

Buying Evidence?

Government Research as a Presidential Prerogative

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Abstract

The federal government routinely engages the private sector to conduct research and this research, in turn, often forms an evidence base for future policy decisions. Given its potential to influence the policymaking process, I argue that research production is a previously unappreciated tool in the president's policy arsenal. Focusing on federally-funded research and using a dataset of federal procurement from 2001-2018, I explore whether government-funded research is subject to political manipulation by the executive. The results show that agencies that are high on the president's policy agenda and those with a higher proportion of presidentially-appointed leaders are associated with larger research awards to contractors. This pattern is unique to research awards, and is not repeated in other contracting areas. The broad implication is that government agencies procure research to advance the president's priorities.

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In 1996, Congress passed the Dickey Amendment, which prevented the Centers for Disease Control and Prevention (CDC) from sponsoring research to advocate or promote gun control. The impetus for the research ban came from gun rights advocates, who feared that, over the long run, an evidence base demonstrating a relationship between gun violence and public health had the potential to lead to the the enactment of legal restrictions on firearm ownership and gun rights (Rostron, 2018). For the subsequent eleven congresses, the amendment was included in the CDC’s appropriations legislation. In 2011, the amendment was extended to cover the National Institutes of Health, in addition to the CDC. Finally, in 2018, ambiguous language was added to the amendment’s text that relaxed the restrictions and opened up the possibility of sponsoring limited research on gun violence. However, significant damage had been done; for 22 years the executive branch produced effectively no research on the role of guns in public health.

The idea that research is a powerful commodity is well known in Washington. Research is understood to be an avenue for advancing—or, from the perspective of the Dickey Amendment’s supporters, potentially hindering—a political agenda. However, the Dickey Amendment was an outlier; it targeted research on one particular issue that was both highly salient and politically controversial. Further, while Congress occasionally requests research from the executive, congressional bans of this nature remain a rare occurrence. In practice, the executive branch produces a tremendous volume of research each year. And this research explores particular questions of interest to political leaders in the executive branch. Further, when government agencies generate policy-relevant research, they dictate who, what, when, where, and how the research is to be conducted.

As the chief executive, the president oversees the production of research in the executive branch and, accordingly, can deploy it to advance her political priorities. Having an evidence base is useful in establishing the scope or scale of a particular policy problem or in advocating for particular policy alternatives.¹ An evidence-base also shores up political

¹I use the terms research and evidence interchangeably here, however researchers often distinguish between

arguments, because it changes the dimensions on which opponents must engage from one of preference or ideology to science. At a minimum, it raises the costs for adversaries by forcing them to procure their own evidence.

How and when do presidents, who oversee the production of research in the executive branch, use research as a tool to advance their policy priorities? In this paper, I explore the role of research as a commodity in presidential policymaking. Using a new dataset of research studies purchased by federal agencies from fiscal year (FY) 2001 to FY 2018, I examine research studies procured by 39 federal agencies across three presidential administrations. To preview, I find that agencies devote more funds to research studies when the president has explicitly made the issue a priority or when the agency has a greater proportion of politically appointed leaders (i.e., those chosen by the president). An explanation based on research as a political commodity has greater explanatory power than one based on presidents rewarding electorally valuable constituents or Congress demanding research from agencies. Importantly, these patterns are not generally replicated in other areas of federal contracting, suggesting that research provides political leaders with a unique opportunity. Finally, as an additional piece of evidence, I show that research contracts are disproportionately more likely to be defunded when they were initiated by a prior presidential administration.

These findings contribute to our understanding of presidential policymaking in at least three ways. First, they build on existing studies that demonstrate how presidents exercise power in a constrained separation of powers context (e.g., Beckmann, 2010; Bolton and Thrower, 2016; Howell, 2003; Lewis, 2010). However, unlike past work that suggests that electoral politics drives much of executive spending decisions (e.g., Berry, Burden and Howell, 2010; Dynes and Huber, 2015; Hudak, 2014; Kriner and Reeves, 2015), the argument here focuses on policy preferences—specifically, presidential attempts to pursue policy priorities. Second, by uncovering political patterns associated with contracts for federal research, the argument puts flesh on the colloquialism in American politics that science has become

the two concepts.

“politicized.” Finally, although government contracting is typically considered a neutral, rule-bound area, the results here imply that, like other areas of executive policymaking (see, e.g., Potter, 2019), it too can be manipulated to serve political ends.

The Role of Evidence in Policymaking

The perspective that research is a strategic or tactical tool in executive policymaking conflicts with understandings of the role of research in a prominent and growing movement for evidence-based policymaking (EBP). The Government Accountability Office (GAO), the Organisation for Economic Cooperation and Development (OECD), and the United Nations, and even the academy (Bogenschneider and Corbett, 2011; Bowers and Testa, 2019; Parkhurst, 2017) promote EBP as a good governance approach. In 2018, the U.S. Congress passed the Foundations for Evidence-Based Policymaking Act (P.L. 115-435), which was based on the premise that “whether deciding on funding allocations, assessing proposed regulations, or understanding how to improve processes for efficiently providing services, evidence should play an important role in key decisions made by government officials” (Commission on Evidence-Based Policymaking, 2017, 4).

EBP proponents tend to focus on its ideal application: the translation to policy of rigorous social science in ways that improve the human condition. Applying this principle in practice, however, is difficult, as policymakers must arbitrate difficult decisions, such as what does and does not constitute high quality evidence and how one should proceed in the absence of scientific consensus on an issue. These are critical issues. For instance, on particularly controversial issues private interests can corrupt the scientific process in ways that may be difficult to detect (McGarity and Wagner, 2008; Oreskes and Conway, 2011), meaning that that it may be nearly impossible for policymakers to distinguish low quality and high quality research in these areas. Further, there may be insufficient evidence available to make reliable policy conclusions. While EBP’s advocates acknowledge these (and other)

challenges (Bogenschneider and Corbett, 2011; Parkhurst, 2017), they suggest they can be overcome if appropriate measures are taken.

Table 1: Weiss’s Models of Research Usage

| Model | Description |
|------------------|---|
| Knowledge-driven | Basic research → applied research → development → application |
| Problem-solving | A problem exists and research is applied to solve that problem, either by generating solutions or arbitrating between alternatives |
| Interactive | All kinds of people involved in an issue area pool their talents, beliefs, and understandings in an effort to make sense of a problem |
| Enlightenment | The concepts and theoretical perspectives that social science research has engendered permeate society, and thus the policymaking process |
| Political | Research is “ammunition for the side that finds its conclusions congenial and supportive” |
| Tactical | Research is conducted to deflect criticism, rather than support policymaking |

Source: Adapted from Weiss (1979).

Yet, research may be deployed with altogether different ends than the ones EBP’s advocates have in mind. Writing in 1979, sociologist Carol Weiss identified six ways, shown in Table 1, that research can be used in policymaking. Of these paths, the first four accord with the neutral view of evidence advanced by EBP’s advocates. For instance, her interactive model, in which all kinds of actors work together to effectively apply research to solve policy problems, meshes with the idea that policymakers and academics can collaborate over evidence use (Bowers and Testa, 2019). However, the latter two models in the table are not consonant with EBP. In particular, the political model, wherein research becomes “ammunition” for political actors suggests that evidence can be used in a way that advantages

one’s political standing or increases the likelihood of achieving a favorable policy outcome.

Through the lens of the political model, evidence in a policymaker’s hand is a powerful tool. Appeals to authority can enhance the credibility of an argument and can potentially convince fence-sitters or silence skeptics (Walton, 1997). For example, Esterling (2009) argues that, when lobbying Congress, interest groups provide information—often in the form of research and expertise—that gives rise to a causal framework that links particular policies to outcomes. Presented with this framework (and under the right conditions) members then become more likely to adopt a given policy. While prior research acknowledges the potential for the political model to motivate policymaking (e.g., Parkhurst, 2017), the contribution of this paper is in laying out when and how that happens in the executive branch.

Evidence as a Tool of Presidential Persuasion

The American president is tasked with developing and executing a policy platform for the entire United States. This is no small feat, but accomplishing all or part of this agenda can bolster her reelection prospects and burnish her legacy. Although Article II enumerates the president’s formal powers, in practice the power of the presidency has expanded dramatically in the modern era (Cohen, 1982; Lowi, 1986; Rogowski, 2016). In unpacking how the Executive amassed this power, scholars have taken an expansive view of the president’s policymaking arsenal, including strategies such as: working with Congress to pass legislation (Beckmann, 2010; Cohen, 2012), acting unilaterally by issuing an executive order, memoranda, or signing statement (Howell, 2003), among other vehicles; setting the agenda through a budgetary proposal (Berry, Burden and Howell, 2010); strategically deploying war powers (Howell and Pevehouse, 2007); manipulating where discretionary funds are deployed (Gordon, 2011; Hudak, 2014; Kriner and Reeves, 2015; Lowande, Jenkins and Clarke, 2018); and using the rhetorical power of public appeals (Canes-Wrone, 2006; Cohen, 1995).

