

Federal employee unionization and presidential control of the bureaucracy: Estimating and explaining ideological change in executive agencies

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Abstract

We present a formal model explaining that US presidents strategically unionize federal employees to reduce bureaucratic turnover and ‘anchor’ the ideological composition of like-minded agency workforces. To test our model’s predictions, we advance a method of estimating bureaucratic ideology via the campaign contributions of federal employees; we then use these bureaucratic ideal point estimates in a comprehensive empirical test of our model. Consistent with our model’s predictions, our empirical tests find that federal employee unionization stifles agency turnover, suppresses ideological volatility when the president’s partisanship changes, and occurs more frequently in agencies ideologically proximate to the president.

Keywords

Bureaucracy; ideological measurement; bureaucratic ideal points; unionization; executive politics; public administration and management

The growth of public sector unions during the past half-century constitutes an important change in US politics (Moe, 2009, 2011; Riccucci, 2011). In addition to protecting the job security and benefits of bureaucratic employees (Frazier, 1985; Moe, 2006, 2011), public sector unions have influenced electoral outcomes (Anzia, 2011; Blais et al., 1997; Johnson and Libecap, 1994; Moe, 2006, 2011; Troy, 1994) and the policy outputs of the

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bureaucracy (e.g., Freeman and Ichniowski, 1988; Lewin et al., 1988; Moe, 2009, 2011). Furthermore, and perhaps most notably, the long-term growth of public sector unions has weakened politicians' control over bureaucratic agents (Moe, 2006, 2011).

A voluminous literature has argued that politicians structure the bureaucracy (Lewis, 2003; Moe, 1989) and write legislation (Epstein and O'Halloran, 1999; Huber and Shipan, 2002) in an effort to exert tighter control over the actions of bureaucrats. Unions, however, provide job protections that—by adding to the generous protections *already* provided by standard civil service procedures (Donahue, 2008; Frazier, 1985; Thompson, 2007)—shield bureaucrats from termination, disciplinary actions, and other adverse personnel decisions that facilitate political control of the bureaucracy (Moe, 2011).

Given that unions hinder control of the bureaucracy, politicians' support for unionizing public employees is puzzling. Why would politicians ever support unionization activities that weaken their control of public bureaucrats? This puzzle proves particularly vexing when researchers consider bureaucratic unionization in the US federal government. Legal precedent and historical anecdote indicate that presidents have provided the primary impetus for expanding federal employee unionization (Slater, 2004). While Congress has provided the statutory basis for federal employee unionization and the Courts have enforced those laws, both Democratic and Republican presidents have enlisted unilateral action to expand federal employee unions' rights and coverage (see Brenner et al., 2009; see Howell, 2003, on unilateral action more generally). This expansion of federal unionization rights is surprising. It is well established that each subsequent president has sought tighter political control over administrative agencies (e.g., Howell and Lewis, 2002; Moe, 1993; Nathan, 1975; Wood and Waterman, 1991); thus, one would expect chief executives to use their powers to impede bureaucratic unionization. Only on rare occasions, however, have presidents pursued such limits (see Thompson, 2007). That broad trend enriches the puzzle of federal employee unionization: why do presidents willingly permit and even support the continued unionization of some federal agencies, even though unionization weakens presidential control over bureaucratic personnel?

To resolve this puzzle, we argue that bureaucratic unionization serves the long-term ideological interests of sitting presidents by inhibiting future executives' control over the bureaucracy. This logic begins from the observation that unionization protects bureaucrats—*above and beyond standard civil service protections* (Donahue, 2008; Frazier, 1985; Thompson, 2007)—from job termination and disciplinary action. These additional job protections create an incentive for sitting presidents to accept weaker control over civil servant termination in the present so that they can prevent future presidential administrations from drastically altering the ideological composition of an agency's workforce. Unionization, in other words, 'anchors' the current ideological composition of a bureaucratic agency by protecting civil servants' jobs and reducing personnel turnover. This phenomenon compels presidents—via their control over the appointment and removal of Federal Labor Relations Authority (FLRA) board members—to accept unionization in agencies with employees sharing their ideology. In the following sections, we formalize this logic and present empirical evidence testing predictions of that formalization.

I. Previous studies of political control and bureaucratic insulation

At the heart of our study rests the challenge of political control: putatively, bureaucrats perform the function of implementing policy (Wilson, 1989), yet, in reality, bureaucrats often *make* policy. As seminal studies have noted, bureaucrats can implement policies that depart from politicians' wishes, thereby creating policy through noncompliance (Niskanen, 1975; Tullock, 1965). Also, as state activities have grown more complex, politicians have granted bureaucrats license over policy-making (Eskridge and Ferejohn, 1992; Moe, 1997). These opportunities for bureaucratic policy-making suggest that if politicians wish to see their preferred policies executed, they must devise ways to *control* public bureaucrats (cf. Fiorina 1985, which explains when politicians may not desire control).

Previous scholarship has studied the various control mechanisms utilized by officials across branches of government. For example, legislators employ oversight procedures (Aberbach, 1990; McCubbins and Schwartz, 1984; Weingast and Moran, 1983), legislative details (Epstein and O'Halloran, 1999; MacDonald, 2010; see Huber and Shipan, 2002, for a discussion outside the US context), and administrative procedures (McCubbins et al., 1987) to control public bureaucrats. Those measures seek bureaucratic compliance in the face of opposing presidential control measures (Moe, 1987), which involve the use of structure (Lewis, 2003; Moe, 1989) and staffing (Lewis, 2008) to ensure public servants abide by executive demands.

These competing attempts to exert control over the bureaucracy have compelled political actors to insulate agencies from interests seeking to hijack agencies' ideological directions (de Figueiredo, 2002; Lewis, 2003; Moe, 1989). This insulation strategy takes into account the fact that, for any politician, tenure in office remains uncertain and perhaps short-lived (Moe, 1989). Thus, while a responsive bureaucracy constitutes an attractive political weapon, it is a weapon that can be turned against the interests of its designers once they leave office (Moe, 1989). As a result, political actors seek to craft institutional structures that prevent future politicians from either using the bureaucracy to their advantage or dismantling the policy infrastructure previous officials designed (Moe, 1989).

Our formal model builds on this past work by proposing that the unionization of agency workforces can serve as an institutional design that insulates administrative agents from politicians' future control measures. As we detail in the next section, presidents possess and exercise significant unilateral authority over the unionization of federal employees due to their control of the FLRA (Cayer, 1996; Frazier, 1985). Unionization, in turn, protects employees from negative personnel actions, even beyond standard civil service protections (Donahue, 2008; Frazier, 1985; Thompson, 2007). This protection inhibits future politicians from using personnel actions to control the bureaucracy; thus, via the FLRA, presidents can 'anchor' the ideological composition of an agency's workforce and use unionization to inhibit control measures employed by future political actors.

