

Civil Service and the Growth of Government*

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Abstract

I study a dynamic model of electoral accountability which links the scale of government activity to the presence of civil service protections. In the model, voters with a demand for public goods forward tax revenue to the government and office-motivated governing parties delegate public spending to career-concerned civil servants. Governments always have power over civil service compensation, but civil service protections limit their ability to hire and fire civil servants. If civil servants are unprotected, civil service turnover matches government turnover and civil servants' interests are aligned with those of the party that hires them. To avoid wasteful partisan spending, voters only consent to minimal taxation. If civil servants are protected, they have no incentive to favour one party over another and governments produce only public goods, so that, in turn, voters consent to high taxes. However, because higher tax revenues increase the corruptibility of civil servants through favourable compensation policies, large-scale government activity is only achieved by inefficiently high wages in the civil service, which increase the frictions in the relationship between politicians and civil servants.

JEL Classification: H11; D73; H41

1 Introduction

In the late 19th and early 20th centuries, many advanced democracies saw both (*i*) the adoption of civil service reforms in the form of a-political personnel rules, from merit-based hiring to tenure-protected retention, as well as (*ii*) large expansions in government

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activity, including public education, old-age pensions, unemployment insurance, and other welfare state programs. In this paper, I develop a theoretical model that links these two developments by focusing on how the relationship between civil servants and politicians affects voters' willingness to fund government spending on public goods through taxation. The central insight of the model is simple. Voters have a demand for public goods, but they understand that their supply is determined by the interaction of governing parties, to whom voters entrust tax revenues, and civil servants, who are tasked by elected officials with delivering public services. If personnel decisions are left entirely to politicians, they can use their power over civil servants' careers to manipulate the administration of tax revenues so that it favours partisan and electoral goals over the efficient provision of public goods. Therefore, large-scale government expansion is incompatible with an unreformed civil service, as voters would not consent to the corresponding growth in taxation.

I study a class of stationary subgame (Markov) perfect equilibria in an infinite horizon model in which two parties compete for power through elections in every period. Because the scale and complexity of government activity requires a division of labour to administer public programs effectively, the governing party must delegate the spending of tax revenue to civil servants. Civil servants are competent and nonpartisan (in their preferences, but as I will show not necessarily in their equilibrium behaviour), but they are career-concerned: their expertise ensures that spending tax revenue on public goods efficiently is always feasible but retention rules or compensation packages, which are designed by politicians, can generate incentives to engage in partisan spending which improves the electoral prospects of the governing party.

By determining the power that politicians have over civil servants, civil service protections shape the degree to which governing parties can align the incentives of civil servants to their partisan objectives. When civil servants are unprotected, governing parties determine both their employment status and their wages. In equilibrium, the parties' hold over the civil service is complete: all civil servants are identified with only one party, and opposition parties that reach office always fire all civil servants that served the previous government. Because civil servants' job prospects are tied to partisanship, their actions in office are guided by the interests of the party that hires them. Moreover, parties' monopoly over their workforce's careers ensures that civil

service compensation is minimal. Both these features, of government-specific turnover and low compensation, are well-documented in the historical periods of patronage in advanced democracies (e.g., Libecap and Johnson (2007) and Ting et al. (2013) for the United States, Kingsley et al. (1944) and Orloff and Skocpol (1984) for the United Kingdom, and Juillet and Rasmussen (2008) for Canada), as well in transitioning and developing countries (e.g., Gorodnichenko and Peter (2007), Kopecký et al. (2016) and Van Rijckeghem and Weder (2001)).

If civil servants are protected, then civil service hiring is no longer in the hands of politicians and civil servants are guaranteed a career path that is independent of electoral outcomes. However, as they leave intact governments' responsibility to set civil servants' working conditions and compensation, these reforms alone do not shield permanent civil servants from attempts by governing parties to recruit their partisan participation. In particular, by enacting a wage policy that is sufficiently generous relative to the policy expected of the opposition, a governing party can induce partisan preferences within the civil service that are strong enough to distort their spending of tax revenues. In equilibrium, all such attempts at corruption fail and civil servants produce public goods efficiently given the government's resources. However, defeating partisan attempts at corrupting civil servants through generous compensation generates a lower bound on their equilibrium wages: civil servants are not corruptible only because the wage they expect from the opposition in case the government is defeated is sufficiently high.

