Slackers, Zealots, Screening and Sorting: How Politicization Drives Agency Performance By Changing Internal Labor Markets

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Abstract

We model the impact of executive politicization on the performance of government agencies. In our account, internal labor markets in government agencies provide the critical link between executive politicization and agency performance. We distinguish agencies in which acquired expertise has little value in the private sector from those in which acquired expertise commands a premium in the private sector. The former can use screening to separate slackers from zealots; the latter can employ sorting to do so. Politicization affects both screening and sorting in government agencies. Within this framework, we examine the intensity of policy-making effort by civil servants, their expertise acquisition, the agency's promotion decisions, the agency's salary structure, the agency's policy activism, and optimal politicization by a political appointee serving as head-of-agency.

I. Introduction

We model the impact of executive politicization on the performance of government agencies. In our account, increased policy tension between agency managers and a political appointee serving as head-of-agency leads to greater politicization of decision-making. Politicization in turn has ripple effects throughout the agency: it decreases the intensity of policy-making effort by civil servants, lowers the agency's promotion standards and decreases the acquisition of expertise by civil servants, flattens the agency's salary structure, and reduces the agency's policy activism. Thus, the operation of internal labor markets in government agencies provides the critical link between executive politicization and agency performance. But the exact mechanisms depend on the nature of the agency. In our model, "Type I" agencies, where the policy-making skills of top employees are in low demand outside the agency, use the promotion process to *screen* "slackers" from "zealots." "Type II" agencies, where the policy-making skills of top employees are in high demand outside the agency, rely on managerial wages to *sort* slackers from zealots.[1] In both kinds of agencies, however, politicization alters agency performance by changing the operation of internal labor markets.

A. Motivating Examples

Type I agencies are like: the Post Office, Amtrac, a motor vehicles agency, a parks and sanitation department, a bureau of meat inspection, a social work department. Skills acquired in the public sector do not command a premium in the private sector. We argue below that these agencies can set wages to produce screening: zealots seek promotion to become policy-making managers, slackers do not. Promoted zealots then receive a premium relative to their available private sector opportunity. Since employees in these agencies cannot transfer skills to higher paying jobs in the private sector, many remain in jobs where they have been passed over for promotion or where their decisions are overruled. Leaving means these employees would be taking a lower paying job.

In Type I agencies, our model predicts that an upward shock to politicization does not lead to exit by agency managers. Rather, they reduce effort – "retire on the job" – while lower ranks decline to seek promotion.

Type II agencies are like: the CIA, employment discrimination and anti-trust lawyers in the Department of Justice. In such agencies, the skills acquired in the public sector are highly valued by some private sector employers. Type II agencies must respond to outside wages. However, we argue below that they can do so in such as way as to induce sorting by employees: both slackers and zealots seek promotion but the slackers leave for the private sector while zealots remain as policy-makers. For example, while some DOJ attorneys work in the agency for a short spell and then jump to the private sector, others work their entire careers in the department. They work their way up the ladder in the agency into positions of higher pay and responsibility.

In Type II agencies, our model predicts that an upward shock to politicization leads to exit by top managers. For example, one effect of the well-documented efforts of the Bush Administration to change the ideological orientation of the Department of Justice, was the departure of large numbers of career attorneys in the agency. In fiscal year 2005 alone 20 percent of the Civil Rights Division's lawyers left, some due to buyout program and others because they were cut out of hiring and policy decisions. Similarly, the appointment of Porter Goss to head the CIA propelled much of the top tier of CIA professionals to exit for the private sector.

B. Sorting, Screening, and Politicization

C. Literature Review

The literature on bureaucratic politics (Wilson 1989) is vast, as is that on public administration. So is the literature on personnel economics, organizational economics, and internal labor markets in private firms (Roberts 2007, Oyer and Lazear 2012, Waldman 2007). The first two literatures identify topics, such as political constraints on agency design, that receive little emphasis in the third literature. The latter employs powerful modes of analysis – including game theory, contract theory, and mechanism design – that have typically been eschewed in the former. Recently, however, the three literatures have started to converge. Notable studies in this vein included Ting 2011, Lewis 2008, Huber and McCarty 2004, Hirsch 2011, Bertelli (best citation?), Gailmard and Patty book manuscript.

Perhaps closest in spirit to our analysis is Gailmard and Patty 2007, which examines how the discretion afforded agencies by Congress affects the sorting of "slackers" from "zealots" and the later's investment in job-specific skills and knowledge. Thus, they consider the distinct behavior of slackers and zealots in what is essentially a Type-II environment. However, we consider in more detail agency career tracks and the role of promotion in inducing investment in job-specific expertise (Prendergast 1993). We can thus study how formal promotion standards screen slackers from zealots in a Type-I environments. In addition, in our model the agency wage structure is determined endogenously rather than imposed exogenously. Perhaps most importantly, we place executive politicization at the center of the analysis. In doing so we side-step the legislative design of statutory authority that is a centerpiece of Gailmard and Patty 2007. In that sense, their approach extends legislative studies emphasizing the control of bureaucratic discretion (Epstein and O'Halloran 1999, Huber and Shipan 2002, and Huber and McCarty 2004), while ours extends studies of executive control over bureaucratic decision making (Lewis 2008, Moe, Nathan).

Analytically, however, the point of departure for both our paper and that of Gailmard and Patty is the analysis of real and formal authority in organizations (Aghion and Tirole 1997). This paper examines how meddling by bosses undermines the work incentives of subordinates. Our formalization draws heavily on a closely related paper, Baker, Gibbons, Murphy 1999.[2] In contrast with that paper, though, we focus on internal labor markets rather than relational contracts within agencies. Nor, in contrast with Van den Steen 2010, do we consider the determinants of agency culture. These, along with a theory of merit pay and a theory of civil service examinations, are obvious routes for future work.

D. Road Map

Next section: The model, with two different assumptions about outside wages.

Then: Equilibria, with screening and sorting. Some numeric examples and a discussion.

Then, comparative statics.

Then, return to motivating examples and discuss?

Discussion and Conclusion.

II. The Model

A. Sequence of Play, Information, and Strategies

The players are the head of an agency (the Boss), assumed to be a political appointee, and a potential employee of the agency (the Subordinate). The Subordinate may be of two types denoted by $\theta \in \{0, 1\}$, a "slacker" ($\theta = 0$) or a "zealot" ($\theta = 1$). (The significance of this distinction will become clearer momentarily, when we detail utility functions, but while both value wages only zealots value policy). Subordinate type is private information for the Subordinate.

There are two jobs for Subordinates within the agency, the two forming a career ladder: an entry-level "clerk" position, and a policy-making "manager" position. In the former, the subordinate performs a routine task yielding benefit v to the Boss. In the latter, the manager searches for a policy initiative, a "project," to recommend to the Boss. (Alternatively, one can imagine the manager working to create a policy proposal, and probabalistically succeeding). If accepted by the Boss, a policy project yields payoffs X to the Subordinate and Y to the Boss. The Subordinate probabalistically discovers a project's payoffs by investigating the project using work effort $a \in [0, 1]$. (Alternatively, the Subordinate probabalistically creates a good project through work.) For simplicity we assume that the benefits take only two values, positive or negative: $X_H > 0 > X_L$ and $Y_H > 0 > Y_L$. Importantly, the project payoffs may differ systematically between the two players, so there is a tension between the preferences of the Subordinate and those of the Boss. In particular, the conditional probability that the Boss's payoff is Y_H when the Subordinate's payoff is X_H is $p = \Pr(Y_H|X_H)$; the conditional probability that the Boss's payoff is Y_H when the Subordinate's payoff is X_L is $q = \Pr(Y_H|X_L)$. Thus, p and q indicate the similarity between the interests of the two players while $1-p$ and $1-q$ indicate the wedge between them ($1-q$ will not play a major role in what follows but $1-p$ is extremely important). Rejected proposals bring a zero policy payoff to both players, as does no recommendation.

