

Agency Risk Propensities Involving the Demand for Bureaucratic Discretion

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Motivation to exercise discretion is another matter and poses serious problems for all types of complex organizations. . . . Nevertheless, we will work with a very simple assumption—*that individuals exercise discretion whenever they believe it is their advantage to do so and seek to evade discretion on other occasions.*

—James D. Thompson

In the study of public bureaucracy, an inherent tension arises concerning the balance of policy-making authority between politicians and administrative agencies. Administrative agencies enjoy some degree of discretion over policy-making via implementation via agency enforcement and rulemaking activities (e.g., Bryner 1987; Meier 1993a; Rourke 1984; Wilson 1989). Important theoretical breakthroughs emanating from the positive theory of bureaucratic discretion (PTBD) have generally focused on the supply side of this commodity. This strand of research treats the level of agency discretion as being determined by political choice, whether it pertains to the “hardwiring” of administrative agencies¹ (e.g., Calvert, McCubbins, and Weingast 1989; McCubbins 1985; McCubbins and Page 1987; McCubbins, Noll, and Weingast 1987, 1989) or a trade-off that exists between political control and agency expertise (Bawn 1995; Epstein and O’Halloran 1994, 1996, 1999; Martin 1997).² While these works provide valuable insights into the supply of bureaucratic discretion that is

produced from bargaining between political institutions, they fail to enhance our knowledge concerning the (agency) demand for this good.³ In other words, if the putative assumption noted in the opening quote by James D. Thompson is valid then it suggests that our present understanding of bureaucratic discretion is noticeably underdeveloped from the agency's perspective.

The purpose of this essay is to undertake a new organizations theoretical approach to explain agency demand for bureaucratic discretion under conditions of uncertainty. The focus lies solely on the agency's choice as to how much discretion it wishes to obtain (demand) in relation to the amount of policy outcome uncertainty that it experiences. In doing so, different types of risk-bearing behavior and contextual conditions that shape agency preferences for discretion can be theoretically examined. Particular emphasis on agency decision making under uncertainty reflects the imperfect and incomplete information that agencies possess on how policy implementation will turn out (e.g., Pressman and Wildavsky 1973). This, in turn, allows for an opportunity to assess the range of risk propensities that bureaucratic agencies will engage in an uncertain world. Bureaucratic discretion does not simply entail the level of slack provided by political principals from a well-defined (ideal) point noted in public choice models (e.g., Niskanen 1971; Tullock 1965). Rather, bureaucratic discretion more broadly refers to a range of parameters by means of which administrative agencies operate. This analysis departs from past research on bureaucratic discretion in political science since it does not focus on the decision making of political institutions but rather on how administrative agencies arrive at such decisions.

The layout of this essay is as follows. First, agency choice is shown to be a vital aspect in understanding administrative discretion. Second, it is demonstrated that the context in which agencies seek to obtain discretion will affect their decision-making calculus. Third, a positive theoretic analysis of an agency's demand for discretion is examined in order to provide insight into the risk propensities for this commodity. Based on deriving the agency's demand for bureaucratic discretion given a fixed level of agency utility, the comparative-static results demonstrate the following: (1) both risk-averse and risk-seeking agencies will exhibit an inverse relationship between bureaucratic discretion and policy (implementation) outcome uncertainty, (2) the bureaucratic discretion-policy outcome uncertainty relationship will be the same for a risk-averse agency

operating under a negative discretionary context as it will be for a risk-seeking agency operating under a positive discretionary context, and (3) a risk-averse agency operating under a positive discretionary context will behave the same as a risk-seeking agency operating under a negative discretionary context with regard to this relationship, and (4) a risk-neutral agency's preference for bureaucratic discretion will be insensitive to changes in policy outcome uncertainty. Finally, the implications of these theoretical results as well as the limitations of this study are discussed.

The Importance of Understanding Agency Choice in Obtaining Bureaucratic Discretion

Bureaucratic policy implementation necessarily involves administrative discretion (Meier 1993a, 57). Discretion refers to the ability of an administrator to choose among alternatives and to decide how the policies of government should be implemented in specific instances (Rourke 1984, 36). Discretion is an important commodity for successful policy-making and is woven into the fabric of the Constitution as a means of diffusing both power and conflict among interests (Bryner 1987). According to Martin Shapiro (1988), administrative agencies are "supplementary law-makers" functioning akin to courts with the purpose of expanding legislative intent via their own decisions and interpretation of statutes. Discretion is obviously part and parcel of the administrative process, and sufficient discretion is essential for an agency to perform its tasks. However, the question remains: how is discretion determined within the venue of institutional politics?

Existing scholarship on the PTBD assumes that politicians determine the level of discretion agencies enjoy. Administrative agencies are generally treated as being exogenous to the decision of how much discretion politicians will bestow upon them (for a notable exception, see Volden 2002). Simply, agencies are treated as if they do not play an explicit role in determining the amount of discretion that they obtain from political principals. This is a very reasonable perspective if one takes a strict hierarchical view of public bureaucracy in a democracy. After all, elected officials have the appointment (e.g., Moe 1985; Wood and Waterman 1994), resources (e.g., Carpenter 1996; Wood and Anderson 1993; Wood 1990), oversight (e.g., Aberbach 1990; Fiorina 1982), and procedural means (McCubbins 1985; McCubbins, Noll, and Weingast 1987, 1989) to play a substantial role in shaping administrative behavior. Omitting agency

choice from the analysis of bureaucratic discretion is problematic if one wishes to obtain a full understanding of this phenomenon. Relations between elected officials and bureaucratic agencies are a “two-way street” in matters involving policy administration (Krause 1996a, 1999). This argument is grounded in the existence of a certain level of agreement occurring between political (superordinate) and bureaucratic (subordinate) institutions, which yields a zone of acceptable behavior for the latter when administering public policy (Barnard 1938; Simon 1976). This, in turn, requires that students of bureaucratic politics must learn more about an agency’s demand for discretion before students of institutional politics can construct valid general equilibrium models of bureaucratic discretion that treat both the demand and supply for this commodity in an explicit fashion.

The omission of the demand side of the bureaucratic discretion equation in existing positive political science research is noteworthy for several reasons. First, the policy-making power derived from discretionary authority that accrues to administrative agencies is vast (Rourke 1984, 39). Administrative agencies typically serve as the last line of defense in policy administration within a governmental system. This is because politicians are in a position to shirk responsibility for problems that may arise during policy implementation. Thus, a rational agency will find its interests best served by articulating its demands concerning discretion to politicians by actively lobbying in favor of legislation that it supports while trying to defeat the proposals it opposes (Rieselbach 1995, 212–14). This, in turn, suggests that variations in agencies’ demand for discretion can shape the actual amount that they obtain from political superiors. Agencies are also engaged in other activities and stages of the policy process (Meier 1993a, 57), thereby further accentuating the proactive role played by these entities in the realm of policy implementation. An agency can also circumvent electoral institutions by using clientele groups to support its policy mission (Carpenter 2001; Quirk 1981; Rourke 1984; Wilson 1989), thus helping to assist it in conveying the demand for bureaucratic discretion. These activities enable bureaucratic institutions to help shape the level of discretion that they obtain from political superiors as opposed to merely allowing political institutions to make such unabridged choices on their behalf.

In addition, administrative agencies enjoy information advantages with respect to politicians. These asymmetries generate a broader range of

policy options or activities in which administrative agencies can engage. As a result, any “discretion equilibrium” between politicians and agencies that exists must take into account the level of discretion the agency desires to obtain for policy implementation purposes. Administrative agencies regularly provide information to legislators and the White House in the formulation of policies that, in turn, often affect the degree of bureaucratic discretion obtained by the agency. Both politicians and agencies possess a strong incentive to ensure that policy administration is successful. Thus, politicians’ realization that they do not have the time, expertise, or interest to implement policy on their own will often lead them to consider an agency’s preference regarding the amount of bureaucratic discretion that it desires.

Bureaucratic discretion has been treated as being a purely political choice (supply side) and not an agency choice (demand side). Since previous approaches typically ignore the demand-side equation of bureaucratic discretion, the focus of this essay is centered solely on agency choice in obtaining this commodity. The next section focuses on how discrete differences in the discretionary context under which an agency performs are critical for understanding an agency’s willingness to acquire discretion.

