SEEKING EXPERTS OR AGENTS OF CONTROL: THE USE OF ADVISORY COMMITTEES IN BUREAUCRATIC POLICYMAKING [1]

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September 3, 2013

ABSTRACT: Following their appointment, how do agency secretaries resolve questions of policy uncertainty? Research has recently turned from considering how political actors control bureaucrats to also examining how to incentivize bureaucrats to invest in expertise. This paper argues that in technical policy areas, agency secretaries construct expert advisory committees to lower the costs of expertise acquisition. The alterative hypothesis agency secretaries establish committees as a mechanism for controlling ideologically divergent bureaucrats. The paper statistically tests hypotheses on an original data set of advisory committee creation and renewal (2001-2011). The results from the analysis find strong support for the claim that agency secretaries create advisory committees to augment agency expertise.

[1] For helpful discussion of this paper, I am grateful to Thomas Brambor, Sandy Gordon, Jeff Jenkins, Dave Lewis, Eric Patashnik, Ryan Pevnick, Craig Volden, and audience members at the Midwest Political Science Association Conference in 2013.

Executive agencies make critically important policy decisions each day, such as setting clean air and water standards, determining regulations for food production, assessing the safety of pharmaceutical drugs, investigating predatory lending, and regulating who may access natural resources on federal land. To effectively craft policy in these areas, agencies must acquire sufficient information and possess the requisite expertise. Although, research on bureaucratic policy-making has typically assumed that bureaucrats have sufficient expertise and focused on the efforts of Congress and the president to control its use. We need to also examine how administrative expertise is built.[2] Sean Gailmard and John Patty (2007, 2012) argue that political actors (mainly Congress) can incentivize career bureaucrats to acquire expertise through a combination of job security (the civil service system) and policy discretion. However, when policy-making is complex or highly technical, these tools will likely be unable to compel the acquisition of adequate expertise. When prospective or current employees with technical skills possess opportunities in the private sector or elite universities that are more lucrative or bestow greater prestige than the agency can offer, it will be difficult to hire and retain qualified employees.[3] In these agencies, political actors will adopt additional strategies to improve internal expertise.

Although Congress, the president and the courts each have reason to be concerned with the quality of expertise that is brought to bear on agency decisions, I examine strategies agency

[2] Additional research in this vein has considered the manipulation of enactment costs improve information gathering by bureaucrats (Stephenson 2007; Gailmard 2009; Stephenson 2011).
[3] Even for Gailmard and Patty's policy zealots, you can imagine ways for them to affect policy outside of the agency while obtaining more prestige or money. For example, an individual with expertise in some area of medical research can affect the availability of treatments for a particular disease by engaging in research at university hospital or working to develop new drugs at a pharmaceutical company rather than reviewing drug applications at the Food and Drug Administration.

heads adopt to build or maintain the expertise of permanent bureaucratic staff. The behavior of agency secretaries is important because they have both the incentive and authority to adopt strategies to augment internal agency expertise (Carpenter 2001, 2010; Huber 2007). If agency secretaries care about avoiding public policy failure resulting from an inability to understand the relationship between policy instruments and their effects, they will adopt strategies to facilitate the development of expertise among the career bureaucrats.

Studying the strategic behavior of agency secretaries typically poses a challenge because their actions, particularly internal organization decisions, are often hidden from view. However, advisory committees offer a window into strategies that secretaries adopt to address deficits in expertise. Any agency secretary may create an advisory committee, and it is possible to document their usage across agencies.[4] I argue that agency secretaries construct expert advisory committees when they question the ability of the permanent bureaucratic staff to ascertain the relationship between a policy intervention and its effect in the world. I will test this argument on an original dataset of advisory committee creation and renewal (2001-2011).

In addition, I test this theory against the alternative argument that agency leaders create expert advisory committees to control subordinate bureaucrats. If career bureaucrats and agency secretaries have diverging ideological preferences, agency secretaries can establish committees to minimize information asymmetries between themselves and subordinate bureaucrats. Advisory committees can reduce uncertainty over whether a policy intervention proposed by subordinate bureaucrats reflects their ideological preferences.

The ability of agencies to reduce policy uncertainty and establish sufficient expertise has important implications for the functioning of American government. Agency expertise is

[4] Agencies must charter all advisory committees with the General Services Administration (GSA) every two years.

necessary if bureaucrats are to translate often vague legislation into concrete policy. However, especially given technological advances and expansions in the breadth of government intervention, agency capacity should not be assumed. Policy expertise must be both built and maintained. This paper is part of an effort to learn more about how agencies cope with expertise problems, and how they balance the need for expertise with that of political control. A study of advisory committee creation, renewal and termination improves our understanding of how agencies go about building capacity when they are unable to recruit the human capital they need.

STAFFING IN THE EXECUTIVE BRANCH: APPOINTEES AND ADVISORY COMMITTEES

Upon assuming office, a new president is faced with managing a sprawling federal bureaucracy, and must do so within the constraints of the civil service system, which limits his ability to select or dismiss bureaucrats and to pay them differentially. Despite this system, the president is not completely restricted in his ability to staff the bureaucracy with individuals of his choosing. Following each election, presidents appoint approximately 3,000 individuals to positions across the executive branch (Lewis 2010, 3). However, their ability to staff the bureaucracy extends beyond appointments. Presidents, and their appointees (once installed) may also create advisory committees. Through these committees, they embed representatives of stakeholder interests as well as external experts into the bureaucratic policy-making process.

The advisory committee system provides an institutional forum in the rulemaking process for consultation with private sector interests and external policy experts. In total, it incorporates approximately 70,000 additional individuals from the private sector, public advocacy groups, research organizations, professional societies, industry representatives, trade groups and academic institutions into the bureaucratic policymaking process ("What is the Composition of

Committees"). These committees provide an additional mechanism through which political actors can affect agency policy. Over the past decade, there have been approximately 1,000 committees in operation at any given time. Agency secretaries established about half of all committees.[5]

Advisory committees may only provide information; their recommendations do *not* hold the weight of law. "Determination of action" on their recommendations must be made through the typical policymaking channels (the legislative process, the rulemaking process, or presidential directive) "unless otherwise specified" by Congress or the president (U.S. Public Law 92-463). According to the Federal Advisory Committee Act of 1972 (FACA), advisory committees need to be re-chartered every two years unless statutorily mandated to remain in place. So, if a president or agency leader creates an advisory committee and then leaves office, the incoming department head or president can choose to *renew* or *terminate* the committee (U.S. Public Law 92-463). They also have the power to re-staff committees inherited from previous agency secretaries or administrations.

Agencies codify committees on the basis of their composition and purpose.[6] There are five main categories: 1) grant-making committees, 2) policy issue committees, 3) program committees, 4) negotiated rulemaking committees and 5) scientific technical committees. I will focus on the subset of advisory committees established by agency secretaries and staffed with technical experts (scientific technical committees). In 2012, there were 169 advisory committees

[5] For example, in 2010, there were 1,007 committees across 77 agencies, and of those, agency secretaries created 446 of them.

[6] There are also some committees labeled as Special Emphasis Panels. These are mainly in the National Institute of Health (NIH). These panels function similarly to grant-making committees, but some both review grants and give technical recommendations on NIH programs. The main characteristics of each committee can be found in the General Services Administration's Federal Advisory Committee database from 1999 to the present.

constructed by bureau chiefs providing policy recommendations on technical policy issues to bureaucratic decision-makers. The membership of these committees primarily consists of non-stakeholder experts drawn from academia, research institutions, and other areas of the private sector. I have chosen to focus on these committees because they get to the heart of the expertise question.

ADMINISTRATIVE PROCEDURE: INFORMATION AND CONTROL

Theories of bureaucratic organization have mainly focused on the efforts of Congress and the president to control agency policy through administrative procedure. First, researchers argued that once Congress (the principal) delegates authority to bureaucrats (the agent), they are faced with the challenge of controlling the bureaucrats they empowered (Niskanen 1972). This literature emphasizes that there is an inherent and unavoidable loss to the principal's welfare in delegation due to the problems of moral hazard and adverse selection, and that principals should delegate when the benefits of efficiency and expertise outweigh the losses (McCubbins and Kiewiet 1991). On this account, political actors adopt strategies to limit the ability of career bureaucrats, presidents or future legislative coalitions to move policy away from what political principals prefer (McCubbins and Schwartz 1984; McCubbins, Noll and Weingast 1987, 1989; Epstein and O'Halloran 1999; Huber and Shipan 2002; Lewis 2003, 2010; Volden 2002). These efforts are then reflected in the institutional organization of the bureaucracy because political actors try to bias policy outcomes in their favor by controlling the structure and process of agency decision-making rather than specifying the policy details.[7] For example, political actors bias decision-making by 1) empowering interest groups (McCubbins and Schwartz 1984;

[7] As an alternative to administrative procedure, Congress can also specify the details of policy to a greater degree (Huber and Shipan 2002).

McCubbins, Noll, Weingast 1987, 1989), 2) imposing time limits, reporting requirements or limitation riders on appropriations (Epstein and O'Halloran 1999; McDonald 2010; Carpenter, Chattopadhyay, Moffitt, and Nall, 2012), 3) locking in staff that are supportive of their goals through insulation (Lewis 2003), 4) setting up ineffective decision-making procedures to limit the impact of a policy (Moe 1989) or 5) appointing allies to positions in the bureaucracy to guide policy outcomes (Lewis 2010).

This line of research typically assumes that bureaucratic agencies possess expertise and that the main concern for political principals is controlling the way that agents use their expertise.[8] However, other researchers have emphasized that expertise is endogenous (Gailmard and Patty 2007, 2012; Stephenson 2007, 2008, 2011; Ting 2009). Stephenson summarizes one main obstacle to the generation of sufficient expertise: "agents' private incentive to invest in research may not align with the social interest in their doing so," and as a result, in questions of institutional design "there is an unavoidable trade-off between inducing optimal use of information *ex post* and inducing optimal acquisition of information *ex ante*." (Stephenson 2011, 1426; c.f. Gailmard and Patty 2012, 6) Aside from the noted exceptions, the literature has mainly focused on the former problem—"the optimal use of information"—and only recently come to focus on the latter—the acquisition of information (Stephenson 2011, 1426). This second approach recognizes that information must be acquired, expertise built, and capacity maintained. This complicates our theories of bureaucratic organization.

