Slackers and Zealots: Civil Service, Policy Discretion, and Bureaucratic Capacity*

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Abstract

In this paper we investigate how "civil service" personnel management interacts with bureaucratic discretion to create high capacity, expert bureaucracies populated by policy-motivated agents. We build a model in which bureaucrats may invest in (relationship specific) policy expertise, and may be either policy-motivated or policy-indifferent. We show that under specific conditions on the nature of expertise and bureaucratic discretion over policy choices, merit system protections for job tenure encourage the development of expertise and problem solving capacity in the bureaucracy. In addition, we identify conditions under which typical civil service rules encourage policy-motivated bureaucrats to enter and remain in public service, and policy-indifferent bureaucrats to leave it.

1   Introduction

Civil service restrictions on public personnel management – on selection of employees, job assignment and reassignment, pay equality within job grades, and especially near guarantees of lifetime job tenure – are commonly lamented as a major source of public sector inefficiency, an outdated system created in response (or even overreaction) to a problem that no longer exists. Indeed, major provisions of the merit system in place in the

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U.S. and many industrialized nations, as well as states and municipal governments in the U.S., do seem to weaken public sector employees' extrinsic incentives to be responsive and energetic in pursuing their duties. But many civil service provisions now have a sizable supporting constituency with a major, concentrated interest in their maintenance. Even "major" reform efforts, such as the federal Civil Service Reform Act of 1978, are variations around the theme, and in some ways add yet more restrictions on public personnel management. The debate over whether 170,000 (by White House estimates) federal employees moved into the Department of Homeland Security in 2002 would be subject to civil service protection only underscores that the coverage of a much larger portion of the federal workforce is beyond debate. In some form, civil service seems to be here to stay.

Most previous discussions of civil service and merit selection, as far as the quality of public employees goes, have focused only selection of public employees with desirable exogenous traits. And, as the name "merit selection" implies, one hopes that selecting on the basis of exams rather than party service or political loyalty makes for a better crop of employees. Indeed, we do not want to take issue with that as far as it goes – only to recognize that it is incomplete. The reason is that selection of people with high intrinsic ability, whatever that might mean, is only part of the story. New hires, even meritorious ones, do not immediately step into high level analysis or management positions. They must take time to learn the job and to learn the policy area and to learn the complex of government responses to it. They must, in short, develop their skill. High merit employees may have an easier time doing that, or may get more out of any given time spent in skill development, but the point is that these skills must be acquired: they are not simply imparted by osmosis to whatever employees happen to be hanging around. And to acquire them implies active effort on the part of the employee. In other words, potential employees may start out with different talents, and merit selection may help select better ones, but that is the start and not the end of the personnel problem. Expert bureaucrats are made, through their own endogenous effort, not born. Put differently, one of our underlying points is that in the counter-factual world where the bureaucrats that would be selected in a "merit system" *without* job tenure could have somehow been selected in a patronage system, the bureaucracy still would not have developed the capacity and expertise that characterize it today.

This paper is an analysis of how civil service rules affect that endogenous effort for skill development, by altering incentives employees face for exerting it. Since employees

evidently do not start out with all the skills they need to truly expand bureaucratic capacity and expertise, this is an essential, but previously missing, piece of the puzzle over the incentive effects of civil service.

Even granting the widely claimed incentive problems of a civil service system with job tenure for careerists, we show that, in the right political context, it has notable upsides as well in terms of motivation and management of bureaucratic agencies. Civil service based on merit protection helps to solve important problems of employee selection and motivation. But the effectiveness, and the effects, of this approach to personnel management are contingent on both the types of policy problems with which the government reckons, and on the wider political environment, in important and intelligible ways.

Policy expertise in our model is costly for bureaucrats to develop, and is a *relationship specific investment*, in that it is most valuable to the bureaucrat provided her employment in public service persists. In our model, mastery of the fine points of the policy process, an agency's accounting and records system, and substantive policy details is much less valuable in alternative employment than it is in public service. Because expertise is both costly and relationship specific, early investments in it create a possible "hold up" problem for the bureaucrat: if the investment is made, but the relationship does not continue, the bureaucrat may not reap gains exceeding the cost of investment.[1] Therefore, uncertainty about future job tenure (say because of spoils system practices) implies uncertainty about a future stream of benefits flowing from this investment, and bureaucrats may avoid investing in expertise as a result. "Standard" ownership solutions allowing the investing agent somehow to appropriate the value of the stream of benefits at the time of investment are not generally available in public bureaucracy, but it is possible to ensure that with very high probability the agent will be around to reap benefits (whatever they might be) as they trickle in, by making it very difficult to remove employees. Merit system protection of job tenure, then, removes some of the downside risk that bureaucrats face when developing their expertise.

However, this alone is not enough to induce bureaucrats to develop expertise individually, or bureaucracies to develop problem solving capacity collectively. Bureaucrats in our model can be one of two "types": policy-motivated or policy-indifferent. Simply put, in our model some people care about public policy *per se*, while others do not. The relative proportions of these types in the population is a parameter of the model. Furthermore,

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[1]The hold up problem has been discussed by many economists and political scientists. Recent examples of work in this area include Castaneda [2004] and Lau [2003].

this relative proportion affects the legislature's optimal civil service contract. One of the main points of the paper is that, in the presence of job tenure protection, bureaucrats who do not care about policy ("slackers") cannot be motivated to develop expertise; they simply value material rewards and not the policy utility that comes from developing expertise. While policy-motivated bureaucrats ("zealots") *do* care about policy, in order for these bureaucrats to benefit directly from developing expertise, they must be able to earn some policy rent in order to wish to develop it in equilibrium. If, on the contrary, policy-motivated bureaucrats are not able to capture enough rent from bending policy to their liking, investing in expertise will not be worthwhile.

We show that a civil service contract that offers the policy rents necessary to induce expertise acquisition by the zealots can, in certain situations, be offered by the legislature. In particular, such a contract offers a bureaucrat who acquires expertise more discretion to shape policy in the future. Furthermore, we show that it is easier to design such a contract when bureaucrats are secure (e.g., protected by some version of job tenure) in their civil service employment. However, without the provision of enough expertise-dependent discretion throughout the relationship, even a policy-motivated bureaucrat with secure job tenure may face a second "hold up" problem. Namely, if the agent acquires expertise only to have a political principal direct its use away from the bureaucrat's desires, the bureaucrat's gains from expertise acquisition may no longer justify the individual cost of acquisition.

In general, this paper makes the general point that bureaucratic discretion, as dictated by political imperatives faced by the bureaucracy's political "principals," interacts with civil service rules in an important way to generate incentives for bureaucrats to invest in expertise. Both of these conditions of the bureaucratic system are important in overcoming the holdup problem, one to reduce the downside risk of sinking the relationship specific investment, and one to enhance the upside benefit. Moreover, some of the necessary discretion can be created by a structural mismatch between the oversight capabilities of political authorities and the vast size of the bureaucracy. Simply, if the bureaucracy is too ponderous to be effectively controlled in its entirety by political principals, this creates some irreducible bureaucratic discretion over policy choices, and therefore generates incentives for policy-motivated bureaucrats to develop policy expertise. Ironically, the imperfect control of the federal bureaucracy interacts with the job security guaranteed by civil service to create a useful incentive to develop the policy making capacity that is essential for the policy process as it exists today.