The sequence of play in the model is shown in Figure 1. Nature selects the Subordinate's type θ with common knowledge probability λ (the probability of being a zealot). The Boss offers an employment contract specifying wages in both the clerk and manager jobs (w_C and w_m, respectively) and a promotion standard $\bar{e}$ based on a score on a civil service exam or an equivalent device. In addition, the Boss decides upon a level of politicization π for the agency.[3] Politicization connotes a centralized capacity for independent review of a recommended project.[4] If the potential employee accepts employment, he enters the clerk-level job where he performs routine work and receives the wage w_C.[5] More importantly, though, as a clerk the Subordinate may invest in human capital or expertise $e \in [0, \infty)$. The clerk then takes the civil service test, which measures his agency-specific expertise. If the clerk attains the necessary score $\bar{e}$, he is promoted to manager; if not, he remains a clerk. In either case, the employee may then exit the agency in favor of employment in the private sector.[6] If promoted to manager and deciding to stay in public employment, the subordinate (now a manager) decides upon a level of work effort $a \in [0, 1]$, searching for (or crafting) a policy project. We define the Subordinate's work intensity as the probability of discovering a good project, so that $a = \Pr(X_H)$. Alternatively, one can imagine a ready stock of "poor" projects that the Subordinate probabalistically turns into "good" projects via policy-making effort.[7]

The effort cost of searching for or crafting a good project $c(a; e)$ depends on the manager's expertise, so that more expert managers can undertake the same level of work effort

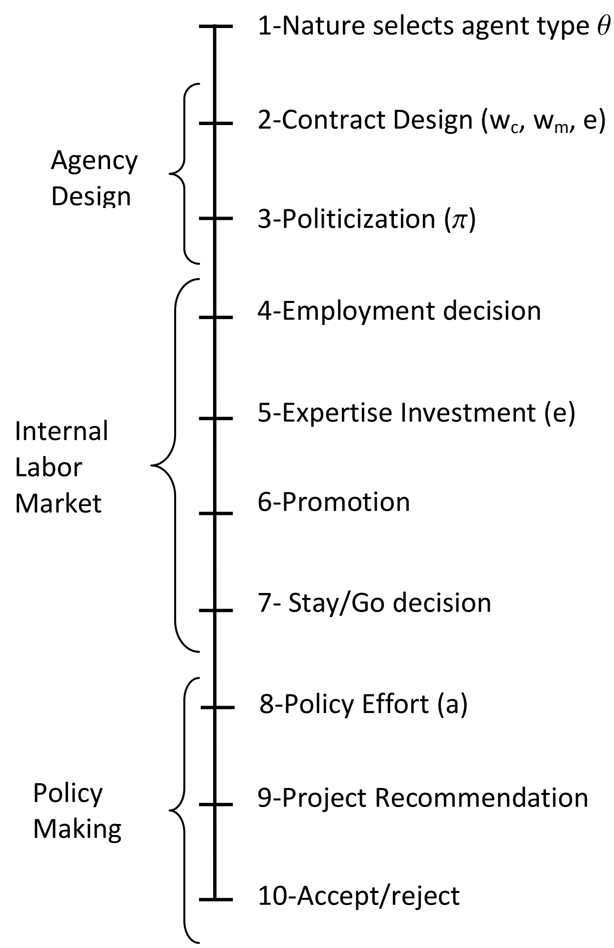

Figure 1: The sequence of play in the game

at a lower cost to themselves. Given the results of his search, the manager may recommend the project to the Boss (the manager makes a positive recommendation). If so, the Boss probabalistically learns the payoffs from the project, depending on the level π of politicization in the agency. Hence, increased "politicization" boosts the likelihood of an informed policy review under the independent control of the Boss. The Boss then accepts or rejects the manager's recommendation. Payoffs then accrue.

Because promoted managers can exit for private sector employment, we must specify the wages that they can earn in the private sector. Indeed this wage, s_i, plays an important role in the analysis. We specify private sector wages parametrically, focusing on two polar cases. In the first, the human capital acquired by the agency employee is of little value to private sector employees. For instance, the skills of policy makers in a Department of Motor Vehicles are not likely to be valued by private sector employers. In this case s_i is not increasing in e. We assume $s_i = s_c$, the clerk-level wage in the private sector (an extreme assumption but one that captures the essential wage dynamic). We call agencies like this "Type I" agencies. In the second case, the skills, knowledge, and contacts acquired by agency managers are very valuable to private sector employers. For instance, the knowledge of anti-trust policy makers in the DOJ may command a considerable premium in the private sector. Here $s_i(e)$ is increasing in e. We assume $s_c = s_i(0)$ and $s_c < s_i(e)$ if $e > 0$. We call agencies like this "type II" agencies. To complete the public-private comparison, we assume there is a mature-level private sector wage s_m for career private-sector employees. For employees of Type I agencies, $s_c = s_i < s_m$. For employees of Type II agencies, $s_c < s_m$ but $s_i(e) > s_m$ for sufficiently high e.

It will be seen that the game has 10 distinct stages that can be grouped into three broad modules. Module 1 concerns agency design, and involves designing the "contract" offered employees and the selection of a level of politicization by the political appointee heading the agency. Module 2 addresses the agency's internal labor market, and details the workers' initial employment decision, employees' investment in expertise, the agency's promotion decision, and employee's decision to remain with the agency or depart for the private section. Module 3 examines policy making in the agency, focusing on the policy-making effort of managers, their recommendations, and the agency head's response. We divide the game into periods 1 and 2. The first period includes the first two modules, the second the third.

Just to be clear, the following are common knowledge: outside wages (s_c, s_m, s_i), the extent of policy agreement (p, q), the value of projects (X_L, X_H, Y_L, Y_H) and the cost functions $c(e)$ and $c(a;e)$. The required test score $\overline{e}$, the wages w_c and w_m, and the chosen level of politicization π are observed by potential employees, and this is common knowledge. The test reveals the employee's human capital e to the Boss but only whether $e > \overline{e}$ to an outside employer. The subordinate's policy effort a is not observed by the Boss (otherwise, managerial wages could be based on policy effort).

For the Subordinate strategies include 1) a contract acceptance strategy; 2) an expertise investment strategy e; 3) an exit or stay strategy following the outcome of the civil service exam; 4) policy effort strategy a (for promoted employees who remain with the agency); and 5) a policy recommendation strategy r. For the Boss strategies include 1) a clerk wage strategy setting w_c; 2) a manager wage strategy setting w_m; 3) a promotion standard strategy setting $\overline{e}$; 4) a politicization strategy setting π, and 5) a decision strategy d for policy recommendations.

B. Utilities

The payoffs to the Boss and Subordinate are the sum of the payoffs accruing in Periods 1 and 2.

For the Boss, the period 1 payoff is

$$u_1^B = \begin{cases} v - w_c \text{ if the worker accepts the contract} \\ 0 \text{ if the worker rejects the contract} \end{cases}$$

The Boss's period 2 payoff is

$$u_2^B = \begin{cases} 0 \text{ if the worker accepted the contract but leaves} \\ v - w_c \text{ if the worker accepted, was not promoted and stays} \\ rdY - w_m \text{ if the worker accepted, was promoted and stays} \end{cases}$$

where r is the probability the manager recommends a policy project and d is the probability that the Boss accepts the recommendation.[8]

For the Subordinate, the period 1 payoff is

$$u_1^s = \begin{cases} w_c - c(e) \text{ if the worker accepts the contract} \\ s_c \text{ if the worker rejects the contract} \end{cases}$$

The period 2 payoff is

$$u_2^s = \begin{cases} s_m \text{ if rejected in period 1} \\ s_c \text{ if accepted, not promoted, and left} \\ s_i \text{ if accepted, promoted, and left} \\ w_c \text{ if accepted, not promoted, and stayed} \\ w_m + \theta rdX - c(a;e) \text{ if accepted, promoted, and stayed} \end{cases} \tag{1}$$

where again r is the probability of making a positive recommendation and d is the probability that the Boss accepts a positive recommendation.