[8] Although expertise is often assumed, the literature does consider the costs of imposing procedural constraints (McCubbins and Kiewiet 1991). For example, Epstein and O'Halloran (1999) argue that Congress will limit the use of procedural constraints like reporting requirements or required consultation with interest groups in highly technical areas. Also, Lewis (2010) and Gallo and Lewis (2012) examine the effects of control strategies on executive branch capacity.

In pursuit of information, expertise, and ultimately competence, political actors may structure institutions in a way that facilitates the development of expertise. Gailmard and Patty (2012) have argued that the "organizational structure and political position of executive branch organizations can decisively affect their members' incentives to make costly investments in information and expertise," so political principals can order agency decision-making to incentivize information gathering and expertise acquisition (Gailmard and Patty 2012, 4). As such, we can understand some institutional innovations as mechanisms to promote the development of agency expertise.

Stephenson (2008, 2011), Gailmard (2009), and Gailmard and Patty (2007, 2012) focus on institutional mechanisms that increase the marginal benefit of research (typically paid out through policy rewards).[9] However, when policy research requires specialized knowledge, especially in highly technical fields where the recruitment and retention of employees is difficult, incentivizing through policy rewards may be insufficient. Under these circumstances, political principals may use administrative procedure to affect the marginal costs of additional research for career bureaucrats to reduce policy uncertainty.

Research Costs and the Use of Expert Advisory Committees

Following their appointment, agency secretaries face uncertainty about 1) the relationship between a proposed policy and its effect in the world and 2) whether the policy reflects their ideological preferences. They need to consider both how to compel career bureaucrats to both acquire the information necessary to make policy decisions and then to use that information in a way that aligns with their preferences. From their position, they have the authority to adopt

[9] Stephenson thinks about the way new institutions affect difference between research and default payoff for the bureaucrat (2011).

strategies within the organization to increase the probability that they will achieve their preferred policy outcomes. Agency secretaries, like other political principals, can impose procedural constraints on the bureaucratic agents to limit the ability of bureaucrats to shift policy away from their preferences (McCubbins, Noll and Weingast 1987, 1989; Epstein and O'Halloran 1999; Huber and Shipan, 2002). Alternatively, if they are concerned about agency expertise, they can structure decision-making procedures to increase incentives for career bureaucrats to engage in information gathering (Gailmard and Patty 2007, 2012; Stephenson 2008, 2011). I propose that when policy uncertainty is high, agency secretaries employ expert advisory committees as a mechanism to alter the costs for bureaucrats to acquire expertise.

It is generally accepted that there is an optimal level of research or information acquisition that an agent will engage in or an "optimal stopping problem." (Carpenter 2002) The question for agency leaders becomes how can they induce career bureaucrats to engage in sufficient information gathering, despite the fact that there is a misalignment between the marginal *social* costs and benefits of information gathering and the bureaucrat's *private* costs and benefits (Stephenson 2011, 1430; Tullock 1971).[10]

Within the civil service system, agency secretaries are limited in their ability to punish career bureaucrats who fail to sufficiently invest in expertise or to reward those that do. Variable compensation schemes are not permissible and dismissal is difficult.[11] If a system of financial

[10] Stephenson explains that "as a relative matter, the cumulative social utility from making an even slightly better decision on a matter like health care, climate change, counterterrorism, or campaign finance likely dwarfs the private utility that accrues to the responsible decisionmaker."(1431)

[11] Even if a system of financial rewards and punishments were available, principals still face the problem of hidden information. It is difficult to determine whether the agents has engaged in sufficient information-gathering or effort, because the principal cannot easily observe effort or assess the quality of a policy decision, particularly in technical policy areas and when the long term consequences of a policy choice are difficult to discern.

rewards and punishments is unavailable, another option is to alter the marginal private costs and benefits associated with acquiring expertise. As previously noted, existing research emphasizes the use of policy discretion (as a way of increasing the bureaucrat's private benefit of research) in order to incentivize expertise acquisition (Gailmard and Patty 2007; Epstein and O'Halloran 1999; Bawn 1995). Others have emphasized the ways that principals can impose enactment costs on bureaucrats seeking policy rewards (Stephenson 2007, 2008, 2012). For example, political principals, like agency heads or members of Congress, can raise the costs associated with adopting a policy option thus forcing bureaucrats to invest in research in order to realize a policy goal (Stephenson 2007, 2011). Both of these courses involve rewarding bureaucrats with policy gains in exchange for research effort. In both of these examples, principals provide agents policy rewards in exchange for greater information gathering and the development of policy expertise. However, there are other institutional mechanisms that could serve to augment agency expertise.

When policy uncertainty is high and agencies need to acquire expertise to reduce this uncertainty, political principals can manipulate the costs of research effort by establishing expert advisory committees. These committees can improve information gathering through distinct two mechanisms. In the first instance, they can subsidize the private costs of doing additional research (*subsidy mechanism*), and in the second, they raise the private costs of inadequate research effort (*review mechanism*). Expert advisory committees typically enter the policymaking process at two distinct points, and the mechanism at work depends on the where in the policy development process they are positioned. First, advisory committees can be called upon to respond to specific requests for information on policy topics or issues that the agency is considering acting upon. Second, they are also often assembled to publicly review and assess the

research and proposed policies of bureaucrats. The system is even called "peer review" for a group of committees in the Environmental Protection Agency (EPA) and the National Institute of Health (NIH). The former represents a subsidy mechanism and the latter a review mechanism.

I assume that an agency secretary prefers to reduce policy uncertainty and that she recognizes the high costs of developing and maintaining expertise in technical policy areas. When an agency in such a policy area is confronted with a new technical advance or novel class of diseases, drugs, or chemicals to be regulated, agency heads may believe that—even with research effort—career bureaucrats lack the expertise necessary to sufficiently minimize policy uncertainty. In this case, simply providing policy discretion to motivate expertise acquisition may prove insufficient given the time and effort it would take them acquire information. Instead of manipulating the private benefits that accrue to bureaucrats for research, the agency secretary may try to alter the costs associated with acquiring new information.

First, agency secretaries can build institutions that lower the bureaucrat's costs of attaining expertise. Expert advisory committees provide a venue in which agencies can ask a select group of individuals for their input on a new policy issue. Rather than toiling on their own by reading through new research and reaching out to experts independently, advisory committees build into the decision-making process (and a career bureaucrat's regular work day) the acquisition of information on specific policy questions that the bureaucrat is trying to solve. They institutionalize the process of collecting information about specific policy decisions from those with expertise in the relevant area, providing those individuals with the necessary background materials, and obtaining their assessment. In these cases, advisory committees provide an *informational subsidy*. So, when agencies face policymaking on a new or complex

problem, the leadership can select the types of experts necessary to assist them on a given policy question and solicit their advice at relatively low cost.[12]

An illustration of this mechanism can be seen in the Center for Medicare and Medicaid Services' (CMS) use of the Medicare Evidence Development and Coverage Advisory Committee (MEDCAC). The committee convenes to assess the effectiveness of new medical advances (procedures, technologies) and then offers advice to CMS on whether Medicare should cover the medical advance in question. This committee regularly incorporates guest members with knowledge bearing on the specific advance in question (Lavertu, Walters and Weimer 2011, 56). The agency solicits information on new advances in technology before deciding how to proceed. The agency does not offer its own assessment prior to soliciting feedback from the committee. In this case, the committee is providing an informational supplement on technical advances prior to developing its own policy assessment. Similarly, the Food and Drug Administration reaches out to their committees on areas of policy they are considering acting on. For example, in April 2008, the Pediatric Subcommittee of the Oncology Committee met to discuss how to enhance global pediatric oncology drug development and the recent European Union legislation governing the development and authorization of medicine for children (Food and Drug Administration 2008). In both cases, agencies are using the committees as a mechanism to lower the costs of information acquisition for career bureaucrats.

Second, agency secretaries who manage agencies with high degrees of policy uncertainty may increase the private costs of inadequate research effort. Although constrained in their

[12] On costs, the total cost of running the advisory committee system in 2011 was $395.2 million and the system consists of 70, 605 individuals so the per person cost of the system is $5,597.33. Of the 70,605 advisory committee members, 1,464 are regular government employees that serve as liaisons between the agency and the committees. So the actual cost per advisory committee member is actually lower (See U.S. General Services Administration, "What is the Composition of Committees"; U.S. General Services Administration, "Spending on Advisory Committees").

ability to offer monitory reward and punishments, they can impose other forms of sanction. Expert advisory committees may accomplish this by introducing a public review or assessment of the work of career bureaucrats. Many expert advisory committees directly review the technical evidence that bureaucrats have assembled in support of a policy decision. In these cases, career bureaucrats research the policy issue in question, present their findings or develop a program, and then the expert panel either directly criticizes the work of the agency's bureaucrats or offers their own assessment of the decision at hand. Either way, the committee is coming in after career bureaucrats have offered their assessment of a policy decision.

If a bureaucrat is policy-motivated and subject to a regular and public review of their policy assessments by a panel of respected external experts, they may be incentivized to engage in research effort for two reasons. First, bureaucrats typically enjoy informational advantages regarding the quality of their work, but when committees composed of well-informed technical experts on the issue in question are assembled to review their work, these advantages are reduced. These external experts can expose inadequate research effort or mistakes that appointees in leadership positions have neither the time nor expertise to identify. If these bureaucrats wish to be trusted with policy discretion or want to preserve a personal reputation that will open career opportunities outside of the agency, then they will want to avoid negative public review. For those bureaucrats motivated by neither esteem nor a desire for policy authority, these reviews will likely do little to improve research effort. However, they may identify those bureaucrats that engage in little research effort and lack expertise.