Notably, this literature takes an institutional view of the presidency, one that moves

our understanding of presidential power away from more individualistic accounts such as Neustadt’s (1990[1960]) famous description of presidential power as varying with each president’s ability to persuade others. Yet, even from the institutional perspective, persuasion remains an important tool of the presidency. Consider, for instance, a program that the president wants Congress to adopt legislatively. She will be much more successful in getting the program adopted if key congressional actors agree that the program is a good idea; a strategic president is therefore one who can sell the merits of her policy proposal, both to other elites and to the public. This insight translates to other domains, as presidents regularly confront implementation problems within the executive branch (Lowande, 2018)

I argue that research is an unrecognized, yet powerful, tool in the president’s policy arsenal. In her role as chief executive, the president oversees the executive branch’s production of research—specifically the production of policy reports, feasibility studies, and evaluation studies. This means that the president has the ability to direct when government research is produced, where it is produced, who produces it, and how it is produced. Research generated by the executive branch is particularly valuable to policymakers as it is inherently credible. Not all evidence is created equal; research of varying quality is frequently available from numerous sources and the challenge is in distinguishing high quality evidence from its low quality brethren. However, evidence with the imprimatur of the U.S. government solves the quality problem—it is generally assumed to be high quality, rigorous and unbiased.

There are numerous benefits for presidents when they bring evidence to bear on a political problem. First, research can serve as a tool of persuasion, demonstrating to external audiences—be they in Congress, the courts, or among a relevant set of interests—the relative merits of the president’s preferred course of action. When audiences are primed that a position is backed by research or evidence, they are more likely to support it (e.g., Bergner, Desmarais and Hird, 2019). Second, even if evidence does not conclusively prove that a program works,² it can be still be valuable as having supportive research may enhance the

²In a trenchant critique of EBP, Cass (2017) refers to this as the “evidence ratchet,” wherein “findings can

target audience’s perception of the legitimacy, viability, or durability of a policy action. For instance, much of the *Chevron* judicial doctrine regarding court deference to policymaking by executive agencies relies on the agency’s actions not being “arbitrary and capricious.” Having a solid research-base for a policy action can potentially forestall this legal determination, while also neutralizing opposition. Third, once the president injects evidence into a policy debate, it raises costs for her opponents. Opponents will be hard pressed to use moral or preference-based arguments to counter an evidence-based case; instead they will be pressured to procure their own research. Finally, having evidence available opens up the possibility for expert (and potentially public) discussion of a particular topic.

Political Evidence as a Presidential Prerogative

Presidents assume office with policy priorities that they want to accomplish. Evidence generation can be useful to an administration in accomplishing this agenda. Two scenarios highlight when the creation of new research is particularly valuable.

First, presidents lay out their policy agendas in a variety of public forums, including budget submissions to Congress, Rose Garden ceremonies, and State of the Union addresses (Cohen, 1995). When the president presents an issue as a public priority, her next challenge is to effectuate action on the issue—by getting Congress to take up legislative action, persuading other actors to accept a unilateral action as valid (Reeves and Rogowski, 2016), swaying public opinion on the issue (Cohen, 1995), or convincing bureaucrats to implement the president’s proposal (Lowande, 2018; Neustadt, 1990[1960]). For the reasons laid out above, having evidence supporting the president’s position can facilitate these ends. This leads to a straightforward expectation that when a president makes an agency’s policy area a priority, she will pursue the generation of research in that area.

The president also has a second, longer term, mechanism in place to enact her policy

promote but not undermine a policy.”

priorities: political appointees. Appointees are central to presidential management of executive branch (Lewis, 2010; Moe, 1985). The political appointees who serve the president are charged with developing and directing the president’s agenda, including through a research program. Although presidential appointees tend to serve for a relatively short period of time,³ they look to leave their mark on policy. Generating an evidence base to advance the administration’s policy goals is one way to accomplish this. Prior research suggests that when agencies are more politicized (i.e., their leadership draws more heavily from the ranks of political appointees), they are more responsive to the political environment (Gordon, 2011). For example, Lowande (2018) finds that more politicized agencies respond more quickly to written requests from members of Congress who share the president’s party, than those who do not.⁴

Political appointees have several means by which to direct agency research. At the most mundane level, political leaders may simply make decisions about how resources should be allocated—and specifically what type of research should be conducted—and direct subordinates to carry these decisions out.⁵ Further, Gordon (2011) suggests that when political appointees are aware of how to advance the president’s interests, they can direct spending in a way that is politically advantageous. When it comes to contracting—the type of research I examine empirically—this can mean taking an action like steering a contract to a preferred research vendor. For instance, Witko (2011) describes a case in which political appointees steered a contract to a preferred contractor. When a career civil servant, a “whistle blower,” threatened to upset this relationship, “her superiors waited until she was out sick and had another employee sign [a] waiver” (767).

In sum, agencies with more direction from political appointees have a greater capacity

³According to Dull et al. (2012), appointees serve for an average of 2.8 years.

⁴Of course this is to say nothing of the numerous studies which outline the deleterious normative consequences of agency politicization; see Doherty, Lewis and Limbocker (2018); Richardson (2019) and Wood and Lewis (2017).

⁵In fact, this is the ideal way that agencies should be managed according to the classic politics-administration dichotomy (Rosenbloom, 2008).

to implement the president’s political agenda. Research and evidence can serve as useful tools in pursuing this goal. This leads to the straightforward expectation that the more politicized an agency is, the more likely it should be to pursue evidence as a means to realizing the president’s political goals.

Research Design

To evaluate how research is created in the executive branch—and whether it is politically directed—I study the largesse associated with government contracts for research studies. There are clear advantages to using government contracts as a way to evaluate federal research patterns. First, procurement is closely tracked and monitored, meaning that is possible to trace where research funds are allocated. Second, from the executive’s perspective, contracting for research is desirable because it supplements existing expertise and capacity within the executive branch. Perhaps most significantly, within bounds, the executive can set terms for the research (e.g., establish the research question and methods) and also select who will conduct the research. Finally, outside vendors may enhance the credibility and esteem of a research endeavor.

There are, however, limitations to this approach. First, research contracts represent only one facet of the executive branch’s research production capability. Federal agencies can also award research grants to external vendors or career civil servants can conduct the research in-house. While these other avenues for research are important and may be subject to the same pressures theorized here, data limitations prevent equivalent analyses. For instance, creating an inventory of agency reports is impractical.⁶ While many agency’s research reports are published online on the agency website, an unknown quantity of reports are hidden from public view, either because they are classified or because political considerations

⁶Grants do not suffer from the inventory problem, but come with their own set of issues. For example, grants are often awarded with minimal stipulations; this leaves the grantee considerable leeway to pursue research questions related to their own interests or to explore issues that might not be relevant to the policy question at hand (i.e., it introduces the possibility for creep).

prevented them from ever being published in the first place.⁷

Second, these are observational data, which makes it difficult to cleanly estimate the effect of presidential prioritization on research contracts given potential concerns about endogeneity and omitted confounders. To address this issue, I present a variety of approaches to analyzing the data, as well as robustness checks and a placebo test. While these analyses are not strongly identified (and thus remain in the realm of correlational patterns), the results are nonetheless consistent with a causal relationship between presidential strategy and contract awards for government research.

Contracting Data

Data on contracts for government research draw from the Federal Procurement Data System (FPDS), a dataset which chronicles all contract awards made by federal agencies from FY 2001-FY 2018. This includes millions of contracts, including commitments for all manner of services and products ranging from janitorial work to rocket parts. To narrow these data, I consider the substantive area of each contract, ultimately focusing in on contracts where the agency has solicited a research study from the private sector.⁸ Because each contract-related action constitutes an entry in the database (e.g., contractors change of address), I focus on entries where a positive amount of money was awarded from the government to a contractor. See the Supporting Information (SI) for more details about the data collection and cleaning processes.

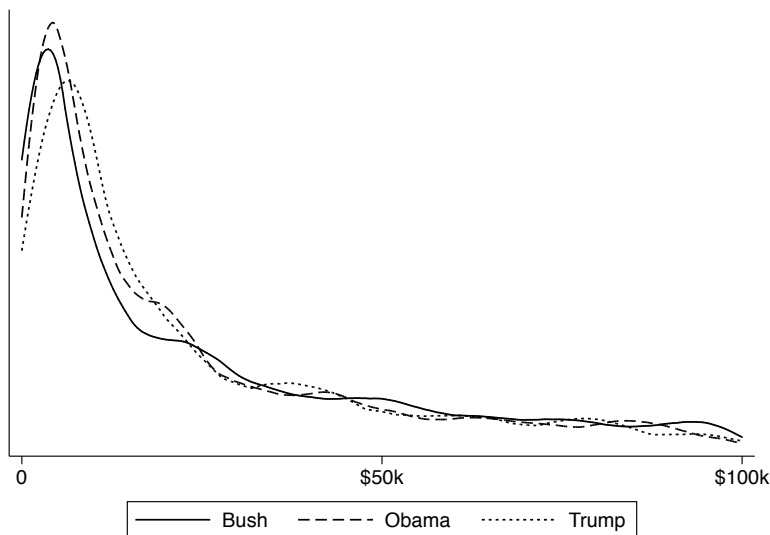
These data suggest nuances in how research monies are allocated across different

⁷It is within the president’s power to suppress agency-generated research reports. For example, the Trump administration prevented the results of a study on the economic benefits of refugees from being publicly released, since the results conflicted with the administration’s refugee policies (Davis and Sengupta, 2017). While contracted reports can also be suppressed, by focusing on the procurement transaction (rather than the resulting product), I avoid this problem.

⁸Specifically, I focus on contracts that are designated as “Special Studies and Analysis” in the “Product and Service Code” for each contract. Contracts for “Special Studies and Analysis” are different from contracts for “Research and Development,” which focus on applied research and market applications. See the Supporting Information for more information about these differences.

presidential administrations. Figure 1 shows the distribution of contracts (by \$ amount) for each of the three administrations included in the dataset. Importantly, the mean contract award for a research study (adjusted for inflation) does not vary much across this time period, but remains at approximately \$15,000, a relatively small amount in terms of government spending.