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This solution to the holdup problem has another benefit as well, from a political principal's point of view: it only works for the policy motivated types of agent. Thus in addition to motivating the development of expertise, the civil service rules we examine induce policy motivated types – who are financially cheaper to retain in public service – to dominate the ranks of civil servants. Given stable job tenure, bureaucratic discretion is both an action- and type-contingent reward for investment in expertise.

For its part, the political principal's (legislature's, in our model) challenge is to offer the bureaucrats just enough control over policy, but no more than necessary, to induce them to develop expertise and select into public service based on policy utility. After all, any agent whose utility is sensitive enough to policy outcomes can obviously be induced to educate herself fully on technical minutiae of a policy area by making her the area-specific dictator for a year: this is as close as possible to creating a residual claim on policy expertise. Of course this is unattractive from the system designer's point of view because it gives more control than necessary – it places too high a premium on informational gains, and too low a premium on distributive benefits.

In short, this seemingly ossified, obsolete personnel management system can have crucial effects on the capacity of the bureaucracy – because of incentives for endogenous actions and because of personnel selection based on exogenous tastes – to carry out policy formulation and implementation. We discuss our results in terms of civil service reform in developed countries, and the development of state capacity in developing ones.

This paper contributes to the formal literature on bureaucratic expertise and/or capacity (e.g., Epstein and O'Halloran [1994, 1999]; Carpenter [2001]; Huber and Shipan [2002]; Huber and McCarty [2004]) by investigating the underpinnings of expertise. The large political economy literature on how political authorities can shape the policy choices of bureaucratic agencies (e.g. McCubbins et al. [1987, 1989]; Calvert et al. [1989]) has paid much less attention to the selection of personnel for public service, or their incentives to develop expertise. Horn [1995] treats merit system protections as a way for governments to solve commitment problems with respect to future governments. In essence, civil service is a form of policy insulation (cf. Moe [1987]), because bureaucrats with relatively fixed tastes influence policy long after their appointing politicians leave office. However, this line of reasoning cannot convincingly explain why merit protection would appear in different jurisdictions or states in explainable patterns – e.g., in response to specific problems – instead of appearing earlier everywhere. Johnson and Libecap [1994] argue that merit protection relieved politicians of the problem of monitoring the political

behavior of patronage appointees, which became acute as the bureaucracy grew. Chang et al. [2001] empirically analyze the turnover of top political appointees (and show its relationship to political conflict with political principals and relative wages available in public and private employment), a pool of public servants complementary to the career civil servants relevant for our analysis.

2   A Model of Civil Service Contracts and Delegation

We model the delegation of authority, hiring of bureaucrats, acquisition of expertise, and implementation of policy as a non-cooperative game between two players: the legislature and the bureaucrat. We assume that the game lasts for two periods.[2] In each period, the legislature sets the discretion offered to the bureaucrat with regard to the setting of policy. We denote the convex policy space by $X \subset \mathbf{R}$ and the discretion given by the legislature to the bureaucrat in time period t by $D_t \in \mathbf{R}_+$. We assume that higher values of D_t indicate higher levels of bureaucratic discretion in the sense that the bureaucrat can choose from a strictly large set of policies to implement. (One can think of D_t as representing the width of an interval of policies centered at zero[3] that the bureaucrat can choose from.) The policy outcome in time t is a function of the implemented policy, x^t, and the state of nature in period t, denoted by ω^t. Specifically, the policy outcome in time t is $y^t = x^t + \omega^t$. The set of all states of nature is denoted by Ω. We assume that in both time periods, ω^t is independently drawn from Ω according to a cumulative distribution function on $\mathbf{R}$, denoted by G, with zero mean and finite variance. The bureaucrat is of type $\theta \in \{0, 1\}$, with $\theta = 1$ denoting that the bureaucrat cares about the policy outcome *per se*. The probability that a bureaucrat is of type $\theta = 1$ is denoted by $f \in [0, 1]$.

For the remainder of the analysis, we assume that the policy space and space of states of nature are each convex subsets of the real numbers including zero and that the legislature's most preferred policy outcome is zero. The payoffs for the legislature are given by

$$u_L = -|y^1| - \delta_L|y^2|,$$

where $\delta_L \in [0, 1]$ is a discount factor. Denoting the bureaucrat's most preferred policy

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[2]While we consider only the 2-period case in this paper, extending the game to more than two periods is straightforward and, without additional assumptions, offers no additional intuition.

[3]It is straightforward to show that centering the discretionary window at $E(\omega)$ is without loss of generality as long as B must choose policy within the window. See Epstein and O'Halloran [1999] and Gailmard [2002].

outcome by $p_b > 0$, the bureaucrat's period 1 payoffs are given by

$$u_B^1 = r - \theta|p_b - y^1| - cs,$$

where r is the remuneration for government employment (treated as an exogenous para-meter of the model), $\theta \in \{0, 1\}$ denotes the type of bureaucrat, $p_b > 0$ reflects ideological conflict with the legislature, c is the cost of obtaining expertise (also a parameter), and $s \in \{0, 1\}$ denotes whether expertise was obtained (a choice variable for the bureaucrat). For simplicity, let $\pi(y^1) = |p_b - y^1|$ denote the bureaucrat's utility function (thus, we leave the bureaucrat's ideal point implicit). Then, given a choice of policy equal to y^2 in the second period, the bureaucrat's period 2 payoffs are given by

$$u_B^2 = r - \theta|p_b - y^2| = r - \theta\pi(y^2)$$

if the bureaucrat remains in office and

$$u_B^2 = w - \theta|p_b - y^2| = w - \theta\pi(y^2)$$

if he or she decides to seek outside employment.

We focus on the following sequence of moves:

1. L chooses first period discretion D_1

2. Nature chooses B's type θ and reveals it to B.

3. B chooses to invest in expertise $(s = 1)$ or not invest $(s = 0)$.

4. Nature chooses ω.

5. If $s = 1$, B learns ω; otherwise B retains its prior beliefs about ω.

6. B chooses a policy $x \in [-\frac{D_1}{2}, \frac{D_1}{2}]$.

7. B chooses whether to stay in government in period 2. If so, L chooses second period discretion as a function of s $(D_2(s))$ and play continues with step 4 (nature chooses a new value of ω; if not, then a new bureaucrat takes the job and all steps repeat.

The game form is designed so that the legislature can offer any level of discretion it wants to a new agent, but can condition this discretion on the bureaucrat's expertise only

after the first period. This assumption is motivated by our desire to understand expertise acquisition that occurs "on-the-job." Furthermore, if the legislature could observe the relevant expertise prior to the first period of the game, then one might expect that no non-expert bureaucrats would be hired by the legislature in the first place. Our model allows us to understand the dynamics of individuals taking civil service employment and then sorting themselves with regard to their desire to affect policy and bearing the burden of developing job-specific human capital within the bureaucracy.

