

**Elections and Reform:
The Adoption of Civil Service Systems in the U.S. States***

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Abstract

Most government bureaucracies in developed countries use civil service systems. What accounts for their adoption? We develop and test a model of bureaucratic reforms under repeated partisan competition. In the model, two political parties composed of overlapping generations of candidates compete for office. An incumbent politician can either “politicize” the bureaucracy, which allows her to direct benefits to voters in a way that will increase her electoral prospects, or she can “insulate” the bureaucracy, which prevents the subsequent winner from using the bureaucracy for electoral advantage. Our main result is that politicization takes place when incumbents expect to win, and insulation takes place when they expect to lose. We test this hypothesis using data from the adoption of civil service reforms across the U.S. states. The predictions of the model are consistent with preliminary empirical findings. As the level of partisan competition increases we find an increased probability of civil service reform. The results also show that the level of partisan competition is a stronger predictor of civil service reform.

1 Introduction

Across political systems, an essential component of effective governance is the insulation of institutions from direct political pressure. Central banks typically enjoy broad latitude to set monetary policies. Independent commissions and authorities regulate significant portions of national and state economies. And in countless other bureaucratic settings, experts have formal or *de facto* autonomy to formulate or execute policies. In this paper, we ask how office-minded politicians come to insulate government institutions.

One reasonable conjecture is that when voters desire “good government,” candidates for office will simply converge in Downsian fashion to the appropriate policies. While citizen preferences are undoubtedly important, their role is limited by an electoral motive. If government institutions can be used to build electoral support, and incumbent politicians can benefit disproportionately from these institutions, then they will have an incentive to withhold insulating reforms. Inefficiently politicized institutions may therefore persist even in the presence of a constituency for reform.

When might reforms take place? Our argument is a simple one. If candidates cared only about the subsequent election, then there would be little reason for reform, as politicized institutions would maximize the immediate probability of victory. But if candidates cared about future elections as well, then they may insulate institutions in order to prevent a hostile future incumbent from harming future friendly candidates. Consequently, insulation might be desirable to incumbents who perceive an imminent election loss. A critical part of the argument is that in addition to a longer time horizon, effective reform also requires a form of institutional inertia. In particular, it requires that incumbents may not easily unwind past reforms, and are instead stuck to some degree with the consequences of past policy choices.

We consider these arguments in the specific context of civil service reform. Broadly speaking, these reforms implemented merit-based selection of public employees and protection from politically motivated dismissal. Since the 19th century, civil service systems have largely displaced systems based on political appointments (also known as “patronage” or “spoils” systems) and now cover a majority of public sector employees in most advanced and developing countries. In addition to their vast scope, civil service reforms illustrate well the electoral tensions inherent in reforms that insulate or de-politicize government. Recent empirical work suggests that civil service systems improve government performance (*e.g.*, Rauch 1995, Rauch and Evans 2000), but also that spoils systems were effective at distributing benefits in ways that appear to help the incumbent party stay in power (Folke, Hirano and Snyder 2011).

Our model attempts to capture the dynamics of election-induced reform. While it is certainly not the first to recognize the constraining effects of present incumbent choices on future policies, it is to our knowledge the first to incorporate some elements that we believe were central to civil service reform. As the preceding discussion suggests, these include a long time horizon, institutional rigidities, and patronage benefits that are disproportionately useful for incumbents.

The model is an infinite horizon game between two parties. Each party is composed of overlapping generations of members, with one candidate for each election. If the candidate wins the election, then she holds office for one period. The candidate cares about the electoral prospects of her two subsequent co-partisans. An incumbent can affect their chances of victory by choosing the government’s personnel system, which is either a spoils system or the civil service.

The personnel system choice matters in three ways. First, it commits the subsequent office-holder to use the same type of system to distribute spending. We assume that civil service systems can neither be established nor dismantled overnight, and so incoming office-holders must use the pre-existing personnel system, even if they plan to change it. Second, it affects the distribution of a fixed level of government spending across society. Under a spoils system, supporters of the incumbent receive targeted benefits from the government. These benefits could be in the form of pork, or jobs. By contrast, a civil service distributes goods in a uniform manner throughout society. Finally, it affects the efficiency of spending. A personnel system that has been in place for two or more periods will have a higher level of human capital, and therefore will distribute a higher proportion of the government dollar than a new system. Thus, a long-term spoils system run by an incumbent party will promise higher benefits to supporters than the “new” spoils system that the challenging party would be forced to implement. Introducing a civil service would essentially eliminate human capital as a consideration for voters.¹

There is a continuum of voters in the electorate. Voters are prospective, and evaluate each party based on its fixed policy platform, the spoils potentially offered by the incumbent party, and two random utility shocks. The first occurs before the personnel system choice, and gives the incumbent a sense of her party’s electoral future, while the second occurs after the policy choice. Citizens vote after seeing both shocks. Importantly, voters do not care about good government per se. This allows us to isolate the pure electoral incentive behind insulating political institutions.

We show that the game has a unique and intuitive stationary equilibrium. The key intuition of the equilibrium is that an incumbent might kill its own spoils system (reducing the next generation’s chances of re-election) when its electoral prospects are dim. This prevents future office holders from the same party from being disadvantaged by the rival party’s spoils system. Likewise, an incumbent will move toward a spoils system when its electoral fortunes seem positive, as this will help to lock in future victories. As a result, conditional upon being the incumbent, an ideologically unfavored party will be more likely to introduce civil service reform. The model also predicts that the larger the human capital

¹As an argument for the accumulation of human capital in spoils systems, consider Sorauf (1959, p. 118):

“... just as it takes money to make money, it takes political power to achieve greater power. The party long out of office and desperately in need of new reservoirs of strength is precisely the party that, should it suddenly find itself in office, would be least able to use patronage for rebuilding. Weak parties lack the discipline, the trained leadership, and the surplus of potential jobholders to use the system to their maximum advantage.”

advantage due to experience, the more likely a spoils system is to survive. By contrast, the more random is the electoral environment (in the sense of a larger initial payoff shock), the more likely a civil service system is to survive. Interestingly, however, we find that (contrary to historical experience), civil service systems should be vulnerable to re-politicization, and the spoils system is *more* likely to survive for a long period than the civil service. We suspect that this is in part an artifact of focusing on an environment where voters do not derive intrinsic benefits from the civil service. The model also ignores the possibility that civil service reform creates a powerful special interest group – the employees themselves – that lobbies to protect its existence (Johnson and Libecap 1994).

In the empirical section of the paper we first provide background information on the adoption of the civil service systems across the U.S. states. We provide some anecdotal evidence that the loss of human capital among state employees that followed changes in state administrations was an common concern among the proponents of civil service reforms. The reforms also tended to occur after one political party had been in control of the state legislature for an extended period of time. Finally, we provide some evidence that when a dominant party was present prior to the establishment of a civil service system, the average underlying electoral support for that party was declining in the years immediately proceeding the reforms. We observe this pattern using both state and city level data. This pattern is consistent with the predictions of the model.

1.1 Related Literature

Perhaps the prevailing explanation for civil service reform focuses on the demand for public goods in society. Skowronek (1982) and Knott and Miller (1987), among others, examine the composition of the Progressive era coalitions that fought over civil service adoption. In an early model, Reid and Kurth (1988, 1989) argue that the patronage and civil service systems were both uniquely suited to maximize votes and political power at the time they were adopted, given citizen demand for public and private goods.

Electoral incentives have also played a central role in theories of civil service reform. Geddes (1994) considers civil service reform as a social dilemma, whereby individual parties are unwilling to forego the electoral advantages of patronage in order to realize the collective benefit of improved state capacity. The prediction, examined in the context of several Latin American countries, is that high levels of electoral competition offer the best opportunity for reform. In a model that is perhaps most closely related to ours, Mueller (2009) presents a theory that links meritocratic bureaucracies and political competitiveness. The model resembles in some respects a single period of the model presented in this paper: an incumbent chooses a personnel system that determines bureaucrat selection and the distribution of payoffs across society the second period. The incumbent maximizes future benefits for constituents, and thus picks patronage if her party’s chances of re-election and the benefits of patronage are high. By contrast, politicians in our model are office-minded and would not renounce patronage in a one-shot setting, as doing so would forego electoral benefits. Variations of this “insurance” argument have also appeared in theories of general institu-

tional reform (Besley and Persson 2011) and electoral system reform (Boix 1999). Notably, Acemoglu, Ticchi, and Vindigni (2011) develop a model of electorally-induced politicization of the bureaucracy that generates the reverse prediction. In their work, political transitions create a large and inefficient bureaucracy because bureaucrats can be bought off as swing voters.

Two prominent accounts of civil service adoption focus on agency problems between politicians and bureaucrats, which our model does not address. In Johnson and Libecap (1994), two factors influence the choice of personnel system by vote-maximizing politicians. The first is voter preferences: some voters are responsive to the quality of government, while others care about campaign services rendered by patronage workers. The second is the size of government: larger government exacerbated transaction cost problems that elected leaders have in monitoring bureaucrats' partisan activities. Over time, this caused politicians to lean toward the selection and retention of high quality personnel. Relatedly, in Horn (1995) civil service systems solve a bureaucratic noncompliance problem. If an incumbent's probability of re-election is exogenously low, then patronage appointees might shirk their duties. Civil service laws therefore give bureaucrats incentives to keep performing in the face of electoral uncertainty.

Since civil service protections typically include strong protections from job dismissal, several rationales for workplace tenure are relevant for the adoption civil service reform as well. These include, *inter alia*, preventing sabotage and rewarding good employee types or performance (*e.g.*, Lazear 1991). Sorauf (1959, 1960) argues that spoils systems were threatened across the U.S. by labor market conditions. In addition to being poorly compensated relative to the private sector, patronage jobs suffered from inherent job insecurity. In this environment, job protections would be essential for attracting high quality employees. Of particular interest is Gailmard and Patty (2007), who develop a model in which a bureaucrat decides both whether to remain in government and whether to invest in policy-relevant expertise. In equilibrium, tenure is important for inducing policy-motivated bureaucrats to make initial investments in policy expertise. This investment may allow the legislature to realize better policy outcomes through increased delegation of authority.

Another line of work examines the effects of personnel systems. Numerous authors have documented the effects of public sector employment on electoral outcomes across nations (*e.g.*, Roett 1999, Golden 2003). Folke, Hirano and Snyder (2011) find that the spoils system did indeed provide a large electoral advantage in U.S. state elections, especially for "dominant" parties. This fact supports our assumption that entrenched parties will be able to field more effective workers.