Figure 1: Size of Research Contracts (\$), by Administration



Note: Kernel density plot of research contract award size. All dollar amounts adjusted to reflect thousands of real 2005 dollars. Figure includes new awards only, since these are the most comparable across administrations. To aid visibility, in this figure only new research contracts under \$100K are shown; this omits the largest contracts (~10% of the data), the majority of which went to DOD contractors.

The federal government purchases many types of research studies and the FPDS contains a wide range of analytic approaches, including feasibility studies, surveys, environmental studies, and extended evaluation studies. For instance, in 2013 the Department of Education funded a \$3 million longitudinal study on high school students and the Department of Health and Human Services funded a \$685,000 survey to monitor influenza vaccination coverage among health care personnel and pregnant women. Unfortunately, the FPDS provides limited information about the precise nature of each contract under study.⁹

⁹The FPDS dataset includes an “award description” field. In some cases that field describes the approach

However, it is possible to consider the substantive policy area associated with each research award, as I do in Table 2. This table shows that across the three presidential administrations under study, the policy areas that merited research remained stable: national security and a broad “other” category received the lion’s share of research funds. Further, each administration devoted approximately the same percentage of spending to the different types of research studies. Where a difference emerges among administrations is in terms of the total average annual spending devoted to research—while the Bush and Obama administrations spent comparatively similar amounts per year on average, the Trump administration spent considerably *less* on research studies. Put differently, while Bush and Obama divvied up similarly-sized research pies, Trump allocated a much smaller pie for research—despite record spending during his tenure (Tankersley and Tackett, 2019).

Table 2: Average Annual Spending by Research Policy Area, by Administration

| Policy Area | Bush | | Obama | | Trump | |
|---------------------------|--------------------|-------|--------------------|-------|--------------------|-------|
| Other | \$798,216 | 31.5% | \$601,251 | 26.1% | \$201,070 | 20.6% |
| National Security | \$494,680 | 19.5% | \$561,869 | 24.4% | \$346,529 | 35.4% |
| Environment/ Public Lands | \$318,640 | 12.6% | \$302,984 | 13.1% | \$110,443 | 11.3% |
| Regulatory/ Data Analysis | \$291,971 | 11.5% | \$387,776 | 16.8% | \$168,776 | 17.3% |
| Social Services/ Health | \$279,091 | 11.0% | \$276,404 | 12.0% | \$71,077 | 7.3% |
| Technology/ Energy | \$269,775 | 10.7% | \$71,272 | 3.1% | \$26,715 | 2.7% |
| Government Operations | \$62,685 | 2.5% | \$74,937 | 3.3% | \$42,517 | 4.4% |
| Labor/ Economy | \$17,589 | 0.7% | \$29,701 | 1.3% | \$11,032 | 1.1% |
| Total | \$2,532,647 | | \$2,306,194 | | \$1,117,896 | |

Note: All dollar amounts adjusted to reflect thousands of real 2005 dollars. Policy areas are classified according to each contract’s “Product and Service Code” in the FPDS. The “Other” category includes research relating to: aeronautics and space studies, recreation studies, historical studies, or studies marked “other.” Totals may not sum to 100, due to rounding.

Taken together, Figure 1 and Table 2 suggest that there are important differences in the way presidents approach research. Nevertheless, if presidents are pursuing research to advance a policy agenda, the argument advanced here holds that we should observe more

(e.g., evaluation study) or subject (e.g., high school students), but more often than not it is incomplete or left blank entirely.

research contracting happening in areas of presidential priority.

Measurement

In the analyses that follow, the dependent variable I focus on is the dollar value of individual research contracts (logged due to the skew shown in Figure 1). This is a reasonable metric since prior work suggests that the size of awards, and not the number, is more sensitive to political influence (e.g., Gordon, 2011; Grimmer, Messing and Westwood, 2012). The unit of analysis is therefore the research award. I initially focus on all contracts that award research money to a contractor, before turning to an analysis of newly initiated contracts, which may be more politically malleable. With the former, extant contract terms are already defined and may be more difficult to amend; with the latter terms must be negotiated anyway, so it may be easier for political factors to push them in one direction rather than another.

To assess whether a policy issue is a presidential priority, I rely on annual State of the Union (SOTU) addresses. During the SOTU, the president lays out her policy agenda for the upcoming year (Cohen, 1995), making it a standardized way of accounting for which issues the president is prioritizing and which she is not. Specifically, I begin by coding each bureau in the dataset according to one of the 220 subtopics listed in the Policy Agenda Project (Jones, 2019). For instance, the National Highway Traffic Safety Administration is coded as “highway construction, safety, and maintenance” and the U.S. Mint is coded as “currency, commemorative coins, medals, U.S. Mint.” I then match this coding to the Policy Agendas coding of mentions of these subtopics in the annual SOTU. *Presidential Agenda* is coded as “1” if the president mentioned the policy area of an bureau awarding a research contract in that year’s SOTU, and “0” otherwise.¹⁰

To measure agency politicization, I rely on the number of politically-appointed man-

¹⁰The results are robust to using the proportion of the subtopic’s coverage in the SOTU, rather than a dichotomous measure.

agers in an agency over the number of career civil service managers in that agency. This ratio has become standard in studies of the bureaucracy (e.g., Lewis, 2010; Lowande, 2018; Berry and Gersen, 2017; Wood and Lewis, 2017). It captures the extent to which an agency’s leadership team is comprised of the president’s directly chosen agents. Specifically, *Politicization Ratio* is the number of politically appointed leaders (i.e., non-career Senior Executive Service (SES), Schedule C, and Senate-confirmed political appointees (PAS)) over the number of career SES managers; this proportion ranges from 0 to occasional values greater than one—when the number of appointed leaders exceeds the number of career managers.¹¹

I also include control variables that address important sources of within-agency variation. First, I consider that agencies may have different capacities to produce research internally, and that this variation may explain an agency’s willingness (or reticence) to engage the private sector to do research. To evaluate this internal capacity, I collect data on the occupations of white collar employees in an agency (e.g., veterinarian, lawyer, accountant). *In-house Capacity* is the proportion of the agency’s white collar professionals who are categorized as either social scientists or mathematician/ statisticians (the type of professionals most likely to be engaged in producing a research report) in the quarter in which the contract was awarded. Next, I include a measure of the agency’s overall annual budget, because changes in an agency’s resources may influence the willingness to devote money to research—especially since research studies could potentially be viewed as luxury goods. *Agency budget (ln)* is logged dollar amount of the agency’s budget.¹² Finally, I include *Agency employees (ln)*, the log of the total number of employees in the agency, since decreases in agency workforce may be associated with the decision to contract out. Descriptive statistics for all variables are shown in Table SI-1.

¹¹All personnel data are drawn from the Office of Personnel Management’s FedScope database and are, generally, measured at the quarter level.

¹²These are outlay data from the Office of Management and Budget’s Public Budget Database.

Methods and Results

I begin the analysis by studying the relationship between the two measures of presidential prioritization—SOTU mentions and the level of politicization in an agency—and the monetary value of each research contract. To model this relationship, I rely on two-way fixed effects models with fixed effects at the agency and year level. Additionally, I include fixed effects for the type of study being conducted (e.g., regulatory analysis, environmental study, education study). All models include standard errors clustered at the agency level.

This modeling approach allows me to hold constant time-invariant agency-specific factors, as well as year-specific factors that may affect agencies cross-sectionally. In essence, such a design compares the effects of differing levels of presidential prioritization *within agencies*; that is, how increasing or decreasing the levels of political management in an agency affects decisions about research awards.

The results are presented in Table 3; the first column (Model 1) shows a parsimonious model of all contracts and the second column (Model 2) shows the results with the three agency controls introduced earlier. In both models, *Presidential Agenda* is positive and significantly associated with an increase in the value of a research contract. Consistent with my expectation *Politicization* is also positive in both models, suggesting that as an agency becomes more politicized the expected value of a research contract increases, although this result is only statistically significant at the $p < .10$ level. Models 3 and 4 replicate the earlier models but for new contracts, which may be more susceptible to political influence. These models offer similar results, although *Politicization* now achieves statistical significance at conventional levels. Among the control variables in Models 2 and 4, none has a consistently significant effect.