Utility in the game is simply the sum of utilities from each period, with period 2 utilities discounted by δ. Sequential equilibrium is the appropriate concept to use since L must choose D without knowing the prior choices of Nature, but we leave off-path beliefs unspecified because they are irrelevant. The expected period t policy payoff for the bureaucrat, given discretion D and expertise decision s, is denoted by $\phi^s(D)$. Specifically, given expertise acquisition s, discretion set by the legislature given s, and policy choice by the bureaucrat following the provision of discretion D, this expected payoff is equal to

$$\phi^s = \begin{cases} \max_{x \in D} \int_\Omega \pi(x + \omega) G(d\omega) & \text{if } s = 0 \\ \max_{z \in D_\Omega} \int_\Omega \pi(z(\omega) + \omega) G(d\omega) & \text{if } s = 1 \end{cases}.$$

Clearly, for any discretion D, $\phi^1(D) \geq \phi^0(D)$. For the remainder of the paper, we will assume that $\phi^1(0) = \phi^0(0)$ and that this inequality is strict for all $D > 0$.[4]

We will denote the optimal expertise acquisition decision for a bureaucrat of type θ by s_θ^*. The decision of the legislature regarding discretion in period 1 is denoted by D_1 and the discretion offered by the legislature in period 2, following observation of expertise acquisition s, is denoted by $D_2(s)$. In order to make the analysis interesting and tractable, we make the following assumptions.

Assumption 1 (Private compensation) *$w \geq r$. To assume otherwise results in a model that is uninteresting:* every *bureaucrat will remain in office, regardless of his or her type or the amount of discretion offered by the legislature.*

Assumption 2 (Uninformed bureaucrats) *In order to assure that the model's predictions are not driven by the behavior of otherwise indifferent actors, we assume that*

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[4]This assumption rules out pathological cases, all of which are uninteresting. A sufficient condition for this assumption to be satisfied is to assume that, for all $D > 0$, there exist two subsets of Ω, q, r, each with positive G-measure, such that there exists $x_r \in D$ and $y_r \in D$, $x_r \neq y_r$ satisfying the following: $\omega \in q \Rightarrow \pi(x_q + \omega) > \pi(x_r + \omega)$ and $\omega \in r \Rightarrow \pi(x_r + \omega) > \pi(x_q + \omega)$.

uninformed type-0 bureaucrats choose the same policy as that which would be chosen by an uninformed type-1 bureaucrat.[5]

Assumption 3 (Overlapping generations) *A newly-hired type-1 bureaucrat will acquire information in the second period if it is in the interests of type-1 bureaucrats to acquire information in the first period. This is equivalent to an "overlapping generations" assumption.*

Assumption 4 (Policy sensitivity) *The type-1 bureaucrat cares about policy, but not enough in any single period to acquire expertise for that purpose alone, i.e. (taking as given that $D(1) > D(0)$, as will be shown below),*

$$0 < \phi^1(D(1)) - \phi^0(D(0)) < c. \tag{1}$$

3   Partial Equilibrium Analysis

In this section, we present a partial equilibrium analysis of civil service design. This analysis is motivated by the supposition that organizational design and change by democratic governments is somewhat "sticky." In the following section, we present an analysis of the responses of the equilibrium civil service contracts to changes in the parameters of the model. The analysis in the following section is more appropriate when considering long-term tendencies of civil service design or situations with both high fluidity of design and rational foresight on the part of the individuals involved.[6] This section, on the other hand, is more suitable for studying the responses of potential bureaucrats to a preexisting and fixed system of civil service employment.

After deriving the incentives and optimal behaviors of potential civil servants, the ultimate goal of this section is to characterize the equilibrium civil service contracts. First, we need to represent the legislature's contract as a strategy. Given that the bureaucrat's choice of expertise, s, is observed once and is binary, the legislature's strategy is denoted by a triple, $(D_1, D_2(0), D_2(1))$. The first component of the strategy is the discretionary authority offered to a new bureaucrat. The second component is the discretionary authority given to a bureaucrat who chooses to stay in the civil service after choosing *not*

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[5]One might think of this as an assumption of benevolence or altruism. If we altered this assumption, type-1 bureaucrats would have an increased incentive to remain in office in the second period.

[6]We thank Marcus Berliant for many helpful suggestions regarding this and the next section.

to acquire expertise ($s = 0$). The final component of the legislature's strategy is the discretion given to a bureaucrat who acquired expertise in the previous period ($s = 1$). We also assume that $D_1 = D_2(0) \le D_2(1)$ (i.e., the legislature offers the same discretion to *all* non-expert bureaucrats, regardless of how long they have been employed in the civil service)[7] and, for simplicity, denote $D_2(1)$ simply by D_2.[8]

3.1 Optimal Policy Choice and Discretion

Some initial results are straightforward and well known from previous work (especially Epstein and O'Halloran [1994, 1999]). B chooses policy x^t to solve $\max_{x \in D_t} -\theta E(|p_b - y^t|)$. For $\theta = 1$ and $D_t > 0$ this results in equilibrium policy x^{*t} in the interior of the discretionary region if the latter contains B's expected ideal policy, and at the boundary of the region otherwise. Note that an informed $\theta = 0$ type is happy to pursue L's interests and achieves the progressive-era ideal of "neutral competence," but as we will see the inducements available cannot cause such a type to invest in expertise.

The legislature chooses D_2 to maximize its expected period 2 utility (with respect to $G(\omega)$) given B's best response x^{*t}. Familiar results imply that $D_2(s) = 0$ if $s = 0$ *and the bureaucrat has remained in office*,[9] since uninformed bureaucrats are no better at setting $x = -E_G(\omega)$ than L is, and that D_t is strictly decreasing (over the relevant range) in p_b. None of these results depend on the two period structure; they are repetitions of results from one period models.

3.2 Self-Selection of Bureaucrats

For a bureaucrat of type $\theta = 0$, the payoff of remaining in office in the second period is simple to compute: it is equal to r. The payoff from taking private employment is w. The assumption that $w > r$ (assumption 1) implies that type-0 bureaucrats will

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[7]In addition to empirical realism, this restriction turns out to be justified on "equilibrium behavior" grounds as well, as we discuss below.

[8]In the next section, we denote an equilibrium contract, given a vector of parameters λ, by $D^* = (D_1(\lambda), D_2(0|\lambda), D_2(1|\lambda))$. In this section, however, our first concern is simply the incentives and behavior of civil servants facing some arbitrary contract $D = (D_1, D_2(0), D_2(1))$.

[9]I.e., this result applies to the path of play – off the equilibrium path as we emphasize below – where the bureaucrat chooses $s = 0$ and remains in public service in period 2, so L is certain that the sitting bureaucrat does not have expertise. On the equilibrium path, assumption 3 implies that L may not be certain that $s = 0$ since a new bureaucrat will be in office in period 2. To make a long story short, the fact that $D_2(0) = 0$ off the equilibrium path and our earlier assumption that $D_1 = D_2(0)$ on the path do not imply that $D_1 = 0$ on the path.

leave in the second period. Such bureaucrats will obviously not acquire expertise in the first period.[10] Using assumptions 2 and 3 (the uninformed bureaucrats and overlapping generations assumptions), the expected payoff for a type-1 bureaucrat who decides to leave office in the second period is equal to

$$w + f\phi^1(D_1) + (1-f)\phi^0(D_1)$$

if the optimal expertise acquisition decision for type 1 bureaucrats in the first period is 1 (*i.e.* $s_1^* = 1$) and

$$w + \phi^0(D_1)$$

otherwise. Given our assumption that $w > r$ and since $D_1 = D_2(0)$, it follows immediately that no bureaucrats of either type will remain in office in the second period if $s_1^* = 0$.