To an outside observer, the model's post-reform civil service compensation policies appear to take the form of an efficiency wage (Shapiro and Stiglitz (1984)), with rents seemingly delivered to civil servants to promote good behaviour. If only because civil servants are protected from dismissal by rigid tenure rules, this compensation scheme seems illogical. Furthermore, when their careers do not depend on their decisions, civil servants allocate government funds according to their public-spirited preferences, so that no rents are needed to provide them with incentives to produce public goods. These observations miss a critical point, however, which is that inflated civil service salaries are not instituted to control the quality the public goods produced by civil servants, but rather to control the politicisation of the civil service by partisan governments. This explanation for favourable civil service working conditions, which are supported by find-

ings of a public-private wage gap in many countries (e.g. Gregory and Borland (1999)), is distinct from other explanations that rely on theories of bureaucratic rent-seeking (Tullock (1965), Niskanen (1975) and Marconi et al. (2009)), partisan manipulation of government employment for redistribution purposes (Alesina et al. (2000)), or on bargaining between governments and unions representing civil servants (Fernández-de Córdoba et al. (2012)).

In the model, the demand for public goods by the electorate drives government spending, which in turn can conceal partisan spending that has no intrinsic value to voters but distorts their electoral decisions. I abstract from divisions within the electorate and let public goods stand for those government activities or programs that would garner voters' support *if* efficiently managed. To this end, I restrict attention to a single voter. I model the voter as sophisticated, in that he anticipates equilibrium actions by governing parties and civil servants, but poorly informed, in that other than knowing how much tax revenue was forwarded to the government, he observes only a coarse measure of government performance which bundles public goods production, partisan spending, the interactions of the governing party with the civil service, as well as any other actions or attributes of the governing party that are valuable to the voter (modeled as a valence shock).

To fix ideas, consider the example of unemployment insurance. Such a program can be ex ante desirable to a large fraction of the electorate *if* they trust that the premiums collected through taxation will be distributed effectively and according to the income losses suffered by the unemployed. Civil servants have the technical knowhow to implement such a program efficiently, but they can also tamper with these programs in order to procure a partisan advantage to the politicians in power. With unemployment insurance, this could be through loosening admissibility requirements in a way that favours some categories of workers whose votes are important in the upcoming election. Such tampering is beneficial to *some* individual voters ex post, and furthermore it may be difficult to determine conclusively whether the slack admissibility requirements constitute political favoritism or instead are required for the competent administration of the program. However, it distorts the actuarial fairness of the insurance scheme ex ante, and hence *all* voters' willingness to pay, through their taxes, for such a program.

Voters' limited information prevents them from using elections to fine-tune the in-

centives of politicians. In turn, this implies that the supply of public goods and the efficiency of public spending is determined by the relationship between politicians and civil servants, which voters infer in equilibrium but never observe directly. Nevertheless, even under patronage systems voters are not powerless in determining the scale of government activities: electoral institutions and alternation of political power are robust enough to prevent extractive policies by governing parties, which ensures that voters must consent to any taxation. I model this by assuming that the voter sets the tax revenue available for public spending. Therefore, the voter chooses the size of the government, under the constraints on the distribution of public spending imposed by civil service protections and the corresponding equilibrium interactions of politicians and civil servants.

In the absence of civil service protections, the voter understands that tax revenues are diverted into partisan spending, which limits his willingness to forward resources to the government. Therefore, public goods are undersupplied and the voter's full demand for these goods cannot be satisfied. An important remark is that the government's ability to corrupt the civil service is increasing in government size: increased revenue has a direct effect, by increasing the resources that can be devoted to civil service wages; and it also has an indirect effect, by increasing the impact of partisan spending on electoral outcomes. Therefore, without civil service protections the equilibrium government size is the largest size \tilde{T} for which tax revenues are insufficient to enlist the partisan participation of civil servants, in other words, for which a private relationship between politicians and the civil service cannot be established.