While we do not accord civil servants any competence advantage over patronage appointees, a wide range of empirical research generally supports the notion that civil service improves bureaucratic performance. Cross-sectional studies on the effects of agency composition include Krause, Lewis and Douglas (2006) on U.S. state governments, and Lewis (2008) on U.S. federal agencies. Rauch (1995) develops a model that predicts higher bureaucratic investment in long-term economic development policies under different civil service reform, and tests the hypothesis on U.S. municipal governments during 1902-1931. Finally, Rauch

and Evans (2000) empirically examine a cross-section of 35 developing and middle income countries, and find a strong relationship between merit recruitment and both bureaucratic performance and low corruption.

2 The Model

We present a simple model of partisan elections and personnel system policy over an infinite horizon. In each period t there is a competition between candidates from two parties, L and R. Parties have fixed platforms p_L and p_R ($p_L < 0 < p_R$, $p_L = -p_R$) that belong to a policy space represented by \mathfrak{R} . The winner adopts that platform if elected. The winner also chooses the government’s personnel system. The personnel system choice in period t is labeled $a_t \in \{c, s\}$, where c denotes a civil service, and s the spoils system. Thus there are three personnel systems; spoils systems for parties L and R, and the civil service.

Parties are composed of overlapping generations of members. In each period t , one member of each party is designated as its candidate. If a candidate wins, then she holds office for a single period. If she loses, she cannot run for office again. Each candidate receives a payoff of 1 if she wins her election, and also receives 1 for the election of each of her two succeeding candidates. The interpretation is that at any given period, the party is composed of a “senior” member who runs for and possibly holds office, an “up and coming” member who would be the next candidate in line, and a “junior” member who would come after that. If given the opportunity, the senior member therefore chooses a_t with the electoral prospects of both of her co-partisans in mind. Parties cannot credibly commit to a_t or any policy other than their platform.

Voters in the game are prospective and care about ideology, valence and government benefits. There is a continuum of voters with quadratic policy utility over \mathfrak{R} . Their ideal points uniformly distributed on some closed, bounded set $X \subset \mathfrak{R}$, with median z_M . Voters are also affected by additive valence shocks in each period. The shocks $v_t^1 \sim U[-\omega, \omega]$ and $v_t^2 \sim U[-1, 1]$ give a relative valence advantage to party L. The shocks are i.i.d. within and across periods, but one occurs after the parties’ personnel system choice. From the perspective of the incumbent party, the first shock may be useful for giving a sense of its electoral prospects, while the second is completely random. A voter with ideal point at z thus receives utility $u_z = -(z - p_L)^2 + v^1 + v^2$ from a party L victory. Similarly, that voter receives $-(z - p_R)^2$ from a party R victory.

Under a spoils system, each citizen additionally receives utility from supporting the election winner. This benefit may be understood as an expectation of targeted expenditures or patronage appointments, both of which are made plentiful by a spoils system. Each incumbent distributes a pool of resources worth $g \in (0, 1)$ to each of its supporters after each election. This patronage is automatically distributed upon election, and implies that candidates are unable to discriminate amongst campaign supporters, for example by targeting moderate voters. A citizen who does not support the winner receives zero in patronage

benefits that period.²

A key feature of the model is that the bureaucracy’s human capital matters for the efficiency of government spoils. We model this idea in the simplest possible way, by assuming that a proportion k of distributed government resources are actually received, and that this proportion is increasing in the length of time that a given personnel system stays in place. The parameter k might then correspond to the accumulated skill level in the bureaucracy. For each possible personnel system, $k \in \{\underline{k}, \bar{k}\}$, where $0 < \underline{k} < \bar{k} < 1$ and $\hat{k} = \bar{k} - \underline{k}$. Upon a change of personnel system (i.e., either a partisan shift or civil service reform), “new” bureaucrats are of the corresponding low type. Bureaucrats move from the low to high level of human capital in the second period of the system’s existence, and remain at the high level as long as that system remains in place. We label the human capital level under party i spoils system k_i . To avoid some uninteresting corner solutions, we assume that $\omega > 1$ and $\omega > 4z_{MPR} + \hat{k}g$. This assumption ensures that under any personnel system, a sufficiently good or bad initial shock v_t^1 will a candidate’s victory or defeat, respectively.

While the preceding discussion establishes what voters can expect under a spoils system, it does not address what they receive under a civil service. Presumably, all voters would receive identical expected allocations under the civil service, regardless of their vote.³ They would also enjoy higher allocations under an “experienced” civil service. But the way in which government spending is allocated under the civil service is irrelevant to the model because the government in each period “inherits” the personnel system choice of the previous period. Thus, under the civil service, the prospect of government benefits does not enter into the citizens’ voting decisions. By contrast, the different human capital levels in the parties’ spoils systems will play a central role in each election.

The sequence within each period t is as follows.

1. Government benefits are allocated.
2. Shock v^1 is realized.
3. The incumbent politician chooses personnel system a_t .
4. Shock v^2 is realized.
5. Citizens vote.

²A more natural assumption might be to let k depend on the size of the winning coalition, which would allow small winning coalitions to give more resources to supporters. Most of the results of this model would hold in such an environment. However, this assumption can also create some perverse incentives, since parties would want to minimize the size of their majorities (Riker’s “size principle”). Also, larger majorities might help parties to capture more resources or offices to distribute, thus making it possible to maintain patronage levels that are roughly constant in majority size.

³A more general but essentially equivalent assumption: suppose that the winning party can always distribute part of a “dollar,” but that the civil service reduces the amount that can be given out for patronage purposes.

It is worth emphasizing the effect of this timing on the implementation of government personnel systems. If party L had a spoils system in period t and lost the election, party R would be forced to adopt its own spoils system in $t + 1$, even if it chose to switch to a civil service system at $t + 1$. That civil service system would come into effect in $t + 2$, regardless of who wins the $t + 1$ election. This assumption captures the idea that personnel systems are administratively costly, and therefore bind the choices of immediately succeeding office-holders to some extent.

We look for stationary, symmetric subgame perfect equilibria, and so omit time subscripts throughout. Each voter's strategy is then given simply by the mapping $\nu : \{L, R\} \times [-\omega, \omega] \times \{a, c\} \times [-1, 1] \rightarrow \{L, R\}$. Politicians' personnel choices are given by the mapping $\alpha_i : \{a, c\} \times [-\omega, \omega] \rightarrow \{a, c\}$.

While citizens are forward looking, each obviously has no ability to affect the future path of policy outcomes. We therefore assume that they vote as if pivotal in each period (consistent with stage undomination). We also focus on equilibria in which voters are partitioned into two convex sets, one voting for each party. This allows us to characterize voting behavior with a single "cutpoint" on the set of ideal points X .

2.1 Elections

To characterize the equilibrium, consider first the citizens' voting behavior. At the voting stage, each citizen knows the aggregate valence shock $V = v^1 + v^2$. Observe first that any citizen to the left of another must receive strictly higher utility from party L and lower utility from party R. Thus, since citizens vote as if pivotal, in any voting equilibrium voters must be partitioned into two convex sets, with "leftists" voting for L and "rightists" voting for R.

First, suppose that there is a spoils system ($a = s$). Both parties must then "offer" potential patronage to voters, as well as the possibility of targeted transfers. The ideal point of the citizen indifferent between parties is characterized by:

$$\begin{aligned} -(z - p_L)^2 + V + w + k_L g &= -(z - p_R)^2 + w + k_R g \\ \Leftrightarrow z &= \frac{v + (k_L - k_R)g}{4p_R}. \end{aligned} \tag{1}$$

Thus as V or L's relative human capital advantage increase, so does the measure of citizens willing to vote for L. Since voters' evaluations of human capital depend only the difference between k_L and k_R , it will be convenient to let $K = k_L - k_R$ denote L's relative advantage in human capital in the subsequent period. Note that an incumbent can never have a human capital disadvantage, and a non-incumbent can never be at an advantage.

Manipulating (1), L will win the election if its valence advantage is sufficiently high:

$$V > v_s \equiv 4z_M p_R - K g. \tag{2}$$

There are two ways in which v_s might vary in the game under a status quo spoils system. First, the incumbent i may have a low level of human capital ($k_i = \underline{k}$) following the election

because it abolished the civil service. This means that $K = 0$: voters face equal levels of human capital from both parties in the subsequent period. As a result, if L has no valence advantage ($V = 0$), a voter located midway between platforms will be indifferent between the parties. Second, the incumbent party i may have a human capital advantage in the election ($k_i = \bar{k}$) because it is currently running a spoils system. This implies that $|K| > 0$, and has the effect of moving v_s in its favor; i.e., enlarging the set of citizens who prefer party i .

Second, under a civil service system ($a = c$), the human capital levels under both parties are always identical. Thus the parties' electoral prospects under the civil service are identical to their chances under a spoils system when $K = 0$. Party L will then win the upcoming election if:

$$V > v_c \equiv 4z_{MPR}. \quad (3)$$

2.2 Personnel Policy Strategies

To derive the symmetric equilibrium strategies, we characterize “cutoff” strategies with two valence thresholds θ^c and θ^s . These are cutoffs below which a party L incumbent prefers a civil service system, and above which she prefers a spoils system. Thus at $v^1 = \theta^c (= \theta^s)$, party L is indifferent between retaining a civil service system (resp., spoils system) and switching to a spoils system (resp., civil service system). By symmetry, the corresponding (symmetric) cutoffs for party R are $-\theta^c$ and $-\theta^s$. Note that these thresholds are independent of the “current” level of K . This is true under a spoils system because the incumbent will always enjoy a human capital advantage in the subsequent (i.e., election-relevant) period regardless of the current level of K . It is also true under a civil service system because election prospects under a civil service system are independent of K .

It will first be necessary to characterize “interim” and *ex ante* probabilities of electoral victory in each period. With these in place, we can write a system of equations characterizing a SSPE.