We also want to examine cases in which the type-1 bureaucrat remains in office after acquiring expertise. This is the case if

$$r + \phi^1(D_2(1)) \quad \geq \quad w + f\phi^1(D_1) + (1-f)\phi^0(D_1). \tag{2}$$

(We assume throughout that a bureaucrat who is indifferent between taking outside employment and remaining in office chooses to remain in office.) Combining Equation 2 with the inequality in assumption 4 (policy sensitivity) yields the following proposition.[11]

Proposition 1 *Type-1 bureaucrats (zealots) who acquired expertise ($s = 1$) will choose*

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[10]This might change if w is a function of s. Inclusion of this possibility is left for future work, as it will not affect this model in a substantively interesting way. To see this, note that type-0 bureaucrats will only acquire expertise for monetary reasons. Thus, the legislature in this setting can not appropriate their expertise in future periods by offering them additional discretion in return for expertise acquisition. It might, however, increase the size of the "discretion rent" the legislature has to offer to type-1 bureaucrats in order to retain their services after expertise acquisition. This presumes that $w(1) > w(0)$. If $w(1) < w(0)$ (*i.e.*, expertise acquisition lowers the value of one's outside option, it is relatively straightforward to show that the analysis presented in this paper would remain unchanged, as the bureaucrats who leave the civil service are not acquiring expertise anyway in equilibrium.

[11]The condition in proposition 1 (Equation 3) is actually stronger than necessary. It follows by reexpressing Equation 2 as

$$r + \phi^1(D_2(1)) \geq w + \phi^0(D_1) + f(\phi^1(D_1) - \phi^0(D_1))$$

and replacing $\phi^1(D_1) - \phi^0(D_1)$ with c, according to assumption 4.

to remain in office if

$$\phi^1(D_2(1)) - \phi^0(D_1) \geq w - r + fc. \tag{3}$$

Proposition 1 allows us to deduce some interesting partial equilibrium comparative statics. To do so, suppose for simplicity (and for the moment) that at the beginning of period 2 the bureaucrat (denoted by i) observes a private sector wage, $\tilde{w}_i$, drawn from a Normal distribution with standard deviation $\sigma > 0$ and mean w. Then Equation 3 becomes

$$\phi^1(D_2(1)) - \phi^0(D_1) \geq \tilde{w}_i - r + fc.$$

This temporary statistical addendum to the model makes the statement of comparative statics in the next proposition less awkward, as it allows us to talk about the probability of retaining an expert bureaucrat in the civil service as a function of four of the parameters of the model (w, r, f, and c).

Proposition 2 *Suppose that the civil service contract $D = (D_1, D_2(0), D_2(1)))$ is fixed, with $D_1 < D_2(1)$ and $D_2(0) < D_2(1)$ ()i.e., expert bureaucrats receive the most discretion under D), and the bureaucrat observes a private sector wage $\tilde{w}_i$ at the beginning of the second period, as described above. Then, the probability that a bureaucrat who acquired expertise will remain in the civil service is decreasing in each of the following:*

1. *the probability of type-1 bureaucrats (*i.e., *zealots), f,*

2. *the cost of acquiring expertise, c, and*

3. *the difference between the private sector and government wages, $w - r$.*

In our opinion, these comparative statics are important because of their analogues in the real world of civil service design. Before discussing them, however, it is important to remember that these comparative statics are derived in "partial equilibrium" – they require that the civil service contract offered by the legislature not vary as a result of changes in the parameters of the model. With that caveat out of the way, consider the first conclusion of Proposition 2. Bureaucrats with expertise have less of an incentive to stay in the civil service when future bureaucrats are more likely to care about policy, because today's bureaucrat realizes that he or she can choose not to stay in the civil service and still obtain the policy benefits of an expert bureaucrat in the future. The second and third conclusions of Proposition 2 are no less important empirically (especially when comparing across agencies and civil service tasks), but the intuition behind both is

obvious. If the cost of acquiring expertise increases, then the incentive for a bureaucrat to do so is directly reduced, *ceteris paribus*. Similarly, if the opportunity cost of staying in the civil service increases, then the incentive to do so is reduced as well.

In addition to the comparative statics of job retention, the sufficient condition stated in Proposition 1 is of interest because the policy-motivated bureaucrat must take into account his or her future employment decision (*i.e.*, whether to remain in the civil service or leave for the private sector) when making a decision in the present about whether to acquire job-specific expertise. This decision is the focus of the next section.

3.3   Expertise Acquisition

Bureaucrats will acquire expertise if they expect to garner net benefits from this acquisition. Such benefits can come in several forms: we examine only the policy benefits that might be offered by the legislature as a result of becoming an expert bureaucrat. We explicitly rule out the possibility of monetary rewards as a motivating force behind the acquisition of on-the-job expertise by civil servants. This is *not* because such incentives are not used in real world civil services but, rather, because the use of such incentives is well-understood theoretically and does not offer the additional self-selection benefits provided by the use of increased discretionary authority as an incentive.

Considering a legislative strategy $(D_1, D_2(0), D_2(1))$, the incentive for a type-1 bureaucrat to acquire expertise is based on the following comparison: he or she should acquire expertise only if

$$\phi^1(D_1) - c + \delta[r + \phi^1(D_2(1))] \geq \phi^0(D_1) + \delta[\max[r + \phi^0(D_2(0)), w + f\phi^1(D_1) + (1-f)\phi^0(D_1)]],$$

It follows from $\phi^0(D) \leq \phi^1(D)$ for all D and $D_2(0) = D_1$ that this reduces to

$$\phi^1(D_1) - c + \delta[r + \phi^1(D_2(1))] \geq \phi^0(D_1) + \delta[w + f\phi^1(D_1) + (1-f)\phi^0(D_1)]. \quad (4)$$

In other words, since we have assumed that $r < w$, given that all other newly-hired type-1 bureaucrats acquire expertise, a type-1 bureaucrat who did not acquire expertise in the first period will seek outside employment. Continuing, Equation 4 holds if

$$\phi^1(D_1) - \phi^0(D_1) + \delta[r - w + \phi^1(D_2(1)) - f\phi^1(D_1) - (1-f)\phi^0(D_1)] \geq c. \quad (5)$$

Equation 5 allows us to make a prediction regarding the effect of job tenure protections (represented by δ) on the maximum cost that a type-1 bureaucrat is willing to incur to acquire expertise. Denoting by $\overline{c}(\delta)$ the "cutoff cost" of expertise acquisition, below which type-1 bureaucrats invests and above which they do not, the following claim is immediate and set off for emphasis.

Proposition 3 *Holding the contract offered by the legislature constant, the maximum cost that a zealot bureaucrat is willing to incur to acquire expertise, $\overline{c}(\delta)$, is*

1. *increasing in his or her valuation of future payoffs: $\frac{\partial \overline{c}(\delta)}{\partial \delta} > 0$), and*

2. *nonnegative: $\overline{c}(\delta) \geq 0$ for all δ.*

Proposition 3 implies that *ex ante*, the policy-oriented legislature wants the horizon of the relationship (as captured by the bureaucrat's discount factor, δ) to be as long as possible. This is because the relative appeal of increased discretionary authority in the future is directly proportional to the likelihood that the agent will continue to be employed in the civil service. Furthermore, while (from an *ex post* perspective) the legislature only wants to retain expert bureaucrats, the equilibrium behavior of the bureaucrats is such that only bureaucrats who have acquired expertise will choose to remain on the job. Intriguingly, then, it follows that with regard to the legislature's induced preferences over δ, the legislature can treat every new bureaucrat *as if* they will acquire expertise.

