Political Screening:
Theory and Evidence from the Argentine Public Sector*

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Abstract

Politicians can benefit by ensuring that public sector positions requiring political services are occupied by partisans. We study a model in which this political screening is achieved by varying the amount of required political services and associated compensation in otherwise similar positions. Past vote shares reflect the population share of partisans, and we predict a U-shaped relationship between an employee’s current salary and the incumbent politician’s vote share at the time of hiring. We test for this effect using individual data from a large national income survey from Argentina, a country with widespread political patronage. The results are consistent with the model, showing that political conditions at the time of hiring have long-lasting effects on public employees’ wages.

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1 Introduction

Every incumbent government has at its disposal an army of potential political activists: the public employees whose livelihood is tied to the state (Wilson, 1961). In environments such as the present-day US, civil service laws prevent incumbent politicians from requiring political services from anyone but top-level political appointees. In other systems, a large portion of public employees from garbage collectors to ministry bureaucrats are in some form of “patronage contract” with the administration. Providing political services such as campaigning for votes or favoring politically connected contractors in procurement decisions is an implicit or explicit part of the job requirements.

This paper argues that political screening - the separation of employees based on political preferences - is an important but little-understood problem in public employment. We provide a theory of political patronage which highlights political screening through appropriately designed patronage contracts. The model predicts a novel relationship between past vote shares and current public-sector salaries, and we find support for this prediction in Argentina.

In line with conventional wisdom and previous studies, we treat patronage as an exchange relationship where public employees receive benefits in return for political support.\(^1\) However, we recognize that there is heterogeneity in individuals’ willingness to support a given politician. As a result, patronage contracts have a screening function: the politician finds it optimal to tailor wages and political requirements in such a way that those willing to provide more support (“partisans”) self-select into positions where this is valued more. For example, a secretary applying for a ministry job may be qualified to work in several different offices within the ministry. He/she may choose between these jobs based on his/her preferences regarding the salary offered, the job requirements (such as hours of work), and the amount of political services required. Because a secretary who likes the incumbent is willing to provide political services for lower compensation, the politician should take this into account in designing the positions. This idea is formalized in Section 4. We show that the optimal system of contracts results in political screening that enhances the effectiveness of large-scale patronage.\(^2\)

In our model, political preferences regarding the incumbent politician are private information at the time of hiring. However, the population share of partisans is known from vote shares in the previous election, and this will be reflected in the optimal structure of

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\(^1\)The related literature is reviewed in Section 2, and Section 3 provides anecdotal evidence on patronage contracts from Argentina and the mid-20th century US.

\(^2\)Screening contracts may complement other screening mechanisms (e.g., personal contacts) typically used on a smaller scale. See Section 3 as well as our empirical results on referrals.
patronage contracts. We therefore predict an association between vote shares at the time of hiring and current salaries. As we show in Section 4.2, there are two opposing effects on the salary of the average public employee. A negative incentive effect comes from a trade-off faced by the politician: to ensure that partisans provide political services at a reasonable price, services from nonpartisans have to be sacrificed. As the population share of partisans increases, more partisans are hired, and the politician is more willing to forego the services of nonpartisans and reduce partisans’ rents. This lowers the salary of both nonpartisans and partisans. A higher vote share also has a positive composition effect because the average employee is more likely to be a partisan. Since partisans receive rents, this raises observed salaries. Under general assumptions these opposing effects imply a U-shaped relationship between vote shares and public wages. Employees hired after low or high vote shares earn more than others.

Section 4.3 discusses several extensions of the model, including the effects of patronage and political screening on the efficiency of public services.

In Section 5, we test for the association between past vote shares and public-sector salaries predicted by the model. We take advantage of a large national income survey from Argentina, a country known to have a large public sector with well-developed patronage systems, where the authority to set public wages is decentralized to the province level. We match to each public employee in our sample the vote share of the current provincial governor at the time the employee was hired by this administration. Our identification strategy relies on within-province variation in the current salary of employees hired by the same governor after different elections. This approach, described in Section 5.2, allows us to control for all unobservable province-level differences affecting current wages, as well as a wide range of individual characteristics. Consistent with the theory, we find that the salary of the average public employee has a robust U-shaped relation to the vote share of the incumbent governor at the time of hiring. Employees hired following an election with a vote share around 50% receive the lowest salaries. A ten percentage points lower or higher vote share yields a 3-3.5% higher salary. We show that these findings are driven by employees not hired through referrals, which provides strong evidence in favor of the asymmetric information problem highlighted in the model. We describe the benchmark results in Section 5.3, and in Section 5.4 we subject these findings to several robustness checks. Finally, we argue that standard models of politically targeted policies do not explain the data.

3In practice, the political support required from nonpartisans seems to be positive: In a survey of Argentine public employees, Oliveros (2011) finds that even workers who identify themselves with the other party provide political services for the incumbent politician.

4In particular, a swing-voter model implies the opposite relationship, with wages being highest around a 50% vote share.
Overall, our results show that the nature of patronage contracts is important in understanding wages in public sectors characterized by extensive patronage. In particular, we show that patronage contracts that have a role in screening employees result in political conditions at the time of hiring having long-lasting impacts on public wages. In Section 6, we discuss some tentative policy implications of our model.

2 Related literature

This paper contributes to several literatures in economics and political science. Informational problems in government are at the heart of the political agency literature (see Besley (2006) for an overview). In this research, the relationship between politicians and public employees is a relatively under-studied area, but the question of how the right types of bureaucrats are selected figures prominently in the work of Besley and McLaren (1993) and Prendergast (2007).\footnote{Di Tella and Schargrodksy (2003) studies the effect of public wages on the honesty of bureaucrats. See also Rauch and Evans (2000) who argue that a well-designed civil service system allows the self-selection of bureaucrats who are right for the job. Related work by Maskin and Tirole (2004) and Alesina and Tabellini (2007) studies the desirability of delegating tasks to bureaucrats or politicians.} In these papers the problem is selecting bureaucrats who place the optimal weight on social welfare. Our paper offers an interesting contrast, since here the politician is trying to select employees with the right type of political preference. We briefly take up the issue of how these two dimensions might interact in Section 4.3.

There are few formal models of political patronage and they generally focus on the moral hazard that arises when the politician cannot observe the actions of his clients (e.g., how they vote) (Robinson and Verdier, 2003; Stokes, 2005; Enikolopov, 2007; Keefer and Vlaicu, 2008). In many cases, however, political support is readily observable, so that moral hazard is not an issue. This is likely to be the case when political support takes the form of campaigning on behalf of the politician (e.g., attendance at rallies, turning out to vote, bringing friends or neighbors to party meetings, etc.), giving identifiable campaign contributions, or making politically motivated decisions in office (e.g., awarding procurement contracts to “friendly” contractors). In other cases, moral hazard may be impossible to resolve. For example, in democratic elections patrons will necessarily lack information on the political support received from their clients in the form of votes. In these cases, the adverse selection problem we study may be more relevant.\footnote{In some previous studies, political preferences matter but are readily observable so the adverse selection problem we study does not exist. This is the case when political patronage is based on closely knit social networks: see Clark (1975) on the Irish in Boston, and Banerjee and Pande (2007), Munshi and Rosenzweig (2008), and Iyer and Mani (2011) on Indian castes. See Padro i Miquel (2007) for a theory of targeted redistribution under this assumption.} \footnote{The empirical political science literature on patronage is surveyed in Kitschelt and Wilkinson (2007).}
The theory of screening contracts has been applied to a wide range of issues from procurement and regulation to optimal income taxation and labor contracts (see Bolton and Dewatripont (2005, Ch 2) for a textbook treatment). To our knowledge, the application to political patronage is new.

There is a large literature on the public-sector labor market, focusing mostly on the public-private wage gap (for a survey, see Gregory and Borland, 1999). Only a handful of papers explore the political motivations behind public wages. In important work related to ours, Borjas (1980, 1986) argued that wage differentials among US government employees in the 1970s could be explained by the political importance of the constituents they served as well as their ability to provide those services. These political considerations were significant in explaining wage differences in a cross section of public employees working for different federal agencies (Borjas, 1980) or for different US state governments (Borjas, 1986). In contrast to Borjas’s general model of political demand and supply, we focus specifically on the mechanism of political patronage. Our model highlights the role played by public employees’ political preferences, and implies a novel relationship between current wages and the incumbent’s vote share at the time of hiring. The Argentine data we use offers an interesting complement to the results regarding wages in the US government.8

More generally, our work is related to the literature investigating politicians’ strategies for eliciting support through targeted redistribution (e.g., Cox and McCubbins, 1986; Lindbeck and Weibull, 1987; Dixit and Londregan, 1996, 1998; Manacorda, Miguel and Vigorito, 2010). We show that the incumbent’s vote share at the time of hiring has an interesting long-run effect on one such strategy, the public wages embodied in patronage contracts.

Finally, our finding that vote shares at the time of hiring have long-lasting impacts on wages also relates this paper to work studying the long-run impact of economic conditions on workers starting a new job (e.g., Beaudry and DiNardo, 1991; Oreopoulos, von Wachter, and Heisz, 2011). To our knowledge, the long-run impact of political conditions on public employees has not been studied previously.

Our paper builds on the studies by Calvo and Murillo (2004) and Remmer (2007) who investigate patronage in the Argentinian public sector using province-level data. Relative to these studies, our work benefits from an explicit theoretical framework and individual-level data, which allows us to be more precise about the mechanisms we explore.

8Alesina, Baqir and Easterly (2000) argue that in US cities, public employment serves redistributive purposes. Matsusaka (2009) studies the effect of citizen initiatives in US cities using a model in which the number of city employees reflect patronage but their wages, set through union bargaining, do not. While the current US civil service laws indeed shelter city employees’ pay from political influence, Argentine provincial governors face no such constraints in setting wages.
3 Screening and the “patronage contract”

While every public sector has a certain number of political appointees, what is striking in many cases is (i) how many employees are actually providing some form of political service, and (ii) how explicit these arrangements are. The sociological study of Auyero (2000) documents how, in a poor suburb of Buenos Aires, the Peronist patronage network extends all the way down to social workers and trash collectors. Similarly, “in Illinois, as elsewhere, public employees like parks and sanitation workers, often formed the backbone of the teams that rang doorbells, collected signatures on petitions and gathered crowds for political candidates.” (Tolchin, 1990). In the Chicago machine in the middle of the 20th century,

“[e]veryone was expected to work for the party. High level office-holders [...] were excused from precinct work of the door-to-door variety, but the alderman expected them to give service in the form of free legal advice to the people of the ward. Job holders also had to buy tickets to various party fundraising events and were required to contribute a percentage of their salaries to the ward organization. Generally, they were assessed between 2% and 3% of their total pay. Patronage workers were held strictly accountable for their political performance, but not for their performance on the job.” (Freedman, 1994, 40).

The *Rutan v. Republican Party of Illinois* case of the Supreme Court provides an example of a particularly explicit patronage contract. In the 1970s, applicants to public-sector jobs in Illinois were required to sign a “promotion form” that included the following questions:

“Would you be willing to become an active Sangamon Country Republican Foundation Member? (The foundation is a voluntary, financial assistance organization)

Would you be willing to canvass and work your precinct or neighborhood for candidates the Central committee recommends as qualified for local, state, and national offices?” (Freedman, 1994, p106).

In other cases, the patronage contract is more implicit. In the Buenos Aires patronage network “‘Gratitude’ goes without saying because it almost always comes without saying. [...] On a few occasions, attendance [at a political rally] is explicitly required. Yet such requests are seldom phrased as orders, obligations; rather, they are usually phrased as invitations.” (Auyero, 2000, 161) As one person employed as a social worker put it, “I know that I have to go to [the politician’s] rally in order to fulfill my obligation to her, to show my gratitude.
Because, if I do not go to her rally, then, when I need something, she won’t give it to me.”

Similarly, during litigations against the patronage machine of Nassau County, NY, workers described how information about the required political support was passed along among co-workers without explicit threats or instructions from party representatives. For example, employees told each other about the requirement to pay an assessment of 1% of each paycheck to the party. This “norm” was specific enough to include the provision that the payments should be made in lump sums, not in installments. Everyone obeyed, even though most workers were never directly approached or threatened by a party official.

Because political preferences affect employees’ willingness to participate in these patronage contracts but are rarely observable, hidden information is an inherent problem in every patronage system. This seems well understood in the Peronist network in Buenos Aires, where potential clients use attendance at political rallies to signal their political loyalties to the organizer: “Attendance at rallies is also considered a way of showing a broker that one is loyal, responsible, and ready to help out when needed - and therefore deserving of a job if and when one becomes available.” (Auyero, 2000, 163)

In the US patronage machines of the mid-20th century, political screening was made easier by voter registration being a matter of public record. In the Rutan case mentioned above C. Rutan was repeatedly denied promotion at the Illinois Department of Rehabilitation Services. When she asked why she was not being promoted, “she was told that her voting record had been checked and that her name didn’t “clear” the governor’s office.” (Freedman, 1994, 105). In most settings, this type of information is not available, and checking individual applicants’ backgrounds would be very costly. In large-scale patronage systems information is likely to remain asymmetric, and this will affect the patronage contracts between politicians and public employees.