Table 3: Presidential Prioritization and Size of Research Contract Awards, FY01-FY18

| | (1) | (2) | (3) | (4) |
|---------------------|---------------------|---------------------|---------------------|---------------------|
| | All Contracts | All Contracts | New Contracts | New Contracts |
| Presidential Agenda | 0.296*** (0.118) | 0.319*** (0.115) | 0.400*** (0.147) | 0.320*** (0.110) |
| Politicization | 0.259 (0.137) | 0.271 (0.149) | 0.697*** (0.166) | 0.508*** (0.124) |
| In-house Capacity | | 0.067 (0.048) | | 0.068 (0.067) |
| Budget (ln) | | -0.029 (0.102) | | 0.036 (0.138) |
| Employees (ln) | | 0.535 (0.470) | | 0.840 (0.534) |
| Observations | 189,328 | 158,174 | 111,165 | 96,603 |
| R-squared | 0.081 | 0.092 | 0.034 | 0.110 |
| Study Type FE | YES | YES | YES | YES |
| Agency FE | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES |

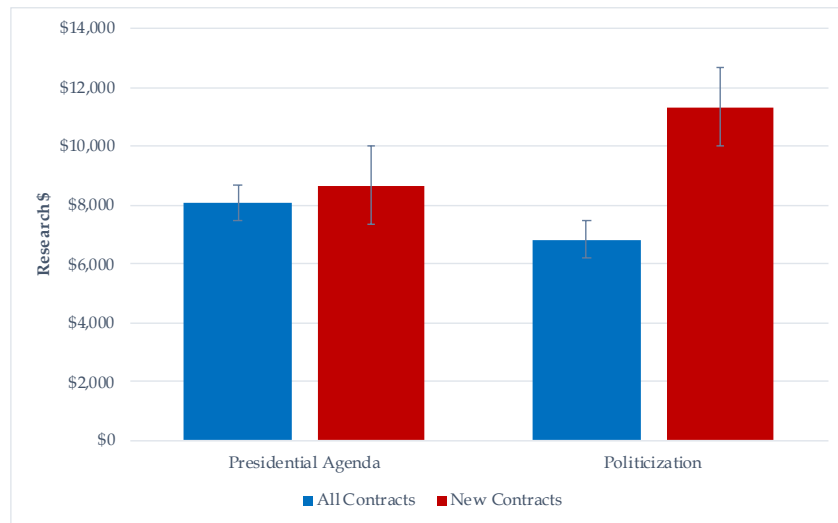
Note: Table entries are two-way fixed effects OLS coefficients. The dependent variable is the logged dollars associated with each research contract. Robust standard errors clustered at the agency level are in parentheses. Two-tailed tests: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. FE = fixed effect.

Overall, the estimates consistently demonstrate that agencies that are prioritized by the president procure larger research contracts. Figure 2 puts the results from Table 3 in substantive context. Having the president place an issue on the public’s agenda is associated with an additional \$8,100 in research contract monies; this effect is magnified for new contracts with a bump of nearly \$8,700. These are large effects, keeping in mind that the average research award in the dataset is about \$15,000. For politicization, the marginal effects are also sizable. Moving from no politicization to a high level of politicization—a rare change, but one that can occasionally occur within an agency¹³—is associated with an additional \$6,800 in research contracts among the set of all contracts. Within the set of new

¹³For example, in 2001 the Department of State’s politicization ratio was already at an above average level of 0.65, but by 2006, the ratio shot up to 1.39, far into the upper 1% tail of the variable’s range. At the start of the Trump administration in 2018 the agency’s politicization ratio reached its nadir of 0.25. While the Department of State’s rapid shifts in politicization are relatively rare, it is not the only agency to have experienced shifts of this magnitude.

contracts, this value increases to more than \$11,300.

Figure 2: Marginal Effects of Presidential Prioritization on Award Size



Note: Panels show marginal effects from Models 2 (all contracts) and 4 (new contracts) in Table 3. All other variables held constant at their mean values.

Overall, these results suggest that research contracts increase when presidents prioritize an issue, either by explicitly putting it on their agenda or by putting their own appointees in place. The magnitude of these effects is larger for new contracts, which may be more malleable in terms of contracting provision, giving further support to the idea that this is an explicitly political strategy.

These results are robust to a variety of different specifications which are presented in the SI. Since the size of research awards is highly skewed, I begin by excluding very small awards (those less than \$1,000; see Table SI-2) and then very large awards (those greater than \$500,000; see Table SI-3) from the analyses. Next, since the Department of Defense is an outlier in terms of the number and size of its awards, I exclude it from the models (Table SI-4). I also include administration specific time-trends to capture the fact that politicization may vary for reasons that are orthogonal to those posed here (e.g., it tends to be lower in the president’s first year as she is staffing up; see Table SI-5). Finally, I break the results down by presidential administration and show that the results are not driven by any one

administration (SI-Table 6). In all cases, the primary results are substantively unchanged by these modifications.

Considering Alternate Explanations

The results above suggest that presidents direct research funds to areas that are of strategic importance to their priorities. However, there are other mechanisms that might plausibly explain the allocation of federal research funds. I consider two of the most prominent: presidential particularism and congressional priorities.

With respect to presidential particularism, a lengthy literature suggests that presidents target “pork” to electorally-valuable constituencies (e.g., Berry, Burden and Howell, 2010; Gordon, 2011; Hudak, 2014; Kriner and Reeves, 2015; Christenson, Kriner and Reeves, 2017; Lowande, Jenkins and Clarke, 2018; Rogowski, 2016). In these studies, pork is broadly construed to include grant monies, disaster declarations, favorable tariffs, and even post office locations. The general finding is that presidents seek to reward core constituents (i.e., those who have historically supported them), as well as those living in swing states that are likely to be electorally valuable to the president or her party in the next election. These findings are magnified in presidential election years (Hudak, 2014; Kriner and Reeves, 2015).

Applying the particularism logic to federal research funds is straightforward: presidents should be expected to award research monies to places that are electorally valuable. Indeed, Kriner and Reeves (2015) offer an example of personal presidential intervention into research spending for political gain. Specifically, they explain how President Lyndon Johnson targeted Rep. Charlie Halleck’s (R-IN) district with research funds in order to persuade the congressman to support the Civil Rights Act of 1964. They explain, “Johnson reached out to [the NASA administrator] to inquire what the agency could do for Halleck and his constituents. Three days later, Webb met with Halleck and discussed a number of research grants that could be awarded to Purdue University, which sat in Halleck’s second

congressional district of Indiana” (156).

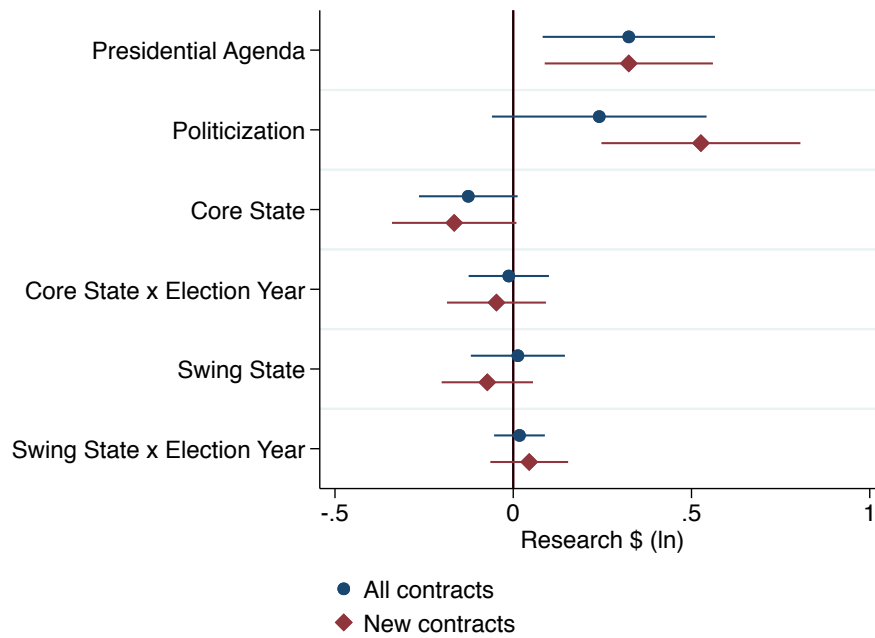
To evaluate whether particularism better explains research production priorities, I reestimate the models from Table 3 following Kriner and Reeves’s (2015) approach and coding each contract for whether it went to a core state or a swing state.¹⁴ I then interact each of these measures with an indicator of whether the contract was awarded in a presidential election year, as these authors find that the effects of politically valuable constituencies is exacerbated in election years.

The results are shown in Figure 3; full model results are shown in Table SI-7. While the political priority variables remain statistically significant, there appears to be no consistent effect in terms of research award size for electorally valuable constituencies, for all awards and also for new contract awards. Indeed the only statistically discernible result is that, in non-election years, core states receive *smaller* research awards than non-core, non-swing states. Overall, these results suggest that particularism is unlikely to be driving research spending.¹⁵ Given the relatively small size of most research awards—and the fact that they are targeted at recipients who are often not particularly visible—these largely null results are unsurprising.

¹⁴The omitted case is a state that is neither core nor swing. A state is coded as a “swing state” if the losing candidate averaged 45% or more of the two-party vote over the past three presidential election cycles. A state is coded as a “core state” if the president’s party averaged 55% or more of the two-party vote in that state in the preceding three elections.

¹⁵Dynes and Huber (2015) suggest an alternate model of presidential allocation of dollars, where presidents take voter preferences more directly into account, and find that presidents reward same party constituents at disproportionate rates. In Table SI-8, I approximate their approach, but again find no support for the explanation that presidents compensate like-minded voters when directing research dollars.

Figure 3: Presidential Particularism and Research Awards



Notes: Figure shows coefficients from OLS models with two-way fixed effects for the state and the year; see Table SI-7 in the SI for full model results. The dependent variable is the logged dollars associated with the research award. The coefficients for the variables associated with presidential particularism are either indistinguishable from zero or not in the expected direction.