Analogously, in terms of inducing expertise acquisition, the legislature is also better off with agents who are more sensitive to the final policy outcome – even though they create ideological conflict by assumption – because it is easier to induce them to invest. Ideally, the legislature would like to hire bureaucrats whose policy preferences mirror its own in terms of ideal policies and are incredibly sensitive to the realization of the final policy outcome. Viewed another way, increasing the bureaucrat's sensitivity to policy outcomes in analogous to decreasing the cost of acquiring expertise, c.[12]

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[12]Though not the focus of our analysis, a form of the *ally principle* (Bendor and Meirowitz [2004]), which states that the principal's (e.g., the legislature's) preference over agents is an increasing function of the principal's preference over the agents' ideal policies, does hold in our model. However, this is at least partly due to the fact that the legislature is not involved in the actual setting of policy. Allowing for this possibility can lead to violations of the ally principle (for example, see Boehmke et al. [2004]). Though this extension is left for future work, we are intrigued by the implications of this extension for the design of civil service contracts.

3.4 The Legislature's Choice of Civil Service Contract

For any discretion level D, let

$$\hat{z}_D = \arg\max_{x \in D} \int_\Omega \pi(x + \omega) G(d\omega)$$

$$z_D(\cdot) = \arg\max_{z \in D_\Omega} \int_\Omega \pi(z(\omega) + \omega) G(d\omega)$$

We assume for simplicity that, for each level of discretion D, both $\hat{z}_D$ and $z_D(\cdot)$ are uniquely defined.[13] Using these, define the following function:

$$\gamma^s(D) = \begin{cases} -\int_\Omega |\hat{z}_D + \omega| G(d\omega) & \text{if } s = 0 \\ -\int_\Omega |z_D(\omega) + \omega| G(d\omega) & \text{if } s = 1 \end{cases}.$$

The legislature's payoff function can now be written as a function of D_1 and D_2. Presuming that type-1 bureaucrats acquire expertise (i.e., $s_1^* = 1$) and remain in office in the second period, the legislature's expected payoff is

$$u_L(D_1, D_2) = (1 + \delta(1 - f))[f\gamma^1(D_1) + (1 - f)\gamma^0(D_1)] + \delta f[\gamma^1(D_2)].$$

On the other hand, if type-1 bureaucrats choose not to acquire expertise (i.e., $s_1^* = 0$) and then take a job in the private sector in the second period, the legislature's expected payoff is

$$u_L(D_1, D_2) = (1 + \delta)\gamma^0(D_1).$$

Define the following values:

$$\hat{D}_1 \equiv \arg\max_{d \in \mathbf{R}_+} \gamma^0(d) \tag{6}$$

$$\hat{D}_1^2 \equiv \arg\max_{d \in \mathbf{R}_+} f\gamma^1(d) + (1 - f)\gamma^0(d). \tag{7}$$

$$\hat{D}_2^2 \equiv \arg\max_{d \in \mathbf{R}_+} \gamma^1(d) \tag{8}$$

As defined in 6, $\hat{D}_1$ is the optimal level of discretion conditional on no bureaucrats acquiring expertise. The value of $\hat{D}_1^2$, as defined in 7, is the optimal level of first period discretion conditional on type-1 bureaucrats (and only type-1 bureaucrats) acquiring

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[13]We could alternatively allow for a multiplicity of optimal policies for the bureaucrat and then simply choose from that set.

expertise. Finally, $\hat{D}_2^2$ is the optimal level of discretion conditional on all bureaucrats acquiring expertise. (This is the optimal level of discretion in the second period for bureaucrats who acquired expertise in the first period.) The next proposition characterizes the equilibrium civil service contract in the sense of the contract that maximizes the legislature's payoff, conditional on sequential rationality by the bureaucrat and legislature.

Proposition 4 *The legislature's optimal civil service contract is $(D_1, D_2(0), D_2(1))$ is given by:*

1. *$(\hat{D}^1, \hat{D}^1, \hat{D}^1)$ if*

$$(1+\delta)\gamma^0(\hat{D}^1) > (1+\delta(1-f))[f\gamma^1(\hat{D}_1^2) + (1-f)\gamma^0(\hat{D}_1^2)] + \delta f \gamma^1(\hat{D}_2^2).$$

2. *$(\hat{D}_1^2, \hat{D}_1^2, \hat{D}_2^2)$ if*

   (a)

   $$(1+\delta)\gamma^0(\hat{D}^1) \leq (1+\delta(1-f))[f\gamma^1(\hat{D}_1^2) + (1-f)\gamma^0(\hat{D}_1^2)] + \delta f \gamma^1(\hat{D}_2^2). \quad (9)$$

   and

   (b)

   $$\phi^1(\hat{D}_1^2) - \phi^0(\hat{D}_1^2) + \delta[r - w + \phi^1(\hat{D}_2^2) - f\phi^1(\hat{D}_1^2) - (1-f)\phi^0(\hat{D}_1^2)] \geq c \quad (10)$$

   all simultaneously hold.

3. *$(\tilde{D}^1, \tilde{D}^1, \tilde{D}^2)$ (as defined in the appendix) otherwise.*

   In words, there are three broad classes of equilibria. The first type of equilibrium, $(\hat{D}^1, \hat{D}^1, \hat{D}^1)$, involves the legislature offering the bureaucrat no incentive (at least in terms of discretion) to acquire expertise. This equilibrium may occur for a variety of reasons, but the basic intuition is that the legislature does not gain enough from an expert bureaucrat to justify the cost of making the acquisition of expertise incentive-compatible. Broadly, there are two potential sources of these costs: (1) policy drift associated with the informed implementation of policy by an agent with preferences that differ from the legislature's and (2) the direct cost of developing specific, discretion-limiting legislation to provide the incentive for type-1 bureaucrats to acquire expertise in the first period.

The second class of equilibrium is the most interesting. In this type of equilibrium, the legislature offers a contract in which all (and only) the policy-motivated bureaucrats develop expertise in the first period and voluntarily remain in office in the second period. The choice by the legislature to offer discretionary authority to expert bureaucrats provides the incentive for the type-1 bureaucrats to acquire expertise in the first period. In addition, the use of increased discretionary authority as the "carrot" leads to only the policy-motivated (*i.e.*, type-1) bureaucrats acquiring the expertise. Notice that this would not be the case if the carrot were universally appealing (e.g., if bureaucrat's job security or wage level depended upon the acquisition of expertise). The legislature offers the same contract in the second period following no expertise acquisition as it did in the first period because, in equilibrium, the bureaucrat employed in the second period will be a new employee – the conditions for this type of equilibrium imply that all employees who remain in the civil service into the second period acquired expertise in the first period. Thus, as mentioned in a footnote above, our restriction on the type of contracts that the legislature may offer (in particular, that $D_2(0) = D_1$) is not binding.

The third type of equilibrium is slightly complicated – put succinctly, the legislature may not be able to implement its "ideal" contract and still provide an incentive for the type-1 bureaucrats to acquire expertise. Thus, as outlined in the appendix, the legislature may have to choose its "constrained ideal" contract from the set of all expertise-discretion contracts under which expertise acquisition by the type-1 bureaucrats is incentive compatible. These contracts are difficult to characterize without a more fully specified model. Nevertheless, they will be similar in nature to the two types of equilibria described above.