When civil servants are protected, the voter knows that all tax revenues are devoted to public goods and civil service compensation, and never to partisan spending. The equilibria that maximise the voter's payoff can exhibit one of two government sizes. If the voter's demand for public goods is low, or if the "efficiency" wages paid to civil servants to protect them from politicians are high, then the government size is \tilde{T} , which is the same minimal size achieved without civil service protections. In this case, there are no benefits to civil service reforms, as the gains from public goods provision by large governments are dissipated in rents, which are delivered to civil servants but are intended to thwart politicians. On the other hand, if the voter's demand for public goods is high, then the government's size is maximised and the voters' demand for

public goods is fully met by a nonpartisan but highly paid civil service.

Thus, returning to the observations in my first paragraph, civil service reform and the scale of government activities are tightly connected, and their underlying predictor is the electorate's latent demand for public goods. This is in line with discussions in historical and informal studies of civil service reforms in advanced democracies, which stress how the old patronage systems could not adequately fulfill the new tasks that governments were being pressured to undertake by their citizens. For example, civil service reform in the United Kingdom started in Victorian times (see Orloff and Skocpol (1984)), when the government had major undertakings at home (e.g., social legislation like the Poor Laws) and abroad (through managing an expanding colonial empire). In the United States, the push for civil service reforms was spurred by the increased demands for public services that accompanied increased industrialisation and urbanisation following the Civil War (see Libecap and Johnson (2007), who also provide evidence that local civil service reforms were adopted first in more urban areas). In Canada, the government expansion prompted by the First World War gave rise to a watershed Civil Service Act in 1918 (see Juillet and Rasmussen (2008). In the literature on state capacity in development economics, Besley and Persson (2009) highlight the link between war and the formation of state administrations).¹

1.1 Related Literature

My paper contributes to a relatively small theoretical literature on civil service reform. A closely related paper is Ujhelyi (2014), in that his model is also centered on how civil service reforms affect the interactions between politicians and civil servants, and, through this, government outcomes and electoral results. As in my model, civil servant's ability to either help or hinder incumbent politicians plays a key role in his results. His model features a fixed scale of government, and his main focus is to characterise the tradeoff between (i) politicians' accountability to voters, which is helped by civil servants' partisanship even if it means implementing policies they know to be bad for voters, and (ii) civil servants' direct contribution to voter welfare, which is helped

¹Related evidence is also presented by Coate and Knight (2011), who show that cities in the United States with city managers have higher public spending than cities with an elected mayor. See also Rauch (1995), who provides evidence that early 20th century cities in the United States that adopted civil service reforms devoted more of their revenue to infrastructure investments.

by protecting civil servants from politicians, which gives them the power to thwart bad policies. I focus on linking civil service performance with the scale of government activity, and furthermore, in my model, civil service protections always improve electoral selection by eliminating the partisan spending which distorts electoral outcomes.

Ting et al. (2013) study the adoption of civil service reforms in a dynamic model with electoral alternation. Their focus is on the loss of government productivity caused by civil service turnover under patronage systems. Their key results link a government's decision to insulate the civil service from political pressure to expected electoral outcomes: governments that expect to lose care more about the future undistorted spending of protected civil servants and are more likely to implement civil service reforms. In a related paper, Huber and Ting (2016) study government investments in a nonpartisan civil service in a dynamic model with probabilistic voting. Their focus is on a governing party's tradeoff between (i) increasing the size of the nonpartisan civil service, which increases future government performance, and (ii) increasing patronage appointments, which yields immediate electoral advantages. They show that large professional civil services evolve when parties place prefer public goods relative to private partisan goods.

A related literature in economics, which is much more extensive, studies the voter's delegation of decision-making authority to elected officials or bureaucrats (e.g., Alesina and Tabellini (2007) and Maskin and Tirole (2004)). In political science, this approach is complemented by focusing on the incentives of politicians themselves to delegate discretionary authority to the civil service (Gailmard and Patty (2012) survey this literature exhaustively). As Ujhelyi (2014) notes in his review of this literature, the decision by a politician to delegate decision-making to a civil servant can be interpreted as a form of civil service protection. In my model, civil servants always have discretion in the spending of government funds, and the role of civil service protections is to interfere with the contractual arrangements between governments and the civil service. Without protections, civil servants choose to align themselves with politicians, while with protections they choose to act in the voters' interests.