The Dilemma of Agency Choice: Positive versus Negative Contexts for Bureaucratic Discretion

In order to understand agency choice in determining the amount of discretion that agencies seek to obtain in response to uncertainty over policy (implementation) outcomes, one first must consider that they will possess differential views of this commodity based on whether the circumstances make it relatively more desirable (positive context) or less desirable (negative context). Francis Rourke (1984, 41–42) asserts that discretion is a variable commodity that can be either embraced or spurned by administrators depending upon the nature of its use. James Q. Wilson (1989, 179–81) maintains that bureaucratic autonomy sought by the agency may lead it to expand or cut back the scope of its activities in response to congressional demands. These statements indicate that an agency’s discretion can also be viewed as being partly determined by its own choices and decisions, not just those made by politicians. In addition, risk-bearing behavior by administrative agencies will not be fixed but instead depends upon the context in which bureaucratic choices or decisions are made (March 1999, 229).

Likewise, agency utility from bureaucratic discretion can be viewed as varying depending upon the context in which public policies are to be implemented. The nature of the balance of marginal benefits and costs associated with bureaucratic discretion is what distinguishes between the positive and negative contexts confronting the agency. A positive discretionary context occurs when the agency's marginal benefits associated with bureaucratic discretion exceeds its marginal costs ($dB/dD > dC/dD$), while the opposite is true in a negative discretionary context ($dB/dD < dC/dD$).⁴ In this analysis, the relative balance of marginal benefits and costs of bureaucratic discretion determines the shape or curvature of such functional relationships. When the balance of marginal benefits and costs associated with discretion are equal ($dB/dD = dC/dD$), then the discretionary context facing the agency will be neutral since they will find it neither more or less favorable to use this commodity.

Therefore, *ceteris paribus*, positive circumstances lead the agency to view discretion as a relatively more desirable commodity since they deem their environmental and organizational conditions favorable. In this case, the agency can mitigate blame directed toward the organization if policies go awry and/or feel confident that additional discretion will enable it to more effectively tackle the problem. Specifically, an agency operating in a positive discretionary context will be relatively more active in seeking this commodity since it is perceived as being vital to the agency's interests. Conversely, an agency operating in a negative discretionary context will feel that it has much to lose and/or too little to gain in policy implementation, and thus it will seek relatively less of this commodity. In such instances, marginal increases in delegated authority by elected officials to the bureaucracy are viewed negatively by the agency since it does not wish to be made a scapegoat if a favorable policy outcome fails to be obtained. Thus, if a task at hand is very easy or controllable by the agency, little is to be gained from seeking additional discretion. The agency has much to lose if policy outcomes do not turn out well and has little to gain if the policy is successfully implemented. An agency within this context will be less inclined to seek additional discretion.

So what constitutes positive versus negative discretionary contexts confronting an agency on a substantive level? Four possible characteristics can allow one to demarcate between these contexts. The first two are environmental in nature and thus completely beyond the control of the agency. The presence of *divided versus unified government* will have mean-

ingful ramifications in determining whether bureaucratic discretion is viewed favorably or unfavorably by bureaucratic agencies. This distinction reflects discrete differences in the amount of political consensus that exists within electoral institutions.⁵ An administrative agency will have a more difficult time making coherent policies under divided government vis-à-vis unified government since it has both less policy-making flexibility (Epstein and O'Halloran 1999, 78) and less institutional stability given the fragmented nature of its political environment. This makes bureaucratic discretion a potentially more harmful commodity in the former era compared to the latter. As a result, during times of divided government administrative agencies will feel less compelled to seek bureaucratic discretion than under an era of unified government since they might not receive the political unity and support that is required for effective policy implementation.⁶ *Issue salience* is also important in determining the context in which agency preferences concerning discretion are formed. When issue salience is high for policy under the agency's jurisdiction, an agency will view bureaucratic discretion less favorably, *ceteris paribus*, because agencies involved in highly salient issues will be easy targets for blame by elected officials and the media. If issue salience is low, however, then the agency will be relatively more willing to seek additional discretion since it does not have to worry about being under the glare of intense scrutiny for its efforts at implementing policy.

Two organizational factors also delineate an agency as operating in a positive or negative discretionary context. When *task complexity* facing an agency is high, it will confront a negative discretionary context since it is more difficult for it to solve public policy problems in a successful fashion. Conversely, when task complexity is low, agencies will experience a positive discretionary context since it is easier for them to handle this particular class of public policy problems. Therefore, agencies will have less to gain from exercising discretion for policy problems of a complex nature (e.g., drug control policy) than when simpler tasks are sufficient for administering public policies (e.g., implementing agricultural subsidy programs). The existence of *agency stability* also plays a vital role in determining whether an agency will function in a positive or negative discretionary context. This concept refers to the overall or general stability of the bureaucratic organization, which comprises agency personnel turnover, workload volatility, the frequency with which rules and procedures for the agency are altered, and the like.

Agencies that are more stable are more apt to benefit from this commodity in relative terms than those that are more volatile. Simply, stable agencies will be more capable of handling discretion than unstable ones. Holding all else constant, agencies that are stable are better equipped to handle a relatively greater amount of discretion whereas agencies that are unstable are better off with relatively less discretion since a higher probability exists that it will be misused. Thus, stable agencies will view discretion in a positive manner while unstable agencies will regard this commodity in a negative light.

Agency Demand for Discretion and Policy Outcome Uncertainty: A Comparative-Static Theoretical Analysis

The aim of this study is to assess the amount of discretion that an agency will “demand” from elected officials in relation to the amount of uncertainty relating to policy implementation outcomes, conditional on the discretionary context. The purpose of this modeling exercise is not to find the level of discretion that maximizes agency utility. Rather, the focus is on agency preference for *more*, *less*, or the *same* level of discretion in response to a change in policy outcome uncertainty at a given (fixed) level of agency utility. This emphasis on analyzing risk propensities can inform our understanding of how agencies make choices under uncertainty.⁷ This is an important avenue of inquiry given that agencies operate in an uncertain environment when implementing public policies (Barnard 1938; Crozier 1964; Downs 1967; Gormley 1989; March 1999; March and Olsen 1976; March and Simon 1958; Simon 1976b; Stinchcombe 1990; Thompson 1967; Wilson 1989). Thus, it is critical to analyze the nature of agency risk-bearing behavior since it is merely assumed a priori for these classes of utility maximization problems under conditions of uncertainty.⁸

The causal path of the theoretical model is portrayed in pictorial terms in figure 1. This diagram shows that the discretionary context has a conditioning effect on how agencies deal with policy outcome uncertainty when determining how much discretion they seek. Assumptions about the direction and curvature of the relationship between (1) agency utility and bureaucratic discretion and (2) agency utility and uncertainty initially must be set forth. The discretionary contexts are reflected in the curvature or shape of these relationships. Positive discretionary contexts will always

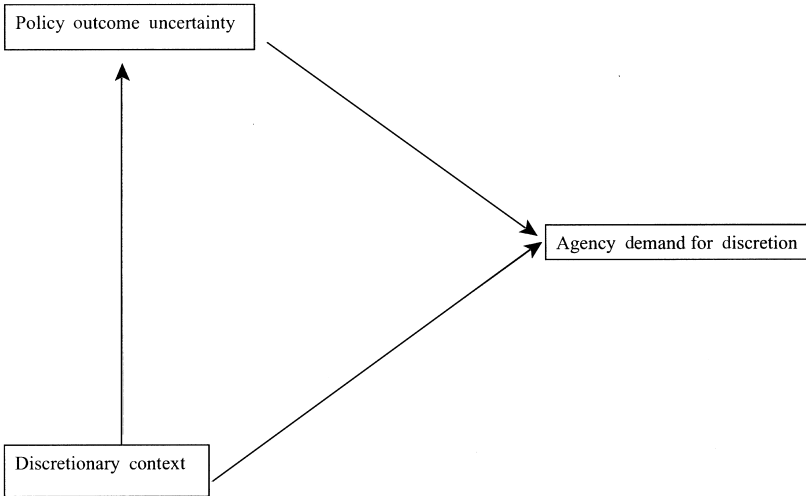


Fig. 1. A theoretical model of bureaucratic discretion as agency choice under uncertainty

exhibit a *convex* agency utility function with respect to bureaucratic discretion and policy outcome uncertainty. Intuitively, for a risk-averse (risk-seeking) agency, a positive discretionary context indicates that each successive drop (rise) in discretion and uncertainty will result in an increasingly smaller (larger) than proportional reduction (increase) in agency utility. In a negative discretionary context, the agency will possess a *concave* utility function with respect to discretion and uncertainty. Therefore, each successive drop (rise) in discretion and uncertainty will result in an increasingly larger (smaller) than proportional reduction (increase) in agency utility under conditions of risk aversion (risk seeking). When a curve is neither convex nor concave (i.e., linear), the positive and negative discretionary contexts are not distinguishable by definition. In instances in which an agency exhibits a mixed discretionary context, whereby discretion is viewed in a positive and uncertainty in a negative context and vice versa, the slope of the rate of change involving the relationship between agency demand for bureaucratic discretion and policy outcome uncertainty will be ambiguous. In addition, the next three subsections analyze the implications of these various risk-bearing behaviors

and discretionary contexts in order to understand agency demand for bureaucratic discretion under conditions of uncertainty.