4 Equilibrium Comparative Statics

In this section, we analyze the comparative statics of equilibrium civil service contracts. In this framework, we assume that the legislature sets the civil service contract on the presumption that bureaucrats behave as determined in the previous section and after observing the parameters of the model, $w, r, f, c,$ and δ. Since we will be interested in the effect of changes in these parameters on the equilibrium civil service contract, let $\Lambda = \mathbf{R}^3_+ \times [0,1]^2$ denote the space of potential vectors of parameters, $\lambda = (w, r, f, c, \delta)$ and let $\lambda = (w, r, f, c, \delta)$ denote an arbitrary vector of parameters. We then denote the equilibrium civil service contract, given λ, by $D^* = (D_1^*(\lambda), D_2^*(0|\lambda), D_2^*(1|\lambda))$. For the purposes of generality, we have not specified the bureaucrat's preferences in any detailed

fashion. Thus, when considering the comparative statics of the equilibrium civil service contract, it is important to note that is quite possible that effect of small deviations in the parameters on the optimal civil service contract will be zero (*e.g.*, $\partial D^*/\partial c = 0$). This is because the legislature's goal is to implement its optimal policy, conditional on satisfying the incentive compatibility constraint embodied in Equation 10. It is possible for the satisfaction of Equation 10 to not "bind" on the legislature. Indeed, the only case where the legislature's optimal contract requires any "sensitive" satisfaction of the bounds implied by Equation 10 is described in the third case of Proposition 4 (which is discussed in more detail in the appendix). Another way of stating this point is to point out that the legislature "moves first" in the model. Thus, the analysis is not carried out in *general equilibrium*: equilibrium in this context refers to perfect Bayesian Nash equilibrium: the behavior by the bureaucrat, and the resulting implicit utility functions ϕ and γ, are constructed in the previous section under the presumption that the bureaucrat behaves optimally following the delegation of authority D and, conditional on acquiring expertise, sets his or her most-preferred policy conditional on the state of nature, ω.

The cases that possess nontrivial comparative statics are those in which Equation 10 is binding:

$$\phi^1(D_1^*(\lambda)) - \phi^0(D_1^*(\lambda)) + \delta[r - w + \phi^1(D_2^*(1|\lambda)) - f\phi^1(D_1^*(\lambda)) - (1-f)\phi^0(D_1^*(\lambda))] = c. \quad (11)$$

Any other equilibrium civil service contract does not possess interesting comparative statics because w, r, f, c, and δ do not enter into γ.

To derive comparative statics, note that ϕ^0 and ϕ^1 are each nondecreasing functions.

Fact 1 *For all D, $\phi^0(D)$ and $\phi^1(D)$ are both nondecreasing functions.*

Furthermore, we impose a minor restriction on the bureaucrat's induced preferences over discretion when the bureaucrat is an expert and a restriction on the preferences of a non-expert bureaucrat.

Assumption 5 *Upon acquiring expertise, the bureaucrat's expected utility from discretionary authority is a strictly increasing function: $\phi^1(D)$ is a strictly increasing function for all D.*

Assumption 6 *A non-expert bureaucrat's expected utility from discretionary authority is a constant function: $\phi^0(D) = \phi^0(D')$ for all D, D'.*

Assumption 5 is a relatively weak assumption, it can be derived from the primitives of the model by assuming that the cumulative distribution function of ω, G, is strictly increasing on $\mathbf{R}$.[14] Assumption 6 is a stronger assumption – in words, it is equivalent to assuming that the bureaucrat's optimal unconstrained choice of policy is feasible for all levels of discretion, D.

Comparative Statics When the Incentive Compatibility Constraint is Binding. As stated above, the comparative statics of the equilibrium civil service contract are interesting (*i.e.*, nonconstant in the parameters of the model) only in regions where Equation 10 holds with equality. Indeed, this must hold in an open convex set of vectors of parameter values.

Proposition 5 *Suppose that Assumptions 5 and 6 hold. Consider a vector of parameters* $\lambda = (w, r, f, c, \delta)$ *and suppose that there exists an open convex set $R \subset \Lambda$ containing λ such that the equilibrium civil service contract for any $\lambda' \in R$ satisfies the following condition:*

A. $\phi^1(D_1^*(\lambda')) - \phi^0(D_1^*(\lambda')) + \delta[r - w + \phi^1(D_2^*(\lambda')) - f\phi^1(D_1^*(\lambda')) - (1-f)\phi^0(D_1^*(\lambda'))] = c.$

Then the following comparative statics with respect to $D_1^*(\lambda)$ and $D_2^*(\lambda)$ hold at λ:

1. *At least one of $D_1^*(\lambda)$ or $D_2^*(\lambda)$ is increasing in the private sector wage, w,*

2. *at least one of $D_1^*(\lambda)$ or $D_2^*(\lambda)$ is decreasing in the civil service wage, r,*

3. *At least one of $D_1^*(\lambda)$ or $D_2^*(\lambda)$ is increasing in the probability of policy-motivated bureaucrats, f,*

4. *At least one of $D_1^*(\lambda)$ or $D_2^*(\lambda)$ is increasing in the cost of acquiring expertise, c,*

5. *At least one of $D_1^*(\lambda)$ or $D_2^*(\lambda)$ is decreasing in the bureaucrat's level of patience, δ.*

If condition (A) of Proposition 5 does not hold, then altering a parameter of the model may very well not change the equilibrium contract. In particular, the legislature's optimal contract satisfies the incentive compatibility contract strictly. In this case, even though the legislature may prefer some contract in which expertise acquisition is not incentive

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[14]In other words, the distribution of ω possesses full support on $\mathbf{R}$.

compatible for the bureaucrat, among those contracts in which expertise acquisition does occur in equilibrium, the best contract (for the legislature) is one in which zealots have a strict incentive to acquire expertise.

Comparative Statics of Second-Period Discretion. In order to make the statement of the comparative statics as clear as possible, we now presume that D_1^* is constant in the open set of parameter values of interest, R. This allows the comparative statics, as describe in the following proposition, to be stated purely in terms of how the parameters affect the discretion offered to senior (*i.e.*, period-2 bureaucrats). The following corollary clarifies

Corollary 1 *Suppose that Assumptions 5 and 6 hold. Consider a vector of parameters $\lambda = (w, r, f, c, \delta)$ and suppose that there exists an open set $R \subset \Lambda$ containing λ such that the equilibrium civil service contract for any $\lambda' \in R$ satisfies the following conditions:*

A. $\phi^1(D_1^*(\lambda')) - \phi^0(D_1^*(\lambda')) + \delta[r - w + \phi^1(D_2^*(\lambda')) - f\phi^1(D_1^*(\lambda')) - (1-f)\phi^0(D_1^*(\lambda'))] = c$
and

B. $D_1^*(\lambda') = D_1^*(\lambda).$

Then the following comparative statics with respect to $D_2^*(\lambda)$ hold at λ:

1. *$D_2^*(\lambda)$ is increasing in the private sector wage, w,*

2. *$D_2^*(\lambda)$ is decreasing in the civil service wage, r,*

3. *$D_2^*(\lambda)$ is increasing in the probability of policy-motivated bureaucrats, f,*

4. *$D_2^*(\lambda)$ is increasing in the cost of acquiring expertise, c,*

5. *$D_2^*(\lambda)$ is decreasing in the bureaucrat's level of patience, δ.*

4.1   Discussion.

Below we briefly discuss the conclusions of Proposition 5 and Corollary 1. Some of the conclusions are more intuitive than others. Two of them are particularly interesting because they are not obvious *and* they speak to real-world features of bureaucratic design – the policy preferences and time horizons of potential civil servants.