The literature on the importance of state capacity for economic development deals with issues that are closely related to those I focus on here. The concept of state capacity was introduced in informal work by historians and political scientists (e.g., Tilly

and Ardant (1975), Migdal (1988) and Evans et al. (1993)). In particular, Levi (1989) stresses the importance of states ensuring the compliance of citizens with the gathering of tax revenue, which often relies on norms of trust and fairness. An interpretation of my results along these lines is that they show policy changes like civil service reforms generate trust in politicians among voters as an equilibrium outcome, given that taxpayers forecast (correctly) that the funds they forward to the government will actually be spent on the goods that they value. Furthermore, one of the main points of my model, that a professional civil service is necessary for welfare state-type expansions in government activity, is quite close to the argument by Evans et al. (1993) that civil service reforms are necessary for a “developmental state”. His argument relies on the fact that only permanent civil servants have the long horizon required to make infrastructure and other investments that are preconditions to economic growth (see also Rauch and Evans (2000)).

There is a growing theoretical literature in economics on state capacity. Besley and Persson (2009, 2010) have developed a class of models in which state capacity, to support both government production through fiscal capacity and private production through legal capacity, is an endogenous choice made by forward-looking governments (see also the discussion in Besley and Persson (2014)). Closer to the topic of my paper, Acemoglu et al. (2011) present a micro-founded model of state capacity in which nondemocratic rulers decide whether to professionalise the civil service or maintain a patronage system. They show that rich elites that face a high risk of democratisation can prefer a corrupt civil service because the resulting governmental inefficiency limits the ability of the poor to redistribute wealth once they accede to power. Acemoglu (2005) studies the taxation and public goods provision decision of nondemocratic states. In his main results, which study Markov perfect equilibria, strong states are extractive and weak states underinvest in public goods. Interestingly, he studies a class of equilibria in history-contingent strategies (which he calls equilibria with “consensually strong states”) in which a politically insecure state trades access to power against public goods provision to its citizens. In these equilibria, the citizens’ ability to revolt against a leader that underinvests in public goods is critical to sustain the leader’s incentives for good behaviour. In my model, the government’s allocation of tax revenues is unobservable to voters so that spending-contingent punishment strategies are not possible. Instead, the

implementation of civil service protections allows voters to infer that the government has no option other than to spend tax revenues appropriately.

2 Model

Two long-lived parties, -1 and 1 , compete for control of the government in an infinite number of periods $t = 1, 2, \dots$, with the party that controls the government in each period being selected through an election decided by a single long-lived voter. The government bureaucracy is staffed by civil servants that live for two periods, and there are overlapping generations of potential civil servants with each cohort containing an infinite number of individuals: for all $t = 0, 1, \dots$, let I_t be an infinite set that denotes the cohort of potential civil servants born in t .² Furthermore, I assume that each civil servant $i_t \in I_t$ is the representative agent of a labour pool containing a continuum of identical individuals, and I assume that this agent's choices coordinate all members of her labour pool. For all t and all (representative) civil servants $i_t \in I_t$, I normalise the mass of their corresponding labour pool to $1/2$.

This setting is meant to capture the fact that the provision of government services requires a large workforce, some members of which are early in their careers and others who are verging on retirement. Notably, this implies that if, in the absence of civil service protections, civil servants' career prospects are tied to the government's survival, younger civil servants have a higher incentive to engage in partisan activities that assist the government's reelection. On the other hand, while older civil servants may not have a stake in future elections, they may owe their current position to past partisan activity. As I detail below, I model this in a simple way by assuming that the production of public goods at t requires the inputs of each type of civil servant (i.e., those from the $t - 1$ and t cohorts), and by limiting the horizon of any civil servant to two periods. Furthermore, a defining relationship in government is not so much that between the governing party and individual civil servants, but between that party and the civil service as a whole, with the latter often having cohesive goals and the ability to unify its members through collective action. Modeling a civil servant in government at t as a representative of a

²Note that period $t = 0$ is not a governing period but that civil servants born in that period can work for the government in the first governing period $t = 1$ when in the second period of their life.