As we show below, the politician’s optimal response to the presence of asymmetric information is to offer contracts that give applicants with different political preferences the incentive to self-select. This is achieved by maintaining “partisan” and “nonpartisan” positions that offer a certain mix of pay, expected performance, and political requirements. This is reminiscent of the distinction between political and civil service positions that characterizes many bureaucracies. While in established democracies civil service regulations prohibit political services in the nonpartisan positions, in other environments any official

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9 The source on Nassau County patronage is Freedman (1994, Ch 4) as well as the series “Hempstead Party Favors” in Newsday, September 22-24, 1991.

10 In Section 6 we discuss implications of our model for US-style civil service reforms. The term “parallel bureaucracies” is sometimes used to describe a duplication of positions that is common in several European countries as well as in the European Commission. Here, a large ministerial cabinet often coexists with a professional bureaucracy performing similar tasks (Cini, 1996, Ch 4).
classification may not be informative about the actual duties performed. Case studies suggest that in Argentina more than 50% of a typical agency’s workforce works in partisan positions (Bambaci et al., 2007).

Of course, systematic evidence that would allow discerning the wage differential between partisan and nonpartisan contracts is scarce.\textsuperscript{11} Our work below provides an indirect way to test for patronage by exploiting the fact that vote shares at the time of hiring should be reflected in optimally designed patronage contracts.

4 The model

4.1 Setup

Consider the problem of a politician in office who is designing a patronage system to fill medium- to low-level public-sector jobs.\textsuperscript{12} Suppose that each of these jobs can constitute a “patronage job” that Wilson (1961, p370) defines as positions “the pay for which is greater than the value of the public services performed. This ‘unearned increment’ permits the machine to require that the holder perform party services as well.” Thus, we assume that employees have the opportunity to provide some political support \(x \geq 0\) to the politician. The variable \(x\) can correspond to different types of behavior, from taking decisions favoring the politician while performing the job to outright campaigning. We assume that the level of support is contractible: the politician can require support \(x\) as a condition of employment, and if the applicant accepts, the contract is perfectly enforced. As described in Section 3, the politician could contract on \(x\) explicitly, or implicitly, by maintaining an organizational culture inside an institution, such as a ministry, that requires a certain amount of partisan support \(x\). The existence of such expectations may be common knowledge among potential applicants even if they are not part of the formal job requirements.

The politician’s payoff in period \(t\) from an employee who provides output \(y^t\) and political support \(x^t\) and who earns salary \(s^t\) is

\[
v_t(x^t) - s^t + \mu_t(y^t),
\]

with \(v_t\) and \(\mu_t\) increasing and concave. Thus, the politician values political support, especially when it is scarce, but does not like to pay for it, perhaps because he has less money to spend

\textsuperscript{11}In the Nassau County, NY, case mentioned above, it was estimated that some partisan government employees earned $11,000-13,000 more than nonpartisan employees in similar positions.

\textsuperscript{12}High-level positions where performance is crucial for policy and electoral success are likely to be filled by hand-picked appointees whom the politician knows personally. The screening system we consider below is different.
on providing public goods. Political support may be valued because it increases future electoral success, or it might increase the utility derived from holding office (e.g., by raising the politician’s status). In addition, the politician may value the output of the employee. Note that we allow the value of political support and output to change over time. For example, changes in the political environment can affect the politician’s tradeoff between providing public goods and targeted transfers, as in the standard models of pork-barrel politics (e.g., Dixit and Londregan, 1998). The politician’s payoff in (1) is a reduced form that is consistent with several underlying models of political competition. This makes our model more general, and highlights the fact that the identification strategy in our empirical work is not contingent on a particular model of elections. As we make clear below, nothing important changes if the functions \( v_t \) and \( \mu_t \) are stochastic.\(^{13}\)

There is a large population of applicants, each of whom can be of two type, either Partisan or Nonpartisan \((i = P, NP)\) and this is private information. Partisans and nonpartisans differ in their willingness to provide political support to the incumbent politician. We capture this by assuming that partisans have a lower cost and lower marginal cost of providing political support: \( c_P(x) < c_{NP}(x), \, c_P'(x) < c_{NP}'(x) \), where these cost functions are increasing and convex. Partisans and nonpartisans do not differ in their ability to perform on-the-job: the cost of providing output \( y \) is the same for everyone, \( \kappa(y) \).\(^{14}\) (The consequences of relaxing this assumption are discussed in Section 4.3.) In period \( t = 0 \), partisanship is private information, but the population share of partisans is known from the politician’s vote share in the last election: it is \( p \in (0, 1) \).\(^{15}\)

This definition of partisanship is consistent with several interpretations. Partisans may like the politician because of personal or ideological reasons, or they (or their families) may have ties to the party machine. Alternatively, “partisans” may in fact be independent voters while “nonpartisans” have ties to the other party’s political machine. In this case, the higher cost of nonpartisans from providing political support comes from the fact that

\(^{13}\) We do not assume that the politician faces a binding budget constraint in setting public wages. While such constraints may be relevant for a local politician, our empirical work studies provincial governors who have considerable latitude in redistributing resources across departments and projects. If creating additional positions is costly, the payoff in equation (1) received from each employee will determine how many are hired.

\(^{14}\) One interpretation of this assumption is that exogenous professional requirements have already narrowed down the pool of applicants to individuals equally capable of performing the job, at least to the extent that the politician cares about performance. Within this group, the only relevant difference remaining between workers is partisanship.

\(^{15}\) In reality, people may differ in other relevant dimensions, for example some people may like the politician but may be unwilling to engage in patronage. Here, we ignore these differences and focus on basic political preferences. In a country where voting is compulsory, such as Argentina, vote shares provide a measure of partisanship that is both accurate and easily accessible to a politician. There are of course other proxies politicians may be able to use in specific settings, and we will control for some of these in our empirical work below.
they have to renege on their engagement with the other party. Finally, a person’s cost of supporting the politician may be lower simply due to the act of having voted for him in the past. Mullainathan and Washington (2009) show that such cognitive dissonance effects are empirically important. In the extreme, this implies that even if ex ante voters view candidates as being identical and vote randomly, after the election the population will be divided into partisans and nonpartisans.

An applicant’s payoff in period $t$ from working in a job that requires political support $x^t$, output $y^t$ and pays salary $s^t$ is $s^t - c_i(x^t) - \kappa(y^t)$. If he works somewhere else, the applicant gets an outside option worth $u^t$, such as a wage in the private sector. As we discuss below, the results we derive are robust to whether this outside option is deterministic or stochastic.\textsuperscript{16}

4.2 Optimal patronage contracts

Since politicians are typically in office for several years, contracts may be signed for the long term. In period $t = 0$, the politician commits to a contract which specifies the political support, output and corresponding salary in each future period, contingent on the relevant parameters of the model. Let $(x, y, s)$ denote a contract for $T$ periods, where $x = (x^0, \ldots, x^T)$, $y = (y^0, \ldots, y^T)$, and $s = (s^0, \ldots, s^T)$. In optimum, these contracts will depend on the future political environment (captured by $v^t$ and $\mu^t$) and the outside option $u^t$ of the employee. For example, a politician may require more political support in periods where his valuation for such support is higher, or may promise to pay the employee more if the outside option increases.\textsuperscript{17}

At the start of the game, the politician decides on a set of contracts $(x, y, s)$ to be offered. Multiple contracts can be interpreted, e.g., as corresponding to separate positions that only differ in the associated contract. Next, an applicant is randomly selected from the population to decide whether to accept one of the contracts offered or to reject all of them. Accepted contracts are enforced, i.e., the politician commits to not exploiting the information gained when an applicant reveals his type by selecting a particular contract. Similarly, employees commit to abide by the terms of a signed contract. However, once hired, the employee may decide to quit in any future period, with no possibility of being re-hired.

As a benchmark, consider the first best case in which the politician observes the agent’s type, and so can offer different contracts to partisan and nonpartisan applicants. For a given type $i = P, NP$, the politician maximizes for each period $t$ his payoff $v_i(x^t_i) - s^t_i + \mu_i(y^t_i)$

\textsuperscript{16}The assumption that partisans’ and non-partisans’ outside options are equal is not crucial. On the other hand, if the two types only differed in their outside option, the screening problem would disappear.

\textsuperscript{17}In section 4.3 below we discuss the difficulties that arise if parameters of the model evolve stochastically and contracts cannot be written to depend on them.
subject to the participation constraint \( s^t_i - c_i(x^t_i) - \kappa(y^t_i) \geq u^t \). The first-best pair of contracts \((\hat{x}_P, \hat{y}_P, \hat{s}_P)\) and \((\hat{x}_{NP}, \hat{y}_{NP}, \hat{s}_{NP})\) is characterized by \( c'_i(\hat{x}^t_i) = v'_i(\hat{x}^t_i), \kappa'(\hat{y}^t_i) = \mu'_i(\hat{y}^t_i)\), and \( \hat{s}^t_i = c_i(\hat{x}^t_i) + \kappa(\hat{y}^t_i) + u^t \). In the first best, all employees provide the same level of output, partisans provide a higher level of support, and both agents are paid according to the services they provide and their outside options. Because types are observable, the population share \( p \) of partisans plays no role in the equilibrium contracts.

With asymmetric information, the politician’s optimal strategy is to offer multiple contracts, and give partisans and nonpartisans the incentive to self-select into the appropriate positions.\(^{18}\) These optimal contracts, described below, achieve the political screening of public employees. In some cases, real-world politicians may also choose to eliminate the informational asymmetry by using referrals and personal connections to screen applicants individually. However, in a large public sector with many applicants, this might be very costly, and draw considerably more public scrutiny than the contracting solution based on self-selection. We therefore model a situation where such direct screening is not feasible and information is asymmetric. Our empirical work below will control for employees hired through referrals.

Letting \( \delta \) denote the common discount factor, the optimally designed screening contracts solve the following problem:

\[
\max_{x_P, y_P, s_P, x_{NP}, y_{NP}, s_{NP}} \sum_{t=0}^{T} \delta^t \left[ p(v_t(x^t_P) - s^t_P + \mu_t(y^t_P)) + (1 - p)(v_t(x^t_{NP}) - s^t_{NP} + \mu_t(y^t_{NP})) \right],
\]

subject to the incentive constraints

\[
\sum_{t=0}^{T} \delta^t \left[ s^t_P - c_P(x^t_P) - \kappa(y^t_P) \right] \geq \sum_{t=0}^{T} \delta^t \left[ s^t_{NP} - c_P(x^t_{NP}) - \kappa(y^t_{NP}) \right] \quad (IC_P)
\]

\[
\sum_{t=0}^{T} \delta^t \left[ s^t_{NP} - c_{NP}(x^t_{NP}) - \kappa(y^t_{NP}) \right] \geq \sum_{t=0}^{T} \delta^t \left[ s^t_P - c_{NP}(x^t_P) - \kappa(y^t_P) \right], \quad (IC_{NP})
\]

\(^{18}\) Throughout, we assume that hiring both types is optimal. This is supported by a survey of Argentine public-sector employees by Oliveros (2011): she finds that even workers who identify themselves with the other party provide political services for the incumbent politician. Moreover, as we show below, our empirical results reject a model in which only partisan contracts are offered.
and two series of participation constraints

\begin{align*}
\sum_{t=0}^{T} \delta^{t-t} [s_{P}^{t} - c_{P}(x_{P}^{t}) - \kappa(y_{P}^{t})] & \geq \sum_{t=0}^{T} \delta^{t-t} u^{t} \quad (PC_{P})
\sum_{t=0}^{T} \delta^{t-t} [s_{NP}^{t} - c_{NP}(x_{NP}^{t}) - \kappa(y_{NP}^{t})] & \geq \sum_{t=0}^{T} \delta^{t-t} u^{t} \quad (PC_{NP})
\end{align*}

for \( t = 0, \ldots, T \).

The incentive constraints ensure that in period \( t = 0 \) the agent chooses the contract designed for him. The participation constraints ensure that, in any period \( t \), applicants are willing to work in the public sector even if that involves providing political support.