First, the interim victory probability depends on the realization of v^1 . Denote by $p_s(v^1, K) = \Pr\{v^2 > v_s - v^1\}$ the probability that party L wins the subsequent period's election under a spoils system, given v^1 and K . Likewise, let $p_c(\theta_i^c)$ denote the probability that party L wins the subsequent period's election under the civil service (note that this value does not depend on K). Using (2) and (3), we have the following general expressions:

$$p_s(v^1, K) = \begin{cases} 1 & \text{if } v^1 > 1 + 4z_{MPR} - Kg \\ \frac{1 - 4z_{MPR} + Kg + v^1}{2} & \text{if } v^1 \in [-1 + 4z_{MPR} - Kg, 1 + 4z_{MPR} - Kg] \\ 0 & \text{if } v^1 < -1 + 4z_{MPR} - Kg. \end{cases} \quad (4)$$

$$p_c(v^1) = \begin{cases} 1 & \text{if } v^1 > 1 + 4z_{MPR} \\ \frac{1 - 4z_{MPR} + v^1}{2} & \text{if } v^1 \in [-1 + 4z_{MPR}, 1 + 4z_{MPR}] \\ 0 & \text{if } v^1 < -1 + 4z_{MPR}. \end{cases} \quad (5)$$

Observe that $p_c(\theta_i^c) = p_s(\theta_i^c, 0)$.

Given these interim probabilities, the corresponding *ex ante* probabilities that party L wins the subsequent election conditional upon a can be found by integrating over v^1 . In the simplest cases, there is no human capital advantage, and so the probabilities of winning under either system are identical; thus:

$$\begin{aligned} P_c &= \int_{-\omega}^{\theta^c} \frac{p_c(v)}{2\omega} dv + \int_{\theta^c}^{\omega} \frac{p_s(v, 0)}{2\omega} dv \\ &= \frac{1}{2} - \frac{2z_{MPR}}{\omega}. \end{aligned} \quad (6)$$

Under a civil service system, P_c depends on neither the level of human capital (K) nor the cutoff rules (θ^s , θ^c) employed by the incumbent. A civil service means that neither party can benefit in the subsequent election, even if there is a switch to a spoils system.

Similarly, the probability of victory under a spoils system is given by:

$$P_s(K) = \int_{-\omega}^{\theta^s} \frac{p_c(v)}{2\omega} dv + \int_{\theta^s}^{\omega} \frac{p_s(v, K)}{2\omega} dv. \quad (7)$$

In the simplest case, when neither party has a human capital advantage, the integrands are identical to those under the civil service system; thus, $P_s(0) = P_c$.

The expressions for victory probabilities when party L has a human capital disadvantage ($K < 0$) are calculated as follows:

$$P_s(-\hat{k}) = \begin{cases} \frac{1}{2} - \frac{4z_{MPR} + \hat{k}g}{2\omega} & \text{if } \theta^s \leq -1 + 4z_{MPR} \\ \frac{1}{2} + \frac{(\theta^s - 4z_{MPR} + 1)^2 - 16z_{MPR} - 4\hat{k}g}{8\omega} & \text{if } \theta^s \in (-1 + 4z_{MPR}, -1 + 4z_{MPR} + \hat{k}g] \\ \frac{1}{2} - \frac{8(\hat{k}g + 2)z_{MPR} - 2\hat{k}g(\theta^s - 1) + (\hat{k}g)^2}{8\omega} & \text{if } \theta^s \in (-1 + 4z_{MPR} + \hat{k}g, 1 + 4z_{MPR}] \\ \frac{1}{2} - \frac{16z_{MPR} + (\theta^s - 4z_{MPR} - \hat{k}g - 1)^2}{8\omega} & \text{if } \theta^s \in (1 + 4z_{MPR}, 1 + 4z_{MPR} + \hat{k}g] \\ \frac{1}{2} - \frac{2z_{MPR}}{\omega} & \text{if } \theta^s > 1 + 4z_{MPR} + \hat{k}g. \end{cases} \quad (8)$$

And when party L enjoys a human capital advantage ($K > 0$), we have:

$$P_s(\hat{k}) = \begin{cases} \frac{1}{2} - \frac{4z_{MPR} - \hat{k}g}{2\omega} & \text{if } \theta^s \leq -1 + 4z_{MPR} - \hat{k}g \\ \frac{1}{2} - \frac{(\theta^s - 4z_{MPR} + \hat{k}g - 1)^2 + 4\theta^s}{8\omega} & \text{if } \theta^s \in (-1 + 4z_{MPR} - \hat{k}g, -1 + 4z_{MPR}] \\ \frac{1}{2} + \frac{8(\hat{k}g - 2)z_{MPR} + 2\hat{k}g(1 - \theta^s) - (\hat{k}g)^2}{8\omega} & \text{if } \theta^s \in (-1 + 4z_{MPR}, 1 + 4z_{MPR} - \hat{k}g] \\ \frac{1}{2} + \frac{(\theta^s - 4z_{MPR} + 1)^2 - 4\theta^s}{8\omega} & \text{if } \theta^s \in (1 + 4z_{MPR} - \hat{k}g, 1 + 4z_{MPR}] \\ \frac{1}{2} - \frac{2z_{MPR}}{\omega} & \text{if } \theta^s > 1 + 4z_{MPR}. \end{cases} \quad (9)$$

Note that regardless of θ_s , $P_s(-\hat{k}) \leq P_c$ and $P_s(\hat{k}) \geq P_c$. Thus, using any cutoff strategies of the specified form, a party must benefit (weakly) from a human capital advantage, and is hurt (weakly) by a human capital disadvantage when competing under a spoils system.

Unlike the civil service system, the parameters K and θ^s do matter under a spoils system. When a voter is not ideologically predisposed toward either party, a party that has a spoils

system and enjoys a human capital advantage will have an *ex ante* probability of victory of at least one half, regardless of the cutoff rule (θ^s) employed. (Likewise, a disadvantaged party loses with probability at least one half.) Under a spoils system, a high threshold θ^s minimizes L's *ex ante* probability of victory when it has a human capital advantage. Similarly, when it is at human capital disadvantage, its immediate electoral prospects benefit from a low threshold. Finally, increasing the support ω of the first electoral shock moves the probability of victory toward $1/2 - 2z_{MPR}$, as it makes electoral outcomes more random.

The equilibrium is characterized by the following system of equations. At each θ^a , a party L incumbent starting with personnel system a is indifferent between a civil service system and a spoils system. Thus we have:

$$\begin{aligned} p_s(\theta^s, \hat{k})(1 + P_s(\hat{k})) + (1 - p_s(\theta^s, \hat{k}))P_s(-\hat{k}) &= p_c(\theta^s)(1 + P_c) + (1 - p_c(\theta^s))P_c \\ p_c(\theta^c)(1 + P_c) + (1 - p_c(\theta^c))P_c &= p_s(\theta^c, 0)(1 + P_s(\hat{k})) + (1 - p_s(\theta^c, 0))P_s(-\hat{k}). \end{aligned}$$

Here the first equation characterizes a switch from a spoils system to a civil service, and the second is for the reverse. Reducing and substituting from (6) yields:

$$p_s(\theta^s, \hat{k})(1 + P_s(\hat{k})) + (1 - p_s(\theta^s, \hat{k}))P_s(-\hat{k}) = p_c(\theta^s) + \frac{1}{2} - \frac{2z_{MPR}}{\omega} \quad (10)$$

$$p_s(\theta^c, 0)(1 + P_s(\hat{k})) + (1 - p_s(\theta^c, 0))P_s(-\hat{k}) = p_c(\theta^c) + \frac{1}{2} - \frac{2z_{MPR}}{\omega}. \quad (11)$$

The first result establishes a unique equilibrium, which is conveniently interior to $(-\omega, \omega)$. The derivation is straightforward, as equation (10) does not depend on θ^c . Thus we will be able to calculate candidate equilibrium values of θ^s directly by manipulating (10). When these values are plausible, it is possible to solve for θ^c using (11).

The equilibrium features an asymmetry between spoils and civil service systems. The *ex ante* probabilities of switching systems are both less than half, but spoils systems are harder to break. Under a spoils system, an incumbent would only switch if it is very unlikely to win the upcoming election. The win probability threshold (conditional upon observing v^1) that would induce a switch is bounded from above by $\hat{k}g/2 < 1/2$. The corresponding probability that v^1 will be that low is bounded from above by $\frac{\omega + 4z_{MPR} - 1}{2\omega}$, which is less than one half for districts that are either moderate or have a preference for party L. Below that threshold, the incumbent is willing to sacrifice the “up and coming” member's electoral chances completely. Switching to a civil service system ensures her loss but gives the “junior” member a victory in the following election with probability $1/2 - 2z_{MPR}$.

Under a civil service system, the switching incentives are reversed. A beneficial electoral environment gives an incumbent the incentive to lock in an electoral advantage for her successors. The win probability threshold for switching is bounded from below by one half, and the corresponding probability that v^1 will be that high is bounded from below by $\frac{\omega - 4z_{MPR}}{2\omega}$. Thus districts with an *ex ante* preference for party L will switch to a spoils system with *ex ante* probability greater than one half.

Proposition 1 Equilibrium existence. *There exists a unique equilibrium $(\theta^{s*}, \theta^{c*})$ with $\theta^{s*} \in (-1 + 4z_{MPR} - \hat{k}g, -1 + 4z_{MPR})$ and $\theta^{c*} \in (4z_{MPR}, 4z_{MPR} + \hat{k}g/(8 - \hat{k}g))$. ■*

Proof. We derive the result for party L incumbents; the derivation for party R follows by symmetry. We proceed in three steps. The first two solve for the necessary conditions for θ^{s*} and θ^{c*} implied by (10) and (11), and the third establishes sufficiency.

First, we show that there is a unique θ^{s*} that satisfies (10). Equation (4) gives three possible expressions for $p_s(\theta^s, \hat{k})$ and equations (8)-(9) give five possible expressions each for $P_s(\hat{k})$ and $P_s(-\hat{k})$. Together, they define five possible regions in which θ^s might lie, demarcated by the cutpoints $-1+4z_{MPR}-\hat{k}g$, $-1+4z_{MPR}$, $-1+4z_{MPR}+\hat{k}g$, $1+4z_{MPR}-\hat{k}g$. We consider each in descending order.

(i) $\theta^s > 1 + 4z_{MPR} - \hat{k}g$. This is a corner case where party L will win the next election with certainty if it retains the spoils system.

There cannot be an equilibrium in this case, since any party L incumbent with $v^1 \in (1 + 4z_{MPR} - \hat{k}g, 1 + 4z_{MPR}) \cap (1 + 4z_{MPR} - \hat{k}g, \theta^s)$ would deviate by retaining a spoils system. This assures her of her maximum possible expected payoff (i.e., winning the next election with probability 1, as opposed to probability $(1 - 4z_{MPR} + v^1)/2 < 1$ by switching, and winning the following election with probability at least P_c due to her spoils system's human capital advantage, as opposed to probability P_c). It follows that $\theta^{s*} \leq 1 + 4z_{MPR} - \hat{k}g$.