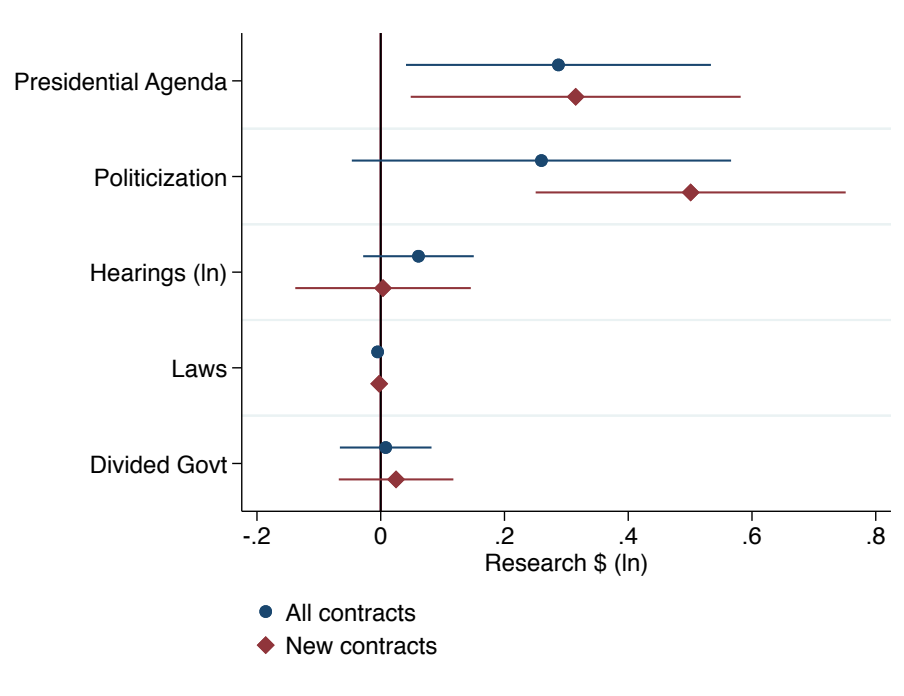
A second potential explanation for research spending priorities is that they are directed by Congress, rather than the president. When passing legislation, Congress sometimes includes provisions explicitly requiring agencies to conduct research. Requests for research need not come in the form of legislation either; individual members also send letters to agencies that contain requests for research (Lowande and Potter, 2020; Ritchie, 2018).

To evaluate congressional demand as a potential force for research production, I reestimate the earlier findings, including three new measures of congressional demand. First, *Hearings* is the number of hearings held in the policy area of a research contract in the year in which the contract was awarded; since this variable has a highly skewed distribution, I add one and take its natural log.¹⁶ Second, *Laws* is the number of bills passed in the contract's

¹⁶Research contracts are coded according to the Policy Agendas Project subtopic codes mentioned earlier. Hearings data are from the Policy Agendas Project (Jones, 2019). Laws data are from the Congressional

subtopic area in the prior year. If congressional pressure for research is a key driver of research awards, then we should expect an increase in congressional hearings or law passage to be positively associated with research production. Finally, *Divided Government* is a variable indicating that the legislative and executive branches are controlled by different parties. If partisan concerns are driving Congress to push the executive to do more—or less—research, then we might expect this to hold particularly under divided government.

Figure 4: Congressional Demand and Research Awards



Notes: Figure shows coefficients from OLS models with two-way fixed effects for the state and the year; see Table SI-9 in the SI for full model results. The dependent variable is the logged dollars associated with the research award. The variables associated with congressional demand for research are approximately zero and not statistically significant.

The results are shown in Figure 4 and Table SI-9. Again, the findings are not consistent with a congressional demand explanation. All three measures—hearings, laws, and divided government—hover around zero and are statistically insignificant. These null results persist when estimated separately or jointly or when examining the results for *Hearings* and *Laws* in a six-month window (rather than a one-year window). Stepping back, it appears that

Bills Project (Adler and Wilkerson, 2019).

neither presidential particularism nor congressional demand are reasonable explanations for how federal research funds are allocated.

Placebo: Contracting for Other Government Services

One potential concern with the approach taken thus far is that the observational nature of the data precludes a causal interpretation. Because both practical and ethical considerations prevent me from being able to provide randomization in presidential agendas or levels of agency politicization (which would allow for a stronger causal study), I instead look for another empirical implication that supports the argument—specifically a placebo test that relies on contracts for government services besides research.

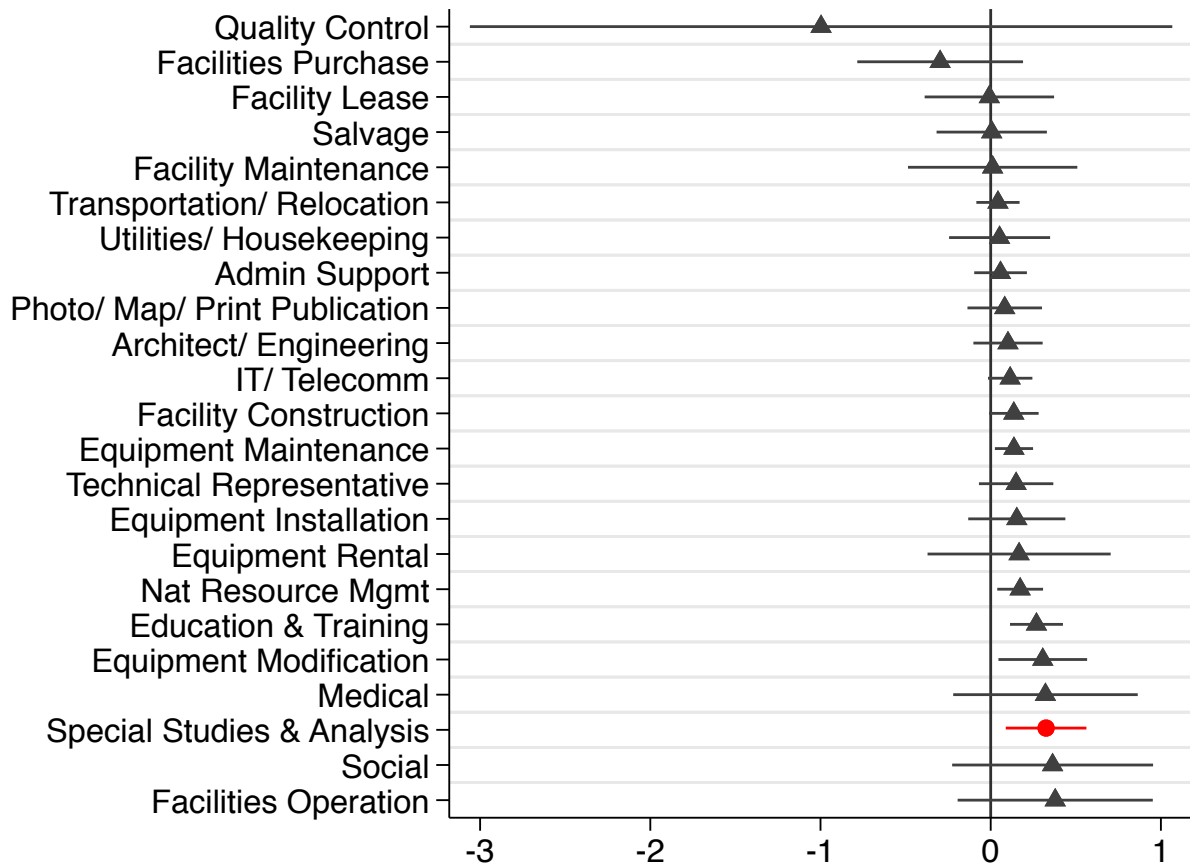
Unlike other areas of federal procurement, the government’s purchase of research is unique in the sense that it has the potential to bolster a broader political agenda. For instance, contracts for building rentals or building services might conceivably be leveraged to reward political supporters or to attract electorally vulnerable groups to the president’s party (Gordon, 2011). However, the political agenda logic that applies to research contracts does not travel to other contracting areas like building services. Put simply, we have no reason to think that the size of contracts for building services (for instance) should systematically increase in response to an issue coming onto the president’s agenda or a greater level of politicization within the sponsoring agency. Indeed, were all areas of contract spending to increase under the conditions it would suggest a systematic preference for outsourcing to the private sector by agencies that are more central to president’s agenda, regardless of the party they serve or the agency’s mission.

To evaluate this proposition, I return to the broader FPDS dataset and disaggregate contracts by their respective service codes. I then home in on the subset of new contracts, which the prior results indicated were particularly susceptible to political influence, and rerun Model 3 in Table 3 for each of the other service contracting areas. However, in

order to standardize across contracting areas, I transform the dependent variable so that it represents the percentage change of the contract's value over the mean contract value in that service area.

Figure 5 shows the results for the *Presidential Agenda* variable. To provide strong support for the theory, this placebo test should show that only "Special Studies & Analysis" has a positive and statistically significant coefficient, and that all other areas are either null or insignificant. This is generally what the figure reveals, subject to some caveats. The coefficient for special studies suggests that when an issue is on the president's agenda, it is associated with about a half a percentage point increase in value over the mean research contract. However, three other contracting areas also have a statistically significant and positive effect: "Natural Resource Management," "Education & Training," and "Equipment Modification." While this is unexpected, among these the coefficient for "Special Studies & Analysis" is the largest in magnitude.