In what follows, we impose considerable structure on the two cost functions and (as explained above) the outside wage function. In particular we assume that $c(e) = ke^2$ (so $c(0) = 0$, $c' > 0$, and $c' > 0$), and we will assume $c(a,e) = \gamma a^2$ where $\gamma = 1/e$. For Type I agencies, we assume $s_i = s_c$ so investment in policy expertise brings no increase in outside wages. For Type II agencies, we assume $s_i = \kappa\bar{e}^2$ so that outside wages increase rapidly in demonstrated policy expertise. (Obviously this assumption may only hold "locally," that is, over a range of expertise.) Both are polar assumptions but distinguish clearly between two wage dynamics.

III. Equilibrium

Some overview.

Although the construction of equilibria is somewhat involved, the following points may clarify the basic logic. In Type I agencies, outside wages are unresponsive to expertise acquired in the agency. Consequently, the agency must compensate an employee for her training costs, if she is to acquire expertise. Critically, zealots receive job satisfaction from occupying a policy-making billet, and this utility wedge between them and slackers allows the agency to set promotion standards and managerial wages that motivate zealots to seek promotion but fail to motivate slackers, hence screening. In Type II agencies, outside wages are highly response to expertise acquired in the agency. The agency must respond to there favorable outside opportunities as it sets managerial wages, if it is to retain employees. But again, the utility wedge between zealots and slackers allows the agency to set promotion standards and wages that will motivate zealots to remain with the agency but will fail to do so for slackers; hence, sorting.

A. Policy Making

Manager Recommendations and Boss Decisions.—We begin by analyzing the play of the game after a manager (a promoted Subordinate) has undertaken his work effort a (which may be zero). One of four states then prevails, and the manager knows which one: (X_H, Y_H), $(X_H, Y_L), (X_L, Y_H)$, and (X_L, X_H). The Boss does not know which state exists. A recommendation strategy r maps the type of the manager (slacker or zealot) and these four states into a positive or negative recommendation (that is, the manager recommends the project he has uncovered, if any, or he does not). The manager's objective is to set this recommendation strategy to maximize $\theta r d X$ (see Equation 1).

Following a positive recommendation, with probability π the Boss becomes informed and learns which state prevails. If he is informed, a decision strategy d maps the four states into an accept/reject decision. If he is not informed, the Boss can condition his decision only on the facts that the manager passed the civil service exam and has now made a positive recommendation. Define the set $\Sigma = \{Y_H, Y_L, \varnothing\}$ with element σ, where $\varnothing$ connotes the uninformed state for the Boss.

Lemma 1. *For the manager:*

$$r^*(X, Y; \theta) = \begin{cases} 1 \text{ (recommend) if } \theta = 1 \text{ and } X = X_H \\ 0 \text{ (don't recommend) otherwise} \end{cases}$$

For the Boss: If $p \geq p^*$

$$d^*(\sigma; p) = \begin{cases} 0 \text{ (reject) if informed and } Y = Y_L \\ 1 \text{ (accept) otherwise} \end{cases}$$

If $p < p^*$

$$d^*(\sigma; p) = \begin{cases} 1 \text{ (accept) if informed and } Y = Y_L \\ 0 \text{ (reject) otherwise} \end{cases}$$

where $p^* \equiv -\frac{Y_L}{Y_H - Y_L}$.

Proof. First consider the manager's recommendation strategy $r()$. In light of Equation **??**, any deviation from the indicated strategy brings a loss to a zealot-type manager given the indicated decision strategy $d^*(\sigma)$, and in fact would do so whenever there is a positive probability the Boss accepts the proposed policy project. Because a slacker-type manager is indifferent between X_L and X_H, he has no incentive to deviate to "recommend" if either $X = X_L$ or $X = X_H$. (As will become clear in the next Lemma, $X = X_H$ is actually off the equilibrium path if the manager is a slacker.) If one assumes an ϵ cost to the manager from a positive recommendation, then a slacker has a disincentive to deviate from the indicated strategy regardless of X. Now consider the Boss's decision strategy. Clearly, if informed the Boss will reject the recommended project if $Y = Y_L$ and accept if $Y = Y_H$. If uninformed, Boss will accept if $\mu Y_H + (1-\mu)Y_L > 0$, where μ denotes Boss's posterior belief that $Y = Y_H$ given being uninformed and manager's recommendation strategy. From Bayes's Rule conditional on a positive recommendation

$$
\begin{aligned}
\mu &= \frac{p * r(X_H|\theta=1) + q * r(X_L|\theta=1)}{p * r(X_H|\theta=1) + (1-p)r(X_H|\theta=1) + q * r(X_L|\theta=1) + (1-q)r(_L|\theta=1)} \\
&= \frac{p * r(X_H|\theta=1) + 0}{p * r(X_H|\theta=1) + (1-p)r(X_H|\theta=1) + 0 + 0} \\
&= \frac{p * 1}{p * 1 + (1-p)(1)} = p
\end{aligned}
$$

Hence, Boss will accept when uninformed if $pY_H + (1-p)Y_L > 0 \Rightarrow p \geq -\frac{Y_L}{Y_H - Y_L}$. If $p < -\frac{Y_L}{Y_H - Y_L}$ Boss will reject when uninformed. QED

The Lemma indicates that a zealot-type manager recommends a project if and only if he prefers the project to the status quo; a zealot-type manager does not recommend a project favored by the Boss if he himself does not favor the policy project. Indeed, this is a dominant strategy for zealot-managers. If the Boss's centralized review reveals the nature of the project, then his action is obvious: approve only "good" projects. But what to do if centralized review fails? The answer depends on the degree of policy convergence between the Boss and the manager. If close enough, the Boss will accept the Subordinate's "pig in a poke." But if not, the Boss will reject all recommendations absent confirmation of their value from his own review.

Manager's Policy-making Effort.—In deciding on a level of work a, the manager takes as given the level of politicization π and the cost-of-effort parameter γ. From his perspective, the ex ante probability of each (X, Y) state is:

$$\begin{aligned}
\Pr(X_H, Y_H) &= ap \\
\Pr(X_H, Y_L) &= a(1-p) \\
\Pr(X_L, Y_H) &= (1-a)q \\
\Pr(X_L, Y_H) &= (1-a)(1-q)
\end{aligned}$$

Given the strategies in Lemma 1, if $p \geq p^*$ the manager seeks to maximize

$$\begin{aligned}
(2) \qquad & w_m + \theta\left[\pi(apX_H) + (1-\pi)(ap + a(1-p))X_H\right] - \gamma a^2 \\
= \;& w_m + \theta a(1-(1-p)\pi)X_H - \gamma a^2
\end{aligned}$$

However, if $p < p^*$ the manager seeks to maximize

$$(3) \qquad w_m + \theta\left[\pi(apX_H) + (1-\pi)(0)\right] - \gamma a^2$$

Lemma 2. *For a promoted Subordinate optimal policy-making effort is:*

$$(4) \qquad a^*(\pi, \gamma; \theta) = \begin{cases} \theta\left(\frac{(1-(1-p)\pi)X_H}{2\gamma}\right) & \text{if } p \geq p^* \\ \theta\left(\frac{p\pi X_H}{2\gamma}\right) & \text{if } p < p^* \end{cases}$$

where $p^* \equiv -\frac{Y_L}{Y_H - Y_L}$.

Proof. i) A slacker ($\theta = 0$) clearly undertakes no policy effort as it brings no utility gain and an effort loss. ii) For a zealot ($\theta = 1$), the indicated results follow immediately from the first order condition for the manager's optimization programs Equation 2 and Equation 3. QED

Note that a slacker undertakes no effort, while a zealot undertakes positive effort for any level of politicization, in both regimes. We will consider in more detail the comparative statics of effort subsequently.