2. Substantive bases for formal modeling assumptions

Our model illustrates how sitting chief executives use federal bureaucratic unionization to shape political control opportunities under future presidential administrations. Our model rests on four previously observed features of federal unions and bureaucratic management. In this section, we describe those features and their justification in the past literature.

2.1. Presidential influence over unionization

In our model, the president can influence the level of bureaucratic unionization. Scholars of public administration have noted that the US president serves as the ultimate arbiter of whether or not employees in each federal agency can form collective bargaining units (Thompson, 2007). The legal framework of US federal labor-management relations (Frazier, 1985) and the president's powers of unilateral action (Moe and Howell, 1999) form the basis of this presidential power.

The legal framework of US federal labor-management relations vests considerable power in the president. The president has the power not only to determine the legality and scope of collective bargaining for each federal agency, as established by Executive Order 10988, but also to decide which employees within each agency—even at low levels of the federal bureaucracy—are eligible for unionization (Thompson, 2007). Some recent well-known examples illustrate how presidents exercise their unilateral control over union formation. For instance, in 2002, George W Bush issued Executive Order 13252 to prohibit employees housed in certain bureaus of the Department of Justice—including US Attorneys' Offices and the Department's Criminal Division—from collective bargaining (Slater, 2004).

Presidential powers of unilateral action, which lean on the Constitution's vague definition of executive powers, also have allowed presidents to interpret federal labor-relations statutes broadly and creatively in their efforts to control federal employee unionization. A typical example occurred in 2002, when the Bush administration denied collective bargaining privileges to employees in the Social Security Administration. The administration justified its decision by citing a provision of the Federal Service Labor Management Relations Act §7112(b)(6) stipulating that federal workers can be denied inclusion in a collective bargaining unit due to national security concerns. Yet, as Slater (2004) notes, the employees who were denied union coverage performed work that did not even necessitate a security clearance. Such anecdotes highlight the president's broad latitude to determine whether non-union employees may form a collective bargaining unit.

In addition to this unilateral control through Executive Order, presidents also maintain control over federal unionization via the management of personnel in the FLRA. The FLRA bears responsibility for governing federal collective bargaining (Frazier, 1985). The president appoints, with Senate approval, the Chair of the FLRA, along with its members and General Counsel (Frazier, 1985). As well, presidents maintain the authority to remove members of the FLRA, given sufficient reason (Frazier, 1985). The FLRA, in turn, carries out a variety of judicial and administrative activities. Those activities range from determining an employee's collective bargaining eligibility to deciding on the negotiability of contractual issues to carrying out union representation elections. Thus,

control over FLRA personnel decisions offers an additional tool through which presidents can determine the level of unionization in a federal agency. Although Congress could intervene—via legislation—to inhibit presidential control over unionization, it does not appear to do so—perhaps due to collective action problems among its members, which have been known to bolster presidential power (Moe and Howell, 1999).

Our formal model incorporates presidential influence over unionization in the following way. In our model, an executive chooses the level of bureaucratic unionization, u , during the first period, and this choice remains permanent. Hence, the chief executive must balance the anticipated future benefits and drawbacks of unionization when strategically choosing u .

Some might argue that modeling the unionization of federal employees as a unilateral decision of the president ignores other factors that might influence unionization—such as the tasks carried out by federal employees or the capacity of unions to organize certain categories of federal employees.¹ While this concern is reasonable, it does not accord with empirical evidence concerning federal employee unionization. As the empirical evidence displayed later in our paper demonstrates, collective bargaining units reside within all agencies studied in our data and those units cover employees who perform diverse jobs not traditionally associated with unionization. For instance, roughly 24.5% of all Medical Officers (Office of Personnel Management (OPM) Occupational Code: 0602) in the federal government are unionized, as are approximately 41.6% of employees bearing the occupational title ‘Accounting’ (OPM Occupational Code: 0510). Computer engineers and other technical occupations also figure among the federal trades with a substantial proportion of unionized employees. This broad spread of unionization is made possible because federal employee unions, such as the National Federation of Federal Employees and the American Federation of Government Employees (AFGE), seek to represent federal employees regardless of agency or occupational affiliations. Indeed, the AFGE (2013) explicitly states on its website that it represents ‘[w]orkers in virtually all functions of government at every federal agency.’ Given the capacity of federal unions to organize employees across all agencies and occupations, as well as the apparent interest that employees across agencies and occupations show toward unionization, we feel confident modeling the unionization decision as determined by the president as opposed to occupational/agency attributes or federal union capacity.

2.2. Presidential control over standards of work quality

In our model, the executive controls bureaucratic quality by enforcing a minimum quality threshold that employees must meet in order to avoid being fired. This modeling feature captures past scholars’ observation that presidents can set quality standards that federal employees must satisfy in order to retain their posts, and presidents actively seek to retain and exercise this authority (Cayer, 1996).

To model this form of executive control over bureaucratic quality, we assume that the executive chooses a minimum level of bureaucratic quality, m . A bureaucrat’s individual quality is exogenously determined, and any bureaucrat whose quality falls below this threshold is automatically fired. Hence, in our model, federal employees can be fired only for reasons of work quality. The executive prefers high-quality employees, *ceteris paribus*, but, as will be evident in the model, a bureaucrat’s policy preferences affect the

executive's strategy as well. The executive is more motivated to retain a bureaucrat whose policy preferences closely resemble those of the executive. This feature of the model creates situations in which an executive has a political interest in protecting bureaucrats who are ideologically sympathetic, but the executive must trade-off bureaucratic quality—by setting a lower quality standard, m —in order to retain these ideologically like-minded bureaucrats.

2.3. Union protection of bureaucratic workers

In our model, unionization protects workers from being fired by the executive. This modeling feature reflects past scholars' observation that although federal unions lack the ability to directly bargain over wages and benefits (Cayer, 1996; Frazier, 1985), unions can strongly influence the job security of their members. Existing literature has focused on two ways that federal unions protect their members' job security. Firstly, unions negotiate collective bargaining agreements that typically create intricate grievance procedures to protect their members' interests in employment matters (Frazier, 1985). Such grievance procedures protect employees who face termination or other disciplinary action because of their poor job performance (Wills, 2006). Secondly, federal unions collectively bargain over the technologies that employees use to carry out work duties (Frazier, 1985). Such bargaining can shelter employees with outmoded skills, thus creating, as Donahue (2008) describes, a public sector refuge for workers with uncompetitive abilities.