In optimum, the nonpartisans’ participation constraints and the partisans’ incentive constraint bind. This argument is relatively standard and left to the Appendix. Solving the resulting problem, we find that the optimal pair of contracts is defined by the following equations

\begin{align*}
x_{P}^{t} &= \hat{x}_{P}^{t} \\
 c'_{NP}(x_{NP}^{t}) &= (1-p)v'_{NP}(x_{NP}^{t}) + p c'_{P}(x_{NP}^{t}) \\
y_{P}^{t} &= y_{NP}^{t} = \hat{y}_{P}^{t} \\
s_{NP}^{t} &= c_{NP}(x_{NP}^{t}) + u^{t} + \kappa(\hat{y}_{P}^{t}) \\
s_{P}^{t} &= c_{P}(x_{P}^{t}) + u^{t} + \kappa(\hat{y}_{P}^{t}) + c_{NP}(x_{NP}^{t}) - c_{P}(x_{NP}^{t})
\end{align*}

In this screening solution, partisans provide the efficient level of political support in every period (equation (2)), and receive a high salary which not only compensates them for the effort provided and the foregone outside option, but also contains a rent of \( (c_{NP}(x_{NP}^{t}) - c_{P}(x_{NP}^{t})) \) (equation (6)). This rent gives partisans an incentive to self-select into the high-\( x \) contract designed for them. To minimize the partisan rent, the politician distorts the support from nonpartisans relative to the first best \( (x_{NP}^{t} < \hat{x}_{NP}^{t} \text{ from equation (3)}) \). This allows him to offer a lower salary in the nonpartisan contract (equation (5)) and hence receive the partisans’ political services at a lower price.

Since partisans and nonpartisans do not differ in their ability to perform on-the-job, they provide the same level of output (equation (4)). Yet, comparing equations (5) and (6), we see that partisans get a higher salary: \( s_{P}^{t} - s_{NP}^{t} = c_{P}(x_{P}^{t}) - c_{P}(x_{NP}^{t}) > 0 \). This “partisan premium” reflects the different levels of political support required in the positions designed for partisans and nonpartisans, as well as the rents associated with the partisan contracts.\(^{19}\)

\(^{19}\)For any given \( t \), equations (2)-(6) are equivalent to the second best contract of the corresponding one-
This simple model implies that in any period $t$, public-sector salaries are affected by the initial vote share $p$: in equation (3), $x_{NP}^t$ is a function of $p$, and in turn both $s_p^t$ and $s_{NP}^t$ depend on $x_{NP}^t$. Without information on individual partisanship, the salaries $s_p^t$ and $s_{NP}^t$ are unobserved. However, for a cohort of employees hired after a given election, we can observe the period-$t$ salary of an average employee (an employee chosen at random): $\bar{s}^t(p) \equiv p s_p^t + (1 - p) s_{NP}^t$. Using (5) and (6), we have the following result.

**Proposition 1** For a given cohort of employees, the period-$t$ salary of the average worker depends on the vote share of the politician at the time of hiring. In particular,

$$\bar{s}^t(p) = p[c_P(x_P^t) - c_P(x_{NP}^t(p))] + c_{NP}(x_{NP}^t(p)) + u^t + \kappa(\bar{y}^t).$$  \hspace{1cm} (7)

How do salaries change as a function of the politician’s vote share at the time of hiring? Taking the derivative of (7) and using equations (2) and (3), we get

$$\frac{\partial \bar{s}^t}{\partial p} = [c_P(x_P^t) - c_P(x_{NP}^t)] + (1 - p) v'(x_{NP}^t) \frac{\partial x_{NP}^t}{\partial p},$$  \hspace{1cm} (8)

The term in brackets is a *composition effect*. As the share of partisans $p$ rises, more partisans are hired, and because partisans’ salary contains a premium, this raises the observed average salary. The second term is an *incentive effect* which is a consequence of the basic trade-off faced by the politician: To ensure that partisans provide political services at a reasonable price, services from nonpartisans have to be sacrificed. For a low $p$, when most employees are nonpartisans, this is very costly. As $p$ increases, however, sacrificing political support from nonpartisans in order to ensure the cheap support of partisans becomes more attractive. As $p$ rises, the politician reduces $x_{NP}^t$ and the salary $s_{NP}^t$ of nonpartisans. This in turn allows him to lower the rent paid to partisans without affecting their incentive to choose the right contract. The decreasing salaries of both groups lead to the second (negative) term in (8).

Given the positive composition effect and the negative incentive effect, the sign of (8) is ambiguous. With general cost and benefit functions, we can establish two results: (i) For $p$ close to 1, the incentive effect disappears: \(^{20}\) when almost all employees are partisans, a small change in partisan shares has a negligible effect on the screening contracts. Therefore the composition effect dominates, and $\bar{s}$ is increasing when $p$ is high. (ii) The composition effect becomes smaller as $p$ declines. \(^{21}\) This is because nonpartisans provide more support,

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\(^{20}\)This is because $(1 - p) v'(x_{NP}^t) \frac{\partial x_{NP}^t}{\partial p}$ goes to 0 as long as $\frac{\partial x_{NP}^t}{\partial p}$ is finite.

\(^{21}\)This is because $\frac{d}{dp}(c_P(x_P^t) - c_P(x_{NP}^t)) = -c_P \frac{\partial x_{NP}^t}{\partial p} > 0$.
hence the difference between the salaries of partisans and nonpartisans becomes smaller. This suggests that if the incentive effect is “large”, \( \tilde{s} \) will be decreasing for low values of \( p \).

To show how the size of the incentive effect depends on the primitives of the model, consider a less general environment with \( c_{NP}(x) = c(x) \), \( c_{P}(x) = \alpha c(x) \), and \( v(x) = \gamma x \) with \( \alpha \in (0, 1) \) and \( \gamma > 0 \). The following proposition shows that a sufficient condition for \( \tilde{s}(p) \) in equation (7) to be U-shaped is that the elasticity of the marginal cost function, \( \frac{c''(x)}{c(x)} \), is U-shaped.

**Proposition 2** Assume that there is some \( \bar{x} \in (x_{NP}^{*}(1), x_{NP}^{*}(0)) \) s.t. \( (\frac{c''}{c'})' < 0 \) for \( x < \bar{x} \) and \( (\frac{c''}{c'})' > 0 \) for \( x > \bar{x} \). Then there is some \( \bar{p} \in (0, 1) \) s.t. \( \frac{\partial \tilde{s}}{\partial p} < 0 \) for \( p < \bar{p} \) and \( \frac{\partial \tilde{s}}{\partial p} > 0 \) for \( p > \bar{p} \).

**Proof.** See the Appendix.

It is worth emphasizing that the nonmonotonicity uncovered here depends crucially on the screening contracts resolving the adverse selection problem faced by the politician. Only then do we have both a negative incentive and a positive composition effect on the average wage. For example, if the politician had perfect information on applicants’ types, everyone would be given the first best contract. The incentive effect would disappear, and the effect of \( p \) on average salaries would be monotonic (a composition effect). Similarly, if only partisan employees were hired, only one type of contract would be observed, and \( p \) would have no effect on wages. The nonmonotonicity we find in our empirical work below rejects these alternatives in favor of screening contracts.

### 4.3 Extensions

Before proceeding to testing our theory, we briefly discuss some of the assumptions and possible extensions of the model.

#### 4.3.1 Uncertainty

There are several ways that adding uncertainty to the model could increase its realism. First, we can allow the politician’s values \( v^t \) and \( \mu^t \) or the employee’s outside option \( u^t \) to be random variables. If their realization is observed by everyone and long-term contracts can be conditioned on them, nothing changes in the above model.

Second, we can allow for asymmetric information. Unfortunately, little is known about the solution to these types of problems once contracting occurs in a stochastic environment. In particular, we are not aware of any studies allowing the agent’s outside option to be private information. Simple examples can be written down to show that one effect of such...
an extension is often to remove the need for screening contracts. Intuitively, when the outside option is private information, instead of an all-or-nothing participation constraint the principal faces some probability that a given contract is accepted. This prompts him, even in the first best, to offer rents to both types to increase the probability of acceptance. In some cases, the rent in the first best contracts is sufficient to guarantee self-selection, i.e., the first best contract solves the second best screening problem as well. Since the first best contract is independent of \( p \), in our case this would mean that the incentive effect disappears, and any effect of the vote share \( p \) on the average salary would be the monotonic composition effect. By contrast, our empirical work below finds robust non-monotonocities.

Another possibility is that political preferences might change over time. If employees foresee that this might happen, this will change their incentives at the contracting stage. Battaglini (2005) is an important paper studying such a problem for the case of a buyer-seller relationship where consumers’ tastes follow a Markov process.\(^{22}\) Unfortunately, for our application, the Markovian assumption seems counterintuitive, as it would imply, for example, that the likelihood of an employee’s preferences changing is independent of how often they have changed in the past. Since we are not aware of any other study with stochastic types, we simply assume that preferences do not change or, if they do, employees do not take this into account at the contracting stage.\(^{23}\)

4.3.2 Political screening and the level of public services

An important question regarding public service delivery concerns the various sources of potential inefficiency in government provision (e.g., Bandiera et al., 2009). It is therefore natural to ask how the type of political screening we study affects the level of services.

To address this issue, we consider the following extension of the model. Suppose that \( x \) and \( y \) represent the time allocated by an employee to providing political support and public services, respectively, out of a total of 1 unit of time available. Let an employee’s payoff from a contract \((s, x, y)\) be \( s + b(1 - y - x) - h_i(x) \) for \( i = P, NP \). Here, \( b(.) \) is an increasing and concave function representing utility from leisure, and \( h_i \) is the utility cost (such as psychological cost) of providing political services. In line with our earlier assumptions, let \( h_P < h_{NP} \), \( 0 < h_P' < h_{NP}' \), and \( h_P'' > 0 \), guaranteeing that the single-crossing condition is satisfied.

\(^{22}\)He shows that under these assumptions, the first best contract will solve the screening problem for most histories. In our case this would again imply a monotonic relationship between \( p \) and the average salary.

\(^{23}\)A buyer may be able to estimate the probability that his preferences will change based on exogenous market processes (e.g., if his valuation for the good is dependent on its resale value or its value as an input into some production process, such changes can be forecasted). It is harder to see where an employee’s prior on a future change in his political preferences would come from.
As before, the politician chooses the optimal screening contracts to maximize his payoff subject to the participation and incentive constraints. For simplicity, assume that there is only 1 period. The first order conditions defining the optimal pair of contracts \((s_i, x_i, y_i)\) are:

\[
v'(x_P) - h'_P(x_P) = 0 \tag{9}
\]

\[
b'(1 - y_P - x_P) - \mu'(y_P) = 0 \tag{10}
\]

\[
ph'_P(x_{NP}) + (v'(x_{NP}) - \mu'(y_{NP}))(1 - p) - h'_P(x_{NP}) = 0 \tag{11}
\]

\[
b'(1 - y_{NP} - x_{NP}) - \mu'(y_{NP}) = 0 \tag{12}
\]

From (10) and (12) we see that all employees spend less time \(y_i\) providing public services than they would in a world with no political support \((x_i = 0)\). This reflects the popular notion that political duties take time away from service delivery, and confirms that patronage is likely to lead to inefficiencies.

But is political screening responsible for the lower level of public services? The answer turns out to be no. Surprisingly, relative to a world with full information on political preferences, screening contracts result in a higher level of public services. The intuition is the following. Recall that relative to the full information case, the political support required in screening contracts is distorted downwards for nonpartisans. Because ceteris paribus this lowers the marginal utility of leisure, it becomes relatively cheap for the politician to require that more time \(y\) be spent on public services. Because the value of leisure is the same for partisans and nonpartisans, raising \(y\) is possible without giving rents to either type. In essence, the need to screen acts as a constraint on how much political support can be required from public employees, and this helps raise the level of public services. Environments where the politician has better information on the political preference of employees result in less service provision.

The Appendix establishes these results formally by showing that as \(p\) rises, \(y_{NP}\) increases above its full information level (while \(y_P\) remains unchanged). We also show that the negative incentive effect and the positive composition effect of the vote share \(p\) on public wages identified above survive in this environment.