large number of identical workers is a convenient way to capture this feature.³

Government revenue. In period $t = 0$, the voter decides on the tax $T \geq 0$ that will be allocated to all governments, irrespective of their partisan makeup, in all periods $t = 1, 2, \dots$

That it is the voter that sets government tax revenue and not governing parties is a key assumption of the model, which is important for both my results and their interpretation. It is meant to capture the idea that in democratic societies the scale of government must, in the last instance, receive the consent of the electorate. Free elections may be too blunt a tool to adequately control how politicians spend tax revenue (and this will be the case in my model without civil service protections), but they should keep politicians from extracting unwanted taxation from voters. That the voter chooses the scale of all future governmental activity at the beginning of the game simplifies the analysis of the model and is not unduly restrictive given my focus on stationary equilibria.

Government spending. In any period $t = 1, 2, \dots$, some party $P_t \in \{-1, 1\}$ is in power at the beginning of the period. Tax revenue is spent by the civil service under the governing party's supervision. The identity of the civil servants, and in particular whether the governing party has a hand in selecting specific civil servants, depends on the existence of civil service protections. Fix governing party P_t with tax revenue T . In the absence of civil service protections, party P_t hires a pair of civil servants $(j_t, s_t) \in I_t \times I_{t-1}$ to direct the provision of public goods, where j_t is the junior civil servant and s_t is the senior civil servant. I assume that hiring junior civil servants entails a commitment by the governing party P_t to retain them as senior civil servants if P_t is reelected in $t + 1$. However, a junior civil servant in office at t has no guarantee of advancement in the absence of civil service protections, in that she may not be in office in $t + 1$ if the opposition party gains office in $t + 1$ and chooses not to retain her. When the civil service is protected by tenure, hiring and retention decisions are no longer at the discretion of politicians. I model this by specifying an exogenous sequence $(j_t, s_t)_{t=1}^{\infty}$ of civil servants. Furthermore, in this case I assume that all junior civil servants are promoted, so that, for all $t \geq 2$, $s_t = j_{t-1}$.

³Notably, my normalisation of civil servant labour pool masses will ensure that per-capita and aggregate dollar variables are identical, which will streamline the exposition of my results.

The governing party P_t also determines the wage bill w_t associated to the civil service at t . Furthermore, I assume that a governing party that is newly elected at t commits to devoting the wage bill w_t to the civil service in each period of the party's tenure in office. I also assume that the government cannot differentially remunerate different members of the civil service, so that, given my normalisation of the size of the civil servant labour pools represented by (j_t, s_t) , it follows that the per-capita wage of all civil servants at t is also w_t . Finally, the tax revenue net of wages $T - w_t$ at t is distributed uniformly within the civil service, so that the per-capita tax revenue entrusted to each civil servant at t is also $T - w_t$.

My key assumption about civil service compensation is that a government's ability to set civil servants' compensation does not depend on the existence of civil service protections regarding tenure and job security (although in equilibrium the two systems will have different compensation schemes). Legislated civil service protections also typically include rigid job classification systems and wage scales that determine the income of individual civil servants. However, office-holders retain significant control over base salaries, benefits and the quantity and types of jobs available in the public service, which together with salaries compose the compensation of the civil service as a whole. In OECD countries this global civil service compensation is typically determined through collective bargaining between the government and civil service unions, and even in the exceptional case of the United States, in which collective bargaining is rarer, unions retain some power to negotiate working conditions on behalf of civil servants (see, e.g., Traxler (1994)). Therefore, while strict rules prevent governments from targeting the career outcomes of any one civil servant, they have many tools with which they can affect the compensation of all civil servants simultaneously.