Risk-Bearing Behavior and Discretionary Context:

Case 1—Risk Aversion

One might suppose that a risk-averse agency will be one that wishes to have less bureaucratic discretion as uncertainty rises since they will have the desire to take as little responsibility for the consequences of policy implementation as possible. This means that such an agency will delegate this responsibility to politicians by asking for as little discretion as possible, *ceteris paribus*. After all, administrative agencies may wish to cut back on the amount of discretion that they desire under certain conditions (Rourke 1984, 41–42; Wilson 1989, 179–181). This proposition can be assessed through a deductive comparative-static analysis.

I assume that an agency's utility function can be expressed in the following general terms.

$$U(D, \sigma) = f(D) + g(\sigma), \quad (1)$$

where agency utility is an additive function of bureaucratic discretion (D) and policy (implementation) outcome uncertainty (σ).⁹ For simplicity, I also assume that a risk-averse agency's utility function can be redefined as a power function of the following form.

$$U = c - D^\alpha - \sigma^\beta, \quad (2)$$

where c is a positive constant and utility is declining with respect to bureaucratic discretion and policy outcome uncertainty at the rate of α and β ($\alpha, \beta > 0$), respectively. Furthermore, I assume that the agency's demand for bureaucratic discretion and the uncertainty that it experiences is positive by definition ($D > 0, \sigma > 0$), which implies that an agency will desire at least a modicum of discretion and experience at least some minimal amount of policy outcome uncertainty. There are reasonable assumptions given that (1) tightly written laws will typically afford bureaucratic agencies some amount of leeway in interpreting these statutes when implementing public policy, and (2) an agency will not know with certainty the consequences of a policy decision or choice.

The risk-averse agency is assumed to receive negative marginal utility from bureaucratic discretion since it does not wish to obtain consider-

able leeway, all else being equal. In other words, a risk-averse agency is presumed to exhibit a tendency to spurn additional units of bureaucratic discretion, all else being equal. This assumption differs from much of the PTBD research on this topic, which implicitly views the agency as wishing to maximize its power via discretion in a monotonic fashion. Instead, agencies can prefer either more or less bureaucratic discretion, which varies by the nature of their risk-bearing behavior. Likewise, this type of risk-bearing agency will also obtain negative marginal utility from policy outcome uncertainty regarding the policy that it wishes to implement. Applying the power function rule of differential calculus to solve the partial derivatives of agency utility with respect to bureaucratic discretion and policy outcome uncertainty yields

$$\frac{\partial U}{\partial D} = -\alpha D^{\alpha-1} < 0, \quad \text{and} \quad (3a)$$

$$\frac{\partial U}{\partial \sigma} = -\beta \sigma^{\beta-1} < 0, \quad (3b)$$

where a risk-averse agency must have decreasing utility with respect to both bureaucratic discretion (D) and policy outcome uncertainty (σ). An agency that is risk averse with respect to bureaucratic discretion and policy implementation outcome uncertainty is one that receives disutility from each phenomenon. Simply, a risk-averse agency will prefer less bureaucratic discretion, *ceteris paribus*. This is because a risk-averse agency, all else being equal, will not wish to have the responsibility associated with additional units of bureaucratic discretion that allows it (instead of politicians) to bear the onus of blame if policy implementation goes awry. Moreover, the risk-averse agency will prefer less policy outcome uncertainty, *ceteris paribus*. Thus, one can presume that a risk-averse agency will seek less discretion as policy outcome uncertainty rises since it will not wish to have greater responsibility attributed to it by politicians, among others, if policy implementation is deemed unsuccessful. In order to determine whether this proposition is true, I employ the standard power utility function in (2) to examine the manner in which bureaucratic discretion will respond to variations in policy outcome uncertainty.

This requires solving for bureaucratic discretion (D) in (2) and setting agency utility constant, equal to a fixed value, ($U = \bar{U}$), which produces

$$D = (c - \bar{U} - \sigma^\beta)^{1/\alpha}, \quad (4)$$

where $0 < \bar{U} < c$. Thus c serves as a supremum for \bar{U} since $D > 0$ by assumption. Next, the *direction* of this relationship is solved by taking the derivative of (4) with respect to σ . This leads to

$$\begin{aligned} \frac{dD}{d\sigma} &= \frac{1}{\alpha} (c - \bar{U} - \sigma^\beta)^{(1/\alpha)-1} \cdot -\beta\sigma^{\beta-1} < 0 \\ &= \frac{-\beta}{\alpha} \sigma^{\beta-1} (c - \bar{U} - \sigma^\beta)^{(1/\alpha)-1} < 0, \end{aligned} \quad (5)$$

where a risk-averse agency will seek less (more) bureaucratic discretion in response to an increase (decline) in policy outcome uncertainty, *ceteris paribus*. In simpler terms, a risk-averse agency that enjoys neither bureaucratic discretion nor policy outcome uncertainty will want less bureaucratic discretion when policy outcome uncertainty rises because it will fear the political retribution that it might receive from an unsuccessful policy implementation outcome more than the burden of having to handle a greater amount of bureaucratic discretion. Thus, a risk-averse agency that obtains disutility from both discretion and uncertainty will have an incentive to seek less bureaucratic discretion as a means of coping with the policy outcome uncertainty that it confronts as an organization.

Introducing discretionary context into this model involves allowing the curvature of the relationships involving agency utility with respect to bureaucratic discretion and policy outcome uncertainty to vary accordingly. The rate of change (or slope) parameters associated with these posited relationships will be greater than unity by definition ($\alpha, \beta > 1$) for risk aversion in a negative discretionary context.¹⁰ Solving for the second-order conditions of agency utility with respect to bureaucratic discretion (D) and policy outcome uncertainty (σ) requires taking the partial derivatives of (3a) and (3b), respectively, yielding

$$\frac{\partial^2 U}{\partial D^2} = -(\alpha^2 - \alpha)D^{\alpha-2} < 0 \quad \text{and} \quad (6a)$$

$$\frac{\partial^2 U}{\partial \sigma^2} = -(\beta^2 - \beta)\sigma^{\beta-2} < 0. \quad (6b)$$

A risk-averse agency functioning in a negative discretionary context will exhibit decreasing marginal utility with respect to bureaucratic discretion

as well as policy outcome uncertainty. Solving for the second-order derivative associated with (4) will indicate the nature of the curvature of the relationship between agency demand for bureaucratic discretion in relation to policy outcome uncertainty:

$$\frac{d^2D}{d\sigma^2} = \frac{-(\beta^2 - \beta)}{\alpha} \cdot \sigma^{\beta-2} \cdot (c - \bar{U} - \sigma^\beta)^{\frac{1}{\alpha}-1} + \left(\frac{\beta^2}{\alpha^2} - \frac{\beta^2}{\alpha} \right) \cdot \sigma^{2\beta-2} \cdot (c - \bar{U} - \sigma^\beta)^{\frac{1}{\alpha}-2} < 0. \tag{7}$$

This comparative-static result reveals that an agency whose marginal disutility from bureaucratic discretion and policy outcome uncertainty is rising at an increasing rate will prefer successively lower amounts of this commodity as uncertainty grows, holding all else constant. Therefore, a risk-averse agency operating under a negative discretionary context will seek larger than proportional reductions in bureaucratic discretion as a rational response to rising uncertainty concerning the policy that it must implement, *ceteris paribus*.