B. The Internal Labor Market

We now turn to the agency's internal labor market: the decisions of subordinates to join the agency and remain employed there rather than exit for the private sector, the agency's promotion decision, and subordinates' acquisition of human capital.

The Exit or Stay Decision Following the Exam.—Consider the decision of the subordinate, taken after the promotion decision, to stay or exit. There are four potential classes of employees: a promoted zealot, a non-promoted zealot, a promoted slacker, and a non-promoted slacker. That is, a zealot-type manager, a zealot-type clerk, a slacker-type manager, and a slacker-type clerk.[9] Each compares the expected value of remaining in the agency, with exiting and receiving the outside wage. For a newly promoted manager, the outside wage is s_i (whose value is either s_c in a Type I agency or $s_i = s_c + \kappa\bar{e}^2$ in a Type II agency). For a non-promoted clerk, the outside wage is s_c.

The expected utility of staying is easily calculated. First consider a zealot-type manager ($\theta = 1$). Substituting Equation 4 into Equation 2, yields the expected utility of staying

$$(5) \qquad Eu_2^s|stay, \theta = 1 = \begin{cases} w_m + \frac{(1-(1-p)\pi)^2}{4\gamma}(X_H)^2 \text{ if } p \geq p^* \\ w_m + \frac{p^2\pi^2 X_H}{4\gamma} \text{ if } p < p^* \end{cases}$$

It proves convenient to define $\beta(p)$ which takes the values $\beta \equiv \frac{(1-(1-p)\pi)^2}{4}(X_H)^2$ and $\widehat{\beta} \equiv \frac{p^2\pi^2 X_H}{4}$ so that this expression becomes

$$Eu_2^s|stay, \theta = 1 = \begin{cases} w_m + \frac{\beta}{\gamma} \text{ if } p \geq p^* \\ w_m + \frac{\widehat{\beta}}{\gamma} \text{ if } p < p^* \end{cases}$$

The terms $\frac{\beta}{\gamma}$ and $\frac{\widehat{\beta}}{\gamma}$ constitute the non-wage portion of the zealot-manager's expected utility, due to his policy-making efforts – they indicate the non-wage "job satisfaction" received by a zealot in a policy-making position. Note that these terms must be non-negative.

Now consider a slacker-type manager ($\theta = 0$). Such a subordinate does not value policy (moreover, via Lemma 2 he undertakes no policy work and consequently would not find an X_H project in any case). Given this, his expected utility from staying is simply his wage w_m. Similarly, a slacker-type clerk will not undertake any investment in expertise since there is no opportunity for promotion. Hence, his expected utility is simply his wage w_c. Finally, consider a zealot-type clerk. Because he was not promoted, the manager job remains unfilled so no manager recommends a project. Hence the expected policy value of agency action is zero. And without the prospect of promotion, the zealot-type clerk will not invest in human capital. Hence, his expected utility in the second period is also simply the wage w_c. Thus we have:

$$Eu_2^s|stay = \begin{cases} w_m + \theta\frac{\beta}{\gamma} \text{ if promoted and } p \geq p^* \\ w_m + \theta\frac{\widehat{\beta}}{\gamma} \text{ if promoted and } p < p^* \\ w_c \text{ if not promoted} \end{cases} \tag{6}$$

Lemma 3. *a) If $p \geq p^*$ a zealot-type manager will remain with the agency if and only if $\frac{\beta}{\gamma} \geq s_i - w_m$; b) If $p < p^*$ a zealot-type manager will remain with the agency if and only if $\frac{\widehat{\beta}}{\gamma} \geq s_i - w_m$; c) A slacker-type manager will exit the agency if and only if $s_i \geq w_m$; c) Non-promoted subordinates will remain with the agency if and only if $w_c \geq s_c$.*

Proof. Follows from comparison of the expected utilities in Equation 6 with the outside wages for clerks and managers (s_c and s_i, respectively). QED

An implication of the Lemma is that managerial sorting will occur if

$$w_m < s_i \leq w_m + \frac{\beta(p)}{\gamma} \tag{7}$$

If this *sorting condition* holds, promoted zealots will stay in the agency but promoted slackers will exit. Conversely, if $s_i < w_m$ sorting cannot work since both slackers and zealots, if promoted, will remain with the agency. Retention of clerks requires that the agency wage for clerks be at least as good as the private wage for clerks ($w_c \geq s_c$).

C. Expertise Acquisition and Promotion

In order to be promoted, a clerk must acquire expertise at least as great as the promotion standard $\overline{e}$. When will it be worthwhile for him to do so? It is easily seen that if outside wages have not risen as quickly in expertise as have training costs at the point $e = \overline{e}$, then compensation from being an agency manager must offset the training costs. In other words, managerial wages and job satisfaction must make training worthwhile. Conversely, if outside wages have risen faster than did training costs at the point $e = \overline{e}$ then it will be worthwhile to acquire expertise up to the promotion standard. Of course, a zealot might still prefer to remain with the agency, if managerial wages and job satisfaction are even more remunerative than the outside wage.

The following rather trivial Lemma formalizes these simple intuitions.

Lemma 4. *A clerk invests in expertise to the promotion standard $\overline{e}$ if and only if* $\max\{w_m + \theta\beta(p)\overline{e}, s_i\} - k\overline{e}^2 \geq w_c$.

Proof. Obvious: the lemma asserts only that either the managerial wage inside the agency or the private sector wage available after promotion must be high enough to offset the cost of acquiring expertise up to the promotion standard, so that investment and promotion is at least as good as not investing and not being promoted. QED

The lemma does have an important implication, however.

Corollary 5. *In a Type I agency, investment to $\overline{e}$ requires $w_m \geq w_c + k\overline{e}^2 - \beta(p)\overline{e}$ for a zealot and $w_m \geq w_c + k\overline{e}^2$ for a slacker, and if*

$$w_c + k\overline{e}^2 - \beta(p)\overline{e} \leq w_m < w_c + k\overline{e}^2 \tag{8}$$

then zealots acquire expertise and are promoted while slackers do not acquire expertise and are not promoted.

Proof. In a Type I agency $s_i = s_c$ so if investment in expertise is to take place, it must be driven by the managerial wage. The two conditions then just re-state the lemma, and the screening condition follows immediately from the two conditions. QED

Equation 8 indicates a set of managerial wages that will induce a zealot in a Type I agency to invest in expertise up to the promotion standard, but will not do so for the slacker. Equation 8 thus provides the *screening condition* for Type I agencies. If this condition holds, zealots will invest in expertise and be promoted but slackers will not. The condition exploits the fact that zealots receive job satisfaction from the policy making job while slackers to not. Hence, one can pay a wage that compensates zealots for their efforts, but will not compensate slackers for theirs.

The following corollary provides some insight into behavior in Type II agencies.