Second, if some appointed committee members are both technically qualified and have ideological preferences that differ from those of career bureaucrats, advisory committee review can incentivize career bureaucrats to secure verifiable information in support of their preferred

outcome. In this case, research effort is propelled by bureaucrats' desire to protect their preferred policy choices from being undercut by negative critiques of committee members. Again, if bureaucrats do not possess strong policy preferences and care little if their recommendation is overturned for inadequate evidence, this mechanism will likely fail to incentivize research effort and may in fact increase their incentive to shirk in the hope that committees will pick up their work.

An illustration of the review mechanism can be seen in both pharmaceutical drug and clean air regulation. First, in pharmaceutical drug regulation, the FDA sometimes requests that advisory committees review new drug applications. When committees meet, both the drug firm and FDA bureaucrats present their assessment of the application. Then the agency asks for the committee's feedback on medical officer's and the firm's assessment of the application and whether the drug should be approved. In a second example, in the Environmental Protection Agency (EPA), calls upon an advisory committee—the Board of Scientific Counselors—to provide "advice, information and recommendations about the Office of Research and Development (ORD) research program."[13] Again, advisory committees assess tasks already completed by career bureaucrats. The Board of Scientific Counselors examines the work of the career bureaucrats, and makes suggestions in reports that are publicly available on the agency website ("Board of Scientific Counselors Meetings and Reports").

There are costs associated with incorporating advisory committees into the policymaking process. In addition to time and resources spent establishing and maintaining committees, they could increase a bureaucrat's incentive to shirk. It could be that advisory committees will not succeed in augmenting expertise if committee members and permanent bureaucrats are

[13] Quote is obtained from the committee's mission statement on their website ("About BSOC").

ideologically close (Ting 2003). [14] Instead, career bureaucrats will rely on information from outside experts to make decisions, but they will not expend effort themselves or use the forum to augment their own expertise by securing knowledge or attaining a skill that could be applied to future policy decisions.

However, there is reason to believe that collective action problems resulting from the introduction of redundant agents are not deeply problematic in this case. Shirking would be a greater fear if the advisory committees and bureaucrats were simultaneously reviewing a policy question and if their task in the review process was identical (Stephenson 2011, 1462-1464, 1467-1468). The relevant distinctions here are the timing—simultaneous versus sequential—and whether the information produced by committees and permanent bureaucrats are substitutes or complements. Dividing complementary tasks has the potential to enhance an agent's research incentive (Persico 2004).[15] On timing, either expert committees provide some information on a new policy issue or they review the work already completed by bureaucrats. In either case, they are not duplicating but complementing research assigned to the career bureaucrats. This is not to say that there are not costs that certainly could include reducing the career bureaucrat's incentive for research and the process introduces the potential for information cascades or herding problems (Sunstein 2011; Vermeule 2012). The costs will be particularly high when bureaucrats 1) assign committees tasks that are redundant not complementary, 2) do not possess

[14] Advisory committees introduce some redundancy into the policy process, because committees make policy recommendations on the same question that members of the permanent staff are working on. Ting argues that if you assign the same task to at least two agents and these redundant agents have similar ideological preferences, bureaucrats have an incentive to shirk in expectation of the other agent performing the task as they would (Ting 2003, 276).) He argues that political principal's have an incentive to create redundancy in policymaking when agent's ideological preferences are distant from her own, but when ideological preferences are too close the principal must be concerned about collective action problems (Ting 2003, 276, 287).

[15] Sequential decision-making can lead to gains, but is not without costs. It can lead to problems like information cascades or herd behavior (Sunstein 2011; Vermeule 2012*)*.

strong policy goals, or 3) are not trying to build a reputation in order to open career opportunities for themselves outside of government.

Besides the issue of costs, if an agency secretary is considering establishing advisory committees, three additional questions that are likely to arise: 1) why not augment expertise by building capacity internally, 2) why establish public advisory committees and not use consultants, and 3) are committees an appropriate mechanism of augmenting expertise in every policy domain? First, agencies clearly have an incentive to hire career bureaucrats with the necessary technical skills, but there are several resource-based reasons why agency secretaries may also turn to advisory committees rather than increase expertise by hiring more qualified bureaucrats. [16] One obvious way that secretaries could lower costs associated with acquiring information is to provide more resources—bigger budgets. Stephenson (2011) argues that this is both socially costly and bureaucrats have only the resourced appropriated to them by Congress. Hiring more and better-qualified bureaucrats also does not address problem of incentive misalignment (1434). Also, agency leaders are typically in their posts for a relatively brief amount of time and supplementing expertise can be done more quickly and at lower costs via advisory committees. Committee members only receive a relatively small per diem and compensation for expenses. While serving, they retain their posts in academic institutions, research organizations or firms.[17] Finally, the agency would likely have difficulty in recruiting top experts away from positions that provide greater financial remuneration and more esteem

[16] Epstein and O'Halloran (1999) argue that Congress faces a "make-or-buy" decision when members must decide whether to write detailed statutes or delegate to the bureaucracy and that if it is too costly to develop the expertise and write detailed statutes that they will delegate (7-8). Agencies face a similar choice when they are forced to consider whether to build a greater informational infrastructure or to draw upon external experts through mechanisms like advisory committees or independent contractors.

[17] In support of this point, Volden (2002) has found that states have turned to policy advisory boards when state financial resources are fewer and governments less professional.

than a position in the civil service could provide. Even if the agency could compete in financial terms, civil service rules limit agencies' ability to take on a group of technical experts while their expertise is in demand, and then they would still face the challenge of incentivizing them to maintain their expertise.

Second, rather than incorporating external experts into the policy process through advisory committees, agency secretaries could just contract with these individuals as private consultants. Technical agencies can and do contract with experts privately. If agencies want to obtain private advice, then consultants are a preferable mechanism for obtaining it. (Unlike advisory committees, the work of consultants is even exempt from Freedom of Information Act requests.) However, these external experts may have a greater incentive to engage in research effort on the policy issue in question when their recommendations are made public. If their advice becomes associated with a policy failure, they could pay a reputational cost. For example, a medical researcher who recommends approval of a drug that turns out to have serious unanticipated harmful effects will likely incur such costs.

As a mechanism for improving agency expertise, expert advisory committees are not equally appropriate across all policy areas. Three points are relevant here: 1) the public nature of advisory committee recommendations make it an inappropriate solution for some types of policy, particularly legal and budgeting strategy, 2) agencies can more easily secure expertise in policy areas where private actors have an incentive to provide it independently, and 3) agencies can more easily secure some types of expertise in house, depending on private sector job opportunities. Therefore, agencies engaging primarily in legal and budgetary policy should rely less on committees, but those agencies relying on scientists and engineers are more likely to bring in external expertise.

In legal and budgetary policymaking, public discussion would likely hinder an agency's ability to achieve its goals. For example, the Department of Justice will not want to openly discuss and debate what legal strategy to adopt in upcoming cases. However, in other policy areas, this open discussion with experts will be less damaging to the goals of agency leaders. For example, scientists in the Center for Disease Control will want to reduce the uncertainty between a given policy intervention and its effect, and in this context, the aims of the CDC are not harmed by open discussion of the best strategy for combating avian flu or H1N1.

ADDRESSING ALTERNATIVE EXPLANATIONS

An alternative explanation for the establishment of advisory committees is that agency leaders institutionalize procedural controls to limit the degree to which subordinate bureaucrats can move policy away from their preferred outcomes. Scholars of delegation have long argued that Congress imposes procedural controls on agencies to limit bureaucratic drift, but this same explanation could also apply to agency leaders (McCubbins, Noll, Weingast, 1987, 1989; McCubbins and Schwartz 1984; Epstein and O'Halloran 1999).[18] Agency secretaries will need to consider whether career bureaucrats will implement the policies they would have given the same information. We know that the ideological preferences of career bureaucrats and agency secretaries often differs (Clinton *et al*. 2012; Aberbach and Rockman 2000; Golden 2000) and can assume that career bureaucrats possess more information about the details of policy than do agency secretaries. So, advisory committees could be an institutional strategy to minimize information asymmetries between agency leaders and subordinate bureaucrats by empowering

[18] There is extensive literature on when Congress and the president will impose procedures constraints on agencies and the effects of those procedures on policy outcomes: Epstein and O'Halloran 1999; Bawn 1995; Huber and Shipan 2002; Volden 2002; McDonald 2010; Balla 1998; Yackee and Yackee 2006; Farhang 2010; Carpenter, Chattopadhyay, Moffitt and Nall 2012; Farhang 2010; Lewis 2003, 2010.

trusted external experts to monitor their decisions. Balla and Wright (2001) have argued that Congress mandates the use of advisory committees to control the content and flow of information available to agencies in policymaking.

If political control is the primary motivation for incorporating expert advisory committees into policymaking, then as the ideological distance between agency heads and career bureaucrats increases the probability of creating and renewing an advisory committee should also increase. The empirical analysis will directly test this possibility with three different measures of agency ideology and ideological conflict.

Hypotheses to Be Tested

The empirical analysis will test the following competing hypotheses:

> *Information: Agency secretaries construct expert advisory committees to reduce uncertainty about the likely effects of a policy choice. As the work of the agency becomes more technical, agency secretaries are more likely to establish a new expert advisory committee.*
>
> *Political Control: Agency secretaries construct advisory committees to reduce information asymmetries between themselves and ideologically divergent career bureaucrats. As the ideological preferences of agency appointees and career bureaucrats diverge, agency secretaries are more likely to establish a new expert advisory committee and more likely to renew an existing committee.*

I argue that the empirical test will uphold the *Information* hypothesis, and that advisory committee generation is driven by the need to improve the information brought to bear on policy decisions not by a need to exert political control over ideologically divergent career bureaucrats.