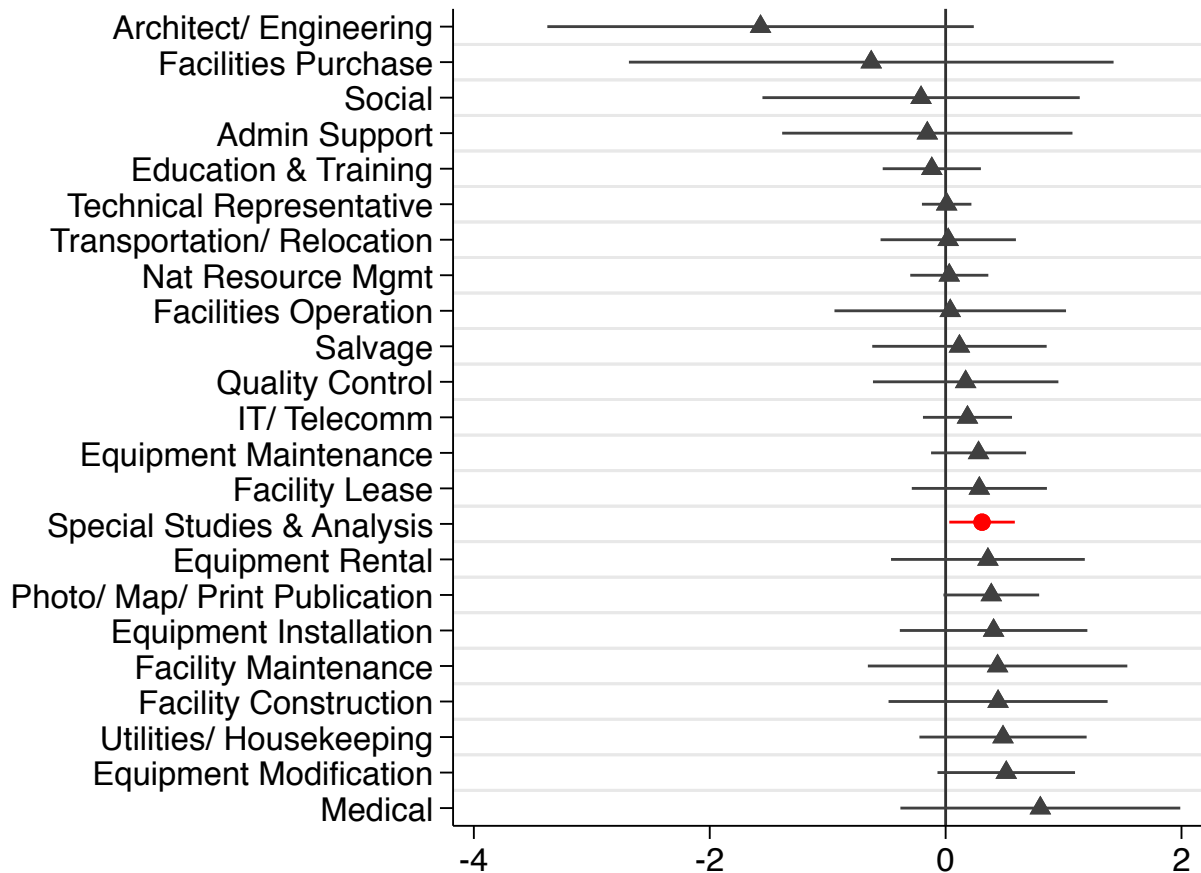
Figure 5: Effects of Presidential Agenda on Award Size by Service Area, New Contracts Only



Note: Plots show the coefficients for *Presidential Agenda* on the percentage change in contract award sizes (over the mean for that contract area) for areas of government service contracting. New awards only. . The red circle shows the coefficient for “Special Studies & Analysis,” while the black triangles show the coefficients for other areas of service contracting, as determined by the FPDS product and service codes.

Figure 6 shows the results of the same analyses, but for *Politicization Ratio*. Here the results are more in keeping with expectations; “Special Studies and Analysis”—the service code of interest here—is the *only* service area where an increasing level of politicization is associated with a positive and statistically effect on the size of the contracts awarded.

Figure 6: Effects of Politicization on Award Size by Service Area, New Contracts



Note: Plots show the coefficients for *Politicization Ratio* on the percentage change in contract award sizes (over the mean for that contract area) for areas of government service contracting. New awards only. The red circle shows the coefficient for “Special Studies & Analysis,” while the black triangles show the coefficients for other areas of service contracting, as determined by the FPDS product and service codes.

Across the two figures, it is clear that several contracting areas have a predicted positive effect, although in nearly all cases the effects are imprecisely estimated. Indeed, over the 22 other service contracting areas, the coefficient for *Presidential Agenda* is significant in the expected direction in just three areas; for *Politicization*, there are no other areas that provide similar results. While not dispositive, these results provide some confirmation—albeit not airtight—that contracting for research is relatively unique in the scope of government contracting.

Additional Implication: Deobligating Funds

The previous sections demonstrate that agencies allocate more research dollars toward the issues that are priority areas for the president, as indicated by either explicit placement on the president's agenda or by virtue of being highly politicized. However, the logic underlying the "research as ammunition" argument applies not just to the initiation of new research, but to the termination of research as well. That is, an additional empirical implication of the theory is that new presidential administrations of a different partisan orientation should not support research initiated by their predecessors and actively seek to discontinue it.¹⁷

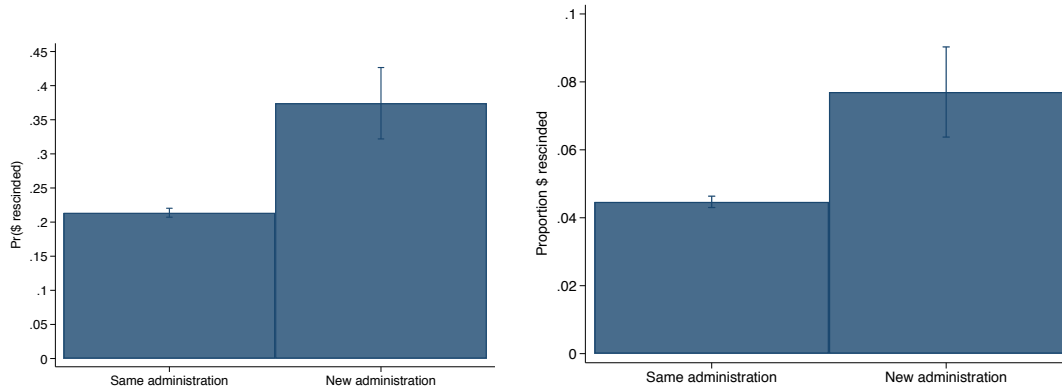
To evaluate this implication, I study the amount of funds, if any, that were deobligated from a research contract. Deobligation is the recuperation of funds to the government of funds that were previously obligated. Approximately 52% of research contracts had some funds deobligated, typically at the time of the contract's completion. Looking at the termination point of each contract, I first assess whether any funds were deobligated and, second, the proportion of the overall contract amount that was deobligated. Using these two measures, I then evaluate whether the contract was completed by the same presidential administration that initiated the research or by a new presidential administration.

The results of this analysis are shown in Figure 7; full model results are shown in Table SI-10. The left panel shows the probability of having any research money rescinded for contracts that were awarded by the current administration and for those awarded by the prior administration. Specifically, the probability of having any research funds deobligated is 0.35 under a new administration, compared with 0.21 under the same presidential administration. Not only were new administrations more likely to deobligate funds from research contracts, the amount that they rescinded was also larger. The right panel of Figure 7 shows the predicted proportion of research contract dollars that are rescinded for contracts initiated

¹⁷In contrast, proponents of EBP might suggest that research is generated where policy problems most demand it.

in the current administration compared to the prior administration. Compared to the same administration that initiated the research, a new administration rescinded an additional 3% of the total award amount.

Figure 7: Deobligation of Research Contracts



Note: The left panel shows the probability of having any research money rescinded for contracts that were awarded by the current administration compared to the prior administration. The right panel shows the predicted proportion of research contract dollars that are rescinded for contracts initiated in the current administration compared to those initiated by the prior administration. See Table SI-10 for full model results.

On balance, these analyses suggest that new presidential administrations are much more likely to discontinue research initiated by a prior presidential administration.¹⁸ While it is not surprising that new presidents pursue their own agendas (Cohen, 1995, 2012), these results show that the use of research to advance their agendas may come at the expense of continuity in policy production.

Case Illustration: Transgender Service in the Military

The evidence suggests that the ability to procure evidence can be used as a tool in the president's policymaking arsenal. What does this look like in practice? President Obama's acquisition of research prior to his announcement of a policy change that allowed transgender

¹⁸However, given the timeframe, this analysis only covers presidential transitions where party power changed hands.

people to openly serve in the military provides a useful case illustration.

Obama assumed office at a time when activists were pushing for transgender rights as a civil rights issue. Obama was receptive to this approach and became an ally of the movement (Bromwich, 2017). He was the “first president to use the word ‘transgender’ in a speech, the first to issue an order to bar discrimination against transgender federal workers and employees of federal contractors, the first to appoint transgender officials to government positions, the first to invite transgender children to take part in the White House Easter Egg Roll, and the first to sign hate crime legislation that included the transgender community” (Mezey, 2020, 3). Nearing the end of his second term, transgender service in the military was a sticking point. While earlier in 2011 President Obama had repealed the military’s long-standing “Don’t Ask, Don’t Tell” policy for gay men, lesbians, and bisexuals serving in the armed forces, the policy for transgender service remained a de facto ban (Mezey, 2020).

At the time, public opinion on allowing transgenders to openly serve was largely favorable, with 64% of Americans and even higher proportions of Democrats supportive (Jones et al., 2019). However, dissent within the military was acute; a 2016 poll showed that 57% of active-duty military personnel held negative views toward the decision to allow transgender troops to serve openly (Shane, 2017). As one *Politico* article described it, Obama faced “some risks... if he is seen as pushing the military beyond its comfort level with transgender troops” (Wheaton, 2015).