Corollary 6. *If $w_m \leq w_c + \kappa\overline{e}^2 - \beta(p)\overline{e}$ then investment to the promotion standard $\overline{e}$ requires $\kappa \geq k$ and both slackers and zealots invest in expertise to the promotion standard.*

Proof. If $w_m + \beta(p)\overline{e} = w_c + \kappa\overline{e}^2$ (that is, if $w_m = w_c + \kappa\overline{e}^2 - \beta(p)\overline{e}$) then a promoted zealot is exactly indifferent between the managerial wage and the outside wage. But, using the lemma, if $w_m \leq w_c + \kappa\overline{e}^2 - \beta(p)\overline{e}$ then the critical condition for investment for a zealot is $s_i - k\overline{e}^2 \geq w_c$, that is, $w_c + \kappa\overline{e}^2 - k\overline{e}^2 \geq w_c \Rightarrow \kappa \geq k$. And, if $w_m \leq w_c + \kappa\overline{e}^2 - \beta(p)\overline{e}$ then $w_m \leq w_c + \kappa\overline{e}^2$ so the slacker also invests. QED

Initial Employment Decision .—A potential employee compares his expected utility from employment in the government agency, with his expected utility from employment in the private sector. If he is to accept employment with the agency, the return from the ensuing public career must be at least as good as that from a private sector career. The expected utility of a private sector career is $s_c + s_m$ Hence, it must be the case that a public career yields at payoff of at least $s_c + s_m$.(Recall that s_m is the expected net payoff in the second

Table 1: EU of Slacker-type Upon Joining the Agency

	Stay	Exit
Invest	$w_c + w_m - k\overline{e}^2$	$w_c + s_i - k\overline{e}^2$
Don't Invest	$2w_c$	$w_c + s_c$

Table 2: EU of Zealot-type Upon Joining the Agency

	Stay	Exit
Invest	$w_c + w_m + \beta\overline{e} - k\overline{e}^2$	$w_c + s_i - k\overline{e}^2$
Don't Invest	$2w_c$	$w_c + s_c$

period in the private sector, which reflects promotion probabilities, cost of human capital investment in the private sector, and so on).

The expected utility of a public career depends on whether the employee invests in human capital and receives promotion, or doesn't invest and isn't promoted (as indicated by Lemma 4), and whether the employee exits or remains in the agency after the promotion/no promotion event (as indicated by Lemma 3). There are thus four possible public sector careers, each with a specific utility. These possible careers and associated utilities are shown in Tables 1 and 2, the first table for slackers, the second for zealots. In any equilibrium in which one of these eight careers occurs, *the payoff from that career must yield at least* $s_c + s_m$.

We now consider the implications of this fact in two candidate equilibria. In a *screening equilibrium*, we conjecture that slackers do not invest in expertise to the promotion standard and are not promoted, but remain with the agency. In contrast, zealots do invest, are promoted, and remain with the agency. In a *sorting equilibrium*, both slackers and zealots invest and are promoted. But then, the slackers exit while the zealots remain.

Lemma 7. *1. In the conjectured screening equilibrium, a)* $w_c \geq \frac{s_c+s_m}{2}$ *and b) if the entry wage is set so slackers are indifferent between a public and private career, then* $w_m+\beta\overline{e}-k\overline{e}^2 \geq w_c$*. 2. In the conjectured sorting equilibrium, if employees are indifferent between a public and private career then a)* $w_m + \beta\overline{e} = s_i$ *and b) if* $s_i - k\overline{e}^2$ *rises (falls) in* $\overline{e}$ *than* w_c *must fall (rise) in* $\overline{e}$*.*

Proof. 1a. The conjectured equilibrium requires for slackers $2w_c \geq s_c + s_m$, which implies $w_c \geq \frac{s_c+s_m}{2}$. 1b. If slackers are indifferent then $w_c = \frac{s_c+s_m}{2}$ and $s_c+s_m = 2w_c$.The conjectured equilibrium requires for zealots $w_c + w_m + \beta\overline{e} - k\overline{e}^2 \geq s_c + s_m$, and the result follows immediately. 2a. Given indifference, the conjecture equilibrium requires both $w_c + w_m + \beta\overline{e} - k\overline{e}^2 = s_c + s_m$ and $w_c + s_i - k\overline{e}^2 = s_c + s_m$. Hence $w_c + w_m + \beta\overline{e} - k\overline{e}^2 = w_c + s_i - k\overline{e}^2$, or $w_m + \beta\overline{e} = s_i$. 2b. The conjectured equilibrium requires that $w_c + s_i - k\overline{e}^2 = s_c + s_m$. Clearly if $s_i - k\overline{e}^2$ varies in $\overline{e}$ then w_c must adjust to maintain the equality. QED

D. Agency Design

We now turn to the Boss's design of the agency. We examine Type I and Type II agencies separately, though the two analyses parallel one another closely. Broadly speaking, the need to efficiently induce screening or sorting ties down the managerial wage function. Given this, the Boss sets the politicization level and promotion standard to maximize his utility, taking into account the effects on policy-making.

Type I Agencies.—In a Type I agency, where the post-promotion outside wage s_i is unresponsive to expertise, the managerial wage must compensate subordinates who invest in expertise for their training costs. And, it is highly desirable to set the wage to induce screening, so that zealots acquire expertise, are promoted, remain with agency, and work to generate policy projects, while slackers do not acquire expertise and are not promoted. Screening avoids paying slackers to invest in expertise, a pointless endeavor since they will not engage in policy work if promoted. Moreover, the least cost screening wage is actually lower than the least-cost non-screening wage (that is, one that induces slackers to invest as well as zealots). Examination of Equation 8 indicates that the least cost screening wage is

$$w_m = w_c + k\overline{e}^2 - \beta(p)\overline{e}$$

We now derive the Boss's expected utility in the design variables. In a screening equilibrium in a Type I agency, if the employee is a zealot then the Boss's expected utility in the second period is

$$\begin{aligned} Eu_2^B|\theta &= 1 = \pi(a^*pY_H) + (1-\pi)(a^*pY_H + a^*(1-p)Y_L) - w_m \\ &= a^*(pY_H + (1-\pi)(1-p)Y_L) - w_m \end{aligned}$$

if $p \geq p^*$. If $p < p^*$ then

$$Eu_2^B|\theta = 1 = \pi(a^*pY_H) + (1-\pi)(0) - w_m$$

so that

$$Eu_2^B|\theta = 1 = \begin{cases} a^*(pY_H + (1-\pi)(1-p)Y_L) - w_m \text{ if } p \geq p^* \\ \pi(a^*pY_H) - w_m \text{ if } p < p^* \end{cases} \tag{9}$$

Let λ denote the proportion of zealots in the employment pool. Then the Boss's expected utility at the design stage is:

$$\begin{aligned} Eu^B &= v - w_c + (1-\lambda)(v - w_c) + \lambda(Eu_2^B|\theta = 1) \\ &= (2-\lambda)(v - w_c) + \lambda(Eu_2^B|\theta = 1) \end{aligned}$$

Clearly the values of π and $\bar{e}$ that maximize Eu_2^B also maximize $Eu_2^B|\theta = 1$ (provided w_c is not affected by the values of those variables, a point we return to below). Returning then to Equation 9, recall the definition of a^* for Lemma 2, recall that $\gamma = 1/e$, and recall the definition of $\beta(p)$. Combining these with the definition of the least-cost screening wage yields:

$$Eu_2^B|\theta = 1 =$$

(10)

$$\begin{cases} \left(\frac{1-(1-p)\pi}{2}X_H\overline{e}\right)(pY_H+(1-\pi)(1-p)Y_L)-k\overline{e}^2+\left(\frac{(1-(1-p)\pi)^2(X_h)^2}{4}\right)\overline{e}-w_c \text{ if } p\geq p^* \\ \left(\frac{p^2\pi^2(X_H+2Y_H)}{4}\right)\overline{e}-k\overline{e}^2-w_c \text{ if } p<p^* \end{cases}$$

Optimal values of π and $\overline{e}$ may now be found straightforwardly and are indicated in the following lemma.

Lemma 8. *The optimal level of politicization and optimal promotion standard are:*

$$\pi^*(p,Y_H,Y_L,X_H)=\begin{cases} 1 \textit{ if } p<p^* \\ \frac{X_H+2Y_L+p(Y_H-Y_L)}{(1-p)(X_H+2Y_L)} \textit{ if } p^*\leq p\leq p^{**} \\ 0 \textit{ if } p>p^{**} \end{cases}$$

$$\overline{e}^*(p,Y_H,Y_L,X_H,k)=\begin{cases} \frac{p^2X_H(X_H+2Y_H)}{8k} \textit{ if } p<p^* \\ -\frac{p^2X_H(Y_H-Y_L)^2}{(X_H+2Y_L)8k} \textit{ if } p^*\leq p\leq p^{**} \\ \frac{X_H(X_H+2(p(Y_H-Y_L)+Y_L))}{8k} \textit{ if } p>p^{**} \end{cases}$$

where $p^*=-\frac{Y_L}{Y_H-Y_L}$ *and* $p^{**}\equiv-\frac{X_H+2Y_L}{Y_H-Y_L}$.