There are likely systematic differences in the decision to create an advisory committee based upon the type of policy work an agency performs. So in addition, the analysis will examine whether agencies engaged in some types of policy work are more likely to establish committees than others. I will also examine the following claim:

Policy Type: Agency secretaries will be more likely to establish advisory committees when policy involves expertise in the biological sciences, physical sciences, mathematical sciences, social sciences, and engineering. They will reach out less consistently when agencies consist mainly of medical professionals, depending on whether medical expertise is used for patient practice or for policy. Finally, they will be unlikely to reach out publicly for additional legal or budgetary expertise.

THE EMPIRICAL TEST

To test the competing explanations, I have constructed a dataset that includes every advisory committee that was established, renewed, and terminated in a federal agency between 2001 and 2011. From this data, I established a count of technical advisory committees created and renewed by agency for each year (See Appendix A for a more detailed explanation of coding protocol). As previously stated, the analysis for this paper includes only those expert or technical committees established by agency secretaries—setting aside committees created by presidents and members of Congress as well as all committees of stakeholder interests. The count of newly created and renewed advisory committees by agency and year will serve as the dependent variable in the three sets of statistical models below. For the analysis, I exclude agencies with less than 100 employees as well as defense and foreign policy agencies.[19] Defense and foreign policy agencies are not required to report the existence of advisory committees engaged in work on classified materials. Given this exemption, the counts that I have established are incomplete for those agencies doing classified policy-making.

Table 1 displays the average number of total committees and new committees created by agency secretaries, and Table 2 presents the distribution of committees across cabinet departments and large agencies.

[19] The analysis excludes the Department of Defense, Department of Army, Department of Navy, Department of Air Force, Central Intelligence Agency, and the Department of State.

TABLE 1. PATTERNS IN ADVISORY COMMITTEE GENERATION

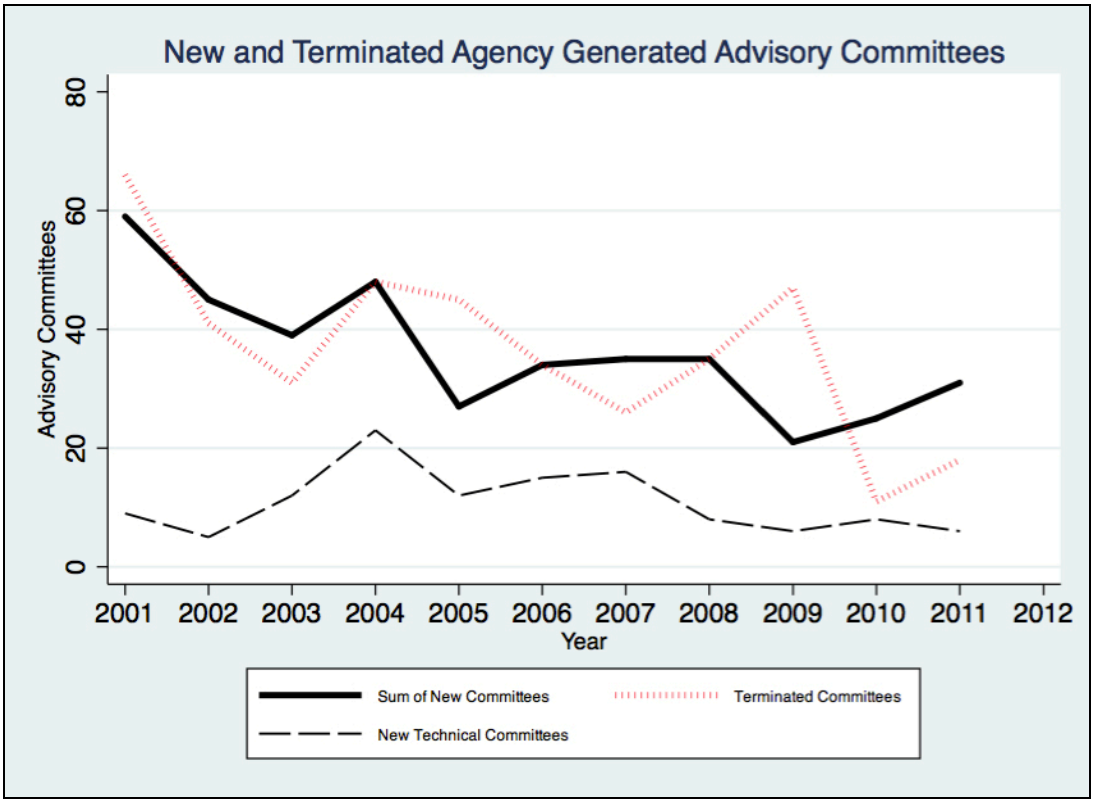
Variable	Mean	Standard Deviation	Min	Max
Sum of Advisory Committees	488	15	458	511
Sum of New Committees	36	11	21	59
Technical Committees	182	8	168	190
New Technical Committees	11	5	5	23
Terminated Committees	37	15	11	66
Terminated Technical Committees	12	7.5	3	31

TABLE 2. AVERAGE SUM OF TECHNICAL ADVISORY COMMITTEES ESTABLISHED BY CABINET DEPARTMENTS AND LARGE AGENCIES (2001-2011)

Agency	Technical Committees	Sum of Committees
Health and Human Services	86.1	175.7
Defense	11.1	32.5
Energy	9.8	16.5
Transportation	8.2	16.5
Environmental Protection Agency	6.4	14.6
Interior	5.6	21.6
Agriculture	5.5	25.9
Commerce	5.2	21.0
Veterans Affairs	5.0	9.6
Homeland Security	2.8	8.8
National Science Foundation	2.2	3.2
State	2.0	14.5
Social Security Administration	.6	.6
Education	.4	1.2
Justice	.3	3.4
Treasury	.2	8.0
Securities & Exchange Commission	.2	.2
Labor	.1	1.2
Housing and Urban Development	0	0
Small Business Association	0	13.0

As you can see, the committees are not in randomly distributed throughout the federal bureaucracy, but concentrated in certain departments and agencies. Furthermore, the creation of new committees and termination of old committees are not evenly distributed across time. Figure 1 highlights the patterns over time of committee generation.

FIGURE 1. ADVISORY COMMITTEE GENERATION AND TERMINATION OVER TIME



EVALUATING THE INFORMATION ARGUMENT: TECHNICALITY OF POLICY WORK

Concern with developing agency expertise will be more acute when policy relevant expertise is difficult to acquire and maintain. Therefore, those agency secretaries who rely on a more highly trained and technical staff will be more likely to adopt strategies aimed at developing and sustaining that expertise. In contrast, agencies whose staffs are mainly

administrators or clerks are less likely to be crafting the type of policy where there is uncertainty about its effects. As a result, maintaining adequate expertise in these cases is less challenging. So, if agency secretaries create advisory committees primarily to augment expertise in technical policy areas, then the probability of creating a technical advisory committee will increase as the percent of staff engaged in technical work increases.

One reasonable proxy for technicality of policymaking is a measure of agency staff qualifications (Lewis 2010). The Office of Personnel Management (OPM) categorizes every federal employee into five types: professional, administrative, clerical, technical, blue-collar, and unknown ("Fedscope Database"). Of these five types, 'professional' and 'technical' employees are a reasonable proxy for the technicality of agency policymaking. The OPM defines professional employees as being in possession of "knowledge in a field of science" or having education or training "with major study in or pertinent to the specialized field."[20] Technical employees serve as the support staff of professional employees, but their work is considered "non-routine in nature" and "involves extensive practical knowledge." ("The Guide to Data Standards")

The variable used in the analysis is the percent of professional and technical employees in an agency. There is substantial variation across agencies on this dimension with the mean value at 39 percent and standard deviation 19 percent with the range extending from 11 percent to 78 percent. I expect that those agencies with higher percent of professional and technical employees will be more likely to construct new and renew existing expert committees.

[20] A position categorized as 'professional' "requires the exercise of discretion, judgment, and personal responsibility for the application of an organized body of knowledge that is constantly studied to make new discoveries and interpretations, and to improve the data, materials, and methods." ("The Guide to Data Standards") For examples of positions labeled as 'professional' or 'technical', see Appendix A.

EVALUATING THE POLITICAL CONTROL ARGUMENT: IDEOLOGICAL DIVERGENCE

If agency leaders establish expert advisory committees as a mechanism for political control, then they should be more likely to create committees when supervising ideologically divergent career bureaucrats. When career bureaucrats and agency secretaries possess the same policy goals, they need not fear that bureaucrats will use information asymmetries to their advantage. But as ideological difference increases, the secretaries should be more likely to establish new expert advisory committees. I will test both whether ideology has an independent effect on advisory committee creation and renewal and whether there is an interactive effect between the technicality of agency policymaking and ideological divergence. The intuition behind the interactive effect is that the effect of technicality may increase when ideological conflict increases.

Estimating ideological difference between career bureaucrats, and presidents or their appointees across the vast federal bureaucracy is a challenge for researchers. In the analysis that follows, I use three different measures to capture ideological difference: 1) an expert survey of agency ideology (Clinton and Lewis, 2008), 2) a survey of career bureaucrats' support for the agency leaders' goals ("Federal Employee Viewpoints Survey" 2004, 2006, 2008, 2010, 2011) and 3) a survey of appointees and career bureaucratic managers that establishes ideal point estimates (Clinton, *et al.* 2012).[21]

Clinton and Lewis (2008) developed the first ideology estimate by surveying 23 experts in American bureaucratic politics. The sample includes academics, journalists, and Washington think tanks. Those experts received a list of 82 departments and were asked to identify each agency as "slant liberal", "neither consistently", or "slant conservative". I will operationalize

[21] The ideology estimates vary in the number of agencies and years that there are available. So the sample size for the analysis will change the ideology estimate included in the model.

ideological different by assuming appointee ideology reflects that of the president.[22] This tests whether as presidential and agency ideology diverge, agency leaders are more likely to establish advisory committees.[23]

The second measure captures ideological difference by using the Federal Employee Viewpoint Survey (FEVS). The Office of Personnel Management (OPM) administers a survey to capture the opinion of federal employees (career bureaucrats) across a range of executive departments and agencies. The variable *Career Support* is the sum of employees who either 'Strongly Agree' or 'Agree' with the following survey question in FEVS: "How satisfied are you with the policies and practices of your senior leaders?".[24] If agency leaders establish advisory committees as a mechanism of political control, the probability of advisory committee creation should increase as career bureaucrat support for "policies and practices" of the agency's leader declines.