In the positive discretionary context, the risk-averse agency will also experience an inverse relationship between its utility with respect to bureaucratic discretion and policy outcome uncertainty (i.e., $\partial U/\partial D < 0$; $\partial U/\partial \sigma < 0$). What differs in the positive *vis-à-vis* the negative context is that the rate of change of this inverse relationship differs. Specifically, the rate of change (or slope) parameters associated with these relationships will lie in the interval between zero and positive unity ($0 < \alpha, \beta < 1$). Taking the partial derivatives of agency utility with respect to bureaucratic discretion (D) and policy outcome uncertainty (σ) in (3a) and (3b) produces

$$\frac{\partial^2 U}{\partial D^2} = -(\alpha^2 - \alpha)D^{\alpha-2} > 0 \quad \text{and} \tag{8a}$$

$$\frac{\partial^2 U}{\partial \sigma^2} = -(\beta^2 - \beta)\sigma^{\beta-2} > 0. \tag{8b}$$

Thus, a risk-averse agency confronting a positive discretionary context will exhibit increasing marginal utility with respect to bureaucratic discretion as well as policy outcome uncertainty. Taking the second-order derivative of (5) with respect to σ determines the curvature of the relationship between agency demand for bureaucratic discretion in relation to policy outcome uncertainty.

$$\frac{d^2D}{d\sigma^2} = \frac{-(\beta^2 - \beta)}{\alpha} \cdot \sigma^{\beta-2} \cdot (c - \bar{U} - \sigma\beta)^{\frac{1}{\alpha}-1} + \left(\frac{\beta^2}{\alpha^2} - \frac{\beta^2}{\alpha}\right) \cdot \sigma^{2\beta-2} \cdot (c - \bar{U} - \sigma\beta)^{\frac{1}{\alpha}-2} > 0. \quad (9)$$

This comparative-static result reveals that an agency whose marginal disutility from bureaucratic discretion and policy outcome uncertainty is increasing at a declining rate will prefer successively smaller cuts in this commodity as uncertainty grows, holding all else constant. Therefore, a risk-averse agency operating in a positive discretionary context will seek smaller than proportional reductions in bureaucratic discretion as a rational response to rising uncertainty concerning the policy that it must implement, *ceteris paribus*.

There are two intermediate situations in which the agency might be facing a positive context with respect to discretion and a negative context with respect to uncertainty. Under these circumstances, rate of change (or slope) parameters associated with these relationships will lie in the interval between zero and positive unity for the discretion parameter ($0 < \alpha < 1$) and will be greater than positive unity for the uncertainty parameter ($\beta > 1$). This will lead to the following result involving the curvature of the relationship between agency demand for bureaucratic discretion in relation to policy outcome uncertainty based on (9).

$$\frac{d^2D}{d\sigma^2} > 0 \quad \text{if } \Gamma < \Pi; \quad \frac{d^2D}{d\sigma^2} = 0 \quad \text{if } \Gamma = \Pi; \quad \text{and}$$

$$\frac{d^2D}{d\sigma^2} < 0 \quad \text{if } \Gamma > \Pi, \quad (10)$$

where $\Gamma = -(\beta^2 - \beta)/\alpha \cdot \sigma^{\beta-2} \cdot (c - \bar{U} - \sigma\beta)^{(1/\alpha)-1}$ and $\Pi = (\beta^2/\alpha^2 - \beta^2/\alpha) \cdot \sigma^{2\beta-2} \cdot (c - \bar{U} - \sigma\beta)^{(1/\alpha)-2}$. Conversely, when the mixture of a negative context for discretion and a positive context for uncertainty exists the risk-averse agency will possess a discretion parameter that is greater than positive unity ($\alpha > 1$) and an uncertainty parameter that lies between zero and positive unity ($0 < \beta < 1$). As before, the curvature of the relationship between agency demand for bureaucratic discretion in relation to policy outcome uncertainty based on (9) will be ambiguous so that it is a mirror image of (10).

$$\frac{d^2D}{d\sigma^2} > 0 \quad \text{if } \Gamma > \Pi; \quad \frac{d^2D}{d\sigma^2} = 0 \quad \text{if } \Gamma = \Pi; \quad \text{and}$$

$$\frac{d^2D}{d\sigma^2} < 0 \quad \text{if } \Gamma < \Pi. \quad (11)$$

If discretionary context does not matter for risk-averse agencies, they will exhibit constant diminishing marginal utility (i.e., a negative linear relationship) with respect to bureaucratic discretion and policy outcome uncertainty ($\alpha, \beta = 1$). Thus, risk-averse agencies experiencing neither favorable nor unfavorable discretionary conditions will prefer proportional reductions in bureaucratic discretion in response to policy outcome uncertainty, *ceteris paribus*. Simply, a risk-averse agency whose marginal benefits associated with discretion equal its marginal costs, $dB/dD = dC/dD$, will have a downward-sloping linear relationship with policy outcome uncertainty, $dD/d\sigma < 0$, $d^2D/d\sigma^2 = 0$. In other words, the risk-averse agency's demand for bureaucratic discretion will be negative with respect to policy outcome uncertainty; however, it will not display a proclivity for additional marginal gains or reductions in this commodity. This makes logical sense when one considers that if the marginal benefits and costs of bureaucratic discretion are equal then discretionary context is neutral and hence the agency will not have any incentive to acquire successively greater or smaller reductions in bureaucratic discretion in response to changes in policy outcome uncertainty.

Risk-Bearing Behavior and Discretionary Context: Case II—Risk Neutrality

In the risk-neutral case, it must necessarily be true that agency utility is unrelated to policy outcome uncertainty by definition (i.e., $\partial U/\partial \sigma = 0$). Although one cannot as confidently state the sign of the relationship associated with agency utility and bureaucratic discretion, it is sure to be small in magnitude relative to the risk-averse and risk-seeking cases $|\partial U_{RN}/\partial D_{RN}| < |\partial U_{RA,RS}/\partial D_{RA,RS}|$. This is because these latter types of agencies will derive greater (or less) utility from additional units of bureaucratic discretion.¹¹ Moreover, one can deduce that the following pattern will hold.

$$\frac{\partial U_{RA}}{\partial D_{RA}} < \frac{\partial U_{RN}}{\partial D_{RN}} < \frac{\partial U_{RS}}{\partial D_{RS}}, \quad (12)$$

where the slope for the risk-neutral agency falls somewhere between those of the risk-averse and risk-seeking agencies yet is assumed to be nonzero by definition. Then, if $\partial U/\partial \sigma = 0$ and $\partial U/\partial D \neq 0$, it must follow that $dD/d\sigma = 0$. In other words, a risk-neutral agency will not seek additional increases or reductions in bureaucratic discretion in response to policy outcome uncertainty, *ceteris paribus*.¹² Thus, an agency exhibiting risk neutrality in its demand for bureaucratic discretion is insensitive to policy outcome uncertainty. If this is the case, then it naturally follows that discretionary context cannot affect the bureaucratic discretion–policy outcome uncertainty relationship since $d^2D/d\sigma^2 = 0$ by definition.

Risk-Bearing Behavior and Discretionary Context: Case III—Risk Seeking

An agency that is risk-seeking will have the following utility function.

$$U = c + D^\alpha + \sigma^\beta, \quad (13)$$

which is the same form as (2) except that utility is assumed to be increasing with respect to bureaucratic discretion and policy outcome uncertainty at the rate of α and β ($\alpha, \beta > 0$), respectively. In other words, a risk-seeking agency will accrue positive marginal utility from both bureaucratic discretion and policy outcome uncertainty. This is because a risk-seeking agency will prefer both the greater responsibility associated with increases in discretion and the increased uncertainty surrounding policy implementation outcomes, *ceteris paribus*. Thus, a risk-seeking agency is viewed as willing to take on the dual pressure of more freedom or leeway in implementing policies as well as facing a more uncertain policy environment. Solving the partial derivatives of agency utility with respect to bureaucratic discretion and policy outcome uncertainty demonstrates this to be the case.

$$\frac{\partial U}{\partial D} = \alpha D^{\alpha-1} > 0 \quad \text{and} \quad (14a)$$

$$\frac{\partial U}{\partial \sigma} = \beta \sigma^{\beta-1} > 0, \quad (14b)$$

where a risk-seeking agency must have increasing utility with respect to both bureaucratic discretion (D) and policy outcome uncertainty (σ).

Solving for D in (13) and setting agency utility constant equal to a fixed value, ($U = \bar{U}$), yields

$$D = (\bar{U} - c - \sigma^\beta)^{1/\alpha}, \tag{15}$$

where $0 < c < \bar{U}$. Thus \bar{U} serves as a supremum for c since $D > 0$ by assumption. Next, one can solve for the *direction* of this relationship by taking the first-order derivative of (15) with respect to σ in order to obtain

$$\begin{aligned} \frac{dD}{d\sigma} &= \frac{1}{\alpha} (\bar{U} - c - \sigma^\beta)^{\frac{1}{\alpha}-1} \cdot -\beta\sigma^{\beta-1} < 0 \\ &= \frac{-\beta}{\alpha} \sigma^{\beta-1} (\bar{U} - c - \sigma^\beta)^{\frac{1}{\alpha}-1} < 0, \end{aligned} \tag{16}$$

where a risk-seeking agency, just as the case with a risk-averse agency, will seek less (more) bureaucratic discretion in response to increases (decreases) in policy outcome uncertainty. Therefore, a risk-seeking agency that obtains increasing utility from both greater bureaucratic discretion and policy outcome uncertainty will seek less (more) of the former commodity as the latter rises (declines). This counterintuitive relationship suggests that a risk-seeking agency may treat bureaucratic discretion in relation to policy outcome uncertainty as a double-edged sword whereby increases in uncertainty provide it with an incentive to reduce its demand for this commodity.