Proof. First, note that because π is a probability it is bounded by 0 and 1, while e must be non-negative. Hence it is necessary to consider corner solutions where $\pi=1$ or 0 and $e=0$. However, for interior solutions one need only examine the first order conditions for maximizing Equation (where $p\in[-\frac{Y_L}{Y_H-Y_L},1]$) and (where $p\in[0,-\frac{Y_L}{Y_H-Y_L}]$). For the former, the relevant partial derivatives are:

$$\frac{\partial}{\partial\pi}Eu_2^B(\cdot)=-\frac{e(1-\pi)X_H\left[2Y_L(1-\pi)+X_H(1-(1-p)\pi)+p(Y_H-Y_L+2Y_L\pi)\right]}{2}$$

$$\frac{\partial}{\partial e}Eu_2^B(\cdot)=\frac{-8ek+2X_H\left[pY_H+(1-p)(1-\pi)Y_L\right](1-(1-p))+X_H^2(1-(1-p)\pi)^2}{4}$$

Setting both to zero and solving simultaneously yields $\pi^*(p,Y_H,Y_L,X_H)=\frac{X_H+2Y_L+p(Y_H-Y_L)}{(1-p)(X_H+2Y_L)}$ and $\overline{e}^*(p,Y_H,Y_L,X_H,k)=-\frac{p^2X_H(Y_H-Y_L)^2}{(X_H+2Y_L)8k}$ respectively. Note that these solutions require

$X_H + 2Y_L < 0$. In addition, $\pi = \frac{X_H+2Y_L+p(Y_H-Y_L)}{(1-p)(X_H+2Y_L)} = 0$ at $p = -\frac{X_H+2Y_L}{Y_H-Y_L} \equiv p^{**}$, implying $\pi = 0$ for values of $p > p^{**}$. But, given $\pi = 0$ $\frac{\partial}{\partial e}Eu_2^B(\cdot) = \frac{-8ek+X_H[X_H+2(p(Y_H-Y_L)+Y_L]}{4}$ implying $e = \frac{X_H(X_H+2(p(Y_H-Y_L)+Y_L))}{8k}$.Now consider Equation **??**. In this case the relevant partial derivatives are:

$$\frac{\partial}{\partial \pi}Eu_2^B(\cdot) = \frac{ep^2X_H(Y_H+2Y_H)\pi}{2}$$

$$\frac{\partial}{\partial e}Eu_2^B(\cdot) = \frac{-8ek+p^2X_H(X_H+2Y_H)\pi^2}{4}$$

Note that the first of these is positive, implying a corner solution $\pi = 1$. Given this, $e = \frac{p^2X_H(X_H+2Y_H)}{8k}$.QED

The lemma introduces a new condition, $p^{**} \equiv -\frac{X_H+2Y_L}{Y_H-Y_L}$. At this level of interest convergence, the optimal level of politicization goes to zero.

Now consider the entry level wage, w_c. Recall s_m, the net expected payoff in the second period from pursuing a private sector career. This value reflects promotion probabilities, the effort costs of investment in human capital, and so on.

Lemma 9. *In a Type I agency where π^* and $\overline{e}^*$ are set according to Lemma __, then $w_c = \frac{s_c+s_m}{2}$ assures both slackers and zealots accept initial employment with the agency.*

Proof. Slackers employed in the agency do not seek promotion and thus receive $2w_c$. The relevant participation constraint is thus $2w_c \geq s_c+s_m$ and the least-cost entry wage satisfying this $w_c = \frac{s_s+s_m}{2}$. For zealots, the equilibrium is constructed so that a zealot employed by the agency is just indifferent between investing in expertise and being promoted, and not investing. Hence the same participation constraint applies. QED

If the average private sector wage profile is increasing, the lemma implies that entry-level wages in the public sector will be somewhat higher than entry-level wages in the private sector. In addition, suppose there are two classes of slacker-type employees who respectively face expected wages $s_m^A < s_m^B$. If the agency is not allowed to discriminate between members of the groups and must set entry-level wages using mean wages, then members of the

"A" group, suffering discrimination in the private market, will find agency employment particularly attractive. In addition adverse selection may lead a slacker to opt for agency employment (that is, if a slacker has private information that his likely prospects in the private sector are rather unfavorable.)

// Note: In the next version of the paper we will consider whether there are parameter values such that the political appointee actually prefers to drive all potential employees into the private sector, thereby shutting down the agency. //

We can now combine results to indicate the screening equilibrium in Type I agencies.

Proposition 10. *In a Type I agency the following is an equilibrium. The Boss offers the contract* $(w_c, w_m, \bar{e}^*)$ *and then chooses a level of politicization* π^*, *where* $w_c = \frac{s_c+s_m}{2}$, $w_m = k\bar{e}^2 - \beta(p)\bar{e} + w_c$ *and* $\bar{e}^*$ *and* π^* *are defined in Lemma _. Both slackers and zealots accept the contract; zealots invest in expertise level* $\bar{e}^*$ *and are promoted while stackers do not invest and are not promoted. Zealots then undertake policy making effort* a^* *defined in Lemma __ and recommend a project if and only if they discover* $X > 0$. *If central review reveals* $Y > 0$ *the Boss accepts the project. Otherwise he accepts the recommendation if and only if* $p \geq p^*$.

Proof. Follows from above Lemmata. QED

Type II Agencies.—In a Type II agency, where the post-promotion outside wage s_i is highly responsive to demonstrated expertise, the managerial wage must track the available outside wage after promotion, otherwise promoted employees will exit for the private sector. And, it is highly desirable to set the managerial wage to induce sorting, so that both slackers and zealots acquire expertise and are promoted but only zealots choose to remain with agency. Sorting avoids paying the managerial wage to slackers who will not engage in policy work if promoted. Moreover, the least-cost sorting wage is actually lower than the least-cost non-sorting age (that is, one that induces slackers to remain in the agency as well as zealots). Examination of Equation 7 indicates that the least-cost sorting wage is

$$w_m = s_i - \beta(p)\bar{e} = w_c + \kappa\bar{e}^2 - \beta(p)\bar{e}$$

Recall from Lemma __ that if $s_i - k\overline{e}^2$ varies in $\overline{e}$ then w_c must adjust. The required relation is that $w_c \geq s_c + s_m - s_i + k\overline{e}^2$ and the least-cost entry wage is then

$$w_c = \frac{s_c + s_m - \overline{e}^2(\kappa - k)}{2}$$

As we assume $\kappa \geq k$, entry wages fall in the promotion standard $\overline{e}$.