An illustrative example is the role of union officials in protecting air traffic workers from being fired in 2007. A government investigation in 2007 revealed that federal air traffic controllers at Dallas-Fort Worth International Airport had committed serious, repeated errors that jeopardized travelers' safety (Associated Press, 2007). However, in this case, union officials protected the controllers from punishment by arguing that on-duty managers and a worker shortage caused the errors (Associated Press, 2007). As of 2011, continuing coverage of the incident indicated the controllers had not been fired (Associated Press, 2011).

Our formal model incorporates this protective role of unions in the following way. We assume that the executive's minimum standard for bureaucratic quality, m , cannot exceed $1-u$, where u is the level of unionization. Hence, a higher level of unionization imposes greater constraints on the executive's choice of m , thus hindering the executive's ability to fire workers for their poor quality.

2.4. The permanency of federal unionization

Once a presidential administration has overseen the creation of a new collective bargaining unit, thereby unionizing employees in that unit, subsequent presidents cannot unilaterally reverse this decision. Rather, a subsequent presidential administration can only influence the union status of newly created personnel groups and non-unionized workers. Barring highly extraordinary circumstances, existing bargaining units cannot be decertified by the president, and collective bargaining agreements cannot be violated. Given that the lifespan of most federal unions and many collective bargaining agreements exceeds the four years of a presidential term, most unionization decisions therefore have a binding effect upon subsequent presidential administrations.

An example of highly extraordinary circumstances warranting union decertification occurred in 1981. The Reagan administration was able to decertify the Professional Air Traffic Controllers Organization (PATCO) only after PATCO violated its labor agreement by pursuing an illegal workers' strike. Without such extraordinary cause, as Frazier (1985) explains, presidents cannot unilaterally decertify unions because federal employees can petition the courts if they believe labor-relations statutes have been violated. If a court rules in favor of the employees, then the President must restore the employees' collective bargaining rights. Thus, the legal environment of federal labor relations is an exception to the usual practice of presidential power in which a president may benefit from acting illegally in order to secure an immediate gain, even if the courts subsequently reverse such actions (Howell, 2003). In the legal environment of federal unionization, a president would not benefit from illegally decertifying a union, as the court could retroactively restore employees' collective bargaining rights and essentially undo any short-term advantage to union-busting activity. Presidential attempts to decertify existing federal unions without cause are thus exceedingly rare.

Our formal model incorporates the binding effect of unionization on subsequent presidential administrations in the following way. In our model, the first-period president's choice of unionization level, u , constrains the second-period president's choice of m , the minimum standard of bureaucrat quality; as explained earlier, we assume that m cannot exceed $1-u$. Hence, the first-period president can use unionization policy to limit a future president's ability to control and alter the bureaucracy. This modeling feature drives our model's main result that a president may strategically unionize a bureaucratic agency in order to constrain future presidents from drastically altering the ideological composition of that agency.

3. A formal model of bureaucratic unionization

3.1. Players and ideal points

There are two executives who each hold office for one period: Executive L has an ideal point of $x_L = 0$, and executive R has an ideal point of $x_R = 1$. Without loss of generality, we assume that the left-wing executive, L , holds office during period 1, while the right-wing executive, R , holds office in period 2.

There are two employees, denoted as A and B . In period 1, employee A works as the bureaucrat in office. Employee B replaces employee A as the bureaucrat if either A voluntarily exits after period 1, or A is fired due to incompetence. Employee A 's ideal point is $x_A \in [0, 1]$, and this ideal point is publicly known by all players. Employee B 's ideal point is randomly chosen by Nature from the distribution $x_B \sim U[0, 1]$. In addition, the quality of each employee is randomly and independently drawn by Nature from the distribution $q_A, q_B \sim U[0, 1]$.

3.2. Strategies

In period 1, executive L holds office and chooses the level of union protection, $u \in [0, 1]$. In period 2, executive R takes office and chooses the minimum acceptable level of bureaucratic quality, $m \in [0, (1-u)]$. If employee A 's quality, q_A , falls below this minimum

threshold, m , then A is automatically fired, and employee B becomes the bureaucrat for period 2. Hence, a higher level of union protection effectively hinders the executive from firing low-quality bureaucrats.

Employee A makes a strategic choice as well. After period 1, A chooses whether to *stay* or *exit* the bureaucratic workforce. If A exits, then B automatically becomes the period 2 bureaucrat, and R 's choice of m becomes moot.

3.3. Utility functions

For either of the executives, $e \in \{L, R\}$, executive e 's utility payoff is

$$U_e = q_i - |x_i - x_e|,$$

where $i \in \{A, B\}$ denotes the employee who holds office in period 2, and q_i denotes i 's quality. Informally, this utility function states that the executive's payoff consists of the bureaucrat's quality, minus the distance of the bureaucrat's ideal point from the executive's ideal point. Hence, the executive prefers a bureaucrat whose ideal point is closer to her own.

Employee A 's payoff depends upon his employment status during period 2. If A *exits* the bureaucratic workforce, then he earns a private wage of $w \in (0, 1)$, which is exogenously determined. If A *stays* to serve as the bureaucrat during period 2, he receives a payoff of 1. However, if A stays and is subsequently fired for low quality, then he receives a payoff of zero. Formally, then, A 's utility function is

$$U_A = \left\{ \begin{array}{ll} w, & \text{if } A \text{ exits;} \\ 0, & \text{otherwise.} \end{array} \right\} + \left\{ \begin{array}{ll} 1, & \text{if } A \text{ stays and } q_A \geq m; \\ 0, & \text{otherwise.} \end{array} \right\}.$$

Hence, by staying in the bureaucratic workforce, A risks being fired by executive R , but this risk can be reduced by union protection.

3.4. Sequence of play

Formally, the sequence of play is as follows.

1. Nature determines A 's quality, $q_A \sim U[0, 1]$, which is privately revealed to A .
2. L chooses the level of union protection, $u \in [0, 1]$.
3. Employee A chooses whether to *exit* or *stay* in the bureaucracy.
4. R chooses the minimum acceptable bureaucratic quality, $m \in [0, (1 - u)]$.
5. If A stays and $q_A < m$, then A is fired and is replaced by employee B . Nature determines B 's ideal point and quality from the distribution $x_B, q_B \sim U[0, 1]$.

3.5. Results

This section presents the players' strategies in Subgame Perfect Nash Equilibrium (SPNE) in *Lemmas A–C*. Propositions 1–3 then use these SPNE results to derive three testable comparative static predictions. We describe each of these results in informal

terms and discuss the underlying theoretical intuition behind the comparative statics. Formal proofs appear in the Appendix.

Lemma A: R 's equilibrium choice of m is $m^* = \min \{(1 - x_A), (1 - u)\}$.

Lemma A states that the second-period executive, R , exhibits political bias when choosing m , the minimum acceptable level of bureaucratic quality. Specifically, executive R demands a lower standard of quality when the current bureaucrat, A , is ideologically closer to her. However, this choice of m is constrained by the first-period executive L 's choice of unionization policy, u .