Despite extant research suggesting that eliminating the transgender ban would “advance a number of military interests” (Palm Center, 2014, 3), in 2015 Obama’s Department of Defense commissioned its own study examining the impact of allowing transgender people to openly serve in the military. When the study was released in May of 2016, the RAND Corporation reported that making this policy change would “cost little and have no significant impact on unit readiness” (Bromwich, 2017). The next month, explicitly citing that report, the Obama administration announced that the Pentagon’s ban would be lifted and

that transgender people could openly serve in the military.¹⁹

The Obama administration’s procurement of the RAND Corporation study illustrates how research can be useful to an administration. In this instance, the research did not appear to change or influence the administration’s thinking on the service of transgenders in the military; that decision seems to have already been made. Indeed, it accorded with a number of other decisions the president had already made with respect to the rights of transgender people. Instead, the report served as both a justification and a public relations tool; it showed that the administration was taking skeptics’ concerns seriously. Additionally, the choice of the RAND Corporation as the research vendor was prudent; the organization is slightly left of center (see Lerner, 2018), which suggests to the extent that its own ideological biases permeated the research it produced those biases were likely to align with the administration’s perspective. Nonetheless, the organization is still widely respected in the defense community. Finally, since much of the opposition stemmed from the military itself, having credible evidence that the policy posed no threat may have neutralized potential opposition in this population and, ultimately, helped with implementation.

Conclusion

Evidence is currency in modern politics—and as I have argued in this paper and as Obama’s procurement of the RAND study illustrates—sometimes those in power can buy the evidence they need. The findings in this paper suggest that there is a substantive and meaningful association between the prioritization of a policy area—either through a mention in the SOTU or through the presence of politically appointed leaders in an agency—and spending devoted to research. When a president prioritizes an issue in these ways, the

¹⁹In 2017, the Trump administration delayed the ban’s removal and subsequently in 2018 reinstated the transgender service ban, essentially nullifying the Obama-era actions. While this reversal is outside the scope of this case, it is worth noting that in dismissing Obama’s policy, Trump Secretary of Defense Jim Mattis explicitly attacked the research underlying it, criticizing the RAND report for glossing over too many issues and minimizing the complexity of the issue (Mezey, 2020, 158).

size of research awards is considerably larger. This pattern of politicized spending is not explained by presidential particularism or congressional pressure and is not replicated in other areas of service contracts, suggesting that research provides political actors with a unique opportunity.

Of course, *generating* evidence is just one way the president can influence the research production pipeline. Presidents can also appoint researchers whose views comport with their own to scientific posts within agencies or nominate them for positions on key agency advisory committees (Jasanoff, 1990; McGarity and Wagner, 2008), among other strategies. Future work would do well to consider these strategies, as well as assessing how presidents trade off among contracts, grants, and in-house production of research.

Important outstanding questions surround the intended audiences for presidential evidence. While evaluating this is beyond the scope of this paper, one preliminary indication from the transgender case is that evidence is aimed at persuading copartisans, rather than outpartisans. In a time of extreme partisan polarization, convincing outpartisans on the basis of an argumentation and evidence alone is a tall order. Indeed, most people filter information through a partisan perceptual screen (Campbell et al., 1960). Yet, there is often significant disagreement within the parties, meaning that evidence can be useful in convincing copartisans to play for the team (Lee, 2016). Future work should explore the role that evidence-based argumentation plays in persuading both copartisans and outpartisans.

Overall, this line of inquiry has at least three broad implications. First, in recent decades the executive branch has amassed considerable powers compared to the legislative (Cohen, 1982; Lowi, 1986; Rogowski, 2016). Meanwhile Congress's capacity to produce research has declined starkly, both in terms of individual members' staffs and in the size and capability of congressional research arms (Brookings Institution, 2019). Viewing evidence production from the perspective of presidential power further highlights this yawning power disparity and suggests that the gulf between the Article I and Article II branches may be

even greater than scholars currently conceive.

Second, prior research has focused extensively on the partisan and geographic benefits associated with the distribution of federal spending (e.g., Berry, Burden and Howell, 2010; Hudak, 2014; Kriner and Reeves, 2015; Rogowski, 2016). This paper highlights a way that presidents, in their role as chief executive, can work to allocate funds in a way that is focused on policy priorities, rather than electoral ones.

Finally, the results show that government-funded research can be directed according to political need, rather than more objective criterion. According to recent scholarship, “less than half of the medical care in the United States is based on or supported by evidence of its effectiveness” (Patashnik, Gerber and Dowling, 2017). This statement is certainly true in other policy areas beyond medicine, such as education policy, labor policy, and even economic policy. In deciding how to allocate federal research dollars, the president has a tremendous ability to shape where evidence is created—and also where it is not. This paper has argued that presidents use that power to direct research in areas that are high on their political agenda. This means that other areas—that may be of high need for other reasons—may not receive the attention from researchers that they deserve. In other words, rather than having science serve as a neutral arbiter between policy problems, evidence can be used in the service of political ends, a fact that should be of imminent concern to proponents of evidence-based policymaking.

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Supporting Information

(to be published online)

Buying Evidence? Government Research as a Presidential Prerogative

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Cleaning the FPDS Data

The data for this project were obtained from the Federal Procurement Data System (FPDS, available online at www.usaspending.gov). The FPDS is the front-end of the federal government’s procurement database; contracting officers input data into the back end of this system each time a new contract is initiated or an existing contract is amended. This means that a new entry is created in the FPDS every time a contracting action occurs—from a vendor’s change of address to the initiation of a multi-million dollar contract. Evaluating what constitutes an award in the context of this study therefore requires separating the wheat from the chaff so to speak.

To distill research studies from the broader data, I rely on the “Product and Service Code” associated with each contract. Agency contracting officers characterize each contract according to the category most appropriate for the “preponderance of work” (author interviews with agency contracting officers, May 2019). There are 23 service categories in the FPDS.¹ I focus on services categorized under Category B, the “special studies/ analysis, not R&D” code. These are studies purchased to research particular policy issues. These studies are separate from the Research & Development code (i.e., Category A). While upon first inspection R&D might appear relevant to the present study, it is primarily concerned with applied research and its market potential. It concentrates on activities like the development of weapons systems and exploratory medical research. To limit the analysis to substantive

¹There are also separate codes for products and goods; I exclude these contracts entirely from my analyses.

contract awards, I include only actions that have an associated award amount greater than zero.

Table SI-1: Descriptive Statistics for Model Variables

| Variable name | Source | Mean | Std dev | Min | Max |
|----------------------|------------------------|-------------|----------------|------------|------------|
| Award Size (ln) | FPDS | 10.060 | 2.088 | -4.832 | 19.936 |
| Presidential Agenda | Policy Agendas | 0.264 | 0.441 | 0 | 1 |
| Politicization Ratio | FedScope | 0.232 | 0.371 | 0 | 6.667 |
| In-house Capacity | FedScope | 4.266 | 4.803 | 0 | 45.386 |
| Budget (ln) | Public Budget Database | 17.160 | 1.748 | 9.909 | 20.636 |
| Employees (ln) | FedScope | 11.075 | 1.012 | 4.7536 | 12.886 |

Table SI-2: Presidential Prioritization and Size of Research Contract Awards, Excluding Small Awards^a

| | (1) | (2) | (3) | (4) |
|---------------------|---------------------|---------------------|---------------------|---------------------|
| | All Contracts | All Contracts | New Contracts | New Contracts |
| Presidential Agenda | 0.215 (0.107) | 0.242*** (0.106) | 0.189*** (0.080) | 0.212*** (0.095) |
| Politicization | 0.243*** (0.098) | 0.282*** (0.098) | 0.497*** (0.134) | 0.529*** (0.128) |
| In-house Capacity | | 0.049 (0.026) | | 0.047 (0.037) |
| Budget (ln) | | -0.047 (0.063) | | -0.038 (0.090) |
| Employees (ln) | | 0.074 (0.368) | | 0.218 (0.414) |
| Observations | 179,388 | 149,080 | 105,804 | 91,628 |
| R-squared | 0.072 | 0.079 | 0.081 | 0.077 |
| Study Type FE | YES | YES | YES | YES |
| Agency FE | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES |

Note: Two-tailed tests: *** p<0.001, ** p<0.01, * p<0.05. FE = fixed effect.

a: Models exclude all research awards less than \$1,000.

Table SI-3: Presidential Prioritization and Size of Research Contract Awards, Excluding Large Awards^a

| | (1) | (2) | (3) | (4) |
|---------------------|---------------------|---------------------|---------------------|---------------------|
| | All Contracts | All Contracts | New Contracts | New Contracts |
| Presidential Agenda | 0.202*** (0.085) | 0.231*** (0.094) | 0.199*** (0.083) | 0.237*** (0.097) |
| Politicization | 0.239 (0.134) | 0.230 (0.147) | 0.422*** (0.135) | 0.443*** (0.122) |
| In-house Capacity | | 0.062 (0.053) | | 0.065 (0.070) |
| Budget (ln) | | -0.010 (0.116) | | 0.032 (0.145) |
| Employees (ln) | | 0.507 (0.467) | | 0.784 (0.563) |
| Observations | 174,675 | 147,989 | 105,794 | 92,777 |
| R-squared | 0.071 | 0.076 | 0.107 | 0.111 |
| Study Type FE | YES | YES | YES | YES |
| Agency FE | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES |

Note: Two-tailed tests: *** p<0.001, ** p<0.01, * p<0.05. FE = fixed effect.

a: Models exclude all research awards greater than \$500,000.