The Boss's expected second period utility, given a promoted zealot, remains that shown in Equation 9:

$$Eu_2^B|\theta = 1 = \begin{cases} a^*(pY_H + (1-\pi)(1-p)Y_L) - w_m \text{ if } p \geq p^* \\ \pi(a^* pY_H) - w_m \text{ if } p < p^* \end{cases}$$

However, the Boss's expected utility at the design stage is now:

$$\begin{aligned} Eu^B &= v - w_c + (1-\lambda)(0) + \lambda(Eu_2^B|\theta = 1) \\ &= v - w_c + \lambda(Eu_2^B|\theta = 1) \end{aligned}$$

Employing the definitions for w_c, a^*, w_m, and $\beta(p)$ yields the following maximand when $p \geq p^*$

$$\begin{aligned} &\frac{1}{2}\left[\overline{e}^2(\kappa - k) - s_c - s_m\right] + v + \frac{1}{4}\lambda[-4\kappa\overline{e}^2 - 2(\overline{e}^2(\kappa - k) + s_c + s_m) + \\ &2\overline{e}X_H\left(pY_H + (1-p)(1-\pi)Y_L\right)\left(1 - (1-p)\pi\right) + \overline{e}X_H^2\left(1 - (1-p)\pi\right)^2] \end{aligned}$$

However, when $p < p^*$ the Boss's maximand is

$$v + \frac{1}{4}[-2\left(\overline{e}(k - \kappa) + s_c + s_m\right)(1 + \lambda) + \overline{e}\lambda\left(-4\kappa\overline{e} + p^2 X_H\left(X_H + 2Y_H\right)\pi^2\right)]$$

The following results follow straightforwardly:

Lemma 11. *The optimal level of politicization and optimal promotion standard are:*

$$\pi^*(p,Y_H,Y_L,X_H) = \begin{cases} 1 \textit{ if } p < p^* \\ \frac{X_H+2Y_L+p(Y_H-Y_L)}{(1-p)(X_H+2Y_L)} \textit{ if } p^* \leq p \leq p^{**} \\ 0 \textit{ if } p > p^{**} \end{cases}$$

$$\overline{e}^*(p,Y_H,Y_L,X_H,k) = \begin{cases} \frac{p^2X_H(X_H+2Y_H)}{8\kappa} \textit{ if } p < p^* \\ -\frac{p^2X_H(Y_H-Y_L)^2\lambda}{4(X_H+2Y_L)[k(1+\lambda)-\kappa(1-\lambda)]} \textit{ if } p^* \leq p \leq p^{**} \\ \frac{X_H(X_H+2(p(Y_H-Y_L)+Y_L))\lambda}{4[k(1+\lambda)-\kappa(1-\lambda)]} \textit{ if } p > p^{**} \end{cases}$$

where $p^* = -\frac{Y_L}{Y_H-Y_L}$ *and* $p^{**} \equiv -\frac{X_H+2Y_L}{Y_H-Y_L}$.

Proof. The proof is virtually identical to that of Lemma __, and is omitted for brevity.

The results for politicization are the same as for Type I agencies, however those for the promotion standard differ slightly.

Proposition 12. *In a Type II agency the following is an equilibrium. The Boss offers the contract* $(w_c, w_m, \overline{e}^*)$ *and then chooses a level of politicization* π^**, where* $w_c = \frac{s_c+s_m-\overline{e}^2(\kappa-k)}{2}$, $w_m = s_i - \beta(p)\overline{e} = w_c + \kappa\overline{e}^2 - \beta(p)\overline{e}$ *and* $\overline{e}^*$ *and* π^* *are defined in Lemma _. Both slackers and zealots accept the contract and both invest in expertise to the promotion standard* $\overline{e}^*$ *and are promoted. Slackers then exit the agency while zealots remain and undertake policy making effort* a^* *defined in Lemma __. Promoted zealots recommend a project if and only if they discover* $X > 0$*. If central review reveals* $Y > 0$ *the Boss accepts the project. Otherwise he accepts the recommendation if and only if* $p \geq p^*$*.*

Proof. Follows from above Lemmata. QED

E. Examples and Discussion

After the blizzard of algebra, it may be useful to examine briefly two simple examples that illustrate screening and sorting in action.[10]

Table 3: EU of Slacker-type in Type I Agency

	Stay	Exit
Invest	.42	1.02
Don't Invest	1.1$*$	1.05

Screening in a Type I Agency.—Consider a Type I agency. Type I agencies operate in an environment in which outside employers do not particularly value the expertise acquired by managers in the agency. More formally, we require that at $\bar{e}$, $s_i - w_c < c(\bar{e})$. The preceding section has argued that such agencies can motivate zealots to acquire costly expertise and assume supervisory roles in the agency while screening out slackers from the top ranks of the agency. This is important because slackers, unlike zealots, shirk their policy work.

The following example shows the screening equilibrium at work. In the example, the values for the parameters are: $X_H = 1/2$, $Y_H = 1$, $Y_L = -1$, $p = 2/3$, $k = 1/36$, $s_c = 1/2$, $s_m = 6/10$, $s_i = 2/3$. In the example $p^* < p < p^{**}$ (using the appropriate definitions, $1/2 < 2/3 < 3/4$). Thus, politicization should take an "intermediate" value rather a corner solution of 0 or 1.

In fact, using the formulae derived earlier, we calculate that the Boss offers the contract $(\bar{e} = 8/3, w_c = .55, w_m = .62)$ and then politicizes the agency to the level $\pi^* = 1/3$. Thus, the agency offers higher entry-level wages than does the private sector. Because the cost of training to the promotion standard $\bar{e}$ is $k\bar{e}^2 = .20$ the agency is a Type I agency (we require $s_i - w_c < c(\bar{e})$ which here is $.67 - .55 < .20$).

Will these wages and promotion standard induce screening, given the level of politicization and outside wage? In other words, will a slacker decline to invest in expertise and remain with the agency, while a zealot does invest, receive a promotion into the policy making ranks, and remain with the agency? Tables 1 and 2 indicate the expected utilities of slackers and zealots as they make decision about investment and exit. It is (relatively) straightforward to calculate the values of the expected utilities in the example. These are shown in Tables 3 and 5.

Table 4: EU of Zealot-type in Type I Agency

	Stay	Exit
Invest	1.1∗	1.02
Don't Invest	1.1	1.05

First consider the slacker. The screening equilibrium requires him not to invest in expertise and to remain in the agency as a clerk. As shown, this is clearly the best option for the slacker. The wages received by a slacker who follows the prescribed actions leave him exactly indifferent between a public sector career and a private sector one (as $s_c + s_m = 1.1 = 2w_c$).

Now consider the zealot. The screening equilibrium requires the zealot to invest in expertise, become a manager, and remain with the agency. As shown, a zealot has no profitable deviation from these choices. Indeed, the managerial wage has been set so that a zealot is just indifferent between seeking promotion and remaining a clerk, given the cost of training up to the promotion standard.

The key in constructing the equilibrium is that the zealot prizes the policy making job more than does the slacker, because he expects to derive job satisfaction from setting policy in a job that would otherwise be vacant. As shown, the zealot's net return from investment and promotion, 1.1, is considerably larger than that of the slacker, .42. This reflects the policy returns so valued by zealots.

Sorting in a Type II Agency.—Now consider a Type II agency. Type II agencies operate in an environment in which outside employers highly value the expertise acquired by managers in the agency. More formally, we require that at $\bar{e}$, $s_i(\bar{e}) - w_c > c(\bar{e})$. (Our parameterization of the $s_i(\bar{e})$ and $c(\bar{e})$ functions guarantees that this requirement is satisfied for any value of $\bar{e} > 0$ when $\kappa > k$.)The preceding section has argued that Type II agencies can set wages and promotion standards that motivate zealots and slackers to sort themselves from one another. In particular, wages and standards can be set so that both will acquire costly expertise, but only the zealot will remain with the agency. The slacker will depart for

Table 5: EU of Slacker-type in Type II Agency

	Stay	Exit
Invest	.93	1.1$*$
Don't Invest	.96	.98

Table 6: EU of Zealot-type in Type II Agency

	Stay	Exit
Invest	1.1$*$	1.1
Don't Invest	.96	.98

pastures he sees as greener.

We retain the same parameters from the preceding example. However, now the outside wage s_i is not fixed but reflects the employee's acquisition of expertise, as demonstrated by agency promotion. In addition, the equilibrium requires a specification of λ, the percentage of zealots in the agency's clerks. In this example we assume $\lambda = 1/2$. Finally, we assume $\kappa = 1/25$.