Monetary Incentives. Conclusions 1, 2, and 4 of both Proposition 5 and Corollary 1 are intuitive: the legislature must use policy "rents" to induce bureaucrats to acquire expertise and remain in the civil service. These policy rents are increasing in discretion so the legislature increases discretion in one or both periods when the monetary incentive to leave the civil service (*i.e.*, $w - r$) increases. Similarly, when the direct individual disincentive to acquire expertise (*i.e.*, c) increases, the legislature must increase the policy rewards resulting from the acquisition of expertise. Proposition 5 states that these additional rewards may be granted in either the first or second period (or both). The choice of in which period the legislature will increase discretionary authority depends on the exact specification of ϕ and γ: the legislature will increase discretion in the period with the lowest marginal cost.[15] The fact that we must remain agnostic about the choice of in which period the discretionary authority will increase is the price paid for the generality of the model's primitives.

The Probability of Zealots. Conclusion 3 of Proposition 5 and Corollary 1 is less intuitive than the three already discussed (1, 2, and 4). When the probability of zealots (*i.e.*, f) increases, the legislature increases the discretion offered to the bureaucrat, but not because of some faith in the zealots. In particular, recalling Equation 2, the legislature must ensure that

$$r + \phi^1(D_2^*(\lambda)) \geq w + f\phi^1(D_1^*(\lambda)) + (1 - f)\phi^0(D_1^*(\lambda))$$

holds in order for bureaucrats to remain in the civil service after acquiring expertise. Thus, while increased discretion in the first period can increase the incentive to acquire expertise, the legislature must "eventually" use increased discretion in the second period to induce expertise acquisition. Otherwise, by the assumption that $\phi^1(D) - \phi^0(D) < c$ for all c, it may be the case that the first period type-1 bureaucrats (zealots) will not have an incentive to acquire expertise *given* that other zealots will acquire expertise in the following period.

Thus, it is possible for an increase in the probability of zealot bureaucrats to lead to a *decrease* in first-period discretion and an *increase* in second-period discretion. In policy areas where potential civil servants are very likely to have policy motivations, initial discretionary authority is set low by the legislature and then increased significantly

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[15]It is also theoretically possible for one of the two levels of discretion to decrease while the other increases as the result of a change in the parameters of the model.

during the career path. Interestingly, while this acts as a screening device or filter (along the equilibrium path, only policy-motivated bureaucrats remain in the civil service for more than one period), this screening is not motivated by any difference in the policies that the two types of bureaucrats would implement (given the same information) when in office (Assumption 2).

Conclusion 5 of Proposition 5 and Corollary 1 is also less intuitive than conclusions 1, 2, and 4. This conclusion states that as bureaucrats value future payoffs more highly (*i.e.*, δ increases), the legislature reduces discretionary authority in one or both of the periods. The simple explanation of this comparative static is that the legislature reduces discretion "because they can." In effect, when bureaucrats care more about future payoffs, then existing incentives to acquire expertise become stronger. The supposition that the equilibrium manifold is determined by the incentive compatibility constraint (condition (A)) implies that the legislature is providing sufficient incentives for bureaucrats to acquire expertise (in terms of increased discretionary authority) only at a cost to itself. Thus, when the incentive compatibility constraint stops binding – as happens when δ increases – the legislature alters the contract so as to "take back as much discretionary authority as it can" while still satisfying Equation 10.

This conclusion is particular interesting when the discounting of future payoffs by civil servants is viewed as being derived from the possibility of being fired or replaced for reasons outside of those modeled here. In particular, if δ represents the probability of not being fired for political reasons (such as in a bureaucratic "purge"), the model predicts that, when faced with policy areas in which the incentive compatibility constraint is binding[16] the legislature will offer less discretion to the bureaucracy when job security in the civil service is increased. Thus, suggestively, the model is consistent with bureaucrats "doing less" after the introduction of job tenure in the civil service.

5 Discussion and Implications of the Model

This paper makes three basic points. First, many civil servants are faced with a traditional hold-up problem: they can make individually costly investments in expertise, training, and information-gathering, but the return on these acquisitions depends sensitively on the future retention and remuneration strategies of the government. This is

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[16]Describing such areas in a precise fashion is obviously difficult, but it is clear that some tasks assigned to the bureaucracy are more electorally salient and/or more highly "politicized" than others.

true of many professions and voluntary economic relationships, of course, but is perhaps more relevant for government positions than for most jobs, given the unique nature of many government jobs.[17] The second point of the paper is that the government can overcome the hold-up problem by conditioning the provision of increased discretion on the acquisition of expertise by the bureaucrat. If such a solution exists, it comes with an extra benefit (or price): the bureaucrats who acquire expertise in such systems are exactly those who care about policy outcomes in their own right. Neutral competence is impossible not because "neutrality" is impossible, but because only those with a stake in policy can be induced (by the instruments available to governments) to become experts.

Another observation from this model is that the bureaucratic expertise hold-up problem can be solved by the legislature limiting the discretion it offers to the bureaucrat early in his or her career. This solution can work even when, on the equilibrium path, *all* bureaucrats acquire expertise and both bureaucrats and politicians prefer unlimited discretion for expert bureaucrats. The reason that "artificial" constraints are placed on discretion early in the bureaucrat's career is simple: the bureaucrats would not find it incentive-compatible to acquire expertise without the conditioning of discretion on expertise.

Furthermore, the overlapping generations feature of the model plays an important, though subtle, role. The carrot/stick approach could be accomplished by the legislature committing to decrease discretion after the first period if the bureaucrat did not acquire expertise. However, this solution does not work insofar as it does not lead to the retention of type-1 bureaucrats. Indeed, such a strategy by the legislature may *hasten* the departure of type-1 bureaucrats, as they will prefer to hand over the reins to a new bureaucrats who will not face the reduced discretion punishment for at least one period.

5.1 Civil Service, Job Tenure, and the Development of Expertise

Our model offers several insights into the general design of optimal civil service contracts. First, a bureaucrat's incentive to acquire job-specific expertise is directly related to his or her discount factor, δ. In practical terms, this discount factor can be thought of as the probability of not being fired randomly (or, in other words, for reasons independent

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[17]A few examples of markets in which the government has a quasi-monopsonistic position: air traffic controllers, soldiers, diplomats, firemen, nuclear scientists, crypto-analysts, and secret agents.

of whether the bureaucrat acquires expertise). Being fired randomly in this setting can be thought of as possibly occurring because of a change in the political party in power. Eliminating (or at least reducing) the role of patronage in the distribution of bureaucratic appointments therefore increases δ and, hence, the bureaucrat's incentive to acquire job-specific expertise. This also captures an important reason for providing stable mechanisms for advancement and retention within the bureaucracy. Political upheaval (as in the periodic purges of the bureaucracy in the Soviet Union and China during the mid 20th century, and continue today in some developing democracies) reduces δ and accordingly inhibit the development of bureaucratic expertise. Furthermore, this inhibition is not simply a result of bureaucrats being removed from power prior to acquiring expertise – expertise may not be developed even during relatively long periods of stability within the bureaucracy. The relevant variables are the beliefs of the bureaucrats themselves. If government employees do not believe that they will be employed in their jobs for an extended period of time, they will have little reason to acquire job-specific expertise. The shadow of future bureaucratic instability leads to less bureaucratic expertise.