(ii) $\theta^s \in (-1 + 4z_{MPR} + \hat{k}g, 1 + 4z_{MPR} - \hat{k}g]$. This case has interior probabilities of victory. Substituting from (4)-(9) into (10) produces:

$$\begin{aligned} \hat{k}g + (1 - 4z_{MPR} + \hat{k}g + \theta^s) \left[\frac{1}{2} + \frac{8(\hat{k}g - 2)z_{MPR} + 2\hat{k}g(1 - \theta^s) - (\hat{k}g)^2}{8\omega} \right] + \\ (1 + 4z_{MPR} - \hat{k}g - \theta^s) \left[\frac{1}{2} + \frac{-8(\hat{k}g + 2)z_{MPR} + 2\hat{k}g(\theta^s - 1) - (\hat{k}g)^2}{8\omega} \right] &= 1 - \frac{4z_{MPR}}{\omega} \\ 8\omega + (1 - 4z_{MPR} + \hat{k}g + \theta^s) [8z_{MPR} + 2(1 - \theta^s) - \hat{k}g] + \\ (1 + 4z_{MPR} - \hat{k}g - \theta^s) [-8z_{MPR} + 2(\theta^s - 1) - \hat{k}g] &= 0 \\ 4\omega + \hat{k}g + 8z_{MPR}(\hat{k}g - 1) - 32(z_{MPR})^2 + 2(8z_{MPR} + 1 - \hat{k}g)\theta^s - 2(\theta^s)^2 &= 0. \end{aligned}$$

Applying the quadratic formula yields:

$$\begin{aligned} \theta^s &= \frac{-2(8z_{MPR} + 1 - \hat{k}g) \pm \sqrt{4(8z_{MPR} + 1 - \hat{k}g)^2 + 8(4\omega + \hat{k}g + 8z_{MPR}(\hat{k}g - 1) - 32(z_{MPR})^2)}}{-4} \\ &= \frac{8z_{MPR} + 1 - \hat{k}g \pm \sqrt{1 + (\hat{k}g)^2 + 8\omega}}{2}. \end{aligned} \tag{12}$$

It is easily verified that the upper solution for θ^s is greater than $1 + 4z_{MPR} - \hat{k}g$, and the lower solution is less than $-1 + 4z_{MPR} + \hat{k}g$. Thus neither candidate satisfies the condition for an equilibrium with $\theta^s \in (-1 + 4z_{MPR} + \hat{k}g, 1 + 4z_{MPR} - \hat{k}g]$.

(iii) $\theta^s \in S_3 \equiv (-1 + 4z_{MPR}, -1 + 4z_{MPR} + \hat{k}g]$. This is a case where a human capital disadvantaged incumbent would lose with certainty, but since an incumbent with a spoils system doesn't face this possibility, it also has interior victory probabilities. Again substituting

(4)-(9) into (10) produces:

$$\begin{aligned} \hat{k}g + (1 - 4z_{MPR} + \hat{k}g + \theta^s) \left[\frac{1}{2} + \frac{8(\hat{k}g - 2)z_{MPR} + 2\hat{k}g(1 - \theta^s) - (\hat{k}g)^2}{8\omega} \right] + \\ (1 + 4z_{MPR} - \hat{k}g - \theta^s) \left[\frac{1}{2} + \frac{(\theta^s - 4z_{MPR} + 1)^2 - 16z_{MPR} - 4\hat{k}g}{8\omega} \right] = 1 - \frac{4z_{MPR}}{\omega} \\ 8\omega\hat{k}g + (1 - 4z_{MPR} + \hat{k}g + \theta^s)[8\hat{k}gz_{MPR} + 2\hat{k}g(1 - \theta^s) - (\hat{k}g)^2] + \\ (1 + 4z_{MPR} - \hat{k}g - \theta^s)[(\theta^s - 4z_{MPR} + 1)^2 - 4\hat{k}g] = 0. \quad (13) \end{aligned}$$

Denote by $l_3(\theta^s)$ the left-hand side of (13). We establish a positive lower bound on $l_3(\theta^s)$ on S_3 by considering each term of (13).

First, $8\omega\hat{k}g$ is clearly positive and bounded from below by $8\hat{k}g$. Second, $1 - 4z_{MPR} + \hat{k}g + \theta^s > \hat{k}g > 0$ for all $\theta^s \in S_3$, and $8\hat{k}gz_{MPR} + 2\hat{k}g(1 - \theta^s) - (\hat{k}g)^2 > 4\hat{k}g - 3(\hat{k}g)^2 > 0$. Thus the second term of (13) is positive and bounded from below by $4(\hat{k}g)^2 - 3(\hat{k}g)^3$. Third, $0 < 1 + 4z_{MPR} - \hat{k}g - \theta^s < 2 - \hat{k}g$ for all $\theta^s \in S_3$, and $0 > (\theta^s - 4z_{MPR} + 1)^2 - 4\hat{k}g > -4\hat{k}g$ for all $\theta^s \in S_3$. Thus the third term of (13) is negative and bounded from below by $-8\hat{k}g + 4(\hat{k}g)^2$.

Given these bounds, $l_3(\theta^s) > 0$ if S_3 if $8\hat{k}g + 4(\hat{k}g)^2 - 3(\hat{k}g)^3 > 8\hat{k}g - 4(\hat{k}g)^2$, or $8 > 3\hat{k}g$. This is satisfied trivially by the fact that $\hat{k}g < 1$. Therefore no value of $\theta^s \in S_3$ satisfies (13), and thus there is no equilibrium with θ^s in this region.

(iv) $\theta^s \in S_4 \equiv (-1 + 4z_{MPR} - \hat{k}g, -1 + 4z_{MPR}]$. In this case an incumbent without a human capital advantage will lose with certainty. Substituting into (10) and simplifying produces:

$$\begin{aligned} (1 - 4z_{MPR} + \hat{k}g + \theta^s) \left[1 + \frac{1}{2} + \frac{-4\theta^s - (\theta^s - 4z_{MPR} + \hat{k}g - 1)^2}{8\omega} \right] + \\ (1 + 4z_{MPR} - \hat{k}g - \theta^s) \left[\frac{1}{2} - \frac{4z_{MPR} + \hat{k}g}{2\omega} \right] = 1 - \frac{4z_{MPR}}{\omega} \\ (1 - 4z_{MPR} + \hat{k}g + \theta^s)[8\omega - 4\theta^s - (\theta^s - 4z_{MPR} + \hat{k}g - 1)^2] - \\ 4(1 + 4z_{MPR} - \hat{k}g - \theta^s)(4z_{MPR} + \hat{k}g) + 32z_{MPR} = 0. \quad (14) \end{aligned}$$

To show that a unique θ^s satisfies (14), denote by $l_4(\theta^s)$ the left-hand side of (14). Straightforward substitution reveals that $l_4(-1 + 4z_{MPR} - \hat{k}g) = -8\hat{k}g < 0$ and $l_4(-1 + 4z_{MPR}) = \hat{k}g(8\omega - 8 + 12\hat{k}g - (\hat{k}g)^2) > 0$. By the continuity of $l_4(\theta^s)$, it therefore suffices to show that $\frac{dl_4}{d\theta^s} > 0$ for $\theta^s \in S_4$, or equivalently:

$$\begin{aligned} 8\omega - 4\theta^s - (\theta^s - 4z_{MPR} + \hat{k}g - 1)^2 + \\ (1 - 4z_{MPR} + \hat{k}g + \theta^s)[-4 - 2(\theta^s - 4z_{MPR} + \hat{k}g - 1)] + 4\hat{k}g + 16z_{MPR} > 0 \\ 8\omega + 2\hat{k}g - 6\theta^s - 3(\theta^s - 4z_{MPR} + \hat{k}g)^2 + 24z_{MPR} - 3 > 0. \end{aligned}$$

The latter expression is easily shown to hold for $\theta^s \in S_4$. Thus there exists a unique $\theta^s \in (-1 + 4z_{MPR} - \hat{k}g, -1 + 4z_{MPR})$ satisfying (10).

(v) $\theta^s \leq -1 + 4z_{MPR} - \hat{k}g$. This is a corner case where the party L incumbent is so disadvantaged that she will lose the upcoming election with certainty under either system ($p_s(\theta^s, \hat{k}) = p_c(\theta^s) = 0$). Substituting from (4)-(8) into (10) produces:

$$\frac{1}{2} - \frac{4z_{MPR} + \hat{k}g}{2\omega} = \frac{1}{2} - \frac{2z_{MPR}}{\omega}.$$

This expression obviously cannot be satisfied at any θ^s . Moreover, the expression implies that retaining a spoils system is dominated for the party L incumbent when v^1 is this low. Thus in any equilibrium, there must be a switch from $a = s$ to $a = c$ when $v^1 \leq -1 + 4z_{MPR} - \hat{k}g$.

Combining the results from regions (i)-(v), there is a unique solution $\theta^{s*} \in (-1 + 4z_{MPR} - \hat{k}g, -1 + 4z_{MPR})$.

Second, we show that there is a unique θ^{c*} that satisfies (11). At an interior solution, satisfying equation (11) when $\theta^{s*} \in (-1 + 4z_{MPR} - \hat{k}g, -1 + 4z_{MPR})$ is equivalent to:

$$\begin{aligned} \frac{1 - 4z_{MPR} + \theta^{c*}}{2} \left[\frac{1}{2} - \frac{4\theta^{s*} + (\theta^{s*} - 4z_{MPR} + \hat{k}g - 1)^2}{8\omega} \right] + \\ \frac{1 + 4z_{MPR} - \theta^{c*}}{2} \left[\frac{1}{2} - \frac{4z_{MPR} + \hat{k}g}{2\omega} \right] &= \frac{1}{2} - \frac{2z_{MPR}}{\omega} \\ (1 - 4z_{MPR} + \theta^{c*}) \left[4\theta^{s*} + (\theta^{s*} - 4z_{MPR} + \hat{k}g - 1)^2 \right] + \\ 4(1 + 4z_{MPR} - \theta^{c*}) \left[4z_{MPR} + \hat{k}g \right] &= 32z_{MPR}. \end{aligned} \quad (15)$$

After some manipulation we obtain:

$$\theta^{c*} = -1 + 4z_{MPR} + \frac{8\hat{k}g}{6\hat{k}g + 8z_{MPR} - 2\theta^{s*} - (\theta^{s*} - 4z_{MPR} + \hat{k}g)^2 - 1}. \quad (16)$$

Now since $\theta^{s*} \in (-1 + 4z_{MPR} - \hat{k}g, -1 + 4z_{MPR})$ and the denominator of (16) is decreasing in θ^{s*} , it is easily verified that $\theta^{c*} \in (4z_{MPR}, 4z_{MPR} + \frac{\hat{k}g}{8-\hat{k}g})$.