Using the formulae derived earlier, we calculate the Boss now offers the contract ($\bar{e} = 25/13, w_c = .48, w_m = .78$) and then politicizes the agency to the level $\pi^* = 2/3$. To promoted employees, the private sector offers the wage $s_i = .95$, which is considerably higher than the wage the agency pays its promoted policy makers. In addition, the agency offers a somewhat lower enty-level wage than does the private sector. The cost of training to the level $\bar{e}$ is $k\bar{e}^2 = .10$. The agency is indeed a Type II agency (we require $s_i - w_c > c(\bar{e})$ which here is $.95 - .48 > .10$).

Will these wages and promotion standard induce sorting, given the level of politicization and outside wage? In other words, will both slackers and zealots invest in expertise and receive promotion, with the zealots opting to remain in the agency as policy makers while the slackers depart for the private sector? Again we calculate the expected utilities of different actions for the actors and display them, here in Tables 5 and 6. As shown, the best choice for the slacker is to invest and depart. The prescribed action for the zealot is to invest and stay, and as indicated he has no incentive to deviate from this action. The agency wage has been set so that a promoted zealot is just indifferent between staying and going. However, a zealot does much better staying than would a slacker (1.1 versus .93). As the agency economizes at its available margins, both slackers and zealots are indifferent between public and private careers.

Discussion.—

IV. Comparative Statics

//This section is even more incomplete than the others!//

We focus on the impact of policy disagreement on: 1) politicization, 2) expertise acquisition, 3) policy making effort, 3) wages and the wage structure in the agency, and 4) agency innovation, that is, the adoption of policy recommendations. The model's comparative statics are much richer, however. Other comparative static variables include: the impact of outside wages (s_c, s_m), including the sensitivity of employers to agency expertise (κ) in Type II agencies; the intensity with which the Boss dislikes proposals he sees as unfavorable (magnitude of Y_L); and the intensity with which the manager likes proposals he sees as favorable (magnitude of X_H).

To generate figures, we employ the same parameter values used in the earlier example.

A. Policy Agreement and Politicization

See Figure 2. As shown, politicization decreases (weakly) monotonically as the likelihood of policy agreement (p) increases. The three politicization regimes are very clear in the figure: when the likelihood of disagreement is high, the Boss fully politicizes so that he audits every recommendation of the subordinate; when disagreement is moderate, level of politicization are moderate; and when the likelihood of disagreement is low, the Boss does not politicize at all.

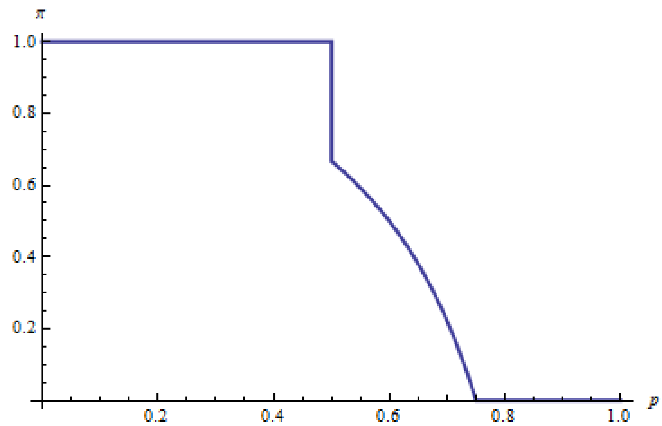

Figure 2: Impact of Policy Agreement on Agency Politicization

B. Policy Agreement and Expertise Acquisition

See Figure 3. In both Type I and Type II agencies, expertise increases monotonically as the likelihood of policy agreement increases. The effect of the jump to a completely polarized environment is clearer in the example in the Type II agency but occurs in both types.

C. Policy Agreement and Managerial Work Effort

See Figure 4. Greater policy agreement brings forth greater work effort.

D. Policy Agreement and Wages

V. Discussion and Conclusion

A The First Appendix

B Another Appendix

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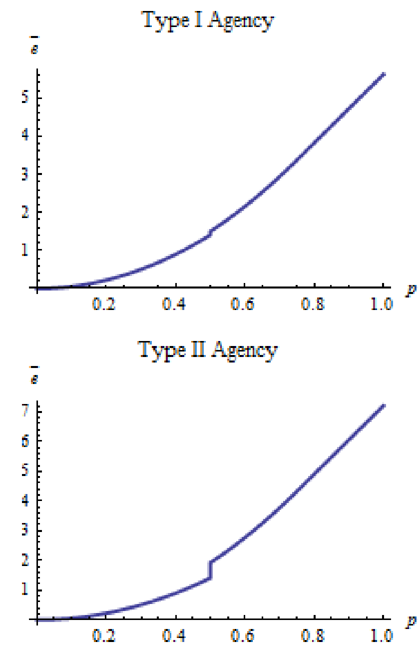

Figure 3: Effect of Policy Agreement on Expertise Acquisition

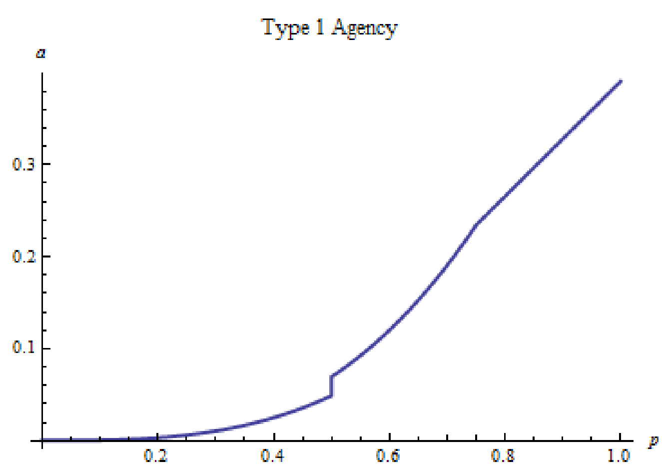

Figure 4: Effect of Policy Agreement on Managerial Work Levels

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Notes

*Note containing author address and acknowledgements.

[1]The critical distinction between the two types of agencies is the rise in outside wages, in response to expertise acquisition, relative to the rise in training costs associated with expertise acquistion. In Type I agencies, training costs rise faster than outside wage. In Type II agencies, outside wages rise faster than training costs.

[2]Following Aghion and Tirole 1997 and Baker, Gibbons, Murphy 1999, we treat workers as recommending "projects" which may bring disutility to the supervisor. In contrast, Gailmard and Patty 2007 treats workers as selecting a policy fully characterized by an ideological score, a point on the real line. We see the former approach as somewhat more flexible than the latter; it also side-steps some difficult issues involving agent expertise, signaling, and commitment (Calander).

[3]Following the arguments in Baker, Gibbons, Murphy 1999, we do not regard politicization and meddling as contractable: a pledge not to politicize is not credible, and if the Boss has the information and incentive to meddle, he will.

[4]In contrast with __, we do not allow the Boss to independently craft his own policy projects. Although such a degree of centralizaiton sometimes occurs, it simply reproduces the same principal-agent tensions we study.

[5]For simplicity we assume w_c is net of effort costs in the clerk job.

[6]This sequence of play allows us to consider not only the exit decision of a non-promoted subordinate, but that of a promoted manager in the face of a new Boss who increases politicization. The promotion outcomes becomes public knowledge; the exact score does not so that a private sector employer can condition its wage on the former but not the latter.

[7]The event $X = X_L$ can be interpreted as the Subordinate not discovering a project. Alternatively, we could assume the Boss knows the Subordinate found a project that was rejected by the Subordiante, but that the expected payoff to the Boss of accepting such a project is very bad.

[8]The Boss may not really suffer disutility from paying wages to the Subordinate as government agencies do not get to retain earnings (for a discussion see Wilson 1989. But at least for agency design, we imagine the Boss trying to conserve on wages, perhaps due to congressional pressure.

[9]In equilibrium, in Type I agencies the zealots will be promoted and become managers while the slackers will remain clerks. In Type II agencies, both will be promoted.

[10]The examples require considerable calculation. A Mathematica program to calculate all the values in the example will be placed on Cameron's webpage.