At first glance, the role of δ in the acquisition of bureaucratic expertise is straightforward: why invest in being good at a job that you are likely to lose tomorrow? But the relationship is deeper than this first order logic. In equilibrium, the degree to which bureaucrats become experts depends on the *legislature's response* to the acquisition of expertise. Expertise is more likely to be acquired if becoming an expert leads to more discretionary authority *and the bureaucrat in question cares about policy*. In other words, the discount factor δ determines incentives only to the extent that the future holds something of value to the bureaucrat.

This paper's main point is that the provision of increased discretionary authority plays this role in successful civil service design. The effect of tying expertise acquisition and discretionary authority to each other in a well-designed way is only so large as civil servants expect not to lose to their positions for other, non-expertise-related, reasons. In this way, the elimination of patronage, or spoils, systems for the retention of civil servants is the first order of business facing a social planner or legislature interested in developing expertise within the public sector. We emphasize the retention aspects of job tenure even more than the selection aspects of merit selection: even if a patronage system were to select exactly the same employees chosen under merit selection, the short horizon of the system inhibits the development of expertise, which lowers bureaucratic discretion, which inhibits the development of expertise still further. According to our model, it is not so

much the selection of "competent" employees, but the stable, continuing employment of ones whose utility is especially sensitive to policy outcomes, that spurs the development of bureaucratic expertise.

5.2 Civil Service and Self-Selection into Public Sector Employment

This research came about as a result of general discussions about bureaucratic employment. In particular, as noted earlier, employment in the civilian branches of the civil service is generally voluntary. This fact suggests the possibility that civil servants represent a (possibly strongly) selected sample of the general electorate. In particular, it is clear that individuals who care about affecting policy will be more willing to accept bureaucratic employment, *ceteris paribus*.[18]

Accordingly, this paper focuses on what this implies about (1) the types of individuals that will be observed in the upper levels of bureaucratic agencies and (2) the legislature's ability to leverage this selection effect in its attempts to design a civil service that leads to the endogenous acquisition of job-specific expertise by civil servants.

In this respect, theory suggests that policy-motivated bureaucrats who invest in expertise early in their careers prefer staying in public service later in their careers to leaving the civil service for outside employment. In other words, having invested in expertise, the theory predicts that bureaucrats prefer a civil service that protects job tenure to one that facilitates the employment of political patrons. Accordingly, the theory suggests that tenure protection helps retain civil servants with above-average expertise.

An important reason for this is that, generally speaking, a new bureaucrat will not have more expertise than one who is already employed and has acquired job-specific expertise. Therefore, letting a new bureaucrat take the position will not offer more policy utility to the sitting bureaucrat than he or she can provide by remaining in the job. Since this comparison is contingent on the difference between the level of discretionary authority that the sitting bureaucrat will have in round 2 and the level that will be offered to a new bureaucrat, a policy-motivated bureaucrat's incentive to acquire expertise can be affected by the design of civil service contracts. To see this in a different light, consider a strange design, where a new bureaucrat is given more discretionary authority than a

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[18]By "more willing to accept a job," we mean that such individuals may accept a lower salary, be more amenable to relocation, and/or more persistent in attempting to acquire such employment.

sitting bureaucrat will have in round 2. In this case, the sitting bureaucrat (even if he or she has acquired expertise) might rather resign and let the new bureaucrat make policy.

On a related note, the theory offers insights into the filtering, or screening, role of civil service design. When the legislature offers the equilibrium civil-service contract, this selection effect leads to zealots (*i.e.*, individuals motivated by public policy concerns) being over-represented in the upper levels of the bureaucracy.

In particular, if the legislature offers a high level of discretionary authority to expert bureaucrats, and the remuneration of bureaucratic employment is low compared to private sector wages, then, in equilibrium, zealots will tend to acquire expertise and pursue a career in public service while individuals who are not motivated by policy concerns (*i.e.*, slackers) will tend to pursue their outside option in the private sector, even if they initially accept employment in the civil service. Thus, the theory points out that the legislature can use discretion as a crude way to affect future payoffs in both type-contingent (*i.e.*, distinguishing slackers and zealots) *and* action-contingent (*i.e.*, distinguishing those who acquire expertise from those who do not) ways. Thus, the legislature can design contracts that lead to an endogenous separation (and revelation) of types. Furthermore, the optimal civil service contract offers the highest payoff to policy-motivated individuals that invested in expertise.

6   Conclusion

Many scholars have noted that despite the efficiency and incentive problems created by civil service systems of personnel management, civil service also serves valuable purposes by improving the representativeness of the federal career workforce, its democratic pedigree, and equity of employment in it. In addition, it also allows for selection of employees with better exogenous abilities or traits. These features combined may well be enough to overcome the management difficulties and perverse incentives for endogenous employee actions that civil service systems create.

Our argument is that civil service also has other potentially compensating benefits – on fairly narrow efficiency grounds alone. Civil service systems of personnel management do not simply create a trade-off between efficiency and other values; they create a trade-off between specific forms of efficiency with subtler forms of efficiency, as well as with other values. In fact, since we can infer from public sector employment patterns that endogenous skill acquisition is important, in addition to selection of employees with

desirable exogenous traits, the analysis of civil service's effects on endogenous employee actions and relationship specific skills is crucial to any efficiency argument.

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A   Equilibria when the IC Constraint is Binding

The set of expertise-discretion contracts under which the acquisition of expertise is incentive compatible for type-1 bureaucrats is the set of all ordered pairs of nonnegative real numbers $(\bar{d}_1, \bar{d}_2)$ satisfying the following inequality:

1. $\phi^1(\bar{d}_1) - \phi^0(\bar{d}_1) + \delta[r - w + \phi^1(\bar{d}_2) - f\phi^1(\bar{d}_1) - (1 - f)\phi^0(\bar{d}_1)] \geq c.$

Define the set of all such contracts by $ICED(r, w, f, \phi, c)$. The third case of equilibrium (as defined in Definition 4) is then given by any $(d, d') \in ICED(r, w, f, \phi, c)$ that maximizes the legislature's payoff *so long as*

$$(1 + \delta)\gamma^0(\hat{D}^1) > (1 + \delta(1 - f))[f\gamma^1(\bar{d}_1) + (1 - f)\gamma^0(\bar{d}_1)] + \delta f\gamma^1(\bar{d}_2). \qquad (12)$$

If this is the case, then the third case of the equilibrium, as discussed in Definition 4 is $(\tilde{D}^1, \tilde{D}^1, \tilde{D}^2) = (\bar{d}_1, \bar{d}_1, \bar{d}_2)$. If Equation 12 does not hold, then the legislature would prefer to implement the optimal contract conditional on no agents acquiring expertise. In those cases, the equilibrium contract is given by $(\tilde{D}^1, \tilde{D}^1, \tilde{D}^2) = (\hat{D}^1, \hat{D}^1, \hat{D}^1)$.