Observe finally that since $\theta^{c*} \in (-1 + 4z_{MPR}, 1 + 4z_{MPR})$ and (15) is linear in θ^{c*} , there can be no corner solution. Thus θ^{c*} is unique.

Third, to show that $(\theta^{s*}, \theta^{c*})$ are sufficient to characterize the incumbent's equilibrium choice of a , consider first a party L incumbent with an existing spoils system ($a = s$). Her expected payoff when $a = s$ conditional upon v^1 is:

$$\pi_s(v^1) = p_s(v^1, \hat{k})(1 + P_s(\hat{k})) + (1 - p_s(v^1, \hat{k}))P_s(-\hat{k}).$$

Likewise, her expected payoff when $a = c$ conditional upon v^1 is:

$$\pi_c(v^1) = p_c(v^1) + 1/2.$$

By (10), $\pi_s(\theta^{s*}) = \pi_c(\theta^{s*})$ when $v^1 = \theta^{s*}$.

There are three cases to consider. First, if $v^1 \in (-1 + 4z_M p_R - \hat{k}g, 1 + 4z_M p_R - \hat{k}g)$, then $p_s(\theta^{s*}, \hat{k}) = (1 - 4z_M p_R + \hat{k}g + v^1)/2$ is interior. Note that (6) then implies that $\frac{d\pi_s}{dv^1} = [1 + P_s(\hat{k}) - P_s(-\hat{k})]/2 > \frac{d\pi_c}{dv^1} = 1/2$. This fact then implies that $\pi_s(v^1) < (>) \pi_c(v^1)$ for any $v^1 < (>) \theta^{s*}$. Second, if $v^1 \leq -1 + 4z_M p_R - \hat{k}g$, then $\pi_s(v^1) = P_s(-\hat{k}) < \pi_c(v^1) = 1/2 - 2z_M p_R/\omega$. Third, if $v^1 \geq 1 + 4z_M p_R - \hat{k}g$, then $\pi_s(v^1) = 1 + P_s(\hat{k}) > \pi_c(v^1) = p_c(v^1) + 1/2 - 2z_M p_R/\omega$. A party L incumbent therefore chooses $a = c (= s)$ whenever $v^1 < (>) \theta^{s*}$.

A virtually identical argument holds for $a = c$, and is therefore omitted. ■

While a closed form solution for θ^s exists, it is highly complex and unintuitive. As with the solution of many cubic equations, there is an imaginary component for the general solution even though the result evaluates numerically to a real number. However, it is possible to use the underlying system of equations to derive some comparative statics. The next result presents a few.

Comment 1 Comparative statics. θ^{s*} is decreasing in ω , \hat{k} and g and increasing in z_M . θ^{c*} is decreasing in ω and increasing in z_M . ■

Proof. From the proof of Proposition 1, θ^{s*} is characterized by the function $l_4(\theta_s)$ (14). The function $l_4(\theta_s)$ is strictly increasing on $S_4 \equiv (-1 + 4z_M p_R - \hat{k}g, -1 + 4z_M p_R)$ and the solution satisfies $\theta^{s*} \in S_4$. Thus to show that θ^{s*} is decreasing in ω , it is sufficient to show that $\frac{dl_4}{d\omega} > 0$ for $\theta^s \in S_4$. Differentiating yields $\frac{dl_4}{d\omega} = 8(1 - 4z_M p_R + \hat{k}g + \theta^s)$, which is clearly strictly positive for any $\theta^s \in S_4$.

Likewise, to show that θ^{s*} is decreasing in \hat{k} , it is sufficient to show that $\frac{dl_4}{d\hat{k}} > 0$ for $\theta^{s*} \in S_4$. Differentiating and simplifying, the result obtains if:

$$0 < -3(\theta^s - 4z_M p_R + \hat{k}g)^2 + 2(\theta^s - 4z_M p_R + \hat{k}g) - 3 + 8\omega + 8\hat{k}g.$$

The result follows straightforwardly from the observations that $\omega > 1$, $\hat{k}g < 1$ and $\theta^{s*} \in S_4$ and $(\theta^s(\theta^s - 4z_M p_R + \hat{k}g) + \hat{k}g)^2 < 1$. Thus the right-hand side of the preceding expression is bounded from below by $-3 - 2 - 3 + 8 + 8\hat{k}g$, which is strictly positive.

The proof for g is virtually identical to that for \hat{k} and is therefore omitted.

To show that θ^{s*} is increasing in z_M , note that by the Implicit Function Theorem on $l_4(\theta_s)$, $\frac{d\theta^{s*}}{dz_M} = -\frac{\partial l_4 / \partial z_M}{\partial l_4 / \partial \theta^s}$. Differentiating and simplifying yields:

$$\begin{aligned} \frac{\partial l_4}{\partial \theta^s} &= -3(\theta^s - 4z_M p_R + \hat{k}g)^2 - 6(\theta^s - 4z_M p_R + \hat{k}g) + 8\omega + 8\hat{k}g - 3 \\ \frac{\partial l_4}{\partial z_M} &= -4p_R \frac{\partial l_4}{\partial \theta^s}. \end{aligned} \quad (17)$$

Thus, $\frac{d\theta^{s*}}{dz_M} = 4p_R$.

To show that θ^{c*} is decreasing in ω , it is easily verified from (16) that θ^{c*} is increasing in θ^{s*} for any $\theta^{s*} \in S_4$. The result follows from the fact that θ^{s*} is decreasing in ω .

Finally, we show that $\frac{d\theta^{c*}}{dz_M} = 4p_R$, and thus θ^{c*} is increasing in z_M . It is clearly sufficient to show that the denominator term in (16) is constant with respect to z_M . Differentiating the denominator and using the fact that $\frac{d\theta^{s*}}{dz_M} = 4p_R$, we obtain $8p_R - 2\frac{d\theta^{s*}}{dz_M} - 2(\theta^{s*} - 4z_M p_R + \hat{k}g)(\frac{d\theta^{s*}}{dz_M} - 4p_R) = 0$. ■

The results for \hat{k} and g demonstrate that an increase in the value of “expert” patronage makes it more likely that a spoils system will be retained. Equivalently, it makes transitions to a civil service more difficult. The results for z_M establish a simple effect of ideology: under either system, a spoils system is less likely to result as a district becomes more ideologically “unfriendly.” That is, an incumbent will be more inclined to neutralize a spoils advantage when the voter favors the opposing party.⁴ Finally, the result for ω is more difficult to interpret because changing ω also changes the support of v^1 and hence the *ex ante* probability of a system switch.

The following figure illustrates the comparative statics on θ^{s*} and θ^{c*} for the case where $z_M = 0$, so that the district is *ex ante* indifferent between parties.

Here it can be seen that as \hat{k} increases, θ^{s*} decreases (as predicted) and θ^{c*} increases. This means that as the human capital advantage increases, a spoils system is more likely to be retained. The thresholds allow us to calculate easily the implied probability of a change in personnel system. For $\omega = 1.5$, the *ex ante* probability of moving from a spoils to a civil service system when $\hat{k} = 0.4$ is over 10%, and drops to less than 2% when $\hat{k} = 0.8$. Although not predicted by Comment 1, the fact that θ^{c*} is often increasing in \hat{k} means that an incumbent will become more likely to retain an existing civil service system. This is intuitive, since she must worry about future generations competing at a larger disadvantage in human capital in the event of a loss under a spoils system.

By contrast, θ^{s*} and θ^{c*} are both decreasing in ω , as predicted by Comment 1, though the effect on θ^{c*} is slight. Note however that the probability of switching systems depends now not only on the thresholds but also on the expanded support of v^1 . Thus as the electoral environment becomes more random, the civil service actually becomes *more* attractive to incumbents with a spoils system: at $\hat{k} = 0.6$, the incumbent’s chances of switching from a spoils system to a civil service rises from under 4% at $\omega = 1.4$ to over 12% at $\omega = 1.8$. By contrast, an existing civil service system is now slightly more likely to be dropped. This reflects the fact that greater randomness makes the period t incumbent less worried about losing the $t + 2$ election.

The model therefore predicts that civil service systems are less stable than they might appear in practice. Why then might civil service reforms persist? One answer might be retrospective voting: if voters could discipline parties *ex post*, then they could vote against politicians for debasing the government’s competence or skill level. The expansion of government may also have played a role, both by creating other opportunities for distributing pork that displaced patronage appointments and by increasing the costs of dismantling the civil service. In any event, the model generates some basic incentives that would appear in any

⁴In fact, the proof shows that $\frac{d\theta^{s*}}{dz_M} = \frac{d\theta^{c*}}{dz_M} = 4p_R$. As (4) and (5) suggest, this is exactly the change in v^1 required to induce a given re-election probability when z_M changes.

environment where there might be a temptation to politicize government services for electoral purposes.

3 Civil Service Reform in the U.S. States

In this section we examine the introduction of civil service reforms in the U.S. states. In particular we focus on the association between civil service reforms and political competition discussed in the above model. We also provide some additional evidence from the introduction of civil service reforms in U.S. cities.

3.1 Background Information

Prior to the introduction of civil service reforms, the conventional wisdom was that political parties would often fill positions in the state bureaucracies with patronage appointments. These state employees were expected to help support the party who appointed them. Pollock (1937, 32) writes, “Employees who are politically appointed are naturally expected to attend political meetings, make speeches, canvas voters, and do all the other things involved in political activity.” State employees were often expected to contribute part of their salaries to the party in control of the government. In comparing the electoral advantage from controlling the state government before and after the introduction of civil service reforms, Folke, Hirano and Snyder (2011) find that the advantage was larger when parties had access to patronage.