Consistent with the risk-averse scenario, if discretionary context matters then the discretion-uncertainty relationship cannot be a linear one—that is, $d^2D/d\sigma^2 \neq 0$. In the negative discretionary context, the rate of change parameters lies in the interval between zero and positive unity ($0 < \alpha, \beta < 1$). The subsequent second-order partial derivatives of agency utility with respect to bureaucratic discretion and policy outcome uncertainty must be negative by definition.

$$\frac{\partial^2 U}{\partial D^2} = (\alpha^2 - \alpha)D^{\alpha-2} < 0 \quad \text{and} \tag{17a}$$

$$\frac{\partial^2 U}{\partial \sigma^2} = (\beta^2 - \beta)\sigma^{\beta-2} < 0. \tag{17b}$$

Put simply, risk-seeking agencies operating under a negative discretionary context obtain diminishing marginal utility from bureaucratic discretion and policy outcome uncertainty. Therefore, agencies operating under

these conditions will demand smaller than proportional reductions (increases) in bureaucratic discretion relative to increases (decreases) in policy outcome uncertainty—that is, $d^2D/d\sigma^2 > 0$. Thus, a risk-averse agency operating in a positive discretionary context will behave in the same manner as a risk-seeking agency functioning under a negative discretionary context according to these comparative-static results.

Conversely, risk-seeking agencies functioning in a positive discretionary context will exhibit increasing marginal utility from bureaucratic discretion and policy outcome uncertainty ($\alpha, \beta > 1$) so that each relationship is convex: $\partial^2U/\partial D^2 > 0$; $\partial^2U/\partial\sigma^2 > 0$. This implies that this type of risk-seeking agency will prefer larger than proportional reductions (increases) in bureaucratic discretion relative to increases (decreases) in policy outcome uncertainty—that is, $d^2D/d\sigma^2 < 0$. A risk-seeking agency in a positive discretionary context behaving in such a manner is suggestive of an organization that wishes to reduce the level of this commodity when uncertainty rises. Surprisingly, this is the same behavior one can expect from a risk-averse agency dealing with a negative discretionary context. In the case in which discretionary context does not matter (i.e., is neither positive or negative), the negative relationship between bureaucratic discretion and policy outcome uncertainty will be linear—that is, $d^2D/d\sigma^2 = 0$.

In the case of a mixture context, whereby discretion is consistent with a positive context while uncertainty transpires under a negative context ($\alpha > 1, 0 < \beta < 1$), the comparative-static results are a function of the relative magnitude of the Γ and Π expressions noted earlier.¹³ Specifically,

$$\frac{d^2D}{d\sigma^2} > 0 \quad \text{if } \Gamma > \Pi; \quad \frac{d^2D}{d\sigma^2} = 0 \quad \text{if } \Gamma = \Pi; \quad \text{and} \quad \frac{d^2D}{d\sigma^2} < 0 \quad \text{if } \Gamma < \Pi.$$

In the opposite case, in which discretion is a negative and uncertainty a positive context for the risk-seeking agency ($0 < \alpha < 1, \beta > 1$), the comparative-static results are as follows.

$$\frac{d^2D}{d\sigma^2} > 0 \quad \text{if } \Gamma < \Pi; \quad \frac{d^2D}{d\sigma^2} = 0 \quad \text{if } \Gamma = \Pi; \quad \text{and} \quad \frac{d^2D}{d\sigma^2} < 0 \quad \text{if } \Gamma > \Pi.$$

Table 1 presents a summary of the theoretical predictions derived from this simple comparative-static analysis of agency demand for bureaucratic discretion under conditions of (policy outcome) uncertainty. These theoretical results indicate that risk-averse agency behavior will resemble that

TABLE 1. Summary of Theoretical Predictions of Bureaucratic Discretion as Agency Choice under Uncertainty (power functional form and corresponding set of assumptions)

	Positive Discretionary Context	Mixed Discretionary Context		Neutral Discretionary Context	Negative Discretionary Context
		Discretion, Positive Uncertainty, Negative	Discretion, Negative Uncertainty, Positive		
Type of agency risk-bearing behavior	$\frac{dB}{dD} > \frac{dC}{dD}$	$\frac{dB}{dD} > \frac{dC}{dD}$ D: $\frac{dB}{dD} < \frac{dC}{dD}$	$\frac{dB}{dD} < \frac{dC}{dD}$ D: $\frac{dB}{dD} < \frac{dC}{dD}$	$\frac{dB}{dD} = \frac{dC}{dD}$	$\frac{dB}{dD} < \frac{dC}{dD}$
	$\frac{d^2D}{d\sigma^2} > 0$	$\frac{dB}{dD} > \frac{dC}{dD}$ σ : $\frac{dB}{dD} > \frac{dC}{dD}$	$\frac{dB}{dD} > \frac{dC}{dD}$ σ : $\frac{dB}{dD} > \frac{dC}{dD}$	$\frac{d^2D}{d\sigma^2} = 0$	$\frac{d^2D}{d\sigma^2} < 0$
Discretionary risk aversion	$\frac{dD}{d\sigma} < 0$	$\frac{dD}{d\sigma} < 0$	$\frac{dD}{d\sigma} < 0$	$\frac{dD}{d\sigma} < 0$	$\frac{dD}{d\sigma} < 0$
	$\frac{d^2D}{d\sigma^2} > 0$	$\frac{d^2D}{d\sigma^2} > 0$ if $\Gamma < \Pi$	$\frac{d^2D}{d\sigma^2} > 0$ if $\Gamma > \Pi$	$\frac{d^2D}{d\sigma^2} = 0$	$\frac{d^2D}{d\sigma^2} < 0$
Discretionary risk neutral	$\frac{dD}{d\sigma} = 0$; $\frac{d^2D}{d\sigma^2} = 0$	$\frac{dD}{d\sigma} = 0$; $\frac{d^2D}{d\sigma^2} = 0$	$\frac{dD}{d\sigma} = 0$; $\frac{d^2D}{d\sigma^2} = 0$	$\frac{dD}{d\sigma} = 0$; $\frac{d^2D}{d\sigma^2} = 0$	$\frac{dD}{d\sigma} = 0$; $\frac{d^2D}{d\sigma^2} = 0$
Discretionary risk seeking	$\frac{dD}{d\sigma} < 0$	$\frac{dD}{d\sigma} < 0$	$\frac{dD}{d\sigma} < 0$	$\frac{dD}{d\sigma} < 0$	$\frac{dD}{d\sigma} < 0$
	$\frac{d^2D}{d\sigma^2} < 0$	$\frac{d^2D}{d\sigma^2} > 0$ if $\Gamma > \Pi$	$\frac{d^2D}{d\sigma^2} > 0$ if $\Gamma < \Pi$	$\frac{d^2D}{d\sigma^2} = 0$	$\frac{d^2D}{d\sigma^2} > 0$
	$\frac{d^2D}{d\sigma^2} < 0$	$\frac{d^2D}{d\sigma^2} = 0$ if $\Gamma = \Pi$	$\frac{d^2D}{d\sigma^2} = 0$ if $\Gamma = \Pi$	$\frac{d^2D}{d\sigma^2} = 0$	$\frac{d^2D}{d\sigma^2} > 0$
	$\frac{d^2D}{d\sigma^2} < 0$	$\frac{d^2D}{d\sigma^2} < 0$ if $\Gamma < \Pi$	$\frac{d^2D}{d\sigma^2} < 0$ if $\Gamma > \Pi$	$\frac{d^2D}{d\sigma^2} < 0$ if $\Gamma > \Pi$	$\frac{d^2D}{d\sigma^2} < 0$ if $\Gamma > \Pi$

of a risk-seeking agency given that in both cases an agency will seek less bureaucratic discretion in response to rising policy outcome uncertainty. Furthermore, they also show that a risk-averse (-seeking) agency operating in a negative (positive) discretionary context will behave the same as a risk-seeking (averse) agency facing a positive (negative) discretionary context. The theoretical predictions become ambiguous when one considers a mixture of contexts in which bureaucratic discretion is sought by administrative agencies under conditions of uncertainty.