This example illustrates that understanding the nature of patronage contracts may have interesting implications for thinking about the quality of public services. Together with our empirical results below, which confirm the relevance of our model in explaining public wages, this suggests that estimating the impact of political screening on the level of public services would be interesting. Unfortunately, measuring output in the public sector is extremely difficult and requires innovative strategies that are outside the scope of this paper (see, e.g., Di Tella and Schargrodsky (2003), Bandiera et al. (2009)). We therefore leave this question
4.3.3 Different on-the-job productivity

Another interesting extension of the model arises when job applicants are allowed to vary by their on-the-job ability as well as partisanship. That is, given any qualifications and other formal requirements, some applicants may have a lower cost \( \kappa \) of producing output \( y \) (higher ability). It is interesting to ask how political screening contracts affect the equilibrium output produced. For example, a common concern regarding patronage is that political hiring leads to less productive employees.\footnote{We are not aware of previous studies directly addressing this question, but there are papers asking whether higher public sector wages lead to the selection of less corrupt bureaucrats (e.g., Besley and McLaren, 1993).}

Suppose each type of employee \( i = P, NP \) can have high ability (1) or low ability (2), with \( \kappa_{i1}(y) < \kappa_{i2}(y) \) and \( \kappa'_{i1}(y) < \kappa'_{i2}(y) \). Let \( q_i \) be the probability that type \( i \) has high ability, so, e.g., the probability of an applicant being a high ability partisan is \( pq_P \). In this case, the politician may want to offer 4, rather than two different contracts. That is, he may want to screen on ability as well as political preferences.

As is typical in multidimensional screening models, the solution quickly becomes very complex. The general characterization of the optimal contracts in this model follows from Armstrong and Rochet (1999), who show that the optimum can take several forms depending on the correlation between the two screening dimensions (in our case, ability and partisanship) and the shape of the utility functions. In many cases, the presence of the political motive leads to a distortion in the output produced. For example, if partisanship is positively correlated with ability \( (q_P - q_{NP} > 0) \), in the optimal contracts, all high-ability employees provide the efficient level of output but all low-ability employees provide too little output. Moreover, if \( q_P - q_{NP} \) is sufficiently large, one can show that as the share of partisans \( p \) increases, the distortion in both the political support of nonpartisans \( and \) in the output of low-ability employees increases. Thus, relative to a situation with no partisans, output \( y \) is more distorted under patronage.

At the same time, there are also cases when the presence of the political motive may actually help efficiency. When \( q_P < q_{NP} \), so that ability and partisanship are negatively correlated, there are cases when the optimal contract involves efficient output by both low and high-ability partisans. (By contrast, if ability was the only dimension of private information, low-ability employees would always provide too little output in the optimal screening contracts.) The intuition for this is that under negative correlation, the actions of low-ability partisans and high-ability nonpartisans are especially important to the politician, therefore
it is optimal to raise the political support and output of these groups. When output is relatively less valuable, its efficient level is lower, and the politician might benefit from raising it all the way to the efficient level. Thus, interestingly, the efficiency gain in output requires that the politician’s utility from political support relative to output be high enough, i.e. that the political motive be strong.\textsuperscript{25}

5 Testing for partisan effects in public-sector wages in Argentina

In this section, we take the theory to the data. After describing the background and our data, we present estimates of the relationship between vote shares and public sector wages.

5.1 Background and data

To test for the effect of vote shares at the time of hiring on the salary of public employees, we take advantage of a large income survey conducted in the twenty four Argentine provinces in 2001. Argentina provides a perfect laboratory to test for patronage in public-sector wages for a number of reasons. First, patronage and the use of public employment for political gain has been extensively documented in the sociology and political science literature (for example, Auyero, 2000, Brusco et al. 2004, Calvo and Murillo, 2004, Stokes, 2005, Remmer, 2007). In particular, Argentine politicians face few constraints in hiring and firing public employees. As a vivid example, in 2000, when discussing the possibility that mass layoffs in the federal public sector (where civil service rules are more prevalent than at the provincial level we study) might allow the hiring of more loyal employees, the current president, then a House representative, explained that this could be done without legislative action. “I accept the rationale for being elected into office and wanting to have collaborators that ministers and secretaries can trust, but for this we do not need [the new legislation]. We just need to modify the policies that regulate the Directors so that they can make new hires, discussing then the possibility of severance packages ”\textsuperscript{26}

A second important feature of the Argentine case is that provincial public-sector employment is regulated by provincial institutions, therefore control over personnel and wages is the exclusive responsibility of the local government. In contrast to countries with enforceable

\textsuperscript{25}With more detailed information on partisanship and output than is available in our dataset, one could test for the sign and magnitude of the correlation between partisanship and ability. This seems like an interesting avenue for future research.

national service rules, provincial employment in Argentina is not under the supervision of federal regulatory agencies. The provincial executives, embodied in the office of the governor and their local ministries of economy, make all relevant decisions on public-sector wages and employment. As a result, there is significant variation in public-sector wages and employment across provinces. Public employees represent approximately 20 percent of total employment in the metropolitan provinces of Buenos Aires, Cordoba, and Santa Fe, but include over 40 percent of total employment in the Northern provinces of Salta, La Rioja, and Santiago del Estero. Similar differences can be observed in public-sector wages, with average salaries in the Tierra del Fuego and the City of Buenos Aires more than doubling those of poorer provinces such as Jujuy or Catamarca. This variation in public-sector wages is explained by more competitive private sector salaries, socio-demographic features of the employee population, and, we argue, partisan differences that deserve further scrutiny.

Finally, an important aspect of the Argentinian case is that voting is compulsory. Even though enforcement is not perfect, turnout in elections tends to be extremely high compared to the typical numbers in Western countries. Since the 1983 democratic transition, turnout levels have remained above 70% for both presidential and congressional elections. Vote shares, consequently, provide an accurate measure of district level partisanship.

The survey we use in this article was conducted by the Argentine census bureau (INDEC) in 2001 for the SIEMPRO agency. The survey includes individual level data measuring wages, employment status and sector, year of hiring, educational achievement, type of search that resulted in employment, and a battery of socio-demographic questions for a total of 23,430 respondents who are currently employed full time in the public or private sector. The sampling frame, which also forms the basis of the official census, is designed to be representative of the Argentine population living in towns of 5,000 or more (84% of the population). In this sample, a total of 5,610 respondents are employed in the public sector, representing a remarkable 23.9% of the economically active population (we use 4,786 observations with no missing variables). The share of public employees in the survey conforms to the national statistical figures of the Argentine census bureau, and is comparable to the share of public employees in Scandinavian countries or France (Gregory and Borland, 1999).

Because we concentrate on within public-sector wage differences, rather than the public-private wage gaps, we use as a dependent variable the log of the individual public employee’s

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27 Collective bargaining in the Argentine public sector is a relatively recent phenomenon. Unions were suspended by the military government until 1983, and democratic governments through the 1990s routinely restricted collective negotiations with public employees when those interfered with national economic policies. In the period we consider, few provinces had collective bargaining laws, although in practice informal negotiation mechanisms may have existed (Cetrangolo, 1997). See also Etchmendy and Collier (2007) on the “resurgence” of Argentine unions after our period of study.

28 Details on the survey methodology can be found in SIEMPRO (2001).
monthly salary in 2001. All contracts in Argentina are signed on the basis of a monthly salary, which conforms to working weeks of 44 hours. While some differences in the contracted working hours could affect the estimates of the public-sector wage gap vis-à-vis the private sector, the weekly hours of all public-sector employees is similar across provinces and salaries are readily comparable. Definitions and summary statistics of our variables are in Table 1.

We merge the SIEMPRO survey with information on political and economic conditions in the provinces. The merging is explained in detail in the next section. We measure partisan shares at the time of contracting using the vote shares of the 2001 incumbent governor in elections prior to 2001. Given the importance of parties in Argentine politics, in most of the analysis we identify the governor by his or her party affiliation. Table 2 gives the year each administration first took office. Note that, due to the presence of several small parties in some provinces, it is possible to win an election with less than 50% of the votes. To measure economic conditions that may have long-lasting effects on public wages, we collected data on provincial GDP per capita, unemployment, and the two major sources of provincial government revenue: taxes and federal transfers. As described in Table 2, this last data has some limitations, in particular, government revenues are only available for three years, 1980, 1990 and 2001.

5.2 Identification

The main challenge in identifying the effect of provincial vote shares on wages comes from the wide range of political and economic factors which may potentially be correlated with both. In the context of our theory a natural solution presents itself, because we predict that current wages will differ within a province between individuals hired after different elections. Thus, our identification strategy relies on within-province variation in the current (2001) salary of employees hired by the same governor after different elections.

Proposition 1 predicts that the current salary \( S_{jrl}^{2001} \) of employee \( j \) in province \( r \) hired by

\[ \text{lognormal} \]

The lognormal distribution of wages is a standard assumption in the labor economics literature and is not rejected in our regressions below. We also show that our results do not depend on the specification being loglinear.

Most governor’s elections were conducted in 1999 and every 4 years before that. Provinces have the constitutional authority to schedule the election date. The electoral calendar can be retrieved from http://andy.towsa.com/totalpais/calendario.html.

In the period we consider, 3 elections (Tierra del Fuego 1999, Corrientes 1997, and Chaco 1995) had runoffs. For these, we take the first round vote share of the eventual winner. For several elections, candidates were supported by a coalition of one major and several smaller parties. In these cases, we take the vote share of the entire coalition. In each case our choice is guided by which vote share is likely to be the most informative about partisanship.

As explained below, we treat the initial decision to retain an employee hired by a previous administration as a new hire.
the current governor between elections $l$ and $l + 1$ will be a function of (i) the vote share $P_{rl}$ of the current governor in election $l$, (ii) the current value $v_{2001}$ that the governor places on political support (through the equilibrium political support $x_{NP}$ and $x_P$), (iii) the current value $\mu_{2001}$ that the governor places on output (through the equilibrium output $\hat{y}$), (iv) the current outside option $u_{2001}$, and (v) the effort costs $c_P, c_{NP}$, and $\kappa$.

Based on this, employees hired by the current (2001) administration are matched with the vote share in the election preceding the hiring. For example, if the current administration was first elected in 1995 (taking office in 1996) and then reelected in 1999, then based on our theory wages of employees hired between 1996 and 1999 will be affected by the 1995 vote share, while the wages of those hired after 1999 will be affected by the 1999 vote share. A question arises however on how to deal with employees hired by a previous administration. One option is to drop them from the sample.\textsuperscript{33} This might be appropriate if we believe that the incoming politician cannot manipulate existing employees’ wages in order to extract political services from them, and also that he cannot fire them. As described above, this assumption is highly unrealistic for the Argentine case. Instead, our preferred solution is to treat these employees as new hires. Thus, we effectively assume that a newly elected governor fires all existing employees, and offers new contracts, possibly re-hiring some of them. This allows for the fact that an incoming governor may not offer a contract to an employee who is very likely to be nonpartisan (i.e., loyal to the previous administration).\textsuperscript{34} Those who are rehired are offered new contracts based on the politician’s vote share from the previous election, as in our theory. Thus, in our example, employees hired before 1995 and still working in the public sector are matched with the incoming governor’s 1995 vote share.\textsuperscript{35}

We control for cross-province differences in outside options and the value of political support vs. output using province fixed effects $\mu_r$. In addition, we ensure that jobs and individuals are comparable to each other by including a detailed vector $X_j$ of individual characteristics. Our specifications therefore take the form

$$S_{jrl}^{2001} = S(P_{rl}, \mu_r, X_j).$$

The variation used to identify the effect of vote share $P_{rl}$ is illustrated in Figure 1. The Figure shows the average salary in 2001 among employees hired after a given election in a province. In Catamarca, shown on the first panel, the current governor has been in power

\textsuperscript{33}This would require dealing with a bias in the resulting sample: governors who have been in office longer would mechanically have more (and likely more senior) employees.

\textsuperscript{34}Theoretically, it is optimal for the politician to fire (and not rehire) those existing employees who have a higher probability of being nonpartisans than the rest of the population.

\textsuperscript{35}We discuss dropping previously-hired employees in the robustness checks section.
for three election cycles. Employees hired after the election with the middle vote share earn considerably less than those hired in the other two cycles. A similar picture emerges in the other three provinces shown on the graph. In each case, being hired after an election with low or high vote shares yields higher future salaries than elections in the middle.

The vector of individual characteristics $\mathbf{X}_j$ includes the following (see Table 1): the number of years since the employee was hired (experience) and its square; age and its square, highest educational attainment (dummies for elementary education (the omitted category), some high-school, completed high-school, some college education, completed college education), gender, 52 dummies for the individual’s job classification coded at the 2-digit level, an indicator for the size of the locality, an indicator for employees hired under the current administration, and a dummy for employees hired before the 1983 democratic transition. Note that by construction the experience variables also control for common time-effects across provinces (we control for such effects in a more flexible way in the robustness section). Finally, in some specifications we also include information about whether the employee found the job through an acquaintance who also works there. If referrals transmit information on political preferences, these applicants may face a different screening process.