While the use of patronage for electoral purposes by state parties has been widely discussed, less is known about why political parties in the states were willing to relinquish their power to make these appointments. Ruhil and Camoes (2003, 27) write, “while some scholars...have studied federal adoption of the merit principle, students of American political development, state politics, and bureaucracy have virtually ignored an intriguing puzzle vis-a-vis state merit adoption.” The forces behind civil service reform at the federal level at the end of the 19th century did not, at least immediately, also push states to enact legislation to enact similar legislation to also insulate state employees from political pressures. With the exceptions of Massachusetts and New York, comprehensive civil service reform at the state level lagged behind the federal level by many decades. Only nine states had passed a general civil service law by 1936, and a majority of the states did not adopt such legislation until the second half of the twentieth century.⁵

In the debates over civil service reform, political competition, at least to the extent that it increased turnover in state employees, was often cited by proponents of the reform as a reason to switch to a merit system. Significant turnover in state employees was commonly argued to reduce the inefficiency of bureaucracies which would be staffed with inexperienced workers and there was often a monetary cost for “breaking in” the new employees.⁶ These inefficiencies

⁵Texas has yet to pass a general civil service law.

⁶Pollack (1937, 31) writes, “Not the smallest loss under the patronage system is attributable to the inexperience of many government employees, especially in state and local government.”

were particularly noticeable when a political party in control of the state government for a substantial period of time was voted out of office. For example, the Michigan state legislature experienced a shift in partisan control just prior to the civil service reforms in 1937. The Republican party in Michigan controlled both chambers of state legislature continuously for four decades until finally losing to the Democrats in 1932. In year prior to the 1932 election, (March 1931 to March 1932) there was only 11.3 percent turnover among incumbent Michigan state employees working in the various state departments. During the first year after Democrats took control of the Michigan government (i.e. March 1933 to March 1934), the turnover rate among incumbent state employees more than doubled to 22.9%.⁷ An editorial in one Michigan newspaper stated:

To the average citizen out in the State it makes no difference whether these positions are held by Democrats or Republicans, but there is a growing objection to the necessity of having these minor State positions changed every time there is a turnover in State administrations. This defect in our State government has been strikingly noticeable because of the in and out fight between the Republicans and Democrats, with first a Democrat and then a Republican administration, then again a Democratic administration since the election in 1932.... Michigan is in a position today as being of the States that is no longer politically safe for either Democrats or Republicans. As a consequence the civil service measure is a proposition that will not only mean monetary savings to the taxpayers but should build up a greater efficiency in State services. (The Owosso Agus-Press, Tuesday April 6, 1937)

Similar claims were made in other states where a party lost control of the state government after being in power for an extended period of time.^{8,9}

In Table 1 we present some information about when states enacted more “comprehensive” civil service reforms.¹⁰ The dates that the civil service systems were established are based on

⁷These data come from 1936 Report of the Civil Service Study Commission in Michigan. The turnover rate was slightly higher, approximately 18.6% in the middle and late 1920s, but the authors of the report suggests that this was because the growing economy was drawing people away from the public sector.

⁸In describing the change in partisan control of the Rhode Island states government Maxwell A. Devoe, Director, Rhode Island State Department of Civil Service, writes, “In 1933 a Democratic administration took office and held sway for three terms, until 1939. During this period there was wholesale turnover in public office and for the first time the citizens of the state were thoroughly aroused against the inefficiency and waste of the spoils system.”

⁹Some claim that parties gaining control of the government would attempt to limit the inefficiencies by a more gradual turnover in state employees. In discussing state employees in Utah, Durham (1940, 25) writes, “The return to power of the opposition party sees virtually a wholesale turnover in state offices. Experience shows that a relatively small number of experienced persons are maintained until the incoming personnel learn the necessary routines. After that, the old hands are either let down gently, or retain, if fortunate, a subordinate position.”

¹⁰In a few state an initial attempt to enact civil service reforms were repealed or weakened. In Kansas the legislature refused to provide funds, rendering the law inoperative; in Michigan it was temporarily gutted then restored in an even stronger form; in Tennessee the law allowed the governor to grant broad exemptions

information gathered from *The Book of the States* (various issues), the *Civil Service Assembly of the United States and Canada* (1940), and Aronson (1979).¹¹ Although it is commonly noted that states faced pressure from the federal government to enact civil service reforms following the 1939 amendment to the Social Security Act, most states responded to the amendment by enacting only a partial reform.¹² In the years around the amendment, 1938 to 1941, only six states enacted general civil service reform. Even into the early 1950s, a majority of states were still operating under a patronage system. Moreover, Folke, Hirano and Snyder (2011) provide evidence that the early partial reforms tended to cover only a small percentage of state employees.¹³

Table 1 also presents information about the degree to which one political party controlled both chambers of the state legislature in the period prior to the introduction of civil service reforms. The third and seventh columns of Table 1 provide the share of election periods in which the same party was dominant in the state legislature in the twenty-year period prior to the reform.¹⁴ In only a minority of states was the reform enacted when there was no dominant party in the state legislature. In all but four cases, when a party controlled both chambers for more than 60% of the two decades prior to the reform, that party was also in control of both chambers when the general civil service system was established. Columns four and eight highlight those cases where one party was in control of both chambers of the state legislature at least 80% of the time in the ten years prior to the reform. As is apparent in these columns, the dominant party also tended to control the state legislature in years

from the civil service, which the governor did almost immediately; and in Arkansas and New Mexico the initial law was repealed outright within two years, and in Connecticut and Louisiana within eight years.

¹¹The date reported in *Civil Service Assembly of the United States and Canada* is the date that civil service agencies were established. In *The Book of the States* we infer the year of establishment by finding changes in the reports of civil service coverage between the annual volumes.

¹²In 1939 an amendment to the Social Security Act required states to enact merit-based personnel systems for state and local government employees working in welfare, health, and unemployment compensation agencies, as a condition for receiving federal grants-in-aid. The states were required to comply by January 1, 1940. Under the 1935 Social Security Act, the Social Security Board had tried to insist that state welfare and unemployment compensation agencies establish personnel standards, but these were evidently not very effective. In Arkansas, for example, “Despite federal personnel standards, the State Department of Public Welfare became a patronage bonanza. The expansion of government services enlarged the army of public employees, which in turn enhanced the spoils system” (Holley, 1986, p. 294).

¹³Using civil service employment data from *The Book of the States* (various issues), and the data on total state employment from the *State Distribution of Public Employment*, published by the Bureau of the Census, Folke, Hirano, and Snyder (2011) calculate the percentage of state employees covered under civil service for those states that enact the reform after 1960. For each state that passed a general civil service law after 1960, on average, prior to the passage of a general civil service law, less than 20% of the state employees were covered by civil service systems. After the passage of such a law, this jumped to an average of more than 60%. Folke, Hirano and Snyder (2011) also provide scattered evidence that the states that passed general civil service laws before 1960 also exhibited a substantial increase in the percentage of employees covered under civil service after the reforms were passed.

¹⁴Years were coded as either Republican control of both chambers, Democratic control of both chambers or divided control. The dominant party refers to the party that was in control of both chambers for more of the years relative to the non-dominant party. Thus, a “dominant” party could be in control of both chambers for could be less than half of the two decade period.

immediately prior to the enactment of civil service. These patterns are consistent with the model, in that the reforms tended to be enacted by parties that had utilized the patronage system for an extended period prior to the reforms.

3.2 Civil Service Reform and Political Competition

In this section we examine whether the trends in underlying party support conform to our theoretical predictions. The main prediction of the model is that the relative value of a civil service regime will increase as the underlying electoral support for the party in power decreases. Thus, we examine the relationship between the underlying support for the dominant party, as measured by the vote share in federal elections, and the implementation of a general civil service reform. According to the model we should expect the underlying electoral support for the dominant party to decrease in the years prior to the reform.

To have a meaningful measure of underlying support we focus our attention on those states where there was a dominant party prior to the introductions of the civil service reform. We define a dominant party as one that held full control of the state legislature for 60% of the election periods during the 20 years prior to the reform. The underlying electoral support for the dominant party is measured by the average presidential vote share for the dominant party's candidate. We exclude elections for statewide offices from our measure of underlying electoral support, since these offices are likely to be affected by the type of state personnel system. More specifically, Folke et al. (2011) provide evidence that dominant party candidates for statewide offices may have an electoral advantage under a patronage system. Including elections for statewide office in our measure of underlying support is likely to overstate the underlying support for the dominant party prior to the civil service reforms.

In Figure 2 we plot our measure of underlying electoral support for the dominant party against the year in which the civil service reforms were enacted. The vertical axis is the average senate and presidential vote for the dominant parties over a four year period.¹⁵ The horizontal axis is the number of years before and after the civil service reform – i.e. 0 is the year the reform was enacted. Each bin covers a full election cycle, i.e. 4 years. Since there is potentially some ambiguity regarding in the exact year when political parties first started to push civil service reforms in each state and also the exact year that the reforms were fully enacted, we omit the data on underlying electoral support for the two years before and after the reform. The figure illustrates a clear decline in the average presidential and senate vote for the dominant parties as we approach the introduction of the civil service reform. During the twenty-year period leading up to the reform our measure of the underlying electoral support for the dominant party drops about 5 percentage points – 61% to 56%. After the introduction of the civil service reform, the trend in underlying electoral support is relatively flat.

In Figure 3 we focus on those states where the dominant party implemented the reform. More specifically we restrict the sample to the states where the dominant party controlled

¹⁵We use a four-year period so that we include at least one presidential election outcome and one senate election for each state.

both the legislature and the governorship at the time of the reform. These are the cases where the model makes the clearest predictions. According to the model we would expect a dominant party to move to civil service when it expects future elections to be competitive. Thus we would expect to observe the civil service reforms to be implemented in response to underlying trends rather than an actual loss in power. The trend in underlying support is consistent with this prediction. We observe a decline in the presidential and senate vote just prior to the move to civil service. Limiting the sample in this way allows us to rule out a possible alternative explanation for the pattern in Figure 2, which is that the increasing competition led to divided government. It is possible that civil service systems may be desirable with divided government for reasons related to difficulty managing state personnel with no clear political leadership and not due to electoral concerns.

Civil Service Reforms in U.S. Cities We can also examine whether a similar relationship between civil service reform and underlying electoral competition also exists for U.S. cities prior to 1940. We use information on the dates the cities established civil service agencies from a report from the *Civil Service Assembly of the United States and Canada*. For this analysis we include cities that enacted partial reforms as well as those that enacted comprehensive reforms.

Unlike the analysis of state government, we unfortunately do not have information about the partisan control of the city governments. Instead we classify a city as “Democratically Dominated” if the Democrats won more than 60% of the elections for president, governor, U.S. senator, and U.S. House in the county that contains the city, in the 16 years prior to the reform (years $t-18$ to $t-3$). Similarly, we define a city as “Republican Dominated” if the Republicans won more than 60 % of the elections for president, governor, U.S. senator, and U.S. House in the county that contains the city. Otherwise, we do not classify the city as dominated by either party and we drop it from the analysis.