Even so, this model predicts that under no circumstances will an agency seek greater bureaucratic discretion in response to rising uncertainty. Underlying this result is the assumption made earlier that risk-averse agencies will receive disutility from additional units of bureaucratic discretion and policy outcome uncertainty while risk-seeking agencies will garner positive utility from additional units of each commodity. Moreover, the rate at which bureaucratic discretion and policy outcome uncertainty separately contribute to agency utility is assumed to lie in the same parameter interval range for those instances in which a discretionary context is neither neutral nor a mixture process.

Substantive Hypotheses Involving Discretionary Contexts Implied from the Theoretical Model

Underlying this theory is the presumption that bureaucratic discretion is a tool of policy influence that administrative agencies can either embrace or spurn (Rourke 1984, 41–42; Wilson 1989, 179–81). This section presents specific theoretical predictions of this model within the context of both environmental and organizational characteristics. In turn, these characteristics determine whether the agency is operating under positive or negative conditions, and thus affects the context by which they seek discretion. For purposes of brevity, this discussion is limited to this qualitative distinction and does not explore the mixture contexts considered in the comparative-static analysis presented earlier. This latter task is best left for subsequent research on this topic.

Hypothesis 1: Divided versus Unified Government

The existence or absence of unified partisan control of the executive and legislative branches will be important in understanding the discretionary context in which administrative agencies operate as decision makers. For

reasons discussed earlier in this essay, divided government will constitute a negative discretionary context for the agency, while unified government will provide a positive discretionary context. Therefore, a risk-averse agency operating under divided government will have the same inverse discretionary response to uncertainty as a risk-seeking agency under unified government. In both instances, an agency will prefer a larger rather than a proportional inverse change in bureaucratic discretion relative to policy outcome uncertainty. It will also prefer successively less bureaucratic discretion as policy outcome uncertainty rises, even though its posited risk-bearing behavior (via its demand for discretion and policy outcome uncertainty's separate impact on utility) and discretionary context could not be more different. Conversely, a risk-averse (-seeking) agency operating under unified (divided) government will prefer a *smaller* than proportional inverse change in bureaucratic discretion in response to a unit change in policy outcome uncertainty. In these latter instances, discretionary context offsets risk-bearing behavior so that the positive context of the risk-averse agency under a unified government leads it to behave in a substantively identical manner to the risk-seeking agency under divided government. Finally, the distinction involving divided versus unified government has no substantive bearing on the agency's demand for discretion under conditions of risk neutrality since it is indifferent to uncertainty by definition.

Hypothesis 2: Issue Salience

Issue salience is also important in determining how agencies view bureaucratic discretion. If issue salience is high for the policy under the agency's jurisdiction, then the agency will view discretion as providing a negative discretionary context. However, if issue salience is low for the policy under the agency's jurisdiction, then the agency will operate in a positive discretionary context. Therefore, low issue salience will lead a risk-averse agency to seek a smaller than proportional decline in bureaucratic discretion in response to a rise involving policy outcome uncertainty, while a risk-seeking agency will seek a larger than proportional reduction in this commodity. Conversely, high issue salience will make a risk-averse agency seek a larger than proportional decline in bureaucratic discretion in response to a rise involving policy outcome uncertainty, while a risk-seeking agency will desire a smaller than proportional reduction in this commodity. Issue salience will not have an effect on the

amount of discretion that the agency wishes to obtain when it behaves in a risk-neutral manner.

Hypothesis 3: Task Complexity

The technical complexity of policy tasks (referred to as *task complexity*) performed by the implementing agency will also be important in determining whether bureaucratic discretion is viewed in a positive or negative light on behalf of the agency. As discussed earlier, from the agency's perspective low task complexity is conducive to bureaucratic discretion (positive discretionary context) while high task complexity is not (negative discretionary context). The comparative-static results suggest that a risk-averse agency confronting low task complexity will demand successively smaller reductions in bureaucratic discretion as policy outcome uncertainty rises, whereas a risk-seeking agency facing the same type of complexity will prefer successively larger decreases of this commodity. In the case of high task complexity, the risk-averse agency will demand successively larger reductions in this commodity in response to rising policy outcome uncertainty. The risk-seeking agency facing the same situation will prefer successively smaller reductions in bureaucratic discretion as policy outcome uncertainty increases. Task complexity will have no effect on the relationship between agency demand for discretion and the policy outcome uncertainty that agencies experience in the case of risk neutrality.

Hypothesis 4: Agency Stability

Agency stability will also be essential in determining whether the pursuit of discretion under uncertainty results in a particular type of risk-bearing agency behavior. For reasons discussed earlier, stable agencies will possess a positive discretionary context, *ceteris paribus*, since they will be better equipped to handle bureaucratic discretion. Unstable agencies will be operating under a negative discretionary context, *ceteris paribus*, since greater discretion translates into a higher likelihood of bungling policy implementation. According to the theoretical model, a risk-averse agency in a stable (unstable) organizational setting will seek successively smaller (greater) reductions in bureaucratic discretion as policy outcome uncertainty increases. However, a risk-seeking agency that is stable (unstable) will seek larger (smaller) than proportional decreases in this commodity as policy outcome uncertainty rises. In the risk-neutrality scenario, whether the agency is stable or unstable will make no difference in how

the agency's demand for bureaucratic discretion responds to policy outcome uncertainty.

Discussion

Existing positive theories of bureaucratic discretion (PTBD) typically view this commodity as being solely determined in a top-down fashion by either legislators' decision-making calculus (e.g., Bawn 1995; Fiorina 1986; McCubbins 1985; McCubbins, Noll, and Weingast 1987, 1989; see Huber and Shipan 2002 for an excellent overview of this literature) or as a separation of powers struggle between the legislature and chief executive (Epstein and O'Halloran 1994, 1996, 1999; Huber and Shipan 2000, 2002). This body of research constitutes an extremely significant contribution to our basic understanding as to when and why administrative agencies receive discretion from political superiors based on the latter's willingness to supply this commodity.

In these studies, however, the degree of agency independence (i.e., discretion) is a choice not left to administrative organizations; instead, it is purely a function of political institutions' choice (but see Volden 2002). Thus, one obtains a well-developed portrait of the supply side of bureaucratic discretion that captures what the producers of this good (politicians) are willing to supply to their consumers (administrative agencies). Unfortunately, the other half of the story, the agency's demand (or desire) for discretion, has gone unexplored in these accounts. This is an important omission for those wishing to understand agency-political equilibrium outcomes concerning both the demand and supply of this commodity. The rise of bureaucratic discretion over the past century has provided agencies with considerable policy-making power in the modern administrative state (Lowi 1969). This has provided bureaucratic institutions with a voice of their own in shaping the contents of legislation by lobbying for legislation that they support and in trying to defeat the proposals they oppose (Rieselbach 1995, 212–14). As James Q. Wilson (1989, 251) aptly notes in his discussion of agency response to legislative control, "The bureaucracy is hardly the passive agent of its congressional overseers; like the wily manservant in *The Marriage of Figaro*, it is constantly working to manipulate its master so as to achieve mutually profitable arrangements." Therefore, considering the demand side of bureaucratic discretion is essential if one wishes to obtain an equilibrium-based understanding of this commodity that is explicitly determined by agency-political interactions.

The basic theoretical motivation underlying the comparative-static analysis conducted in this study is straightforward. Understanding an agency's pursuit of discretion in an uncertain environment requires scholars to consider the discretionary context reflected by the balance of marginal costs and benefits associated with this commodity. This is consistent with theoretical research on organizations that emphasizes context-dependent considerations affecting bureaucratic choice under uncertainty (March 1999, 244–45; Thompson 1967, 118–21). Further, the nature of risk-taking behavior observed in administrative organizations is not only affected by expected risk calculations akin to a risk-neutral decision maker but also by the propensities of these organizations to either seek or avoid a particular level of expected risk (March 1999, 20).