Table SI-4: Presidential Prioritization and Size of Research Contract Awards, Excluding DOD^a

| | (1) | (2) | (3) | (4) |
|---------------------|---------------------|---------------------|---------------------|---------------------|
| | All Contracts | All Contracts | New Contracts | New Contracts |
| Presidential Agenda | 0.161*** (0.079) | 0.201*** (0.094) | 0.204*** (0.088) | 0.226*** (0.105) |
| Politicization | 0.254 (0.144) | 0.258 (0.155) | 0.492*** (0.128) | 0.514*** (0.120) |
| In-house Capacity | | 0.056 (0.042) | | 0.053 (0.060) |
| Budget (ln) | | 0.004 (0.105) | | 0.067 (0.143) |
| Employees (ln) | | 0.440 (0.500) | | 0.809 (0.567) |
| Observations | 173,617 | 142,541 | 101,113 | 86,583 |
| R-squared | 0.066 | 0.071 | 0.090 | 0.091 |
| Study Type FE | YES | YES | YES | YES |
| Agency FE | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES |

Note: Two-tailed tests: *** p<0.001, ** p<0.01, * p<0.05. FE = fixed effect.

a: Models exclude all research awards from the Department of Defense.

Table SI-5: Presidential Prioritization and Size of Research Contract Awards, with Administration Time Trends^a

| | (1) | (2) | (3) | (4) |
|---------------------|---------------------|---------------------|---------------------|---------------------|
| | All Contracts | All Contracts | New Contracts | New Contracts |
| Presidential Agenda | 0.326*** (0.122) | 0.360*** (0.120) | 0.358*** (0.102) | 0.394*** (0.125) |
| Politicization | 0.115 (0.129) | 0.108 (0.126) | 0.134 (0.130) | 0.123 (0.142) |
| In-house Capacity | | 0.085 (0.056) | | 0.105 (0.072) |
| Budget (ln) | | -0.118 (0.092) | | -0.082 (0.120) |
| Employees (ln) | | 0.473 (0.428) | | 0.602 (0.506) |
| Observations | 189,328 | 158,174 | 111,165 | 96,603 |
| R-squared | 0.075 | 0.085 | 0.092 | 0.094 |
| Study Type FE | YES | YES | YES | YES |
| Agency FE | YES | YES | YES | YES |
| Year FE | NO | NO | NO | NO |

Note: Two-tailed tests: *** p<0.001, ** p<0.01, * p<0.05. FE = fixed effect.

a: Includes secular time trends across administrations (i.e., accounting for administration's first year, second year, etc.). Notably, these controls soak up some of the variation in politicization, which differs by time in the administration, but the coefficients retain their magnitude and positive sign.

Table SI-6: Presidential Prioritization and Size of Research Contract Awards, by Presidential Administration

| | W. Bush | | Obama | | Trump | |
|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | All Contracts (1) | New Contracts (2) | All Contracts (3) | New Contracts (4) | All Contracts (5) | New Contracts (6) |
| Presidential Agenda | 0.332 (0.167) | 0.305*** (0.147) | 0.299 (0.149) | 0.313 (0.156) | 0.289*** (0.107) | 0.336*** (0.116) |
| Politicization | -0.123 (0.133) | 0.431 (0.302) | -0.095 (0.238) | -0.292 (0.345) | -0.200 (0.222) | -0.314 (0.262) |
| In-house Capacity | 0.030 (0.033) | -0.003 (0.035) | -0.092 (0.091) | -0.096 (0.093) | -0.195 (0.147) | 0.044 (0.249) |
| Budget (ln) | -0.030 (0.192) | 0.045 (0.195) | -0.069 (0.085) | 0.007 (0.101) | -0.062 (0.043) | -0.281*** (0.071) |
| Employees (ln) | -0.113 (0.672) | 0.392 (0.820) | 1.192*** (0.449) | 1.548*** (0.613) | 1.576*** (0.619) | 0.419 (0.828) |
| Observations | 71,763 | 44,186 | 72,152 | 44,131 | 13,170 | 7,700 |
| R-squared | 0.101 | 0.132 | 0.080 | 0.077 | 0.104 | 0.099 |
| Study Type FE | YES | YES | YES | YES | YES | YES |
| Agency FE | YES | YES | YES | YES | YES | YES |
| Year FE | YES | YES | YES | YES | YES | YES |

Note: Two-tailed tests: *** p<0.001, ** p<0.01, * p<0.05. FE = fixed effect.

Table SI-7: Presidential Particularism and Size of Research Contract Awards, FY01-FY18

| | (1) | (2) |
|-----------------------------|---------------------|---------------------|
| | All Contracts | New Contracts |
| Presidential Agenda | 0.335*** (0.115) | 0.340*** (0.110) |
| Politicization | 0.243 (0.148) | 0.528*** (0.138) |
| Core State | -0.125 (0.068) | -0.164 (0.085) |
| Core State X Election Year | -0.012 (0.056) | -0.047 (0.069) |
| Swing State | 0.014 (0.065) | -0.071 (0.063) |
| Swing State X Election Year | 0.016 (0.035) | 0.044 (0.053) |
| In-house Capacity | 0.068 (0.055) | 0.071 (0.074) |
| Budget (ln) | -0.045 (0.097) | 0.028 (0.132) |
| Employees (ln) | 0.645 (0.489) | 0.968 (0.537) |
| Observations | 153,196 | 92,825 |
| R-squared | 0.096 | 0.116 |
| Study Type FE | YES | YES |
| Agency FE | YES | YES |
| Year FE | YES | YES |

Note: Two-tailed tests: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. FE = fixed effect.

Table SI-8: Presidential Partisanship, Voter Preferences, and Size of Research Contract Awards, FY01-FY18

| | (1) | (2) |
|---|---------------|---------------|
| | All Contracts | New Contracts |
| Presidential Priority | 0.323*** | 0.321*** |
| | (0.121) | (0.117) |
| Politicization | 0.299 | 0.616*** |
| | (0.184) | (0.163) |
| Republican President | -0.080 | -0.139 |
| | (0.058) | (0.087) |
| State Republican Tendency | -0.223 | -0.294 |
| | (0.344) | (0.323) |
| Republican President × State Republican Tendency | -0.481 | -0.718*** |
| | (0.270) | (0.335) |
| Observations | 153,196 | 92,825 |
| R-squared | 0.096 | 0.116 |
| Controls | YES | YES |
| Study Type FE | YES | YES |
| Agency FE | YES | YES |
| Year FE | YES | YES |

Note: Two-tailed tests: *** p<0.001, ** p<0.01, * p<0.05. FE = fixed effect.

Dynes and Huber (2015) argue that it is important to account for voter preferences directly in accounts of presidential particularism. This table does so by including a measure of *State Republican Tendency*, a calculation of the proportion of the two-party vote share for the Republican presidential candidate in a state in each presidential election minus the average proportion of the Republican vote share across all states for that election.² Dynes and Huber (2015, 178) explain that “Measuring Republican performance relative to average performance in all districts accounts for partisan tides and differences in average candidate strength across elections.” The resulting measure ranges from -1 to 1, with higher values indicating a state that is more Republican leaning than its peers.

Following their approach, I interact *Republican Tendency* with *Republican President*. If presidents reward copartisan constituents, then this interaction should be associated with an increase the size of research awards. However, contrary to this expectation, the interaction is negative and in the case of new awards, the relationship is statistically significant. This provides another indication that research is not a forum for presidential pork barreling.

²Dynes and Huber (2015) implement a district level measure of *Republican Tendency*. The measure employed here is at the state level, however, since the FPDS data are not tagged at the district level.

Table SI-9: Congressional Pressure and Size of Research Contract Awards, FY01-FY18

| | (1) | (2) |
|---------------------|---------------------|---------------------|
| | All Contracts | New Contracts |
| Presidential Agenda | 0.300*** (0.118) | 0.334*** (0.127) |
| Politicization | 0.261 (0.151) | 0.502*** (0.124) |
| Hearings (ln) | 0.059 (0.044) | 0.002 (0.070) |
| Laws | -0.005 (0.004) | -0.003 (0.005) |
| Divided Govt | 0.009 (0.036) | 0.026 (0.045) |
| Observations | 151,760 | 93,071 |
| R-squared | 0.092 | 0.110 |
| Controls | YES | YES |
| Study Type FE | YES | YES |
| Agency FE | YES | YES |
| Year FE | YES | YES |

Note: Two-tailed tests: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.
FE = fixed effect.

Table SI-10: Deobligation of Research Funds by Presidential Administrations

| | (1) | (2) |
|--------------------|---------------------|----------------------|
| | Any \$ Rescinded | Proportion Rescinded |
| New Administration | 0.140*** (0.021) | 0.028*** (0.005) |
| Award Total (ln) | 0.005 (0.006) | -0.008*** (0.001) |
| Contract Length | 0.000*** (0.000) | 0.000*** (0.000) |
| In-house Capacity | 0.015 (0.010) | 0.004 (0.003) |
| Budget (ln) | 0.028 (0.024) | 0.011 (0.008) |
| Employees (ln) | -0.092 (0.079) | 0.001 (0.024) |
| Observations | 86,340 | 85,486 |
| R-squared | 0.220 | 0.042 |
| Study Type FE | YES | YES |
| Agency FE | YES | YES |
| Year FE | YES | YES |

Note: Two-tailed tests: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. FE = fixed effect.