We also, unfortunately, do not have electoral returns at the city-level. Instead we use county-level data for the county containing each city as a proxy of the underlying electoral support for the dominant party. We only include cases where the city accounts for more than 1/2 of the population of the county that contains it.¹⁶ In our sample, we have 39 Democratic cities and 83 Republican cities with a dominant party and county level electoral returns.

As in the state analysis, we study the trends in the dominant party’s vote share in the period before and after the reform. For the cities with a dominant party, we track the average vote-share won by the dominant party in years $t-18$ to $t-3$ for president, governor, U.S. senator and U.S. House. We group the years into 2-year bins. Again, according to the model, we should observe a drop in the underlying electoral support for the dominant party in the period before the reforms.

As we see in Figure 4, there is a sharp drop in the dominant party’s underlying electoral support in the six years prior to the reform. In fact, the pattern is even more striking than at the state level. As in the figure for dominant parties at the state level, we see that the

¹⁶A few cities are split across more than one county. In these cases we use the county that contains more than 1/2 of the city’s area.

underlying support for the dominant parties does not continue to decline after the reform is passed.

4 Discussion

The existing literature highlights a variety of factors affecting the decision to adopt civil service reform. The most prominent among these include the benefits of good public administration, agency problems and electoral incentives. In this paper, we present a model that focuses on the electoral incentives for political parties to introduce these reforms. The model provides a rationale for why future electoral concerns would lead incumbent parties prefer to politically insulate public sector employees (*i.e.*, implement civil service systems). The model predicts greater political insulation when elections are expected to favor the opposition party, and greater political de-insulation when the dominant party's expects to maintain control the government. The model also highlights how changes in electoral uncertainty, human capital and voter ideology may also affect the decision to insulate public sector employees.

Using a simple graphical analysis we find evidence that civil service reforms were adopted in states and cities with dominant parties in years following an increase in the underlying electoral competitiveness. As we approach the passage of the civil service reform we see a clear downward trend in underlying electoral support for dominant political parties, both at the state and city level and level. At the state level this trend remains even as we restrict the analysis to the states where the dominant party was in full control of the state government at the time of the reform. An avenue of future research is to test if political competition is a better predictor of civil service reform than other common explanations, such as increases in private income and the the number of government employees.

One concern with the above model is that it predicts frequent de-insulation, when in fact civil service systems have generally persisted once adopted. However, the lack of de-insulation may not be surprising. As pointed out previously, to the extent that voters view civil service systems as facilitating good government, they are likely to punish incumbents who attempt to remove such reforms. Moreover civil servants often constitute an influential interest group that can be mobilized against incumbents who attempt to politicize their job security.

The logic in the above model also applies to contexts where the insulation of government is not necessarily beneficial to voters. In other words, electoral incentives may also easily generate over-insulation. The structure of the model is appropriate for considering any policy area that exhibits increasing returns to experience, as well as policy areas that are particular complex and require high levels of human capital for implementation. The above model may be extended to provide a more formal interpretation of some well known existing studies on the role of elections in determining bureaucratic structure (*e.g.*, McCubbins, Noll, and Weingast (1987) and Moe (1989)). We how to make such extension in future research.

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Table 1: Introduction of General Civil Service Reforms

State	Year Intro	Dom Party Prev 20	Dom Party Prev 10	State	Year Intro	Dom Party Prev 20	Dom Party Prev 10
AK	1960	–	–	MT	1976	50	
AL	1939	100	X	NC	1949	100	X
AR	1968	100	X	ND	1974	90	X
AZ	1968	90	X	NE	1974	–	–
CA	1913	91	X	NH	1954	100	X
CO	1918	50	X	NJ	1908	71	X
CT	1937	73*		NM	1962	80	X
DE	1966	60	X	NV	1953	18*	
FL	1968	100	X	NY	1883	67*	
GA	1953	100	X	OH	1913	50*	
HI	1955	–	–	OK	1958	100	X
IA	1966	90*	X	OR	1945	82	
ID	1969	73	X	PA	1968	60	
IL	1905	73	X	RI	1939	82	
IN	1941	55		SC	1973	100	X
KS	1941	100	X	SD	1968	90	X
KY	1954	100	X	TN	1937	100	X
LA	1940	100	X	TX	N/A	–	–
MA	1885	100	X	UT	1962	40	
MD	1921	90	X	VA	1942	100	X
ME	1937	100	X	VT	1954	100	X
MI	1937	82*		WA	1961	64	
MN	1939	–	–	WI	1905	82	X
MO	1946	60*		WV	1989	100	X
MS	1976	100	X	WY	1956	60	X

* indicates a state where the dominant party was not in control of the state legislature when the reform was passed. In the cases of NV and CT the state legislature was divided.

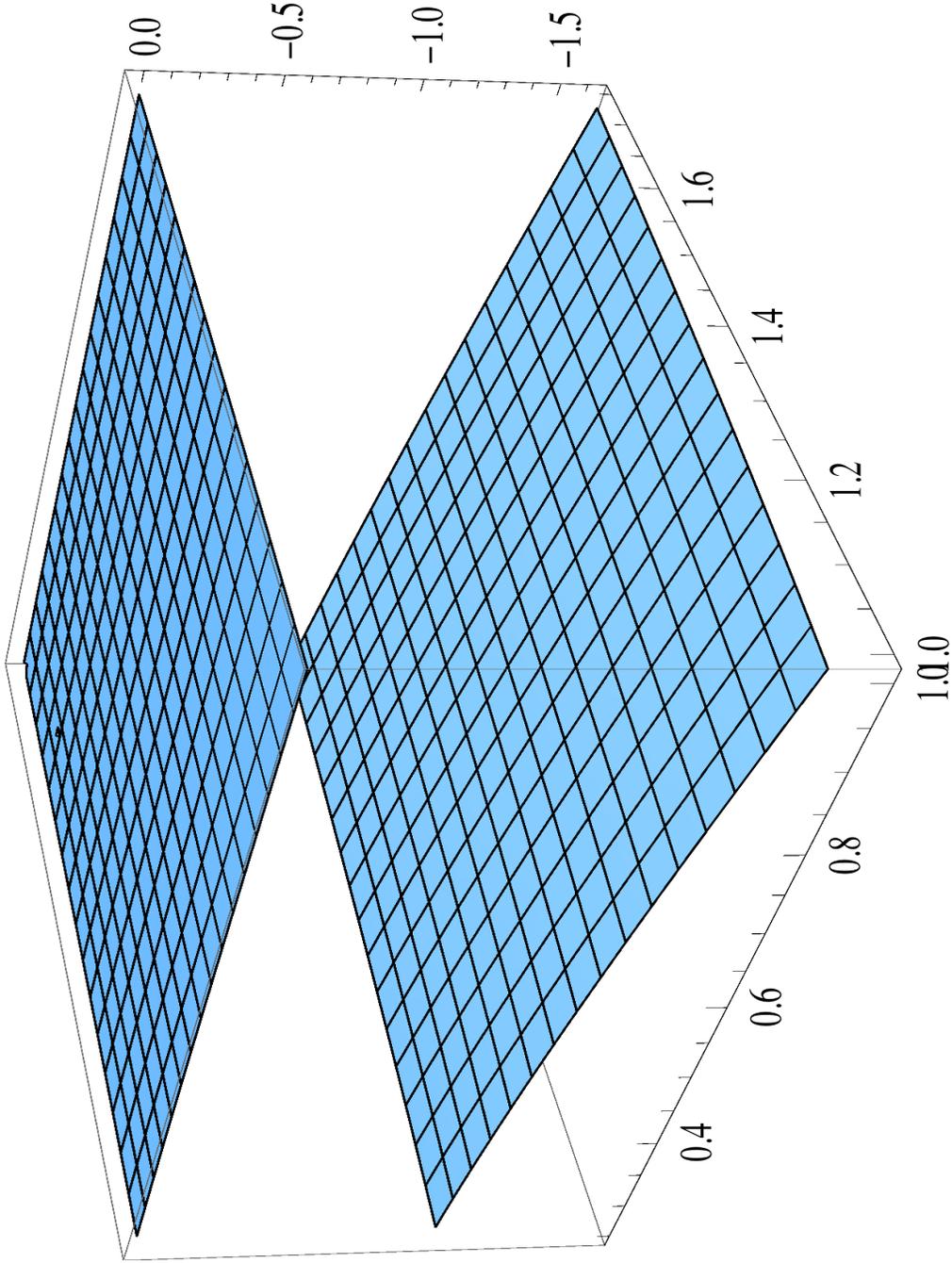


Figure 1. Equilibrium Cutoffs, θ^{s*} and θ^{c*} . For $z_M = 0$, this plot depicts the party L cutoffs for v^1 below which an incumbent would switch to a civil service system as a function of \hat{k} (lower left axis) and ω (lower right axis). The top surface represents θ^{c*} (*i.e.*, starting from the civil service), and the bottom surface represents θ^{s*} (*i.e.*, starting from the spoils system).