The intuition behind Lemma A is as follows. Executive R exhibits political bias when choosing m because executive R prefers to retain a right-wing bureaucrat, even if doing so requires sacrificing bureaucratic quality. However, executive R is willing to retain a left-wing bureaucrat only if this bureaucrat's quality is exceptionally high, thus compensating for his ideological opposition to the executive. Consequently, executive R chooses the quality threshold m with this political bias in mind.

Lemma B: A chooses to exit the bureaucracy if and only if $q_A < \min \{(1 - x_A), (1 - u)\}$ and stays otherwise.

Lemma B states that bureaucrat A chooses to voluntarily leave the bureaucratic workforce and take private employment if his quality, q_A , is too low. Note that bureaucrat A has perfect information about his own quality and makes his employment decision accordingly. The intuition behind this *Lemma B* result is straightforward: The bureaucrat anticipates executive R 's choice of m in period 2 and can thereby anticipate whether he will be fired for poor quality. If bureaucrat A anticipates being fired in period 2, then he preemptively chooses to *exit* in order to take the private wage, w . Hence, actual firings never occur on the equilibrium path, but the threat of potentially being fired induces voluntary *exit* by the bureaucrat.

Proposition 1 (bureaucrat turnover): the probability that bureaucrat A exits is weakly decreasing along the level of unionization, u .

Proposition 1 states that employee turnover is less likely to occur when the level of union protection is higher. That is, the first-period bureaucrat is more likely to *stay* if the bureaucracy is highly unionized. The intuition behind this result is that unionization constrains the period 2 executive's ability to fire the bureaucrat for poor quality. With this increased job security, the bureaucrat thus finds remaining in the bureaucratic workforce to be a more attractive option; hence, the bureaucrat is less likely to voluntarily *exit*. Therefore, this *Proposition 1* result directly follows from our formal model's setup, whereby unionization directly limits the ability of the employer to terminate low-quality workers in the future.

Lemma C: L 's choice of unionization policy, u , is

$$u^* = \begin{cases} 1 - x_A, & \text{if } x_A < 1/2; \\ 0, & \text{if } x_A \geq 1/2. \end{cases}$$

Proposition 2 (unionization): in equilibrium, the level of unionization, u^* , is weakly decreasing along x_A , the ideological distance between bureaucrat A and executive L .

Lemma C and *Proposition 2* state that the executive chooses more union protection when the period 1 bureaucrat is ideologically closer to her; she chooses less unionization when the bureaucrat is ideologically further away. Hence, *Proposition 2* predicts that the executive will exhibit a political bias when choosing the unionization level of bureaucrats. Specifically, unionization is targeted to bureaucrats who are more ideologically proximate to the executive.

The intuition behind the *Proposition 2* result is as follows. Unionization reduces bureaucratic turnover (*Proposition 1*), and the executive prefers to reduce the turnover of bureaucrats who share her ideology. The executive has preferences over policy outcomes in future periods when she will no longer be in office, and manipulating the future personnel composition of the bureaucracy allows her to influence these future policy outcomes. Hence, the executive uses her control over unionization to discourage the turnover of ideologically proximate bureaucrats while increasing the turnover of ideologically opposed bureaucrats. This result explains why executives may have a political incentive to unionize some bureaucrats, even if unionization inefficiently protects low-quality employees.

Proposition 3 (change in bureaucratic ideal point): if bureaucrat A is left-leaning ($x_A < 0.5$), then the expected change in the bureaucrat's ideal point from period 1 to period 2 is weakly decreasing along unionization level, u .

Proposition 3 states that unionization reduces the likelihood that a left-wing bureaucrat is replaced by a right-wing bureaucrat in period 2. Hence, unionization brings about ideological stability in the bureaucracy by reducing the expected change in bureaucratic ideology from period 1 to period 2. For this reason, the left-leaning first-period executive, L , uses unionization to strategically retain left-wing bureaucratic personnel under the future executive's term.

The driving intuition behind the *Proposition 3* result is as follows. A left-wing bureaucrat with high union protection is unlikely to exit the public workforce; hence, he is very unlikely to be replaced by a right-wing bureaucrat. By contrast, a left-wing bureaucrat with lower union protection is more likely to exit and therefore be replaced by bureaucrat B during period 2; there is some chance that this replacement bureaucrat, B , is right-wing, so the expected change in bureaucratic ideal point between period 1 and period 2 is higher when union protection is low.

Note that this comparative static result in *Proposition 3* does not apply when the first-period bureaucrat, A , is right-wing ($x_A > 0.5$). The first-period executive, L , always chooses a policy of no unionization when bureaucrat A is ideologically opposed, as demonstrated in *Proposition 1*. Hence, the use of unionization as an ideologically stabilizing instrument of bureaucratic control applies only for a left-wing bureaucrat who is ideologically aligned with the left-wing executive.

4. Empirical tests of model results

Our formal model offers three testable predictions. We evaluate those predictions in this section using federal employee personnel data, as well as ideological measures of presidential and bureaucratic ideology. The data we use in our paper derives from two sources: the Central Personnel Data File (CPDF), which was constructed by the OPM, and the Database on Ideology, Money in Politics, and Elections (Bonica, 2013). The former data set provides information about the unionization of federal employees, as well as other variables relevant to understanding employee and workplace characteristics in the federal government. The latter data set provides information that we use to estimate the political ideology of bureaucrats working in the US federal government. By combining the federal personnel data with our ideological estimates, we can test each of the three propositions put forward in our formal model.

4.1. Data: federal personnel records

We secured our copy of the CPDF via a Freedom of Information Act request to the OPM. The CPDF contains information about all executive branch employees who entered federal service between 1974 and 2007. This information includes employees' agencies of employment, occupations, pay plans, and collective bargaining unit affiliations for all years of the data file. Unique features of our study, however, compel us to focus our analysis on a subset of the complete CPDF.

Firstly, our study's focus on the turnover of bureaucratic personnel necessitates subsetting the CPDF. The CPDF does not possess a variable indicating when an employee leaves her agency or exits the federal workforce, thus we infer agency turnover. To infer agency turnover, we identify either (1) when an employee's four-digit OPM agency code changed in year $t + 1$ from its prior code in year t , or (2) when an employee present in the data set in year t no longer appears in the data set in year $t + 1$. When one of these events occurs, we denote an employee as having exited her present agency. Due to these procedures, we cannot include data from 2007 in our analysis because inferring whether an employee leaves an agency or the federal workforce in year t requires the availability of data in year $t + 1$. Thus, the final year of data used in our analysis is 2006.