It is worth emphasizing that when estimating (13), the province fixed effects control for a wider range of possible confounding effects than in panel studies (i.e., if $S_{jrt}$ was varying in $t$). These fixed effects capture all province-level factors that affect the 2001 wages, whether or not these factors vary over time. For example, different political environments might lead to different opportunities for patronage politics vs. public goods provision for the incumbent politician, and this is likely to be reflected in public wages. However, this implies a relationship between salaries and the current political environment within a province, and this is controlled for by the province fixed effect. Thus, factors such as the degree of political competition, whether incumbent politicians feel secure or threatened in their seats, differences between current governors’ “abilities”, differences in the most recent electoral results, or the current state of provincial government budgets are all controlled for by $\mu_r$. Similarly, province-level differences in the current economic environment presumably have a major impact on public wages, but any such factor will again be captured by the fixed effects.

The obvious threat to our identification strategy is if other factors at the time of hiring besides vote shares have long-term effects on wages. As above, we expect political factors to mainly affect contemporaneous wages, and we know of no other study that finds long-term wage impacts. We do however deal with the concern that economic factors may have long-term effects. In some specifications we add to (13) a term $\mathbf{Z}_{rl}$ containing province characteristics that may have long-lasting effects on salaries between election $l$ and 2001.
We were able to find data on three factors that may be correlated with vote shares and have long-lasting effects on salaries: provincial GDP, unemployment, and provincial government revenues at the time of hiring (see Table 2). Once the vote shares are merged to the income survey as explained above, we merge the $Z_{rl}$ variables based on the same year as the vote shares. For government revenues, we take the 1980 value for all elections in the 80s, the 1990 value for elections in the 90s, and the 2001 value for elections in 2000.

5.3 Benchmark results

We start by estimating the following specification:

$$\ln S_{jrl}^{2001} = \alpha_1 P_{rl} + \alpha_2 P_{rl}^2 + \beta X_j + \mu_r + \varepsilon_j;$$

(14)

where $\varepsilon_j$ is a normally distributed error term that may be heteroskedastic and correlated within a province. We expect $\alpha_1 < 0$ and $\alpha_2 > 0$, consistent with the U-shape suggested by Figure 1 and our theory.

Table 3 presents the results from estimating equation (14). We report heteroskedasticity-robust standard errors that allow for two-way clustering at the province and election-year level following the method proposed by Cameron, Gelbach and Miller (2008). Column (1) confirms the U-shaped relationship between vote shares at the time of hiring and individual salaries when individual and province characteristics are controlled for. The negative coefficient on the main effect of $P$ and the positive coefficient on the squared term are both individually and jointly significant (F-test p-value = 0.012). Figure 2 graphs the estimated marginal effects. The impact of $P$ on salaries is initially negative, but the magnitude of the effect declines, and becomes positive at $P = 48\%$ (the last row of Table 3 reports the estimated turning points).

According to these estimates, the average public-sector employee hired following a vote share of 47.2% (employees in Salta hired between 1995 and 1999) currently earns a 3.5% lower wage than a similar employee hired in an environment where 36.4% of the voting population was partisan (Chaco between 1995 and 1999). The magnitude of this effect is comparable to the average wage differential between large cities and towns with less than 100,000 inhabitants holding everything else constant (3.8%, see Table A1 in the Appendix). From our theory, this negative wage effect of the vote share is explained by the incentive effect: in provinces with a low partisan share, the political support purchased from nonparti-

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36Since our dependent variable is for a single year, clustering at the province × year level is inappropriate as this would assume that, in a given province, only employees hired in the same year face correlated shocks in their current wages.
san employees is very valuable. This results in high salaries for nonpartisans, and hence also for partisans, who need to be compensated for selecting the contracts designed for them. As the share of partisans rises, the support purchased from nonpartisans can be replaced with the support of partisans, consequently the salaries can decrease.

Based on the estimates, an environment with a 60% partisan share for the incumbent results in similar salaries as the 36.4% partisan share in Chaco. As \( P \) increases further, salaries rise at an increasing rate. Based on the point estimates, the partisan environment in San Luis in the same time period \( (P = 71.6\%) \) resulted in public salaries that are 9.1\% higher than in Chaco.\(^{37}\) Based on the theory, this is explained by the composition effect: the high partisan share results in many partisan employees. In equilibrium, partisans are paid more than their nonpartisan colleagues both because they provide more political support and because they receive rents to ensure self-selection.

Column (2) of Table 3 includes information on whether employees found their current position through a referral (28\% of the sample did so). While we do not know the type of information transmitted in a referral, it could be that at least some referrals contain credible information on an applicant’s partisanship. In such cases an applicant would be offered the first best contract and his salary would not be affected by the population share of partisans. Thus, if screening contracts play an important role in patronage, we should expect the effect of the initial vote share on current wages to be less important among those hired through referrals. The findings in Column (2) are consistent with this interpretation. We see that the effect of vote shares comes from individuals not hired through a referral. As before, the main effects of \( P \) and \( P^2 \) show a robust U-shape. By contrast, the interaction of both vote share terms with the network dummy has the opposite sign of the main effects, resulting in a flat relationship. The estimated marginal effects are graphed in Figure 3 separately for employees hired with and without referrals. Both the individual and the joint effect of the vote share variables is statistically insignificant for those hired through referrals.\(^{38}\) These findings strongly support our model of screening contracts: the predictions are confirmed exactly for those employees where asymmetric information is more likely to be a problem.

5.4 Robustness

In this section, we examine the robustness of the above findings through a series of further tests. The results appear in Tables 4 and 5. In both of these, we present results without the

\(^{37}\)Because 90\% of our sample is characterized by vote shares between 36-66\%, the quantitative predictions for very high vote shares should be interpreted with care.

\(^{38}\)The p-values are \((\beta_P + \beta_{\text{Referral} \times P} = 0) = 0.675, \text{F-test}(\beta_{P^2} + \beta_{\text{Referral} \times P^2} = 0) = 0.452, \text{joint F-test} = 0.40\).
Referral interactions (Panel A) as well as with these interactions (Panel B).

First, we ask whether our findings could be driven by outliers. In Column (1) of Table 4, we drop the Federal Capital and the province of Buenos Aires to make sure that the potentially different dynamics of the provincial public sector close to the federal center do not drive the results. This causes very little change in the coefficient estimates on $P$ and $P^2$ in both panels: our findings are robust. In Column (2), we drop the provinces of La Rioja, Tierra del Fuego, and Tucuman. La Rioja has particularly large vote shares in our sample (in Table 2, it is the only province whose vote share is more than two standard deviations away from the mean across all provinces), while Tierra del Fuego and Tucuman have the lowest average vote share over this period. As Column (2) shows, dropping these three provinces yields even larger coefficient estimates on the vote share terms.39

Next, we ask whether our results are robust to including province characteristics at the time of hiring which might have long-term effect on wages. This is the only type of province level effect that would not be captured by the fixed effects. In particular, Beaudry and DiNardo (1991) and subsequent authors have argued that, in the private sector, economic conditions at the time of hiring can have long-lasting effects on workers’ salaries. Although it is unclear whether these factors would be correlated with the vote share of the incumbent governor,40 they certainly could be, so it is useful to check if our results are robust. In Column (3) of Table 4, we include provincial GDP per capita and provincial unemployment at the time of hiring. We match these variables based on the same year as the vote share $P$.41 Compared to the benchmark results of Table 3, our estimates of the vote share coefficients change very little, with the point estimates on both $P$ and $P^2$ becoming slightly larger than those reported earlier. While in the regression without referrals the effect of $P$ is now only significant at the 13% level, $P$ and $P^2$ remain jointly significant (p-value = 0.002).42

Another relevant factor that may potentially have long-term wage impacts is the size of state government budgets. As described above the available information is very limited, but in an attempt to address this issue, Column (4) includes state government revenues from their two

---

39Our findings are also robust to dropping any subset of these 3 provinces (regressions not shown). To further investigate the possibility of influential outliers, we computed Cook’s Distance, and found it to be below 0.205 for every observation in the sample, far from the threshold of 1 that is commonly viewed as problematic.

40Recall that $P$ measures the incumbent’s vote share regardless of the party of the incumbent. In fact, the difference in mean winning vote shares between elections won by the Peronists (51.5%) and the Radicals (48.9%) between 1983-2001 is not statistically significant ($t = -1.29$). Thus, omitted province characteristics correlated with vote shares conditional on the party would not necessarily be correlated with $P$ in our regressions.

41We lose several observations due to missing values, including all of Rio Negro and the Federal Capital. See Table 2 for details.

42In Column (3), the unemployment rate at the time of hiring has the expected negative effect on current wages but it is insignificant. Surprisingly, GDP per capita also has a negative effect.
main sources: taxes, and transfers from the federal government. Our previous results are robust to including this additional variable. Moreover, the estimated turning point where the effect of \( P \) becomes positive is remarkably stable throughout. The results in Columns (3) and (4) confirm that in the public sector, apart from the economic factors identified in previous research, political factors at the time of hiring also have long term impacts on wages.

In Column (1) of Table 5 we perform a simple falsification test by running regression (14) on the private sector employees in our dataset. Compared to Table 3, the coefficient estimates on \( P \) and \( P^2 \) drop by more than a half and become highly insignificant. As expected, the implications of our model of political screening do not show up in the private sector data. Interestingly, Panel B indicates that referrals also matter less in the private sector, which supports the idea that referrals may in part transmit relevant political information on job applicants.

Next, we control for time-varying shocks common to all employees within a cohort. Column (2) includes election year dummies, and Column (3) replaces the experience variables with year of hiring dummies. Note that, based on our theory of screening contracts, common shocks to incumbent governors’ popularity should be reflected in public wages. Therefore the year effects introduced in Columns (2) and (3) will capture part of the variation in wages that is caused by vote shares as predicted by our model. Here the estimated effect of \( P \) and \( P^2 \) only capture deviations across provinces and cohorts from these common shocks.\(^{43}\) Nevertheless, our basic findings on the U-shaped relationship between wages and vote shares are borne out even in these conservative specifications. While as expected the coefficients are smaller, they are highly significant in both panels. In Panel B, we again see that the results are driven by employees not hired through referrals.

In Column (4), we ask whether the way we matched elections to employees matters for the results. Recall that we equated the incumbent governor and his or her party, and assumed that upon entering office, a new governor could choose to fire or write new contracts with existing employees. Although we argued that these assumptions are supported by features of the Argentine public sector, we now look at what happens if we relax them. In particular, Column (4) restricts attention to employees hired by the person who is occupying the governor’s seat in 2001. This ignores 75% of our sample, but we find that the U-shaped relationship holds even in this case.\(^{44}\)

Column (5) excludes all employees hired since the most recent election and shows that

\(^{43}\)Note that, by construction, the experience variables controlled for cohort-specific shocks even in our benchmark regressions (as long as these were linear or quadratic functions of time).

\(^{44}\)Here we do not see any significant impact of being hired through a referral, possibly because of the small sample size.
our findings are robust. We discuss the significance of this result in Section 5.5 below.

Another concern we took seriously is whether our results could be explained away by salaries being more noisy in some province-election cells than others. This is motivated by the fact that the number of employees in our sample varies by province and election: across the 77 cells, the average sample size is 62, with a median of 40 and a standard deviation of 61. This might be worrisome if cell sizes happen to be small for very large or very small vote shares, so that salaries in the survey are measured with more noise in exactly these cases. We do not find this to be the case. In fact the three elections with the highest vote share have an average sample size above the median (41), while the three elections with the lowest vote share are among the largest cells in the sample (with an average size of 183). (Figure A1 in the Appendix shows the sample size for each election.) In any event, as discussed above, dropping La Rioja, the province with the two highest-\(P\) elections does not change our results. We also checked that our results are robust to dropping elections with a cell size below 20, the lowest 5 percentile of our sample (regressions not shown).

Finally, we perform two tests to assess whether the functional form assumption in equation (14) is important. We first relax the loglinearity assumption, and then allow the effect of \(P\) to vary arbitrarily across different ranges.

Because wages are measured on the log scale, equation (14) assumes that the data generating process is loglinear. While this is a common assumption in the labor literature, it is not implied by our theory, and therefore it is useful to check whether our results are robust. To keep the lognormal distribution of wages, we estimate

\[
S_{jrl}^{2001} = \alpha_1 P_{rl} + \alpha_2 P_{rl}^2 + \beta X_j + \mu_r + \varepsilon_j, \tag{15}
\]

where \(S_{jrl}\) is wages in hundred pesos, and \(\varepsilon_j\) is lognormal with a parent distribution \(N(\mu, \sigma^2)\). Note that this is exactly the quadratic approximation of equation (7) in Proposition 1, assuming that for each individual \(j\) the sum of the outside option \(u_j\) and the equilibrium cost of effort \(\kappa_j(\hat{y})\) can be written as \(u_j + \kappa_j(\hat{y}) = \beta X_j + \mu_r + \varepsilon_j\). We include all the controls listed in Table 3, and estimate equation (15) by Maximum Likelihood.