The analytical results of this study demonstrate that an agency demanding less bureaucratic discretion in response to higher policy outcome uncertainty may paradoxically reflect either risk-averse or risk-seeking behavior regardless of the discretionary context, yet the rate at which this inverse relationship varies will depend upon whether agencies are confronting a positive or negative discretionary context. In a positive discretionary context, the comparative-static results reveal that risk-averse agencies will seek decreasing marginal declines in bureaucratic discretion as policy outcome uncertainty rises, whereas a risk-seeking agency will exhibit increasing marginal reductions in this commodity. In a negative discretionary context, the comparative-static results indicate that a risk-averse agency will prefer larger rather than proportional inverse changes in bureaucratic discretion with respect to policy outcome uncertainty, while a risk-seeking agency will prefer a smaller rather than proportional inverse change involving this same relationship. When the discretionary context is mixed, the theoretical predictions that flow from this comparative-static analysis are ambiguous and depend partly upon the extent to which a positive discretionary context, on one hand, is offset by a negative discretionary context. In the case in which discretionary context is neutral, one can neither theoretically nor empirically discriminate between risk-averse and risk-seeking agency behavior since each will possess constant marginal declines in bureaucratic discretion in relation to policy outcome uncertainty. In the special case of risk neutrality, the agency's discretionary context will have no conditional bearing on determining its risk-bearing behavior since its demand for bureaucratic discretion is completely divorced from policy outcome uncertainty. The

theoretical predictions generated from this analytical exercise are empirically testable and also directly relevant to administrative agencies' desire to have variable levels of discretion at their disposal for policy administration purposes (Rourke 1984, Thompson 1967, Wilson 1989).

This study has important implications for advancing our understanding of how bureaucratic agencies operate within a political environment on a systemic level. The theoretical argument contained in this essay is suggestive of the considerable importance associated with agency response to uncertainty being conditioned by the context that they experience on a given dimension at a single point in time. Specifically, if the goal is to understand the risk-bearing behavior of bureaucratic agencies in seeking discretion, then one must consider the context that these administrative organizations are confronting. In this particular analysis, agency decision making is a function of context and uncertainty, where the former refers to the known environment that they observe *ex post* and the latter pertains to uncertainty concerning *ex ante* successful policy implementation. On a more fundamental level, the motivation underlying this study attempts to convey the important point that administrative agencies do not passively serve as the pawns of electoral institutions in a representative democracy, as is portrayed in a considerable portion of the existing research on bureaucratic organizations within political science. Instead, these entities exhibit proactive behavior and thus can directly shape both the political and policy environments in which they operate (Brehm and Gates 1997; Carpenter 2001; Krause 1996a, 1999).

In the parlance of consumer theory in microeconomics, the concept of equilibrium typically refers to the relationship between supply and demand of a commodity. If one views bureaucratic discretion as a commodity that is supplied by electoral institutions and demanded by administrative agencies, then one cannot accurately characterize agency-political equilibrium relationships involving policy administration without explicit consideration of both components. David Spence (1997a) correctly notes that existing positive theories of bureaucratic discretion emphasize the goals and decision making of politicians in shaping administrative behavior yet fail to provide commensurate attention to agency goals and policy choice. While this study does not provide a general equilibrium framework for understanding the issue of agency-political equilibrium relations, it does take an initial step in this direction by investigating the nature of agency demand for bureaucratic discretion.

Much scholarly effort is needed in exploring both the theoretical explanation and the systematic empirical testing of the demand side of bureaucratic discretion before knowledge can be acquired that can appropriately complement the increasingly well developed literature on the supply side of how political institutions choose to allocate (delegate) this commodity to bureaucratic organizations. The ultimate goal of a political-agency general equilibrium theory of bureaucratic discretion can only be attained when our understanding involving the supply and demand of this commodity are each sufficiently well developed. While this essay has set forth an analytical framework for studying the risk propensities of bureaucratic agency decision making, considerably more work remains to be done on this fertile topic for both students of institutional politics and administrative organizations to explore.

Appendix: General Solution to Agency Risk Propensities and Demand for Bureaucratic Discretion

The general solution that demonstrates the comparative-statics hold for the bureaucratic discretion policy outcome and uncertainty relationship, irrespective of the functional form adopted for purposes of analysis, is straightforward. If one begins with the generic agency utility function involving agencies' demand for bureaucratic discretion under conditions of uncertainty, as in (2)—dropping constant terms—the following remains.

$$U(D, \sigma) = f(D) + g(\sigma), \quad (\text{A1})$$

where agency utility is an additive function of bureaucratic discretion (D) and policy (implementation) outcome uncertainty (σ). The partial derivatives of (A1) are such that

$$f'(D) = \frac{\partial U}{\partial D}; \quad g'(\sigma) = \frac{\partial U}{\partial \sigma}. \quad (\text{A2})$$

In order to solve for $dD/d\sigma$ and $d^2D/d\sigma^2$, respectively, agency utility must be fixed so that $U = \bar{U}$. Rewriting (A1) based on a positive level of fixed utility gives us

$$\bar{U} = f(D) + g(\sigma). \quad (\text{A3})$$

Differentiating (A3) with respect to σ yields

$$0 = f'(D) \frac{dD}{d\sigma} + g'(\sigma), \quad (A4)$$

and solving (A4) in terms of $dD/d\sigma$ gives us the following expression for the general first-order condition of this problem.

$$\frac{dD}{d\sigma} = \frac{-g'(\sigma)}{f'(D)}. \quad (A5)$$

Since I assume that agency utility has the same directional relationship with respect to D and σ separately in the risk-averse and risk-seeking conditions, $dD/d\sigma < 0$ by definition. In the risk-neutral case, $dD/d\sigma = 0$ by definition because $g'(\sigma) = 0$ and $f'(D) \neq 0$ by assumption. Solving for the second-order conditions involves differentiating (A5) via the quotient rule and yields the following general solution.

$$\frac{d^2D}{d\sigma^2} = \frac{-f'(D) \cdot g''(\sigma) + g'(\sigma) \cdot f''(D) \cdot \frac{dD}{d\sigma}}{[f'(D)]^2}, \quad (A6a)$$

and substituting the equivalent $-g'(\sigma)/f'(D)$ for $dD/d\sigma$ gives us

$$= \frac{-f'(D) \cdot g''(\sigma) + g'(\sigma) \cdot f''(D) \cdot \frac{-g'(\sigma)}{f'(D)}}{[f'(D)]^2}. \quad (A6b)$$

Multiplying both sides by $f'(D)$ and combining some terms yields the general solution for discretionary context:

$$= \frac{-[f'(D)]^2 \cdot g''(\sigma) - [g'(\sigma)]^2 \cdot f''(D)}{[f'(D)]^3}. \quad (A6c)$$

The sign of the function associated with the general solution to the second-order conditions will depend upon the sign of $f'(D)$ as well as for both $f''(D)$ and $g''(\sigma)$. There are eight possible combinations covering risk aversion and risk-seeking agency behavior under nonneutral (positive or negative) discretionary contexts. They are summarized here.

Agency Risk Aversion

Case I (Positive):

$$\text{If } f'(D) < 0 \text{ and } f''(D) \cdot g''(\sigma) > 0, \text{ then } \frac{d^2D}{d\sigma^2} > 0. \quad (A7)$$

Case II (Mixed) (D, Positive; σ , Negative):

$$\text{If } f'(D) < 0 \text{ and } f''(D) > 0, g''(\sigma) < 0, \text{ then} \quad (A8)$$

$$\frac{d^2D}{d\sigma^2} > 0 \quad \text{when } |[f'(D)]^2 \cdot g''(\sigma)| < |[g'(\sigma)]^2 \cdot f''(D)|,$$

$$\frac{d^2D}{d\sigma^2} = 0 \quad \text{when } |[f'(D)]^2 \cdot g''(\sigma)| = |[g'(\sigma)]^2 \cdot f''(D)|,$$

$$\frac{d^2D}{d\sigma^2} < 0 \quad \text{when } |[f'(D)]^2 \cdot g''(\sigma)| > |[g'(\sigma)]^2 \cdot f''(D)|.$$

Case III (Mixed) (D , Negative; σ , Positive):

$$\text{If } f'(D) < 0 \text{ and } f''(D) < 0, g''(\sigma) > 0, \text{ then} \quad (\text{A9})$$

$$\frac{d^2D}{d\sigma^2} > 0 \quad \text{when } |[f'(D)]^2 \cdot g''(\sigma)| > |[g'(\sigma)]^2 \cdot f''(D)|,$$

$$\frac{d^2D}{d\sigma^2} = 0 \quad \text{when } |[f'(D)]^2 \cdot g''(\sigma)| = |[g'(\sigma)]^2 \cdot f''(D)|,$$

$$\frac{d^2D}{d\sigma^2} < 0 \quad \text{when } |[f'(D)]^2 \cdot g''(\sigma)| < |[g'(\sigma)]^2 \cdot f''(D)|.$$