We further truncate the CPDF to accommodate the agency ideal points included in our analysis. We provide further details about our agency ideal point estimation procedures in the next section of this article, but, presently, we find it necessary to note that the data used in our estimation procedures limit our ability to compute reliable ideal point estimates prior to the Clinton Administration. As a result, we limit the years of the CPDF studied in our analysis to those in which we have available ideal points. Thus, the first year of data from the CPDF studied in the present investigation is 1993. Furthermore, we limit our analysis solely to employees housed in agencies for which we can compute reliable ideal point estimates. Those agencies are listed in Section A2 of the online Appendix.

Finally, we focus solely on employees paid under the General Schedule (GS). Focusing on GS employees ensures that we do not include hourly, blue collar workers, paid under the Federal Wage System, in our analysis. Given that those employees do not perform tasks that shape policy, we view their ideological leanings as outside the scope of

the president's strategic considerations—at least as those considerations are captured in our formal model.

By trimming the CPDF in the above manners, we produce a final data set consisting of $N = 11,531,930$ employee-year observations. We use that data set to test our formal model propositions and gain insight into how presidents use unionization to shape the ideological orientation of the public bureaucracy.

4.2. Data: bureaucratic ideal point estimates

To evaluate our model's predictions about the effect of unionization on the ideology of the public bureaucracy, our empirical analysis requires a measure of bureaucratic political ideology. Until recently, and despite their prominent position in theories of bureaucratic politics, quantitative estimates of bureaucratic political ideology have remained elusive. Recent efforts have improved the estimation of bureaucrat ideology, however (Bertelli and Gross 2007, 2009, 2011; Clinton and Lewis, 2008; Clinton et al., 2012; Nixon, 2004; Snyder and Weingast, 2000). We draw insights from those past efforts to advance a method of estimating bureaucratic ideal points from public employee campaign contributions. This method was originally put forward by Chen (2010) and we elaborate upon it here.

We use federal bureaucrats' campaign contributions to specific politicians as a means of estimating agency ideology. Specifically, we estimate an agency's Common Space score during each session of Congress using the method developed by McCarty et al. (2006). Firstly, we identify all individuals who: (1) contributed at least US\$200 to an incumbent, elected, federal office-holder or to the office-holder's PAC (Political Action Committee); and (2) self-identify as an employee of a US federal agency. Next, we identify the Common Space score during the current session of Congress for each office-holder who received such campaign contributions from agency employees. Finally, for each individual agency, we calculate the mean Common Space score of the incumbent politicians who received contributions from the agency's employees, weighted by the dollar amount of each contribution. Thus, larger contributions, which are more likely to come from higher-paid, upper-level bureaucrats, are weighted more heavily.

This method rests on two assumptions. Firstly, we assume that a campaign contribution to a specific politician represents a sincere expression of a bureaucrat's political preferences, rather than a strategic calculation that conflicts with the bureaucrat's sincere political attitudes (see Ansolabehere et al., 2003; cf. Gordon et al., 2007). This assumption is empirically supported by Gimpel et al. (2008), who find evidence that out-of-district campaign contributions are targeted to candidates who share the policy preferences of the contributor. Similarly, the findings of Fuchs et al. (2000) and Mutz (1995) suggest that individuals make contributions to candidates whom they wish to see elected.

Secondly, given that the size of a campaign contribution varies widely and correlates with the donor's income, we also assume that contributions from upper-level bureaucrats, who wield more influence on agency policy, are typically larger than contributions from rank-and-file agency employees. This assumption is supported by Ansolabehere et al. (2003), who report that various measures of income correlate strongly with political contributions. Our use of this assumption implies that our agency ideal point estimates

are more heavily weighted toward upper-level bureaucrats, who typically wield more influence on policy within agencies.

Given these assumptions, the use of campaign contributions to estimate bureaucratic ideology has two advantages. Firstly, many contributions are given to politicians who already hold an elected federal office and therefore have a Common Space DW-NOMINATE score. Hence, under the assumption that a contribution generally represents a sincere political endorsement of a candidate, we can recover estimated ideological affinities from contributors' behavior. Secondly, as bureaucrats are generally free to make contributions based upon their personal political preferences, estimates of agency ideal points using contributions are less likely to reflect strategic institutional position-taking or other calculated behavior by the agency.

Table A2 in the Online Appendix displays our ideal point estimates for all agencies included in the data. The estimates range from -1 (most liberal) to $+1$ (most conservative). As evident in the table, agencies popularly perceived to be liberal, such as the Equal Employment Opportunity Commission and the National Science Foundation, have consistently left-wing ideal points across all presidential terms. Other, more politicized agencies, such as the Department of Justice, the Small Business Administration, and the Department of Labor, exhibit ideological volatility across presidential administrations.

Such patterns reveal that not all agencies exhibit the same uniform swings during presidential transitions. Some agencies maintain a relatively stable ideology across time, while others exhibit more ideological volatility, shifting in line with the partisanship of the president. Our formal model proposes that this ideological volatility is tempered by unionization. In the next section, we explain the methods used to test that proposition.

4.3. Methods

The personnel data and ideological measures described in the previous two sections allow us to test the three propositions derived from our formal model. Proposition 1 of our formal model predicts that unionized bureaucrats are less likely to leave the public workforce. Proposition 2 predicts that, in equilibrium, presidents more willingly support unionization in ideologically proximate agencies. Finally, Proposition 3 states that, during presidential transitions, unionized agencies are less ideologically volatile than non-unionized agencies.

To empirically examine Proposition 1, we analyze the effect of unionization on agency turnover. We measure agency turnover at the individual level, constructing a binary indicator that takes a value of unity whenever an employee exits the agency in which she is currently employed. Note that this binary indicator takes a value of one when an employee either (1) leaves her current agency to work in a different agency or (2) ceases employment in the federal government. Over the time period studied, 1,339,117 agency exits occurred out of the 11,551,816 opportunities in which employees could exit their agency. The highest percent of agency exits occurred in 1994 with roughly 23.9% of employees exiting their current agency; the fewest percent of exits occurred in 2002, when only about 8% of employees exited their agency.

We model an employee's exit from her incumbent agency via logistic regression. Firstly, we specify a parsimonious model that regresses an employee's turnover onto a

binary indicator denoting her union membership.² The rate of unionization among federal employees studied in this paper hovers above 50% (see online Appendix Table A3). That rate has declined from 58% in 1993 to 54% in 2006, however. Despite that decline, unionization is spread throughout agencies and occupations; of the 74 agencies studied in our data, only three maintained workforces, in 2006, in which less than half of all employees were covered by a collective bargaining agreement (see online Appendix Table A4). These unionized employees, furthermore, were spread across all occupational categories (see online Appendix Table A5).