The results, shown in Table 6, are very similar to those seen earlier. Starting from the lowest vote share, the wage declines until about \(P = 48\%\). The magnitude of this change is 24 pesos, or 3.5\% of the average wage. Employees hired after vote shares greater than 48\% receive increasingly higher wages on average.

\[\text{While one might have expected to find employees hired earlier to be over-represented in the sample, this does not seem to be the case. For the 1983, 1987, 1991, 1995 and 1999 election years, the average sample sizes are, respectively, 73, 56, 44, 59, and 64. This likely reflects the ease with which public employees are fired in Argentina.}\]
Next, we replace the quadratic specification in equation (14) with a series of dummies for different $\Pi^h$ ranges of $P$:

$$S_{jrl}^{2001} = \sum_h \alpha_h \times I(P_{rl} \in \Pi^h) + \beta \mathbf{X}_j + \mu_r + \varepsilon_j. \quad (16)$$

We create an indicator for vote shares less than 0.4, and then one each for ranges of 7.5 percentage points, the last one being 0.625 and above.$^{46}$ Figure 4 presents the results from this regression, where the omitted category is $P \in [0.475, 0.55)$. Again a clear U-shaped pattern emerges, with employees hired after elections with very low or very high vote shares being paid more than others.

### 5.5 Alternative explanations

We have shown that the pattern of public-sector wages and partisan shares in Argentina is consistent with a model of political screening, where patronage contracts must deal with asymmetric information on employees’ political preferences. In this section we briefly consider potential alternative models and argue that there are no obvious alternatives that would explain the data.

First, we note that in standard models of targeted redistribution where politicians acquire votes by favoring pivotal voter groups (swing voters) or by increasing turnout among loyal supporters (core voters), expenditures are correlated with current electoral results. In models such as Cox and McCubbins (1986), Lindbeck and Weibull (1987), and Dixit and Londregan (1996, 1998), politicians allocate resources among voters based on partisanship to win the next election (or as a reward for votes after an election). Since a politician cannot increase his vote share retrospectively and there is no reason to reward supporters for electoral results in the distant past, these models have no implications for the relationship between past vote shares and current wages.

Second, in these models, the relationship between vote shares and expenditures is very different from the U-shaped pattern we find. In swing-voter models, expenditures as a function of vote shares tend to be inverse U-shaped as very low or high vote shares usually indicate the presence of few swing voters. In core-voter models, expenditures increase monotonically with the share of partisans. (See, e.g., Case (2001) and Ansolabehere and Snyder (2006) for empirical work on these models.)

Could some other theory based on recent elections drive our empirical results? The province fixed effects would pick up any impact that the last election may have on all

$^{46}$This is based on Table 2, where the standard deviation of the average vote share across provinces is 7.2 percentage points.
employees in a province, but differential impacts across cohorts may be possible. Column (5) of Table 5 estimates our baseline regression omitting every employee hired since the most recent election. These are the employees most likely to be affected by the standard mechanisms of targeted redistribution. Our findings remain robust, these employees do not drive the results. Consistent with our screening theory of patronage, elections at the time of hiring, in some cases going back as much as 18 years, have an impact on wages currently paid.

6 Conclusion

We have presented a model of political patronage in which a politician attempts to maximize the level of political support extracted from public employees and minimize its cost. Political preferences are private information. In settings where personal screening is impractical and there are no readily available indicators of preferences (such as family ties or ethnicity), the optimal patronage contracts have a screening function. Positions with different combinations of political requirements and compensation are offered, and partisans self-select into positions that require a large degree of political support in exchange for high pay. At the time of hiring, the politician’s vote share reflects the population share of partisans, and this affects the structure of optimal patronage contracts. Thus, the model predicts an association between the incumbent’s past vote shares and current wages in the public sector. Individual-level data across provinces in Argentina is consistent with the theory, indicating that public-sector salaries have a U-shaped relation to the vote share of the incumbent governor at the time of hiring. This finding is driven by employees not hired through referrals, and it survives a number of robustness checks.

How special is Argentina? Although the Argentine provinces are an ideal setting to test our theory, there is no reason to believe that other politicians are not benefitting from the self-selection of partisans into appropriately designed patronage contracts. While in established democracies direct interference with civil service procedures often receives attention from the media and the courts, a system based on self-selection might be difficult to detect.

Consider Texas. It is the only US state without a centralized personnel office, it has no statewide merit system, and “simply put, state agencies are free to develop their own policies and procedures for most every aspect of HR, including: recruitment, selection, performance evaluation, training and development, employee discipline, and grievance.” (Coggburn, 2006, p206) Observers often voice concerns about political interference in such a decentralized system. \(^{47}\) The first panel of Figure 5 presents administrative data on the 2010 salary of all

\(^{47}\)In one survey 12% of state agency HR directors said they could think of an instance where someone’s
Texas state employees not working in the education sector. Mirroring our empirical strategy in the paper, we plot the average salary of employees hired after each of the past four gubernatorial elections (since the governor’s office has been occupied by the same party). Controlling for experience, we find that average current salary is a U-shaped function of the governor’s vote share at the time of hiring. As a comparison, the second panel shows the same information for North Carolina, a state where a statewide merit system has been in effect since 1949. The pattern of salaries is markedly different. While this is merely an example, it does illustrate that the relationship between past vote shares and current wages predicted by our model of screening contracts could show up in other settings with weak civil service rules.

In the past 30 years, civil service reform has been on the agenda in both developed and developing countries. To conclude, we briefly discuss potential implications of our paper for these policies.

Our approach underscores the importance of policies that tie public wages to observable employee characteristics, such as civil service pay scales based on qualifications and entrance exams. Our model shows how, in a world without such restrictions, politicians can use salary differences in otherwise similar positions to screen applicants based on political preferences. In contrast, tying salaries to education or experience prevents the politician from offering a partisan premium, a necessary ingredient of the system of screening contracts. Thus, pay-setting policies in the public sector can help reduce political screening.

A standard feature of civil service reforms is the designation of “political” positions in which patronage is legal and “career” positions in which it is not, as in the US system. In our model, the regulation of career positions can be represented as putting restrictions on the nonpartisan contracts that the politician can offer. This has an interesting implication: the self-selection constraints imply that the politician’s optimal response to lower $s_{NP}$ and $x_{NP}$ is to reduce the rents offered in the partisan contracts. This shows that the regulation of career jobs may lead to lower payments for political services in political positions, even if those are not regulated directly.

Typical accounts of civil service reforms view them as driven by public demands for more

48 Out of the 9 states that had the governor’s seat occupied by the same party for at least 3 election cycles and that did not recently undergo a major civil service reform, North Carolina and Texas were the only states for which salary and hiring date information was available.

49 Between 1981 and 1991, such reforms were a component in 90 World Bank loans to 44 different countries totalling over $4.6 billion (Lindauer and Nunberg, 1996). See Halligan (2003) for a description of recent reforms in Australia, Canada, New Zealand, UK and the US.

50 In the US, the 1883 Pendleton Act establishing the civil service system initially left 89% of federal employees in political positions. This share decreased to 14% in 1950 but rose to almost 50% by the mid 1990s (Ingraham and Moynihan, 2003).
transparency and efficiency in government. However, relative to a world with implicit screening contracts, separating political and career positions codifies the existence of partisan and nonpartisan contracts and makes it explicit that political support is expected from employees in the latter but not in the former. If self-selection based on partisanship is important, as in our model, then civil service reform may be attractive to incumbent politicians because it can enhance the efficiency of political screening. Investigating these and other implications of our approach for the regulation of public employment is an interesting topic for future research.

7 Appendix

7.1 Optimal contracts

We first solve the problem ignoring, for each type, all but the first participation constraint. We show that the contract given in (2)-(6) solves this problem. Since this solution satisfies the deleted constraints, it is also a solution to the complete problem.

Consider the politician’s problem subject to the two incentive constraints

\[(IC_P)\]

\[(IC_{NP})\]

and two participation constraints,

\[t = 0 \quad \text{and} \quad T \]

\[s_t^P - c_t(x_t^P) - \kappa(y_t^P)] \geq \sum_{t=0}^T \delta^t u_t. \quad (PC^0_t)\]

Assume that \((PC^0_P)\) binds. Then \((IC_P)\) is

\[\sum_{t=0}^T \delta^t u_t \geq \sum_{t=0}^T \delta^t [s_{NP}^t - c_t(x_{NP}^t) - \kappa(y_{NP}^t)], \]

but since \(c_{NP}(x_{NP}^t) > c_t(x_{NP}^t)\), this would imply

\[\sum_{t=0}^T \delta^t u_t > \sum_{t=0}^T \delta^t [s_{NP}^t - c_t(x_{NP}^t) - \kappa(y_{NP}^t)], \]

contradicting \((PC^0_{NP})\). Since \((PC^0_P)\) does not bind, \((IC_P)\) has to, or else all payments \(s_t^P\) could be reduced. Next, assume that \((IC_{NP})\) binds. Using the binding \((IC_P)\), \((IC_{NP})\) would then become

\[\sum_{t=0}^T \delta^t [c_P(x_t^P) - c_t(x_{NP}^t)] \geq \sum_{t=0}^T \delta^t [c_{NP}(x_t^P) - c_{NP}(x_{NP}^t)]. \]

But since \(c'_P(x) < c'_{NP}(x)\) for all \(x\), this cannot be the case. Therefore \((PC^0_{NP})\) has to bind. Substituting the binding constraints into the objective and solving gives (2)-(6).

7.2 Proof of Proposition 2

With \(c_{NP}(x) = c(x)\), \(c_P(x) = \alpha c(x)\), and \(v(x) = \gamma x\), the first order conditions (2) and (3) are \(c'(x_P^*) = \frac{\gamma}{\alpha}\) and \(c'(x_{NP}^*) = \frac{\gamma(1-p)}{1-p\alpha}\), and the derivative of average salary with respect to \(p\)
(equation (8)) is
\[ \frac{\partial \hat{s}}{\partial p} = \alpha (c(x_p^*) - c(x_{NP}^*)) - \gamma^2 \frac{(1 - \alpha)(1 - p)}{c''(x_{NP}^*)(1 - p\alpha)^2}. \] (17)

Take the derivative once again and rearrange to get
\[ \frac{\partial^2 \hat{s}}{\partial p^2} = \frac{\gamma^2(1-\alpha)^2}{(1-p\alpha)^3 c'(x_{NP}^*)} \left[ 1 - \frac{c'(x_{NP}^*)c''(x_{NP}^*)}{c''(x_{NP}^*)^2} \right], \]
so that \( \frac{\partial^2 \hat{s}}{\partial p^2} \sim (c''(x_{NP}^*))^2 - c'(x_{NP}^*)c'''(x_{NP}^*) \sim \left( \frac{c''(x_{NP}^*)}{c'(x_{NP}^*)} \right)' \).

Note that for \( p \to 1 \) the second term in (17) disappears so \( \frac{\partial \hat{s}}{\partial p} > 0 \) for \( p \) large enough.
Next, consider \( \frac{\partial \hat{s}}{\partial p} |_{p=0} = \alpha (c(x_p^*) - c(x_{NP}^*)) - \gamma^2 \frac{1-\alpha}{c'(x_{NP}^*)} \) and note that for \( \alpha = 1 \), \( \frac{\partial \hat{s}}{\partial p} = 0 \). Take

\[ \frac{\partial}{\partial \alpha} \left( \frac{\partial \hat{s}}{\partial p} |_{p=0} \right) = c(x_p^*) - c(x_{NP}^*) + \alpha c'(x_p^*) \frac{\partial x_p^*}{\partial \alpha} + \frac{\gamma^2}{c'(x_p^*)}, \]

\[ = \left[ c(x_p^*) - \frac{c'(x_p^*)^2}{c''(x_p^*)} \right] - \left[ c(x_{NP}^*) - \frac{c'(x_{NP}^*)^2}{c''(x_{NP}^*)} \right]. \]

Because \( x_p^* > x_{NP}^* \), \( \frac{\partial}{\partial \alpha} \left( \frac{\partial \hat{s}}{\partial p} |_{p=0} \right) \) is positive if \( \left( c - \frac{(c')^2}{c''} \right)' \sim \left( c''c' - (c')^2 \right) \sim \left( \frac{c''}{c'} \right)' > 0 \). But since we have \( \frac{\partial \hat{s}}{\partial p} |_{p=0} = 0 \) for \( \alpha = 1 \), \( \frac{\partial}{\partial \alpha} \left( \frac{\partial \hat{s}}{\partial p} |_{p=0} \right) > 0 \) implies \( \frac{\partial \hat{s}}{\partial p} |_{p=0} < 0 \) for all \( \alpha < 1 \).