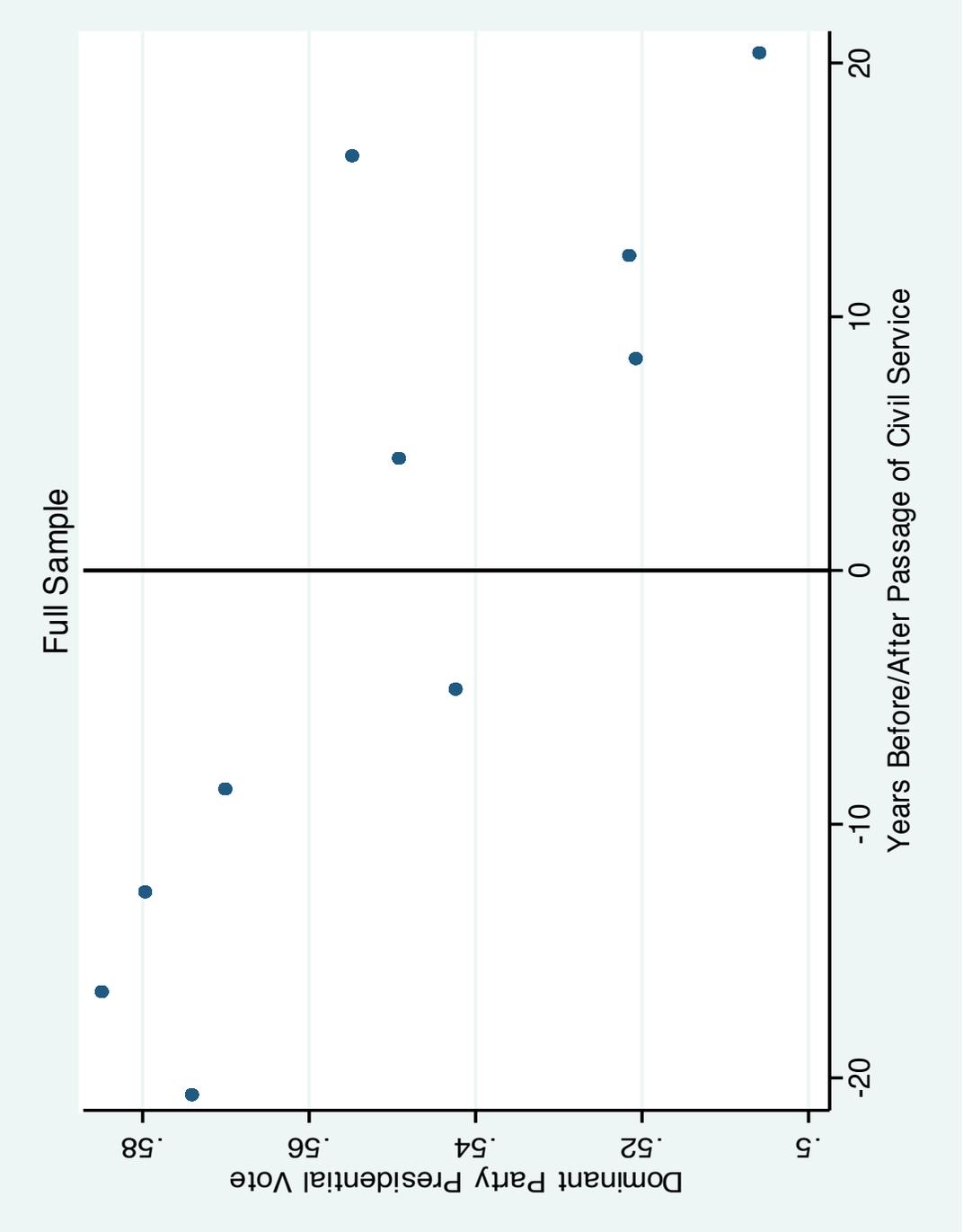


Figure 2: Change in dominant party's vote share pre- and post-reform, state level, all states with dominant party.

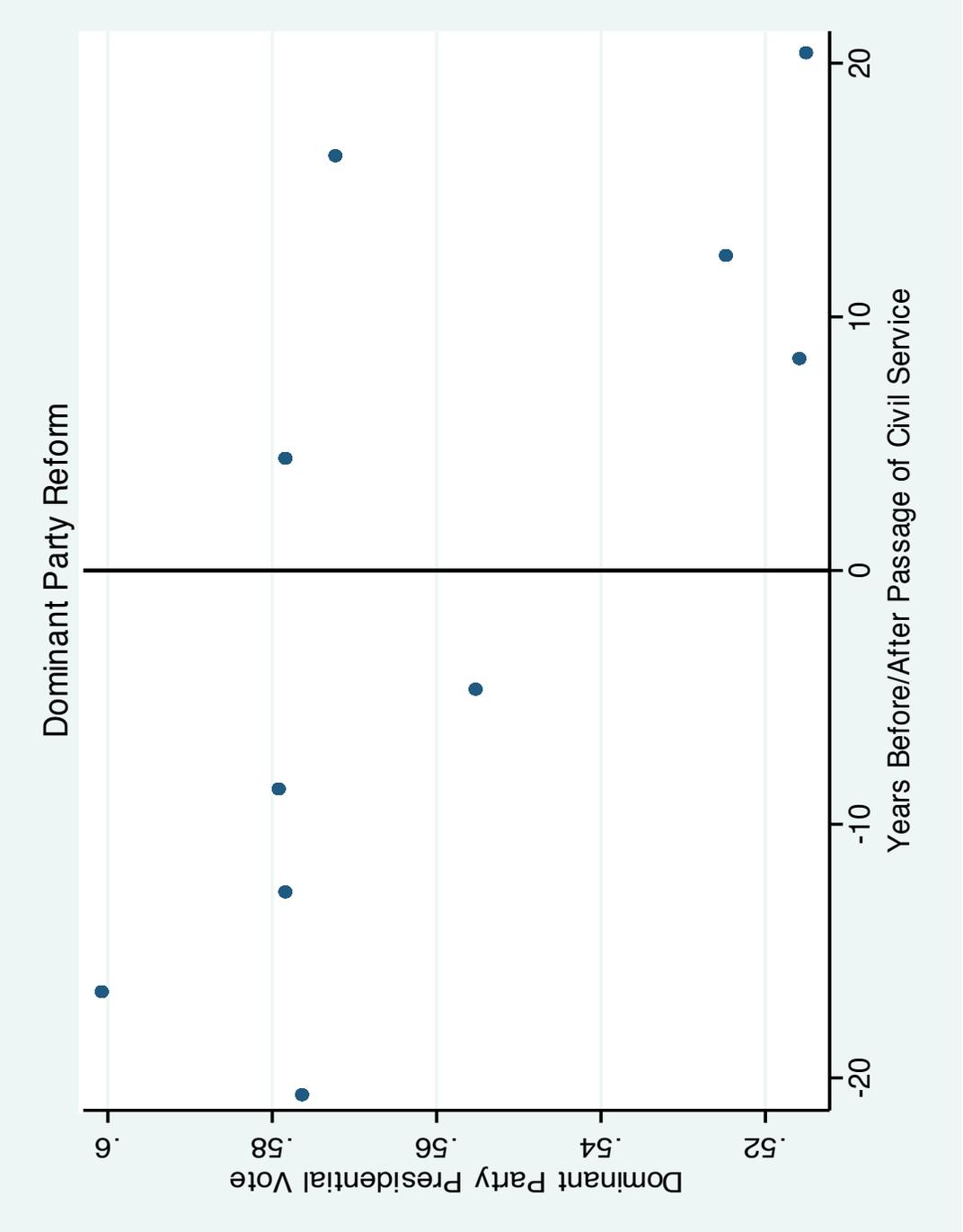


Figure 3: Change in dominant party's vote share pre- and post-reform, state level, states where dominant party was in power at the time of reform.

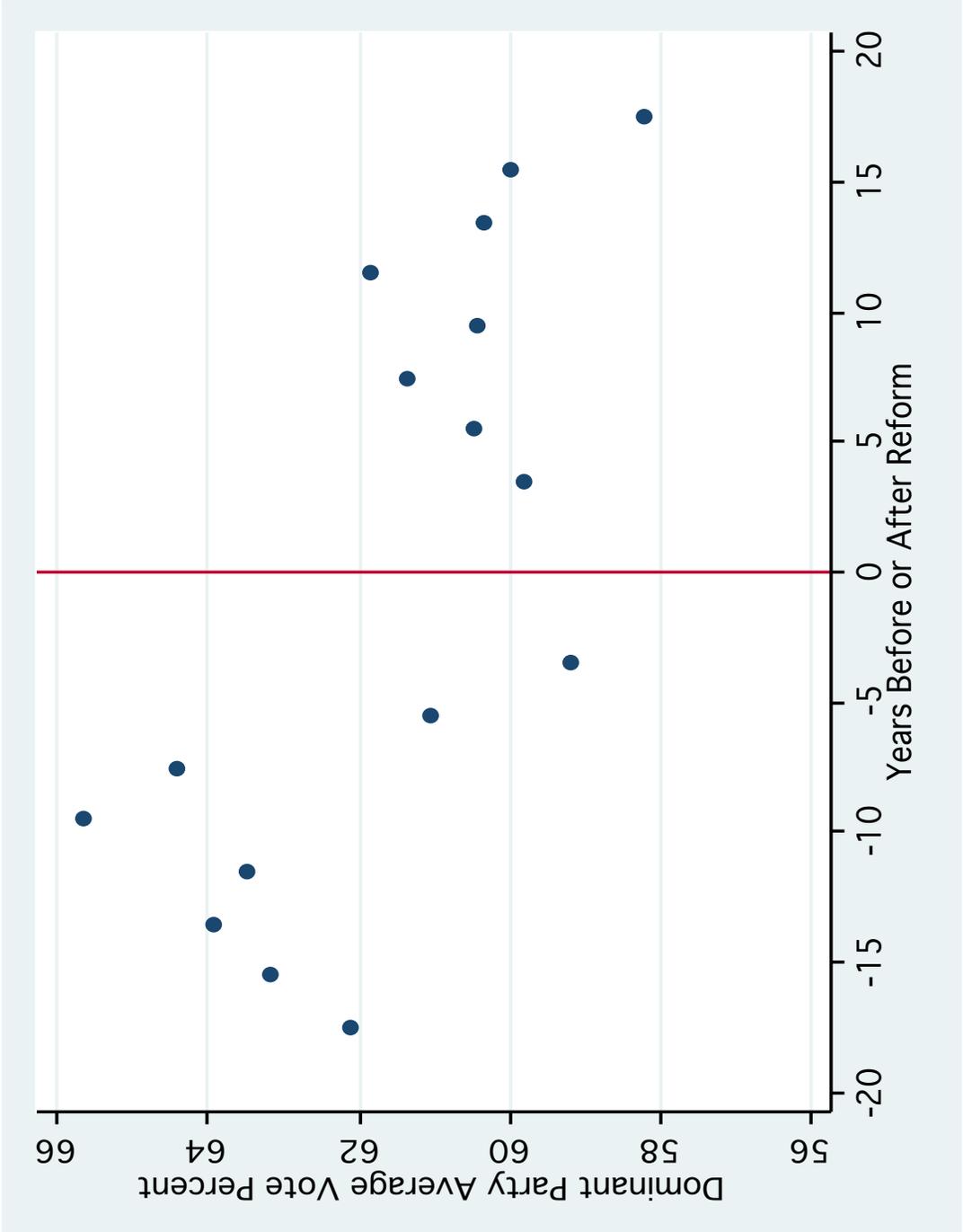


Figure 3: Change in dominant party's vote share pre- and post-reform, city level, all cities with dominant party in county containing the city.