After estimating a basic model that regresses agency turnover on an employee's membership in a collective bargaining unit, we then add covariates to gauge estimate robustness. Specifically, we model agency exit as a function of an employee's union status, occupational category, years of federal employment, and log inflation adjusted pay, as well as indicators of the agency in which an employee works.

To empirically examine Proposition 2, we merge our personnel records with our agency ideal point estimates and model the unionization of federal employees. The dependent variable in the analysis is a binary indicator signaling whether or not an employee is covered by a collective bargaining unit. We model unionization as a function of both an agency's absolute ideological distance from the president's ideal point and agency indicators. Inclusion of the agency indicators controls for all static, unobservable features of the agencies under study. Thus, given that agency ideology varies with time, the inclusion of agency indicators ensures that patterns of unionization across agencies do not confound our efforts to isolate the effect of agency ideology on unionization.

Our final set of empirical analyses test Proposition 3 of our formal model. Proposition 3 predicts that heavily unionized agencies are less susceptible to ideal point changes during presidential transitions. To test Proposition 3, we again utilize the agency ideal point estimates derived from bureaucratic campaign contributions. The dependent variable in our analysis is the absolute change in an agency's ideal point from time period T to time period $T + 1$, with each time period representing a four-year term of a presidential administration. The independent variable is the proportion of unionized employees in an agency at time t , which is the year prior to the inauguration of the new presidential term occurring at $T + 1$.

As an example, we estimate the following model to examine the effect of unionization on agency ideal point changes between the second term of the Clinton Administration and the first term of the George W Bush administration. This model regresses the absolute change in an agency's ideal point on the proportion of unionized employees in the year 2000—that is, the year prior to the presidential transition. In that analysis, we expect to see the absolute change in an agency's ideal point decline with the proportion of employees unionized in the agency. On the other hand, we would not expect to see a significant effect of unionization on absolute ideological changes between the first and second terms of the Clinton and Bush presidencies, respectively. Thus, we also perform this placebo test to further test Proposition 3.

4.4. Results

In this section, we report the results of the empirical methods described in the previous section. Those results offer broad support for the propositions derived from our formal model.

In Table 1, we report estimates from logistic regression models designed to test Proposition 1, which posits that unionization will stifle agency exit. Model 1.1, in Table 1, evaluates the unconditional association between unionization and agency turnover. The coefficient associated with the unionization indicator takes a significant, negative value implying an odds ratio of 0.897 (95% C.I. = [0.894, 0.900]). Adding covariates in the model, as done in Model 1.2, increases the absolute magnitude of the coefficient associated with the unionization variable and decreases the odds ratio of the union variable to 0.827 (95% C.I. = [0.824, 0.830]), suggesting that unionized employees have roughly 83% of the odds of exiting their agency as do non-unionized employees. These findings coincide with Proposition 1, which also gains further support from Model 1.3 of Table 1. Model 1.3 adds agency indicators to eliminate confounding factors, which relate to a federal bureaucrat's agency of employment and which might bias the association between unionization and agency exit. The addition of agency indicators further increases the magnitude of the logistic regression coefficient and reduces the odds ratio to 0.752 (95% C.I. = [0.749, 0.755]), which suggests that unionized employees have three-fourths the odds of exiting their agency than do non-unionized employees. In sum, our empirical tests of Proposition 1 lend support for our formal model.

To test Proposition 2, we examine the relationship between (1) the absolute distance between an agency's ideology and the ideology of the president and (2) unionization. To ensure that the estimated effect of time-varying agency ideology is not confounded by static features of an agency associated with unionization—for instance, an agency's mission and tasks—we condition the measure of ideological distance on agency indicators. Results from a logistic regression model estimated on pooled data provide evidence of a negative relationship between ideological distance and unionization: the log odds of unionization decrease as an employee's agency grows more ideologically distant from the president (see Model 2.1, Table 2). Because the George W Bush presidency took stances against employee unionization in the Department of Homeland Security (Thompson, 2007), we add an indicator variable to control for the effects of the GW Bush presidency on unionization; the results of this amended model, which are reported as Model 2.2 of Table 2, show that the log odds of unionization declined slightly during the GW Bush years, but this effect did not diminish the negative relationship between ideological distance and unionization. In fact, when estimating models separately on data collected during the Clinton and Bush presidencies, the analysis finds markedly similar coefficient estimates for the ideological distance measure: under both presidents ideological distance has roughly the same, negative effect on unionization (see Models 2.3 and 2.4 of Table 2). These findings are consistent with the prediction encapsulated in Proposition 2.

The final proposition studied in our analysis maintains that unionization, by protecting agency employees from dismissal, stabilizes an agency's workforce thus anchoring the agency's ideology during presidential transitions. To test this proposition, we estimate three ordinary least squares (OLS) regression models in which absolute changes in agencies' ideologies, from one presidential term to the next, are regressed on the proportion of unionized employees in those agencies prior to the transition of presidential terms.

Firstly, we calculate the change in ideal points, across agencies, following the transition from Clinton's first (1993–1996) to second (1997–2000) term. We then regress these ideal point changes onto agencies' unionization rates during 1996, the year immediately

Table 1. Test of Proposition 1: unionization and agency exit.

	Dependent variable: agency exit 1 = left agency, 0 = remains in agency		
	Model 1.1	Model 1.2	Model 1.3
Unionized	-0.11* (0.002)	-0.19* (0.002)	-0.29* (0.002)
Unidentified occupation	—	-0.53* (0.08)	-0.75* (0.08)
Administrative occupation	—	0.07* (0.003)	-0.03* (0.003)
Clerical occupation	—	0.29* (0.003)	0.26* (0.003)
Other white collar occupation	—	0.03* (0.005)	0.015* (0.003)
Professional occupation	—	-0.29* (0.003)	-0.15* (0.003)
Years in federal government	—	-0.02* (0.0001)	-0.02* (0.0001)
Log (inflation adjusted basic pay)	—	-0.22* (0.003)	-0.37* (0.003)
Intercept	-1.97* (0.001)	0.80* (0.03)	2.29* (0.03)
Agency indicators	No	No	Yes
AIC (intercept only)	8,266,377.3	8,266,377.3	8,266,377.3
AIC (intercept & covariates)	8,262,911.2	8,142,993.3	7,876,790.0
N	11,531,229	11,531,229	11,531,229

Note: Logistic regression coefficients are the top-most value in each cell. Standard errors are listed in parentheses. Estimates are rounded. Model 1.3 employs agency indicators. Due to the large number of parameter estimates associated with those indicators, we refrain from displaying them here. * $p < 0.01$ (two-tailed).

AIC is an acronym for Akaike Information Criterion.

prior to the presidential transition. We expect this placebo test to produce a null finding, as the president's partisanship did not change from Clinton's first to second term. As Model 3.1 of Table 3 indicates, no significant relationship exists between unionization rates and the absolute change in agencies' ideal points from the first to second Clinton terms.