Under the conditions in the Proposition, \( \frac{\partial \hat{s}}{\partial p} |_{p=0} < 0 \), and \( \frac{\partial^2 \hat{s}}{\partial p^2} < 0 \) for low \( p \). Once \( p \) is high enough that \( x_{NP}(p) \leq \bar{x} \), we have \( \frac{\partial^2 \hat{s}}{\partial p^2} < 0 \), and since \( \frac{\partial \hat{s}}{\partial p} > 0 \) for \( p \to 1 \), there must be some \( \bar{p} < 1 \) s.t. \( \frac{\partial \hat{s}}{\partial p} > 0 \) for \( p > \bar{p} \).

7.3 Political screening and the efficiency of public services

From the first-order conditions (9)-(12), the comparative statics w.r.t. \( p \) give

\[ \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \begin{bmatrix} \frac{\partial x_{NP}}{\partial p} \\ \frac{\partial y_{NP}}{\partial p} \end{bmatrix} = \begin{bmatrix} z \\ 0 \end{bmatrix}, \]

where

\[ a_{11} = ph''(x_{NP}) + v''(x_{NP})(1 - p) + (1 - p)b''(1 - x_{NP} - y_{NP}) - h''_{NP}(x_{NP}) \]
\[ a_{12} = a_{21} = (1 - p)b''(1 - x_{NP} - y_{NP}) \]
\[ a_{22} = (1 - p)[b''(1 - x_{NP} - y_{NP}) + \mu''(y_{NP})] \]
\[ z = v'(x_{NP}) - b'(1 - x_{NP} - y_{NP}) - h'(x_{NP}) \]

From the second-order conditions, we know that \( a_{22} < 0 \) and \( a_{11}a_{22} - (a_{12})^2 > 0 \), which are necessary for the Hessian to be negative semidefinite. From (11), we also know that \( z > 0 \).

Using Cramer’s rule, we therefore find
\[ \frac{\partial x_{NP}}{\partial p} = \frac{z a_{22} - (a_{12})^2}{a_{11}a_{22} - (a_{12})^2} < 0 \] and
\[ \frac{\partial y_{NP}}{\partial p} = \frac{-z a_{12}}{a_{11}a_{22} - (a_{12})^2} > 0. \]
Now consider the average wage as a function of $p$. From the binding constraints we find, as in the main text, that
\[
\tilde{s}(p) = p(-b(1-x_P-y_P)+h_P(x_P)+b(1-x_{NP}-y_{NP})-h_{NP}(x_{NP}))-b(1-x_{NP}-y_{NP})+h_{NP}(x_{NP}).
\]

Taking the derivative and simplifying gives
\[
\frac{d\tilde{s}}{dp} = \left[-b(1-x_P-y_P)+h_P(x_P)+b(1-x_{NP}-y_{NP})-h_{NP}(x_{NP})\right] + (1-p)\left[v'(x_{NP})\frac{\partial x_{NP}}{\partial p} + \mu'(y_{NP})\frac{\partial y_{NP}}{\partial p}\right].
\]

The first term in brackets is the positive composition effect. The second term is the incentive effect, which now reflects both $x_{NP}$ and $y_{NP}$ changing as the vote share changes. Using the expressions above for the derivatives of $x_{NP}$ and $y_{NP}$, we find that the incentive effect is
\[
v'(x_{NP})\frac{\partial x_{NP}}{\partial p} + \mu'(y_{NP})\frac{\partial y_{NP}}{\partial p} \sim b''(1-x_{NP}-y_{NP})(v'(x_{NP})-\mu'(y_{NP}))+\mu''(y_{NP})v'(x_{NP}) < 0,
\]
where the inequality follows from $b'' < 0$, $\mu'' > 0$, and the first order condition (11).

References


### Table 1: Definitions and summary statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
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<tbody>
<tr>
<td>Wage</td>
<td>Natural logarithm of individual respondent's salary</td>
<td>4786</td>
<td>6.25</td>
<td>0.74</td>
<td>1.39</td>
<td>9.23</td>
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<tr>
<td>( P )</td>
<td>Vote share of the incumbent governor</td>
<td>4786</td>
<td>0.49</td>
<td>0.09</td>
<td>0.35</td>
<td>0.82</td>
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<td>Women</td>
<td>1 if the respondent is a woman</td>
<td>4786</td>
<td>0.52</td>
<td>0.50</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Age</td>
<td>Respondent's age ( \times 0.1 )</td>
<td>4786</td>
<td>4.07</td>
<td>1.07</td>
<td>1.5</td>
<td>8.5</td>
</tr>
<tr>
<td>Schooling</td>
<td>Education achieved by respondent (0 = some primary school or less, 1 = completed primary school, ..., 5 = completed college or higher)</td>
<td>4786</td>
<td>3.25</td>
<td>1.8</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Experience</td>
<td>Number of years since hired ( \times 0.1 )</td>
<td>4786</td>
<td>1.15</td>
<td>0.9</td>
<td>0</td>
<td>5.4</td>
</tr>
<tr>
<td>Occupation</td>
<td>Respondent's occupation coded at the 2-digit level from the Argentine National Job Classification, 1998. (52 occupations are represented in our sample.)</td>
<td>4786</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>1 if respondent lives in a town of at least 100,000</td>
<td>4786</td>
<td>0.54</td>
<td>0.5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Oldsystem</td>
<td>1 if hired before 1983</td>
<td>4786</td>
<td>0.25</td>
<td>0.43</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Current governor</td>
<td>1 if respondent was hired under the current administration</td>
<td>4786</td>
<td>0.51</td>
<td>0.50</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Referral</td>
<td>1 if the respondent found this job through an acquaintance who also works there</td>
<td>4734</td>
<td>0.28</td>
<td>0.45</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

*Source: Individual data is from SIEMPRO (2001). The electoral data is from the Ministry of the Interior, available at http://andy.towsa.com/totalpais/index.html. The electoral data was matched to individuals based on the year they were hired, as explained in the text.*
<table>
<thead>
<tr>
<th>Province</th>
<th>Year 2001 incumbent first elected</th>
<th>Year 2001 governor(^a)</th>
<th>Avg. vote share of 2001 incumbent since first elected</th>
<th>Avg. GDP per capita 1983-2000(^b)</th>
<th>Avg. unemployment 1983-2000(^c)</th>
<th>Avg. gov't. revenue per capita 1980-2000(^d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buenos Aires</td>
<td>1987</td>
<td>ucr</td>
<td>49.60%</td>
<td>0.284</td>
<td>15.1%</td>
<td>0.428</td>
</tr>
<tr>
<td>Capital Federal</td>
<td>1996</td>
<td>ucr</td>
<td>41.80%</td>
<td>n/a</td>
<td>9.7%</td>
<td>n/a</td>
</tr>
<tr>
<td>Catamarca</td>
<td>1991</td>
<td>pj</td>
<td>51.40%</td>
<td>0.244</td>
<td>11.5%</td>
<td>1.141</td>
</tr>
<tr>
<td>Chaco</td>
<td>1995</td>
<td>pj</td>
<td>44.70%</td>
<td>0.133</td>
<td>10.8%</td>
<td>0.731</td>
</tr>
<tr>
<td>Chubut</td>
<td>1991</td>
<td>ucr</td>
<td>54.80%</td>
<td>0.629</td>
<td>12.4%</td>
<td>0.862</td>
</tr>
<tr>
<td>Cordoba</td>
<td>1998</td>
<td>ucr</td>
<td>49.60%</td>
<td>0.283</td>
<td>12.1%</td>
<td>0.540</td>
</tr>
<tr>
<td>Corrientes</td>
<td>1997</td>
<td>Other</td>
<td>48.50%</td>
<td>0.233</td>
<td>11.9%</td>
<td>0.623</td>
</tr>
<tr>
<td>Entre Rios</td>
<td>1999</td>
<td>ucr</td>
<td>49.10%</td>
<td>0.28</td>
<td>10.7%</td>
<td>0.665</td>
</tr>
<tr>
<td>Formosa</td>
<td>1983</td>
<td>pj</td>
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<td>8.0%</td>
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<td>Jujuy</td>
<td>1983</td>
<td>pj</td>
<td>48.60%</td>
<td>0.216</td>
<td>9.3%</td>
<td>0.723</td>
</tr>
<tr>
<td>La Pampa</td>
<td>1983</td>
<td>pj</td>
<td>50.00%</td>
<td>0.378</td>
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<td>1.131</td>
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<td>La Rioja</td>
<td>1983</td>
<td>pj</td>
<td>69.80%</td>
<td>0.324</td>
<td>7.2%</td>
<td>1.342</td>
</tr>
<tr>
<td>Mendoza</td>
<td>1999</td>
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<td>37.90%</td>
<td>0.228</td>
<td>5.0%</td>
<td>0.529</td>
</tr>
<tr>
<td>Misiones</td>
<td>1987</td>
<td>ucr</td>
<td>50.20%</td>
<td>0.183</td>
<td>6.4%</td>
<td>0.583</td>
</tr>
<tr>
<td>Neuquen</td>
<td>1983</td>
<td>Other</td>
<td>52.90%</td>
<td>0.721</td>
<td>9.0%</td>
<td>0.915</td>
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<td>Rio Negro</td>
<td>1983</td>
<td>ucr</td>
<td>45.80%</td>
<td>0.369</td>
<td>n/a</td>
<td>0.882</td>
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<td>Salta</td>
<td>1995</td>
<td>pj</td>
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<td>0.213</td>
<td>13.4%</td>
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<td>San Juan</td>
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<td>Other</td>
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<td>0.212</td>
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<td>0.789</td>
</tr>
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<td>San Luis</td>
<td>1983</td>
<td>pj</td>
<td>54.00%</td>
<td>0.593</td>
<td>6.2%</td>
<td>1.038</td>
</tr>
<tr>
<td>Santa Cruz</td>
<td>1983</td>
<td>pj</td>
<td>57.70%</td>
<td>0.687</td>
<td>3.7%</td>
<td>1.806</td>
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<tr>
<td>Santa Fe</td>
<td>1983</td>
<td>pj</td>
<td>47.10%</td>
<td>0.365</td>
<td>14.7%</td>
<td>0.573</td>
</tr>
<tr>
<td>Santiago del Estero</td>
<td>1983</td>
<td>pj</td>
<td>54.80%</td>
<td>0.139</td>
<td>5.5%</td>
<td>0.655</td>
</tr>
<tr>
<td>Tierra del Fuego</td>
<td>1999</td>
<td>pj</td>
<td>36.80%</td>
<td>1.165</td>
<td>9.2%</td>
<td>1.929</td>
</tr>
<tr>
<td>Tucuman</td>
<td>1999</td>
<td>pj</td>
<td>36.40%</td>
<td>0.257</td>
<td>16.0%</td>
<td>0.565</td>
</tr>
</tbody>
</table>

**Mean**: 49.60% 0.361 9.7% 0.872

**Std. dev.**: 7.20% 0.245 3.4% 0.391

**Notes**: 
\(^a\) If the governor was supported by a party alliance, the dominant party is listed. UCR: Union Civil Radical, PJ: Partido Justicialista, Other: other provincial party.

\(^b\) 1000 pesos at 1986 prices. Source: Universidad Nacional de La Plata as described in Porto (2004).


Table 3: The effect of partisan shares on public-sector wages

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P$</td>
<td>-2.135**</td>
<td>-2.573***</td>
</tr>
<tr>
<td></td>
<td>(0.937)</td>
<td>(0.853)</td>
</tr>
<tr>
<td>$P^2$</td>
<td>2.227***</td>
<td>2.621***</td>
</tr>
<tr>
<td></td>
<td>(0.827)</td>
<td>(0.731)</td>
</tr>
<tr>
<td>$Referral \times P$</td>
<td></td>
<td>1.913**</td>
</tr>
<tr>
<td></td>
<td>(0.827)</td>
<td>(0.765)</td>
</tr>
<tr>
<td>$Referral \times P^2$</td>
<td></td>
<td>-1.704***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.537)</td>
</tr>
<tr>
<td>$Referral$</td>
<td></td>
<td>-0.500**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.247)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.47</td>
<td>0.47</td>
</tr>
<tr>
<td>$N$</td>
<td>4,786</td>
<td>4,734</td>
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<tr>
<td>Provinces</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Estimated turning point</td>
<td>0.48</td>
<td>0.49</td>
</tr>
</tbody>
</table>

Notes: Dependent variable is Wage. All regressions include Women, Age, $Age^2$, Experience, $Experience^2$, City, Oldsystem, Currentgovernor, dummies for Schooling and Occupation, and a full set of province fixed effects. A more detailed regression output is given in the Appendix. Robust standard errors clustered two-way by province and election year in parentheses. The last row reports the value of $P$ for which the estimated effect becomes positive (conditional on $Referral = 0$ in column (2)).