Case IV (Negative):

$$\text{If } f'(D) < 0 \text{ and } f''(D), g''(\sigma) < 0, \text{ then } \frac{d^2D}{d\sigma^2} < 0. \quad (\text{A10})$$

Agency Risk Seeking

Case V (Positive):

$$\text{If } f'(D) > 0 \text{ and } f''(D), g''(\sigma) > 0, \text{ then } \frac{d^2D}{d\sigma^2} < 0. \quad (\text{A11})$$

Case VI (Mixed) (D , Positive; σ , Negative):

$$\text{If } f'(D) > 0 \text{ and } f''(D) > 0, g''(\sigma) < 0, \text{ then} \quad (\text{A12})$$

$$\frac{d^2D}{d\sigma^2} > 0 \quad \text{when } |[f'(D)]^2 \cdot g''(\sigma)| > |[g'(\sigma)]^2 \cdot f''(D)|,$$

$$\frac{d^2D}{d\sigma^2} = 0 \quad \text{when } |[f'(D)]^2 \cdot g''(\sigma)| = |[g'(\sigma)]^2 \cdot f''(D)|,$$

$$\frac{d^2D}{d\sigma^2} < 0 \quad \text{when } |[f'(D)]^2 \cdot g''(\sigma)| < |[g'(\sigma)]^2 \cdot f''(D)|.$$

Case VII (Mixed) (D , Negative; σ , Positive):

$$\text{If } f'(D) > 0 \text{ and } f''(D) < 0, g''(\sigma) > 0, \text{ then} \quad (\text{A13})$$

$$\frac{d^2D}{d\sigma^2} > 0 \quad \text{when } |[f'(D)]^2 \cdot g''(\sigma)| < |[g'(\sigma)]^2 \cdot f''(D)|,$$

$$\frac{d^2D}{d\sigma^2} = 0 \quad \text{when } |[f'(D)]^2 \cdot g''(\sigma)| = |[g'(\sigma)]^2 \cdot f''(D)|,$$

$$\frac{d^2D}{d\sigma^2} < 0 \quad \text{when } |[f'(D)]^2 \cdot g''(\sigma)| > |[g'(\sigma)]^2 \cdot f''(D)|.$$

Case VIII (Negative):

$$\text{If } f'(D) > 0 \text{ and } f''(D), g''(\sigma) < 0, \text{ then } \frac{d^2D}{d\sigma^2} > 0. \quad (\text{A14})$$

In the preceding eight cases, the discretionary context is presumed to be non-neutral (i.e., a positive or negative discretionary context). In instances in which discretionary context is neutral, the second-order conditions must equal zero. If this is to be true, then the following must hold: $f'(D) \neq 0$; $f''(D), g''(\sigma) = 0$. This occurs for both risk-averse and risk-seeking agencies when the marginal benefits and costs associated with bureaucratic discretion are equal (i.e., $dB/dD = dC/dD$) and also under the condition of risk neutrality (i.e., $dD/d\sigma = 0$).

Notes

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The quotation that appears at the beginning of this essay is from Thompson 1967 (118).

1. The most sanguine empirical evidence to date shows limited support for the hardwiring proposition in diverse policy areas such as Medicare payments (Balla 1998), state air pollution (Potoski 1999), and federal hydroelectric licensing programs (Spence 1999b). Research on hazardous waste implementation reveals that informal rules are successfully substituted by an agency in place of formal rules when politicians constrain agency decision making by reducing the agency's discretion (Hamilton and Schroeder 1994; Hamilton 1996).

2. Furthermore, the salience of a policy will also have an impact on discretion (Epstein and O'Halloran 1999). As a policy becomes more attractive, the amount of discretion given to the agency will decline. In addition, another trade-off exists between the additional information obtained by politicians and the distributive losses felt by the agency since the latter cannot efficiently use its expertise in implementing policies.

3. The omission of bureaucratic demands for discretion makes it practically impossible to arrive at a true general agency-political equilibrium perspective that captures the full nuances of such relationships. Simply, a general equilibrium theory can be ascertained regarding the bargaining over the supply of discretion between political institutions, as recent research over the past decade has done an impressive job of demonstrating. This approach, however, does not allow one to ascertain the nature of agency preferences and hence ignores their role in shaping political supply and bureaucratic demand based equilibrium outcomes involving this commodity.

4. These contexts must be defined in terms of marginal costs and benefits since the agency must necessarily prefer or receive, in absolute terms, a nonnegative level of discretion by assumption.

5. This discrete distinction simplifies the analysis and is consistent with existing research on this topic (e.g., Epstein and O'Halloran 1999). Alternatively, one can view the degree of political consensus in terms of the continuous differences that exist within electoral institutions.

6. The view taken here runs counter in two ways to what a traditional power accrual story would predict since a coalition of politicians will have a harder time thwarting an agency's policies (e.g., Bryner 1987; Dahl and Lindblom 1953; Hammond and Knott 1996). First, I presume that agencies care not so much about playing political principals against each other to accrue power as an end as these accounts infer; rather, the context in which they wish to exercise policy-making authority is related to its consequences for policy outcomes. This is especially important given that the purpose of this study is to analyze the risk-bearing behavior of administrative agencies. Second, one can view the power accrual account as an increase in the *supply* of bureaucratic discretion (i.e., a downward shift in supply schedule) made available to administrative agencies attributable to comparative-static changes in political institutions and thus results in a higher equilibrium level of discretion when holding agency demand for discretion fixed. The agency response will result in a shift toward less demand for bureaucratic discretion in these instances for the reasons noted earlier. In agency-political equilibrium terms, the relative magnitude of these changes to the supply and demand schedules will subsequently determine the net effect on the actual level of bureaucratic discretion. It is important to note, however,

that in the present study the focus is exclusively on agency choice under uncertainty and thus on an agency's incentive for desiring additional power in the face of policy outcomes that are uncertain.

7. The isolation of this relationship for a given level of utility was motivated by seminal research on portfolio choice under uncertainty (Tobin 1958).

8. This perspective conceptually departs from the traditional PTBD view that politicians bargain and subsequently allocate a certain amount of bureaucratic discretion and thus their demand cannot exceed their supply over the long run. This presumes that an agency cannot effectively seek more discretion than is being supplied by political institutions at a given point in time. This line of reasoning is problematic unless one treats agencies as being passive entities that cannot affect the (political market) equilibrium level of discretion that they actually obtain. For reasons noted earlier in this essay, if one views agencies as proactive policy actors then it is plausible to suggest that politicians may shift their supply of discretion in response to a shift in agency demand for this commodity so as to reach a new equilibrium quantity. Moreover, agencies can also seek as much discretion as they deem fit, although this does not necessarily mean that they will obtain what they request. Given that the focus of this study is on agency preferences for bureaucratic discretion under conditions of uncertainty, this potential criticism is moot for the purposes of the present study.

9. The mathematical proof of the general solution, independent of the type of functional form utilized, can be found in the appendix to this essay.

10. The comparative-static analysis throughout this essay assumes that the α and β lie in the same range of values for the clear-cut positive and negative discretionary contexts, while they differ for the mixed discretionary contexts. The former assumption is based on the view that the agency's utility obtained from discretion must be consistent with its relationship with uncertainty for a given type of risk-bearing behavior and discretionary context. Relaxing this assumption obviously affects the curvature of these functions by allowing for a mixed discretionary context, whereby the sign associated with the second-order derivative is based upon the relative amount that α deviates from unity vis-à-vis β in the opposite direction. Furthermore, it is also possible for risk-averse and risk-seeking behavior under a neutral discretionary context to be observationally equivalent in the special case when $1 + \alpha = 1 + \beta$ since the curvature of the function will be linearized by definition due to symmetry around unity.

11. This discussion presumes that agency utility must not be completely inelastic to variations in bureaucratic discretion—that is, $\partial U/\partial D \neq 0$. This is not an untenable simplifying assumption given that an agency is likely to receive at least a modicum of utility (or disutility) from changes in this commodity.

12. Besides deducing this from the power function expression in (4) where $\alpha \neq 0$ and $\beta = 0$, this can also be shown to generally hold by applying the chain rule via implicit differentiation to the utility function and setting it equal to zero: $\partial U/\partial D \cdot dD/d\sigma + \partial U/\partial \sigma = 0$. Solving for $dD/d\sigma$ yields $dD/d\sigma = (-\partial U/\partial \sigma)/(\partial U/\partial D) = 0$.

13. Please recall from equations (4) and (5) (risk-averse case) as well as (15) and (16) (risk-seeking case) that one notable difference between these expressions is that they possess different supremum. The interpretation of the Γ and Π expressions take this fact into account.