Model 3.2 of Table 3, however, tests Proposition 3 during the transition from Clinton's second term to George W Bush's first term—a period in which we would expect unionization to affect the volatility of agency ideal points. Estimates from Model 3.2 indicate that, during this transition from Clinton to Bush, a significant association exists between the percent of unionized employees in an agency's workforce and the absolute change in agency ideal points during the transition. Furthermore, this association is negative, thereby indicating that more heavily unionized workforces experienced less ideological change during the transition, as predicted by Proposition 3.

Finally, Model 3.3 of Table 3 presents a second placebo test that examines whether rates of agency unionization in 2004 predicted agency ideal point changes during the

Table 2. Test of Proposition 2: ideological proximity and unionization.

	<i>Dependent variable: employee is included in a collective bargaining unit (CBU) = 1, employee not included in CBU = 0</i>			
	Clinton and Bush administrations (pooled data)	Clinton and Bush administrations (pooled data)	Clinton administration (1993–2000)	Bush administration (2001–2007)
	Model 2.1	Model 2.2	Model 2.3	Model 2.4
Absolute distance between agency's ideal point and president's NOMINATE score	–0.11* (0.004)	–0.08* (0.008)	–0.37* (0.02)	–0.34* (0.01)
Bush administration (indicator variable)	—	–0.01* (0.003)	—	—
Intercept	1.17* (0.002)	1.15* (0.003)	1.18* (0.006)	1.43* (0.009)
Agency indicators	Yes	Yes	Yes	Yes
AIC (intercept only)	15,778,873	15,778,873	8,750,222.0	7,027,630.3
AIC (int. & covariates)	14,127,960	14,127,935	7,873,674.7	6,219,558.9
N	11,506,726	11,506,726	6,391,023	5,115,703

Note: The table reports estimated logistic regression coefficients as the top-most value in each cell. Standard errors appear in parentheses. Estimates are rounded. Some agency ideal points are missing (less than 0.2% of the sample) because of a dearth of campaign contributions from employees in those agencies; as a result, the sample sizes reported in the pooled models, in this table, are less than those in Table 1. All models employ agency indicators. Due to the large number of parameter estimates associated with those indicators, we refrain from displaying those parameter estimates here. * $p < 0.01$ (two-tailed). AIC is an acronym for Akaike Information Criterion.

Table 3. Test of Proposition 3: unionization and ideological stability during presidential transitions.

	Model 3.1: Placebo Test I	Model 3.2: Focal Test	Model 3.3: Placebo Test II
<i>Dependent variable:</i>	Absolute change in an agency's ideal point from Clinton 1st term to Clinton 2nd term	Absolute change in an agency's ideal point from Clinton 2nd term to Bush 1st term	Absolute Change in an Agency's Ideal Point from Bush 1st term to Bush 2nd term
Proportion of agency workforce unionized	-1.23 (0.85)	-1.84* (0.60)	0.67 (0.71)
Constant	0.81 (0.48)	1.18*(0.33)	-0.18 (0.38)
R-squared	0.05	0.18	0.02
N	42	43	46

Note: Each column of the table presents estimates from an ordinary least squares regression model. Coefficient estimates are presented without parentheses and standard errors appear in parentheses. The models regress the absolute change in an agency's ideal point—from one presidential term to the next—on the proportion of the agency's workforce in the year prior to the new presidential term (i.e., 1996, 2000, and 2004). The varying size of the sample across models results from missing agency ideal point estimates; some agencies lack ideal point estimates because of a lack of employee contributions. Values are rounded. * $p < 0.01$ (two-tailed).

transition from George W Bush's first to second terms. Once again, Proposition 3 predicts no significant relationship between ideal point change and unionization in this test. Indeed, that null relationship is evident in Model 3.3; the coefficient associated with agency unionization rates in 2004 is small and is associated with a large standard error. According to the results of the models in Table 3, agency unionization only influences the magnitude of absolute ideal point changes during the transition from Clinton to Bush. This pattern is consistent with the Proposition 3 prediction that unionization 'anchors' an agency's current ideological composition, thus making it harder for future presidents to alter the ideology of bureaucratic agents in the pursuit of political control.

5. Discussion

In this paper, we have presented a model that explains the president's openness to unionization as resulting from a strategic, forward-looking decision. The model posits that sitting presidents, at the cost of present-day administrative flexibility, use unionization to insulate like-minded agencies from future presidents' efforts to alter those agencies' ideological compositions. Unionization serves this strategic role because it reduces bureaucratic turnover, thus essentially 'anchoring' the current ideological preferences of unionized bureaucrats. Hence, a president will accept unionization in agencies that presently exhibit an ideological make-up similar to his or her own ideology.

Our empirical analyses corroborate these predictions. Firstly, we show that unionization indeed reduces bureaucratic turnover, both at the individual level and at the aggregated agency level, which provides evidence for the central mechanism of our theory. Secondly, we find that unionization occurs more frequently in agencies whose political ideology more closely resembles that of the president. This evidence is consistent with our model's logic that presidents strategically support unionizing employees whom they want to see remain in the bureaucracy. Thirdly, we show that more heavily unionized federal workforces remain more ideologically stable than less unionized workforces during presidential transitions. By contrast, less unionized workforces are more vulnerable to personnel turnover and thus to more dramatic ideological shifts when a new president comes to office. Those findings support our theory's predictions.

Despite the empirical support provided for our model in this paper, future research will need to gauge the robustness of this study's results. For instance, it could be that unionized positions have few private sector analogues and, thus, are not easy for their incumbents to exit.³ Such a relationship would induce a correlation between unionization and ideological stability, but not for the reasons identified in this manuscript. As a result, future research will need to rule out such possibilities.

For now, however, the present paper contributes insight into the puzzle of federal employee unionization. The paper also reinforces studies of the institutional presidency suggesting that executives seek to control bureaucratic activities not just in the short term, but in the long term as well (Howell, 2003; Moe, 1993). Past research has illuminated how presidents manage personnel so as to secure bureaucratic compliance in the near term. For instance, presidents control bureaucratic policy through their political appointments to agency positions (Berry and Gersen, 2011; Lewis, 2003, 2008). Appointees provide an immediate and direct tool for the president to manipulate the ideological direction of agencies for the duration of the *present* administration's term. However, the president

also has ideological preferences over bureaucratic politics in the *future*, when he or she will no longer be in the White House and thus cannot control political appointments. Our manuscript thus complements and extends the past research of Lewis (2003, 2008) and Berry and Gersen (2011) by identifying another mechanism through which presidents exercise indirect but *long-term* influence over the ideological composition of agencies.