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
Table 4: Robustness 1

Panel A

<table>
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<tr>
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<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P$</td>
<td>-2.201*</td>
<td>-5.049***</td>
<td>-2.337</td>
<td>-2.287</td>
</tr>
<tr>
<td></td>
<td>(1.168)</td>
<td>(1.941)</td>
<td>(1.532)</td>
<td>(1.487)</td>
</tr>
<tr>
<td>$P^2$</td>
<td>2.236**</td>
<td>5.041***</td>
<td>2.614**</td>
<td>2.542**</td>
</tr>
<tr>
<td></td>
<td>(0.969)</td>
<td>(1.793)</td>
<td>(1.240)</td>
<td>(1.194)</td>
</tr>
<tr>
<td>Unemployment</td>
<td></td>
<td>-0.006</td>
<td>-0.007</td>
<td></td>
</tr>
<tr>
<td>GDP per capita</td>
<td></td>
<td>-0.613**</td>
<td>-0.601**</td>
<td></td>
</tr>
<tr>
<td>Govt. revenues</td>
<td></td>
<td></td>
<td></td>
<td>-0.062</td>
</tr>
</tbody>
</table>

| $R^2$  | 0.47         | 0.46          | 0.48          | 0.48          |
| $N$    | 4,078        | 4,097         | 4,084         | 4,084         |
| Provinces | 22           | 21            | 22            | 22            |
| Estimated turning point | 0.49 | 0.50 | 0.45 | 0.45 |

Panel B: Referrals

<table>
<thead>
<tr>
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<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P$</td>
<td>-2.552**</td>
<td>-5.032***</td>
<td>-2.755*</td>
<td>-2.710**</td>
</tr>
<tr>
<td></td>
<td>(1.010)</td>
<td>(1.748)</td>
<td>(1.414)</td>
<td>(1.362)</td>
</tr>
<tr>
<td>$P^2$</td>
<td>2.551***</td>
<td>5.033***</td>
<td>2.988***</td>
<td>2.919***</td>
</tr>
<tr>
<td></td>
<td>(0.835)</td>
<td>(1.654)</td>
<td>(1.146)</td>
<td>(1.093)</td>
</tr>
<tr>
<td>Referral $x P$</td>
<td>1.507*</td>
<td>0.126</td>
<td>1.806**</td>
<td>1.817**</td>
</tr>
<tr>
<td></td>
<td>(0.886)</td>
<td>(0.489)</td>
<td>(0.774)</td>
<td>(0.789)</td>
</tr>
<tr>
<td>Referral $x P^2$</td>
<td>-1.335**</td>
<td>-0.094</td>
<td>-1.656***</td>
<td>-1.662***</td>
</tr>
<tr>
<td></td>
<td>(0.609)</td>
<td>(0.264)</td>
<td>(0.561)</td>
<td>(0.580)</td>
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<tr>
<td>Referral</td>
<td>-0.400</td>
<td>-0.013</td>
<td>-0.454*</td>
<td>-0.458*</td>
</tr>
<tr>
<td></td>
<td>(0.281)</td>
<td>(0.202)</td>
<td>(0.248)</td>
<td>(0.250)</td>
</tr>
<tr>
<td>Unemployment</td>
<td></td>
<td>-0.006</td>
<td>-0.007</td>
<td></td>
</tr>
<tr>
<td>GDP per capita</td>
<td></td>
<td>-0.605**</td>
<td>-0.592*</td>
<td></td>
</tr>
<tr>
<td>Govt. revenues</td>
<td></td>
<td></td>
<td>-0.064</td>
<td></td>
</tr>
</tbody>
</table>

| $R^2$  | 0.47         | 0.46          | 0.48          | 0.48          |
| $N$    | 4,040        | 4,050         | 4,044         | 4,044         |
| Provinces | 22           | 21            | 22            | 22            |
| Estimated turning point | 0.50 | 0.50 | 0.46 | 0.46 |

Notes: Dependent variable is Wage. In each panel, Column (1) excludes the Federal Capital and the province of Buenos Aires, and Column (2) excludes La Rioja, Tierra del Fuego and Tucuman. All regressions include a full set of province fixed effects as well as all the independent variables listed in the notes to Table 3. Robust standard errors clustered two-way by province and election year in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.
### Table 5: Robustness 2

#### Panel A

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<th>(5)</th>
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<tr>
<td>$P$</td>
<td>-0.834</td>
<td>-1.205**</td>
<td>-1.430**</td>
<td>-6.700***</td>
<td>-2.211***</td>
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<tr>
<td></td>
<td>(0.895)</td>
<td>(0.488)</td>
<td>(0.575)</td>
<td>(1.646)</td>
<td>(0.256)</td>
</tr>
<tr>
<td>$P^2$</td>
<td>1.072</td>
<td>1.271***</td>
<td>1.322***</td>
<td>5.731***</td>
<td>1.784***</td>
</tr>
<tr>
<td></td>
<td>(0.695)</td>
<td>(0.334)</td>
<td>(0.454)</td>
<td>(1.330)</td>
<td>(0.296)</td>
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<tr>
<td>$R^2$</td>
<td>0.42</td>
<td>0.48</td>
<td>0.49</td>
<td>0.52</td>
<td>0.42</td>
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<tr>
<td>$N$</td>
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<td>4,786</td>
<td>1,095</td>
<td>4,129</td>
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<td>Provinces</td>
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<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
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<td>0.47</td>
<td>0.54</td>
<td>0.58</td>
<td>0.62</td>
<td>0.67</td>
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</table>

#### Panel B: Referrals

<table>
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<th>(1)</th>
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<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
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</thead>
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<tr>
<td>$P$</td>
<td>-0.831</td>
<td>-1.661***</td>
<td>-1.895***</td>
<td>-6.007***</td>
<td>-2.844***</td>
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<tr>
<td></td>
<td>(0.937)</td>
<td>(0.402)</td>
<td>(0.460)</td>
<td>(2.235)</td>
<td>(0.415)</td>
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<tr>
<td>$P^2$</td>
<td>1.082</td>
<td>1.666***</td>
<td>1.742***</td>
<td>5.233***</td>
<td>2.327***</td>
</tr>
<tr>
<td></td>
<td>(0.756)</td>
<td>(0.292)</td>
<td>(0.396)</td>
<td>(1.798)</td>
<td>(0.389)</td>
</tr>
<tr>
<td>Referral x $P$</td>
<td>0.142</td>
<td>1.909***</td>
<td>1.929***</td>
<td>-1.166</td>
<td>2.716***</td>
</tr>
<tr>
<td></td>
<td>(0.470)</td>
<td>(0.585)</td>
<td>(0.675)</td>
<td>(2.069)</td>
<td>(0.702)</td>
</tr>
<tr>
<td>Referral x $P^2$</td>
<td>-0.164</td>
<td>-1.663***</td>
<td>-1.703***</td>
<td>0.639</td>
<td>-2.297***</td>
</tr>
<tr>
<td></td>
<td>(0.452)</td>
<td>(0.267)</td>
<td>(0.354)</td>
<td>(1.800)</td>
<td>(0.405)</td>
</tr>
<tr>
<td>Referral</td>
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<td>-0.508**</td>
<td>-0.504**</td>
<td>0.390</td>
<td>-0.746***</td>
</tr>
<tr>
<td></td>
<td>(0.117)</td>
<td>(0.220)</td>
<td>(0.237)</td>
<td>(0.614)</td>
<td>(0.263)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.42</td>
<td>0.48</td>
<td>0.49</td>
<td>0.52</td>
<td>0.42</td>
</tr>
<tr>
<td>$N$</td>
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<td>4,734</td>
<td>1,094</td>
<td>4,078</td>
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<td>Provinces</td>
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<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Estimated turning point</td>
<td>0.50</td>
<td>0.54</td>
<td>0.61</td>
<td>0.57</td>
<td>0.62</td>
</tr>
</tbody>
</table>

Notes: Dependent variable is Wage. In each panel, Column (1) is a falsification exercise on private sector employees, Column (2) includes year of election dummies, Column (3) includes year of hiring dummies, Column (4) restricts the sample to employees hired by the person currently governing, and Column (5) excludes employees hired since the most recent election. All regressions include a full set of province fixed effects as well as all the independent variables listed in the notes to Table 3. Robust standard errors clustered two-way by province and election year in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.
Table 6: Linear specification with lognormal errors (Maximum Likelihood)

<table>
<thead>
<tr>
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<th>Estimate</th>
<th>Standard error</th>
</tr>
</thead>
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<tr>
<td>$P$</td>
<td>-14.467</td>
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<tr>
<td>$P^2$</td>
<td>15.070</td>
<td>0.670</td>
</tr>
<tr>
<td>$\mu$</td>
<td>1.706</td>
<td>0.023</td>
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<tr>
<td>$\sigma$</td>
<td>0.587</td>
<td>0.016</td>
</tr>
<tr>
<td>$N$</td>
<td>4786</td>
<td></td>
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<tr>
<td>Provinces</td>
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<td></td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-12406.77</td>
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</tr>
<tr>
<td>Estimated turning point</td>
<td>0.48</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Results from estimating equation (15). The dependent variable is respondents' wage in 100 pesos. The regression includes a full set of province fixed effects as well as all the independent variables listed in the notes to Table 3. The asymptotic covariance matrix was estimated using the inverse of the Hessian of the likelihood function (Wooldridge, 2002, p352).
Table A1: Detailed regression output for Table 3, column (1)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
</tr>
</thead>
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<td>$P$</td>
<td>-2.135**</td>
<td>(0.937)</td>
</tr>
<tr>
<td>$P^2$</td>
<td>2.227***</td>
<td>(0.827)</td>
</tr>
<tr>
<td>Women</td>
<td>-0.278***</td>
<td>(0.019)</td>
</tr>
<tr>
<td>Age</td>
<td>0.803***</td>
<td>(0.049)</td>
</tr>
<tr>
<td>Age$^2$</td>
<td>-0.082***</td>
<td>(0.006)</td>
</tr>
<tr>
<td>Schooling1</td>
<td>0.141***</td>
<td>(0.039)</td>
</tr>
<tr>
<td>Schooling2</td>
<td>0.250***</td>
<td>(0.046)</td>
</tr>
<tr>
<td>Schooling3</td>
<td>0.425***</td>
<td>(0.049)</td>
</tr>
<tr>
<td>Schooling4</td>
<td>0.493***</td>
<td>(0.069)</td>
</tr>
<tr>
<td>Schooling5</td>
<td>0.705***</td>
<td>(0.052)</td>
</tr>
<tr>
<td>Experience</td>
<td>0.358***</td>
<td>(0.062)</td>
</tr>
<tr>
<td>Experience$^2$</td>
<td>-0.040**</td>
<td>(0.018)</td>
</tr>
<tr>
<td>City</td>
<td>0.038</td>
<td>(0.036)</td>
</tr>
<tr>
<td>Oldsystem</td>
<td>-0.121**</td>
<td>(0.056)</td>
</tr>
<tr>
<td>Current governor</td>
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<td>(0.066)</td>
</tr>
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<td>Occupation dummies</td>
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<td></td>
</tr>
<tr>
<td>Province dummies</td>
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<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.47</td>
<td></td>
</tr>
<tr>
<td>$N$</td>
<td>4,786</td>
<td></td>
</tr>
<tr>
<td>Provinces</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

Notes: see the notes for Table 3 in the text for details.
Figure 1: Mean 2001 public sector salaries as a function of vote shares at the time of hiring in four provinces

Each dot represents the 2001 mean log salary of public sector employees hired or retained by the 2001 incumbent after a given election.
Figure 2: Effect of the vote share on wages
The figure displays the estimated marginal effect of $P$ from column (1) in Table 3. Gray lines denote the 90% confidence interval.

Figure 3: Effect of the vote share on wages for employees hired with and without referrals
The figure displays the estimated marginal effect of $P$ from column (2) in Table 3 for $Referral = 1$ (dashed lines) and $Referral = 0$ (solid lines) with the corresponding 90% confidence intervals (gray lines).
Figure 4: Effect of the vote share on wages in various ranges of $P$

The diamonds represent point estimates from regression (16) with five ranges of $P$, as described in the text. Labels on the horizontal axis correspond to the midpoint of each category (the omitted category is 0.475-0.55). The vertical lines represent the 90% confidence intervals.
Figure 5: Average 2010 salary of Texas and North Carolina state employees as a function of the current governor's vote share at the time of hiring.

Each panel plots the residuals from regressing the 2010 annual salary of state employees on their experience and its square, averaged by the election cycle they were hired in. Education sector employees are excluded. Source: http://www.texastribune.org/library/data/government-employee-salaries (TX) and http://apps.newsobserver.com/know/osp (NC)
Figure A1: Number of observations in the sample for each province / election cell