Third, Clinton, Bertelli, Grose, Lewis, and Nixon (2012) developed a measure of agency ideology that breaks down agency ideology into two components—career bureaucrats and agency appointees. In 2007 and 2008, they directly surveyed 7,448 administrators and program managers (both appointed and career) about 14 policy issues voted on by Congress in 2006.[25] From their answers to these policy questions, they derive ideal point estimates for each

[22] The extent to which this assumption is true varies and sometimes presidents appoint individuals who are ideologically distinct (Bertelli and Grose 2009, 2011).
[23] This is the same approach that Lewis (2010) employed when testing the effect of ideological difference on the creation of additional agency appointees.
[24] The survey question of asked in 2004, 2006, 2008, 2010, 2011. To establish data points for the missing data points, I average the results of the prior and post survey results. For the year 2003, I repeat the data point from 2004.
[25] The response rate was 33%, but lower for the highest level of appointees. 59% of respondents were Democrats, which is a reasonable correspondence to the likely partisan composition of the federal bureaucracy.

individual.[26] From this measure, it is possible to calculate the ideological difference between the two. Although estimates were developed to make inferences about the 2006-2006 Congress, I make the assumption that the differences between career and appointments do not change greatly over a single presidential administration and use the estimates to assess how ideological difference affects advisory committee creation during the Bush administration. For models using this measure, the sample will be restricted to 2001-2008.

It is also likely that if political control is the driving the establishment of a new expert advisory committee, new committees will be more likely following a presidential transition. You would imagine that if committees are created to fulfill informational needs, these needs should not vary across a presidential administration, but if they are used as a control mechanism, they will be created mostly early in an administration. To capture this, I estimate the effect of a new presidential administration with the *Transition* variable.

OTHER CONTROL VARIABLES

The models that follow also contain several important control variables. I include estimates of agency characteristics that also likely affect the decision to create and renew an advisory committee, including agency size (number of employees), and agency structure (whether the agency is a commission or not).[27] I also include a dummy variable for presidential administration to capture any differences between the executive leadership of President George W. Bush and President Barack Obama. Finally, I also include a dummy variable for divided government. Table 3 contains a brief explanation of all variables and their summary statistics.

[26] They are able to place bureaucrats on a scale comparable with presidents and members of Congress.

[27] I take the log of the *Employees* variable, because there is a strong positive skew in the data. After taking the log, the data more closely approximates a normal distribution.

TABLE 3. VARIABLES AND SUMMARY STATISTICS

Variable	Description	Mean (Standard Deviation)
New Technical Committees	A yearly count of new technical committees by agency	.18 (.75)
Professional Technical Employees (%)	Percent of agency employees categorized as "professional" or "technical" by General Services Administration	.39 (.19)
Agency Ideology (Clinton-Lewis Expert Survey)	Ideology measure established by an expert survey; ranges from -1 to 1	-.08 (.83)
Bush	Equals 1 if George W. Bush is president, 0 otherwise	.73 (.44)
Career Bureaucrat Support (Federal Employee Viewpoint Survey)	Percent that are satisfied or very satisfied with policies of senior leaders (2004-2011)	41.57 (7.14)
Career-Appointee Ideology Difference (Clinton Bertelli Grose Lewis Nixon)	Survey-based measure that assesses the ideology of career and appointed bureaucrats by asking their opinion on legislation in Congress	.53 (.45)
Divided Government	Equals 1 if either house of Congress and Presidency are held by different parties, 0 otherwise	.46 (.49)
Employees (log)	Natural log of the number of agency employees	7.68 (2.17)
Commission	Equals 1 if agency is an independent commission, 0 otherwise	.46 (.49)
Transition	Equals 1 in the first year of a presidential administration, 0 otherwise	.29 (.45)

EVALUATING THE POLICY TYPE ARGUMENT: EMPLOYEE QUALIFICATIONS

In a second set of models, I evaluate the proposition that the type of policy expertise an agency seeks will affect a secretary's decision to create a new committee. Agencies will be more likely to establish committees when the policymaking requires expertise in the biological,

physical, mathematical, and medical sciences and engineering. In contrast, budgetary politics and legal strategy are a less appropriate venue for augmenting expertise through advisory committees. In order to evaluate these claims, I break down the percent of professional and technical employees by policy type: 1) Biological and Physical Scientists, 2) Engineers and Mathematicians, 3) Legal Positions, 4) Medical Sciences 5) Social Scientists, and 6) Budgetary Analysts.[28] Table 4 displays the summary statistics for these variables.

TABLE 4. POLICY TYPE VARIABLES AND SUMMARY STATISTICS

Variable	Description	Mean (Standard Deviation)	Range
Biological and Physical Science Employees (%)	Percent of federal employees classified as professional or technical and as biological or physical scientists by agency	2.6% (5.8)	0-26.8%
Math and Engineering Employees (%)	Percent of federal employees classified as professional or technical and as mathematicians or engineers by agency	4.4% (10.0)	0-56.0%
Medical Science Employees (%)	Percent of federal employees classified as professional or technical and as medical scientists by agency	1.3% (5.5)	0-33.3%
Social Science Employees (%)	Percent of federal employees classified as professional or technical and as social scientists by agency	3.9% (10.1)	0-65.6%
Budget Employees (%)	Percent of federal employees classified as professional or technical and as budgetary analysts by agency	3.1% (4.3)	0-27.8%
Legal Employees (%)	Percent of federal employees classified as professional or technical and as legal employees by agency	10.6% (15.0)	0-58.2%

In summary, I will test whether agency leaders establish new advisory committees and renew existing committees primarily to (1) augment agency expertise by lowering the costs of its acquisition, or (2) control ideologically divergent subordinates by reducing information asymmetries. The first two sets of tables test these propositions. Then, given that it is unlikely that advisory committees are an equally appropriate mechanism for augmenting expertise across

[28] See Appendix A for details of the types of positions that fall into each of these categories. In the analysis, I will take the log of each to correct for the strong positive skew in the data.

policy areas, I drill down into the variable capturing the technicality of agency policy work in the third set of models. These models examine the types of policy expertise that drive agency secretaries to reach out to external experts.

RESULTS

ADVISORY COMMITTEE CREATION MODELS

The dependent variable is a count and overdispersion is likely so I use a negative binomial model. Given the time series and cross sectional components of the data, I use a random effects estimator.[29] The results for the advisory committee creation models are presented first and the models for advisory committee renewal follow.

[29] In choosing an appropriate model with panel data, there are several relevant factors. First, in panel data, you can have two types of variation—between and within. Between variation is variation between units (*i*) or in this case the agencies, and within variation is variation over time (*t*). The data in this case has both types of variation so I need a model is able to estimate both types variation. Given this, the two main modeling options are the population averaged (PA) estimator (also called generalized estimating equations approach) and the random effects model (RE) (also called error components model). A fixed effects (FE) model is inappropriate, because it will not allow you to estimate the between variation (time invariant variables) accurately. Second, the type of panel—short versus long—is also relevant. A panel is short if the number of units (*i*) is greater than time unit (*t*). The data in this case is a short panel, and in short panels, the FE model can lead to inconsistent estimates of coefficients. Since the units are not independent observations over time, a random effects model estimates a random effect for the unit or in the case agency (Wooldridge 2010, 291-310). All models were also estimated using a negative binomial model pooled across *t*, but with yearly fixed effects and cluster robust standard errors on the agency. The results were consistent with those displayed below, but coefficients were approximately 15-20% smaller in size.

TABLE 5. ADVISORY COMMITTEE CREATION: RANDOM EFFECTS NEGATIVE BINOMIAL MODEL

Variable	Model 1. 2001-2008	Model 2. 2001-2008	Model 3. 2001-2008	Model 4. 2001-2011	Model 5. 2002-2011	Model 6. 2002-2011	Model 7. 2002-2011	Model 8. 2001-2008	Model 9. 2001-2008	Model 10. 2001-2008
Prof. & Tech. Employees (%)	7.261***	5.813***	5.500***	4.906***	4.864***	4.041***	8.464	3.477*	5.133***	3.398
	(1.791)	(1.533)	(1.390)	(1.312)	(1.409)	(1.359)	(7.551)	(1.884)	(1.719)	(2.187)
Agency Ideology Expert Survey (CL)	-.307	-.437*	1.169	.941						
	(.314)	(.263)	(1.037)	(.938)						
Prof. & Tech Emp. x Agency Ideology (CL)			-3.303	-2.892						
			(2.042)	(1.865)						
Career Support (FEVS)					-.031	.003	.063			
					(.028)	(.031)	(.106)			
Prof. & Tech. Emp. x Career Support							-.108			
							(.183)			
Career- Appt. Difference								.456	.161	-2.544
								(.755)	(.573)	(2.447)
Prof. & Tech Emp. x Career-Appt Difference										5.714
										(4.888)
Bush				.666**		.631*	.684***			
				(.294)		(.360)	(.316)			
Sum of Employees (Log)		.585***	.555***	.632***		.588***	.600***		.266	.152
		(.201)	(.181)	(.180)		(.202)	(.208)		(.268)	(.279)
Divided Government		-.406	-.413	-.369*		-.214	-.135		-.381	-.345
		(.270)	(.268)	(.224)		(.274)	(.283)		(.353)	(.347)
Commission		.041	.153	.373		.352	.442		-1.544	-2.044
		(.851)	(.787)	(.754)		(.826)	(.853)		(1.241)	(1.325)
Transition Years		.000	.005	-.104		-.182	-.272		-.042	-.076
		(.439)	(.436)	(.324)		(.572)	(.348)		(.424)	(.418)
Constant	-3.600	-8.516	-8.194	-9.040	-1.28	-8.477	-10.982	-1.881	-5.083	-3.091
	(1.024)	(2.067)	(1.869)	(1.909)	(1.334)	(2.440)	(4.926)	(1.146)	(2.822)	(3.222)
Log Likelihood	-165.548	-151.800	-150.537	-190.794	-170.151	-160.925	-160.506	-126.669	-121.563	-120.749
N	432	432	432	589	289	289	289	152	152	152
Groups	55	55	55	55	33	33	33	19	19	19
Wald Chi2	17.33	45.04	55.20	58.76	12.36	28.16	28.02	4.43	16.93	17.24
Prob. > Chi2	.0002	.000	.000	.000	.002	.000	.001	.109	.010	.016