Agency politicization is not the only consequence of such strategic unionization. As Gailmard and Patty (2007) argue, increased job security encourages bureaucrats to invest in greater policy expertise and this expertise may induce future legislatures to grant more policy discretion to such bureaucrats. Hence, strategic unionization of an agency possibly affects not just the future direction of the agency's politics, but also the expertise of its bureaucrats, thus altering a future legislature's options for bureaucratic delegation (e.g., Epstein and O'Halloran, 1999; Huber and Shipan, 2002). Future presidential administrations are also potentially affected, as presidents must expend more effort to monitor and control the regulatory actions of ideologically deviant agencies (e.g., Acs and Cameron 2011). These potential effects of strategic unionization remain fruitful lines of inquiry for future research.

Appendix: formal model proofs

Proof of Lemma A: R chooses m without knowing q_A , the quality of employee A . Instead, R only knows that q_A has been drawn from the uniform distribution $q_A \sim U[0, 1]$. If $q_A \geq m$, then A remains the bureaucratic employee, and R 's payoff is $U_R = q_A - |x_A - 1|$. However, if $q_A < m$, then A is fired, B becomes the bureaucrat, and R 's payoff is $U_R = q_B - |x_B - 1|$, where x_B and q_B are each chosen by Nature from the distribution $U[0, 1]$. Hence, in choosing m , R optimizes as follows:

$$\arg \max_{m \in [0,1]} \int_m^1 (q_A - 1 + x_A) \cdot dq_A + \int_0^m \left[\int_0^1 q_B \cdot dq_B - 1 + \int_0^1 x_B \cdot dx_B \right] \cdot dq_A$$

$$s.t. : m \leq 1 - u,$$

where the constraint, $m \leq 1 - u$, represents the limitation imposed by L 's unionization policy. The optimization solution is $m^* = \begin{cases} 1 - x_A, & \text{if } x_A \geq u; \\ 1 - u, & \text{otherwise.} \end{cases} = \min\{(1 - x_A), (1 - u)\}$.

Proof of Lemma B: if he *stays*, then A receives a payoff of 1 if $q_A \geq m$, and 0 otherwise. If he *exits*, then A 's payoff is $w \in (0, 1)$. Hence, A anticipates R 's equilibrium choice of m^* and *exits* if and only if $q_A < m^* = \min\{(1 - x_A), (1 - u)\}$.

Proof of Lemma C: via Lemma B, L 's choice of u affects A 's decision of whether to *stay* or *exit*. If A *stays*, then L 's payoff is $U_L = q_A - x_A$. However, if A *exits*, then L 's payoff is $U_L = q_B - x_B$, where x_B and q_B are each chosen by Nature from the distribution $x_B, q_B \sim U[0, 1]$. Hence, in choosing u , L faces the optimization problem:

$$\arg \max_{u \in [0,1]} \int_{1-u}^1 (q_A - x_A) \cdot dq_A + \int_0^{1-u} \left[\int_0^1 q_B \cdot dq_B - \int_0^1 x_B \cdot dx_B \right] \cdot dq_A,$$

which has the solution $u^* = \begin{cases} 1 - x_A, & \text{if } x_A < 1/2; \\ 0, & \text{if } x_A \geq 1/2. \end{cases}$

Proof of Proposition 1: via Lemma B, A exits if and only if his quality, q_A , falls below the threshold $q_A < \min\{(1 - x_A), (1 - u)\}$. Because q_A is drawn randomly by Nature from the distribution $q_A \sim U[0, 1]$, the probability that A exits is $\Pr(A \text{ exits}) = \begin{cases} 1 - x_A, & \text{if } u \leq x_A; \\ 1 - u, & \text{if } u > x_A. \end{cases}$ The first-order derivative is $\frac{\partial \Pr(A \text{ exits})}{\partial u} = \begin{cases} 0, & \text{if } 0 \leq u \leq x_A; \\ -1, & \text{if } x_A < u \leq 1. \end{cases}$ Hence, the probability that A exits is weakly decreasing along $u \in [0, 1]$.

Proof of Proposition 2: via Lemma C, the equilibrium level of unionization is: $u^* = \begin{cases} 1 - x_A, & \text{if } x_A < 1/2; \\ 0, & \text{if } x_A \geq 1/2. \end{cases}$ The first-order derivative with regard to x_A is $\frac{\partial u^*}{\partial x_A} = \begin{cases} -1, & \text{if } x_A < 1/2; \\ 0, & \text{if } x_A \geq 1/2. \end{cases}$ Hence, equilibrium unionization is weakly decreasing along $x_A \in [0, 1]$.

Proof of Proposition 3: the second-period bureaucrat's identity depends on whether the first-period bureaucrat, A , stays or exits. If A stays, then the period 2 bureaucrat's ideal point remains x_A . However, if A exits, B becomes the period 2 bureaucrat, and his ideal point is drawn by Nature, with an expected value of $E[x_B] = \int_0^1 x_B \cdot dx_B$. Moreover, the likelihood of A exiting is a function of u , via Proposition 1. Hence, when $x_A < 0.5$, the expected value of the second-period bureaucrat's ideal point, denoted below as $E[x_2]$, is

$$\begin{aligned} E[x_2] &= \begin{cases} \int_0^{1-x_A} \left[\int_0^1 x_B \cdot dx_B \right] \cdot dq_A + \int_{1-x_A}^1 x_A \cdot dq_A, & \text{if } u \leq x_A; \\ \int_0^{1-u} \left[\int_0^1 x_B \cdot dx_B \right] \cdot dq_A + \int_{1-u}^1 x_A \cdot dq_A, & \text{if } u > x_A. \end{cases} \\ &= \begin{cases} x_A^2 - \frac{x_A}{2} + \frac{1}{2}, & \text{if } u \leq x_A; \\ \frac{1}{2} - u \left(\frac{1}{2} - x_A \right), & \text{if } u > x_A. \end{cases} \end{aligned}$$

Hence, the expected change in the bureaucrat's ideal point from period 1 to period 2 is

$E[x_2] - x_A = \begin{cases} x_A^2 - \frac{3x_A}{2} + \frac{1}{2}, & \text{if } u \leq x_A; \\ (1 - u) \left(\frac{1}{2} - x_A \right), & \text{if } u > x_A. \end{cases}$, which is weakly decreasing along u when $x_A < 0.5$.

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Notes

1. We thank an anonymous reviewer for raising this issue.

2. A logistic regression model is employed in the analysis, as opposed to a survival model, because employees occasionally leave an agency but not the government workforce (i.e., they do not drop from the data set).
3. We thank an anonymous reviewer for providing this suggestion. Also, recent research by Bertelli and Lewis (2013), on the relationship between agency-specific human capital and personnel turnover, provides further reason to examine such alternative mechanisms.

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