*Variable is significant at the .10 level ** Variable is significant at the .05 level *** Variable is significant at the .01 level

As previously noted, I assess the political control argument by including three different estimates of ideological difference. Table 5 is segmented by the political control variable used. Models 1 through 4 include the *Agency Ideology Expert Survey* variable, models 5 through 7 include the *Career Support* variable, and finally models 8 through 10 include the *Career-Appointee Difference* variable. Depending on the political control variable used, the size of the sample changes. Each estimate of agency ideology differs in the number of agencies included. The estimates also cover different time spans. To ease in the interpretation of the models I have included the time frame of the sample at the head of each column. The number of agencies for a given model is displayed in the row entitled 'groups'.

In Models 1 through 3, I assess the affect of *Agency Ideology Expert Survey* and *Professional & Technical Employees* on the decision to create a new committee from 2001 to 2008. Given the president is a Republican and his political appointees likely reflect his preferences, then we should see appointees creating more committees in liberal agencies.[30] If this is the case, the *Agency Ideology* variable should be negative and significant. Although the coefficient is negative, it does not approach significance. However, the technicality of agency policymaking does affect the decision to create a new advisory committee. When the control variables are added in Model 2, *Professional & Technical Employees* is still positive and significant. With all other variables set at their means and the *Professional & Technical Employees* variable is set at one standard deviation below its mean (20%), the predicted count of committees .038 (.005-.071). When *Professional & Technical Employees* increases to its mean value (39%) the predicted count increases to .10 (.045-.071). Then as the variable increases to

[30] I make this assumption despite recent evidence that the extent to which appointees ideological preferences reflect those of the president varies (Bertelli and Grose, 2011; Aberbach and Rockman 2000; Golden 2000).

one standard deviation above its mean and then at its maximum, the expected count increases to .271 (.135-.406) and .846 (.108-1.584) respectively.

Model 3 introduces an interaction between *Agency Ideology* and *Professional & Technical Employees* to assess whether the affect of technicality is contingent on the presence of ideological divergence. Since the significance of interaction terms will depend on the value of the each term, Table 6 calculates the coefficients for different levels of agency ideology.

TABLE 6. ESTIMATING THE INTERACTIVE EFFECTS ON ADVISORY COMMITTEE CREATION: AGENCY IDEOLOGY (EXPERT SURVEY) X POLICY TECHNICALITY

Interactive Effect	**Model 3.**	**Model 4.**
Effect of Technicality for Most Liberal Agency (Minimum)	11.181*** (3.745)	9.882*** (3.391)
Effect of Technicality for 1 Standard Deviation below mean Agency Ideology	8.496*** (2.288)	7.530*** (2.077)
Effect of Technicality for Mean Agency Ideology	5.754*** (1.395)	5.129*** (1.311)
Effect of Technicality for 1 Standard Deviation above mean Agency Ideology	3.012 (2.098)	2.729 (1.980)
Effect of Technicality for Most Conservative Agency (Maximum)	-.314 (3.885)	-.184 (3.610)

*Variable is significant at the .10 level
** Variable is significant at the .05 level
*** Variable is significant at the .01 level

The table demonstrates that the effect of technicality is largest in the most liberal agencies while it has no effect at all in the most conservative agencies. This effect could be driven by the fact that conservative appointees are more likely to create committees in liberal agencies as a mechanism of control or it could be that liberal agencies are more likely to rely on advisory committees. If the effect is driven by ideological difference than the effect should dissipate when the sample is expanded to include the Obama Administration. Model 4 tests this

proposition. The results are consistent across the two models indicating that it is ideology not ideological difference driving the effect.

In sum, Models 1 though 3 demonstrate that the technicality of policymaking affects the decision to create an advisory committee and that effect is even greater in liberal agencies. These models provide no support for the political control hypothesis, but the models do reveal that technical liberal agencies create committees more often than do conservative technical agencies. The predicted count of new committees when the agency is at its most liberal and the technicality variable is at the minimum is .005 committees, but as you move to the most technical liberal agencies the expected count increases to .978 committees. In the most conservative agencies, the expected count when technicality is at its minimum is .017, but as you move to the most technical conservative agency, the expected count is still only .091. The effect of technicality on the decision to create a new committee is much greater in liberal agencies.

Models 5 and 6 estimate the effect of *Professional Technical Employees* and *Career Support* on outcomes. In both the baseline model and the model with controls, support from career bureaucrats has no effect on the decision to create an advisory committee while the *Professional Technical Employees* variable still significantly affects outcomes. Model 7 introduces an interaction term between *Career Support* and *Professional & Technical Employees* to see if the effect of *Professional and Technical Employees* differs for varying levels of support from career bureaucrats. If agency secretaries create committees to control bureaucrats, then we should see the effect of technicality increase as support from career bureaucrats decreases. Column 1 of Table 7 calculates the interaction coefficient on *Professional & Technical Employees* for different levels of *Career Support*. Evidence suggests that the effect of

technicality is greatest for moderate to slightly below average levels of career support lending some tentative support for the political control hypothesis.

TABLE 7. ESTIMATING THE INTERACTIVE EFFECTS ON ADVISORY COMMITTEE CREATION: CAREER SUPPORT X POLICY TECHNICALITY AND CAREER-APPOINTEE DIFFERENCE X POLICY TECHNICALITY

Interactive Effect	**Model 7.**	**Model 10.**
Effect of Technicality for Minimum Level of Career Bureaucrat Support/ Ideological Difference	5.756* (3.178)	3.540* (2.114)
Effect of Technicality for 1 Standard Deviation below mean Level of Career Bureaucrat Support/ Ideological Difference	4.735*** (1.800)	3.843** (1.974)
Effect of Technicality for Mean Level of Career Bureaucrat Support/ Ideological Difference	3.962*** (1.414)	6.415*** (2.111)
Effect of Technicality for 1 Standard Deviation above Mean Level of Career Bureaucrat Support/ Ideological Difference	3.189 (2.040)	8.986** (3.834)
Effect of Technicality for Maximum Level of Career Bureaucrat Support/ Ideological Difference	1.077 (5.235)	13.791* (7.731)

*Variable is significant at the .10 level
** Variable is significant at the .05 level
*** Variable is significant at the .01 level

Models 8 through 10 estimate the effect of ideological difference between political appointees and career bureaucrats on the decision to create a new committee. Models 8 and 9 demonstrate that, once again, technicality of agency employees has a significant effect on outcomes while ideological distance fails to have an independent effect. When an interaction term between *Professional & Technical Employees* and *Career-Appointee Difference* is introduced, there is evidence that technicality of policymaking affects decision to create a committee for all levels of ideological difference. As the ideological difference increases, the size of the coefficient increases. This could lend some tentative support for both hypotheses. These results are difficult to interpret, because this analysis is on the Bush Administration alone

and ideological difference is greatest in the most liberal agencies. So, we cannot distinguish between whether this effect is actually being driven by ideological difference. The evidence from Model 4 suggests that this affect is likely driven by ideology.

One might argue that those agencies with established advisory committee systems will be more likely to create a new committee. This could be because they already have the institutional apparatus in place or because they have a history of working with advisory committees. To account for this possibility, I also ran a series of models that include the total number of existing technical advisory committees for each observation (agency-year). (Results are displayed in Appendix B.) The ideological difference or conflict variables still fail to reach significance, and the *Professional Technical Employees* variable is still highly significant with the coefficient only marginally smaller in size than the coefficients in models without these variables.

In sum, the technicality of agency policymaking consistently affects the decision to create an advisory committee. The coefficient on the *Professional and Technical Employees* variable is substantial and significant regardless of model specification. The evidence from Model 7 provides some support for the political control hypothesis. The results of Models 3 and 4 indicate that agency ideology is also an important factor affecting the decision to create a committee. Agencies that are liberal and technical are much more likely to establish a committee than one that is conservative and technical. In conclusion, the analysis supports the argument that when agency policymaking is more technical, agency secretaries are more likely to establish a new committee. This finding lends credence to the information hypothesis suggesting that agencies create committees to lower the costs of expertise acquisition.

POLICY TYPE MODELS

Next, I will examine how policy type affects the decision to create a committee by breaking down the *Professional Technical Employee* variable. Advisory committees are a reasonably flexible tool, but there are still some policy areas where this strategy is more appropriate than others. Table 10 presents the results of the models that divide the *Professional Technical Employees* by type of expertise. There are two versions of the model. Model 1 includes only the policy type variables, and then in Model 2, I add the controls.

Consistent with the proposed hypothesis, agencies with more career bureaucrats in engineering, and the biological, physical and mathematical sciences are more likely to turn to advisory committees. The coefficient for medical employees was also positive and highly significant. An increasing presence of legal, budgetary or social scientists has no effect on the decision to create a new technical advisory committee.

To capture the substantive impact of the estimates, we can again calculate the predicted counts. The presence of biological and physical science employees had a large and significant effect. When the *Biological and Physical Science Employees* variable is set at its mean (2.5%), the predicted count of new committees is .11 (.045-.178), but if you set the variable at its maximum, the expected count rises to .77 (.098-1.459). These models demonstrate that the effect of policymaking technicality varies across policy areas.

TABLE 8. ADVISORY COMMITTEE GENERATION: POLICY TYPE

Variable	Model 1.	Model 2.
Biological and Physical Science Employees (%)	16.306*** (2.934)	12.224*** (2.967)
Math and Engineering Employees (%)	2.895** (1.276)	2.830** (1.300)
Medical Science Employees (%)	10.951*** (2.175)	5.751** (2.905)
Social Science Employees (%)	-2.442 (2.389)	-2.202 (2.248)
Budget Employees (%)	4.214 (5.694)	2.667 (5.428)
Legal Employees (%)	-1.492 (2.477)	.866 (2.751)
Agency Ideology (Expert Survey)		-.185 (.271)
Bush		.560** (.284)
Divided Government		-.191 (.242)
Employees (Log)		.558*** (.199)
Transition		-.149 (.282)
Commission		.603 (.743)
Constant	-2.246 (.590)	-7.436 (2.103)
Log Likelihood	-197.221	-187.222
N	599	588
Groups	56	55
Wald Chi2	76.34	78.29
Prob. > Chi2	0.000	0.000

*Variable is significant at the .10 level ** Variable is significant at the .05 level
*** Variable is significant at the .01 level

Discussion and Conclusions

This paper aims to make two core points. First, agency leaders, in addition to presidents and members of Congress, actively adopt strategies to pursue their policy goals in the bureaucracy. Second, political principals are not only concerned with controlling ideologically divergent subordinates, but also with developing agency expertise, particularly in technical policy areas where recruitment and retention of qualified personnel is difficult. The presence of agency generated advisory committees throughout the executive branch are just one indication of how active these agency leaders are in trying to shape the information environment of the agencies they manage. Agency secretaries have established hundreds of advisory committees across the federal bureaucracy bringing in thousands of external actors into direct and regular contact with the permanent bureaucratic staff. Research evaluating the effectiveness of congressional procedural controls over the bureaucrats must also consider the ways in which actors within the executive branch also work to structure agency decision-making.

This paper lends support to arguments made by Gailmard and Patty (2007, 2012) and Stephenson (2007, 2008, 2011) that emphasize that expertise is not exogenous, and principals need to consider how to facilitate its development. The organization of bureaucratic decision-making can be structured to incentivize the acquisition of information as well as to control potentially divergent agents. If agencies are trying to decrease uncertainty between a policy intervention and its outcome in the world, then the advisory committees can be a mechanism to lower the costs of expertise acquisition necessary to make policy decisions in some areas. The results of the empirical test above confirm that agency secretaries construct advisory committees in those agencies engaging in more technical policy work—not in those agencies where ideological conflict is greatest. I do not claim that these agency secretaries never adopt strategies

to control subordinate bureaucrats only that when policy is highly technical, they will try to adopt institutional strategies to lower the costs of expertise acquisition.

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APPENDIX A. DATA

ESTABLISHMENT OF ADVISORY COMMITTEE COUNT:

I assembled advisory committee count data from the Federal Advisory Committee database. The database can be accessed at: http://www.fido.gov/facadatabase/. The database is managed by the General Service Agency (GSA). Within the electronic database, a list of current advisory committees is listed by agency by year. From this list, I established a count of new, renewed, and terminated committees by year.

In order to establish the year that committees become active, I determine this date by the year that the committee enters the database and then check the date of the current charter for the committee and list of recent meetings. (Committees need to be re-chartered every two years and the current charter date is listed within under the 'Committee Report' section for every advisory committee.) Sometimes, committees only enter the database the year following the actual charter begins so in these cases, they enter the count in the year that their charter begins. In rarer cases, committees enter the database years after their establishment. For these cases, I count the current charter date given for the committee's first entry into the database. If an advisory committee meeting is listed prior to that current charter date, I use the earliest meeting date available. If committees were once active, then terminated, I consider the re-establishment of the committee the same as creating a new committee. If committees were merged and formed under a new name; I count them as a newly formed committee

The committees exit the count of active committees the year that they are terminated. In committee report, the GSA reports the termination date of the committee. Sometimes committees are dropped, but the termination date is not included in their last year in operation. In those

cases, I consider the last year that the committee is in the database to be the year that the committee was terminated.

The committees can be created by either by executive order or statute as well as through the will of an agency head (typically through an secretarial memorandum). The FACA database codes committee as either: presidential, authorized by law, statutory, or agency. The distinction between authorized by law and statutory is that if the committee is established by statute, then the agency is required to constitute a committee. However, in the case of authorized by law, the agency is not legally bound to create a committee. Therefore, I recoded all 'authorized by law' committees as agency committees since the ultimate decision to create the committee is left in the hands of the agency. All of the committees in the portion of the broader dataset used in this paper are agency-generated committees.

The advisory committee count is also broken down by committee type. The database codes committees as: 1) scientific technical, 2) non-scientific program advisory board, 3) national policy issue advisory board, 4) grant, 5) special emphasis panel, 6) negotiated or 7) other. I re-coded all committees as either: 1) technical, 2) program, 3) issue, 4) grant or 5) negotiated. Many committees coded as 'other' were performing the same function as another committee in the agency that was labeled as technical, grant, program or issue. I used these comparisons and the description of what the committee does and the membership content of the committee to re-label 'other' committees by type.

'Scientific Technical' committees (labeled as TECH committees in the dataset) are committees composed of experts from academia and the private sector. They include only non-voting representatives of stakeholders or interest groups among their members. They tend to offer review technical programs (like in the Centers for Disease Control) or to oversee the

regulation of technical products (like chemicals and pharmaceuticals) or where implications of the policy interventions are complicated and implications of interventions are less than certain (like in the Environmental Protection Agency's regulation of clean air and water).

Grant committees primarily distribute federal grant money to private sector, local governments or university recipients. They are often also composed of a technical, academic members, but these committees do not advise of policy intervention only aid in the identification of suitable candidate for the distribution of government research funds.

Committees labeled 'special emphasis' were primarily located in the National Institute of Health. These committees were recoded as either technical or grant depending on whether they were advising on policy technical policy issues or distributing grant money. The technical committees are composed on external experts. They are not representatives of interest groups or active, financial stakeholders in the policy question at stake.

Program committees consist of active stakeholders in a policy area and include representatives of interest groups with a stake in the policy. Program committees actively advise on a current policy program. In contrast, policy issue committees propose policy solution to an issue, rather than advising on the implementation of a particular program. Their recommendations could call for new legislation rather than provide recommendations on the management of an existing policy. Issue advisory committee members are often a mix of stakeholder interests and outside policy experts.

Negotiated committees are distinct from each of the other categories of advisory committees. Typically, advisory committees have only the authority to make recommendations to presidents, members of Congress, and agency leaders. However, in the case of the negotiated

committees, political actors expressly delegate these negotiated committees the power to make agency policy. They are few in number and are excluded from the dataset.

DEPENDENT VARIABLE:

TECH = count of active technical expert advisory committees in a given year. See below for a more in depth explanation of how the count of advisory committees was established.

TECHNEW= count of all newly created technical advisory committees in a given year.

TECHRENEW= count of all renewed technical advisory committees in a given year.

UNIT OF ANALYSIS:

YEAR= year of observation

AGENCYID: each unit of observation or agency is assigned an agency id number.

LEADERSHIP AFFECTS:

BUSH= 1 if George W. Bush is president and 0 otherwise.

APPTNEW= 1 if a new individual is appointed to lead an agency and 0 otherwise.

DIVIDED= 1 if government is divided by party and 0 is government is unified by party.

EMPLOYEE TYPE:

All data on employee type is from the Office of Personnel Management (OPM) Fedscope database. Accessed at: www.fedscope.opm.gov. In depth descriptions of variables collected by the OPM can be found in "The Guide to Data Standards," which is consider the operating manual compiled by the OPM for the Fedscope database (http://www.opm.gov/feddata/guidance.asp).

EMP= sum of all agency employees.

PROF_EMP= sum of professional employees. The OPM categorizes all employees into the following occupational categories: Blue Collar, Professional, Administrative, Technical, Clerical, White Collar Other. The OPM defines professional employees as: "White collar occupations that require knowledge in a field of science or learning characteristically acquired through education or training equivalent to a bachelor's or higher degree with major study in or pertinent to the specialized field, as distinguished from general education. The work of a professional occupation requires the exercise of discretion, judgment, and personal responsibility for the application of an organized body of knowledge that is constantly studied to make new discoveries and interpretations, and to improve the data, materials, and methods."(U.S. Office of Personnel Management. 2013, 348) Examples of 'Professional' employees include: Foreign Law Specialist, Social Science, Economist, Foreign Affairs, Microbiology, Pharmacology, Ecology, Forestry, Soil Science, Agronomy, Medical Officer, Nurse, Veterinary Medical Science, General Engineering, Chemical Engineering, General Attorney, Administrative Law Judge, Patent Adviser, Chemistry, Metallurgy, Astronomy, Mathematics, Statistics, Computer Science, or Education Research among others.

TECH_EMP= sum of technical employees. White collar occupations that involve work typically associated with and supportive of a professional or administrative field, that is non-routine in nature; that involves extensive practical knowledge, gained through on-job experience and/or specific training less than that represented by college graduation. Work in these occupations may involve substantial elements of the work of the professional or administrative field, but requires less than full competence in the field involved."

Examples include: Environmental Protection Assistant, Computer Operation, Equal Opportunity Assistance, Telecommunications Processing, Soil Conservation Technician, Irrigation System Operation, Medical Technician, Animal Health Technician, Engineering Technical, Construction Control Technical, Physical Science Technician, Hydrologic Technician, Patent Technician, Mathematics Technician, Cartographic Technician, Food Inspection, Agricultural Commodity Grading, or Air Navigation.

PROFTECH= sum of Professional and Technical Employees

PROFTECPCT= percent of agency employees that are Professional and Technical Employees

PROFTECHPCTLOG= the natural log of 1 + PROFTECHPCT

SOCSCI_EMP= sum of professional social science employees. Category includes positions labeled as: Social Science, Economist, Foreign Affairs, International Relations, Foreign Agricultural Affairs, Workforce Research and Analysis, Geography, History, Psychology, Sociology, Social Work, General Anthropology, and Archeology.

BIO_EMP = sum of professional biological sciences and natural resource management employees. Includes individuals in positions labeled as: General Natural Resources Management and Biological Science, Microbiology, Pharmacology, Ecology, Zoology, Physiology, Entomology, Toxicology, Botany, Plant Pathology, Plant Physiology, Horticulture, Genetics, Rangeland Management, Soil Conservation, Forestry, Soil Science, Agronomy, Fish and Wildlife Administration, Fish Biology, Wildlife Refuge Management, Wildlife Biology, or Animal Science.

BUD_EMP= sum of professional budget and account employees. Includes individuals in positions labeled as: Accounting, Auditing, or Internal Revenue Agent.

MED_EMP= sum of professional medical, hospital, dental and public health employees. Includes individuals in positions labeled as: General Health Science, Medical Officer, Nurse Anesthetist, Nurse, Dietitian and Nutritionist, Occupational Therapist, Physical Therapist, Kinesiotherapy, Manual Arts Therapist, Recreation/Creative Arts Therapist, Educational Therapist, Medical Technologist, Pharmacist, Optometrist, Speech Pathology and Audiology, Podiatrist, Dental Officer, or Industrial Hygiene.

ENG_EMP = sum of professional architecture and engineering employees. Includes individuals in positions labeled as: General Engineering, Safety Engineering, Fire Protection Engineering, Materials Engineering, Landscape Architecture, Architecture, Civil Engineering, Environmental Engineering, Mechanical Engineering, Nuclear Engineering, Electrical Engineering, Computer Engineering, Bioengineering and Biomedical Engineering, Aerospace Engineering, Naval Architecture, Mining Engineering, Petroleum Engineering, Agricultural Engineering, Chemical Engineering, or Industrial Engineering.

LEGAL_EMP= sum of legal and kindred employees. Includes individuals in positions labeled as: Law Clerk, General Attorney, or Administrative Law Judge.

PHYSCI_EMP= sum of professional physical science employees. Includes individuals in positions labeled as: General Physical Science, Health Physics, Physics, Geophysics, Hydrology, Chemistry, Metallurgy, Astronomy and Space Science, Meteorology, Geology, Oceanography, Cartography, Geodesy, Land Surveying, Forest Products Technology, Food Technology, Textile Technology, or Photographic Technology.

MATH_EMP= sum of mathematics and statistical employees. Includes individuals in positions labeled as: General Mathematics and Statistics, Actuarial Science, Operations Research, Mathematics, Mathematical Statistics, or Statistics.

APPT_EXECUTIVE = sum of executive appointees to agency. This is the sum of employees that are excepted from civil service laws and implanted on a nonpermanent basis.

APPT_SCHEDC = sum of schedule C appointees to agency.

AGENCY IDEOLOGY MEASURES:

CARSUPPORT= sum of employees who either 'Strongly Agree' or 'Agree' with the following survey question in Federal Employee Viewpoint Survey: "How satisfied are you with the policies and practices of your senior leaders?". The survey question of asked in 2004, 2006, 2008, 2010, 2011. To establish data points for the missing data points, I average the results of the prior and post survey results. For the year 2003, I repeat the data point from 2004. Survey results accessed at: www.fedview.opm.gov.

CL_IDEO=1 agency leans conservative, 0 agency is neither consistently liberal nor conservative, and -1 if the agency leans liberal. The agency ideology measure based on expert survey by Joshua Clinton and David Lewis. They sent the survey with 37 experts in bureaucratic politics including academics, journalists and think tanks and 23 responded (62 percent response rate). (They had a 62% response rate.) See Clinton and Lewis's 2008 article "Expert Opinion, Agency Characteristics, and Agency Preferences,"

Political Analysis 16(1): 3-16. The dataset includes measures of 82 agencies. The data can accessed at: https://my.vanderbilt.edu/davidlewis/data/.

CADIFF= difference between career managers in and appointee ideology in bureaucratic agencies. The measure was developed by Joshua Clinton, Anthony Bertelli, Christian Grose, David Lewis, and David Nixon They surveyed 7.448 administrators and program managers (both appointed and career) about 14 policy issues voted on by Congress in 2006. The response rate was 33%, but lower at the higher level appointees. 59% of respondents were Democrats, which is a reasonable correspondence to the likely partisan composition of the federal bureaucracy. The ideology estimates for administrative agencies were developed through a survey in 2007 and 2008, but they use the survey to make inferences on those in 2005 and 2006. See Clinton, et al. 2012. "Separated Powers in the United States: The Ideology of Agencies, Presidents, and Congress." American Journal of Political Science 56(2): 341-54. The dataset is available electronically at http://agencydata.wordpress.com.

APPENDIX B. NULL RESULTS AND ALTERNATIVE MODEL SPECIFICATIONS

TABLE 1. ADVISORY COMMITTEE CREATION: ALTERNATIVE SPECIFICATION

Variable	**Model 1.** 2001-2008	**Model 2.** 2001-2008	**Model 3**. 2001-2011	**Model 4.** 2001-2011	**Model 5.** 2002-2011	**Model 6.** 2002-2011	**Model 7.** 2001-2008	**Model 8.** 2001-2008
Professional & Technical Employees (%)	4.816*** (1.265)	4.846*** (1.176)	4.265*** (1.204)	4.292*** (1.202)	3.247*** (1.005)	6.119 (6.682)	4.397*** (1.081)	No Solution
Agency Ideology Expert Survey (CL)	.018 (.281)	.310 (.990)	-.088 (.264)	.266 (.909)				
Prof. & Tech Employees x Agency Ideology (CL)		-.667 (2.157)		-.814 (1.997)				
Career Support (FEVS)					-.001 (.029)	.035 (.089)		
Prof. & Tech. Employees x Career Support						-.070 (.162)		
Career- Appointee Difference							-.427 (.430)	
Prof. & Tech Employees x Career-Appointee Difference								
Bush			.647** (.291)	.652** (.291)	.626* (.347)	.642** (.298)		
Sum of Employees (Log)	.372** (.167)	.320** (.135)	.409*** (.155)	.484*** (.171)	.353*** (.144)	.361*** (.147)	.022 (.163)	
Divided Government	-.435 (.268)	-.434* (.268)	-.373 (.223)	-.373* (.222)	-.212 (.264)	-.105 (.268)	-.387 (.328)	
Commission	-.298 (.703)	-.248 (.721)	.001 (.682)	.055 (.694)	-.004 (.646)	.097 (.677)	-1.827 (.918)	
Transition Years	.017 (.435)	-.018 (.435)	-.118 (.322)	-.117 (322)	-.179 (.541)	-.352 (.335)	-.147 (.403)	
Existing Technical Committees	.027*** (.009)	.025** (.011)	.025*** (.008)	.022* (.012)	.026*** (.006)	.027*** (.006)	.027*** (.004)	
Constant	-6.490 (1.623)	-6.581 (1.659)	-7.557 (1.732)	-7.660 (1.752)	-6.159 (1.882)	-7.651 (4.031)	-2.321 (1.816)	
Log Likelihood	-148.326	-148.277	-189.267	-189.182	-155.581	-154.982	-113.632	
N	432	432	589	589	289	289	152	
Groups	55	55	55	55	33	33	19	
Wald Chi2	65.87	65.83	68.47	68.07	65.56	59.14	88.59	
Prob. > Chi2	.000	.000	.000	.000	.000	.000	.000	

*Variable is significant at the .10 level ** Variable is significant at the .05 level
*** Variable is significant at the .01 level

TABLE 2. ESTIMATING THE INTERACTIVE EFFECTS ON ADVISORY COMMITTEE CREATION: AGENCY IDEOLOGY (EXPERT SURVEY) X PROFESSIONAL TECHNICAL EMPLOYEES

Interactive Effects	Model 2. 2001-2008	Model 4. 2000-2011
Effect of Technicality for Most Liberal Agency (Minimum)	5.992 (4.029)	5.692
Effect of Technicality for 1 Standard Deviation below mean Agency Ideology	5.450** (2.425)	5.030** (2.248)
Effect of Technicality for Mean Agency Ideology	4.897*** (1.286)	4.354*** (1.223)
Effect of Technicality for 1 Standard Deviation above mean Agency Ideology	4.344** (1.959)	3.679** (1.854)
Effect of Technicality for Most Conservative Agency (Maximum)	3.673 (3.885)	2.859 (3.629)

TABLE 3. ESTIMATING THE INTERACTIVE EFFECTS ON ADVISORY COMMITTEE CREATION: CAREER SUPPORT (FEVS) X PROFESSIONAL TECHNICAL EMPLOYEES

Interactive Effects	Model 6.
Effect of Technicality for Minimum Level of Career Bureaucrat Support	4.357 (2.752)
Effect of Technicality for 1 Standard Deviation below mean Level of Career Bureaucrat Support	3.693** (1.455)
Effect of Technicality for Mean Level of Career Bureaucrat Support	3.190*** (1.048)
Effect of Technicality for 1 Standard Deviation above Mean Level of Career Bureaucrat Support	2.687 (1.660)
Effect of Technicality for Maximum Level of Career Bureaucrat Support	1.314 (4.573)