Government production. The civil servants (j_t, s_t) in office at t are tasked with spending the tax revenue that remains net of civil service compensation. Civil servants can choose not to work at all, in which case the government revenue they are tasked with is wasted. If civil servants choose to work, they can direct government revenue either to the provision of public goods or to the production of partisan goods that favour P_t . Specifically, given tax revenue T and wage w_t , the civil servants (j_t, s_t) simultaneously make effort decisions $(\ell_t, \ell_t^s) \in \{0, 1\}^2$ and allocate revenue $(x_t, x_t^s) \in \mathbb{R}_+^2$ to the provision of public goods and revenue $(y_t, y_t^s) \in \mathbb{R}_+^2$ to partisan activity. The civil servants'

spending decisions must satisfy the constraints

$$x_t + y_t \leq T - w_t, \text{ and}$$

$$x_t^s + y_t^s \leq T - w_t.$$

I also impose a technological constraint on public spending. Specifically, I fix $\bar{X} > 0$ and assume that $x_t, x_t^s, y_t, y_t^s \leq \bar{X}$ (as I detail below, \bar{X} will parametrise the voter's demand for public goods).⁴ Now let

$$X_t = \ell_t \ell_t^s [1/2x_t + 1/2x_t^s], \text{ and}$$

$$Y_t = \ell_t \ell_t^s [1/2y_t + 1/2y_t^s]$$

denote the aggregate levels of government spending on public goods and partisan activity respectively, and write the government's spending constraint as $X_t + Y_t \leq T - w_t$. Note that it must be the case that $X_t, Y_t \leq \bar{X}$.

I assume that both public and partisan goods are produced through constant returns to scale technologies. First, if the civil service devotes portion X_t of tax revenues to public goods, then the quantity of the public good produced is X_t . Second, the technology that converts partisan spending into partisan goods is time-dependent. Let $\theta_t \in \{\bar{\theta}, \underline{\theta}\}$ be the productivity of partisan spending in period t , where $\underline{\theta} < 1 < \bar{\theta}$ and $\mathbb{P}(\theta_t = \bar{\theta}) = q$ for all periods t . Therefore, if the civil service devotes portion Y_t of tax revenues to partisan goods, the quantity of partisan goods produced is $\theta_t Y_t$. Note for now that if $\theta_t = \bar{\theta}$, the production of partisan goods is more efficient than that of public goods, while the opposite is true if $\theta_t = \underline{\theta}$.

Finally, note also that the civil servants' effort decisions are perfectly complementary in the production of both public and partisan goods, so that shirking by either wing of the civil service leads to a failure of all government production. This assumption simplifies my results by ensuring that governments must provide incentives to the whole civil service in order to generate public spending, and so it cannot benefit from excluding some segments of its workforce.

Voter's payoffs. At the end of each period t there is an election decided by the voter. Given public spending (X_t, Y_t, w_t) financed by tax revenue T and delivered by governing

⁴That the bound \bar{X} is symmetric across both goods facilitates the exposition of my results but it is not crucial.

party P_t , the voter's payoff is

$$U_t = X_t - \Psi T + \Phi_t^{P_t},$$

where $0 < \Psi < 1$ is the cost of raising tax revenue and $\Phi_t^{P_t}$ is the valence of party P_t . For simplicity, I assume that $\Phi_t^{P_t} = \phi_t^{P_t} + \phi_{t-1}^{P_t}$, where $\phi_t^{P_t}$ and $\phi_{t-1}^{P_t}$ are independent and distributed uniformly on $[-\tilde{\phi}, \tilde{\phi}]$, with $\tilde{\phi} > 0$. As is standard in probabilistic voting models, the valence shock $\phi_t^{P_t}$ at t generates variability in electoral outcomes. Furthermore, the fact that the payoff effect of valence $\phi_{t-1}^{P_t}$ persists into period t gives the voter incentives to select high-valence politicians through his electoral decision at $t - 1$. In this model, I abstract from all actions taken by governments that do not involve public goods provision, so that parties' valence shocks can capture, in reduced form, the voter's evaluation of parties on these other dimensions.

Note that the voter does not derive any utility from partisan spending, although, as I describe next, the production of partisan goods will influence his electoral decisions. Note also that the optimal level of public goods provision for the voter is time-independent, and in particular it is independent of political variables Y_t and $\Phi_t^{P_t}$. Specifically, because the voter's payoff to public goods is linear and $\Psi < 1$, \bar{T} is the optimal level of public goods for the voter. In this model, the voter has an unambiguous demand for public goods, which is parametrized by \bar{T} , and he would be willing to forward as much tax revenue as required to meet this demand to any government he could trust to spend this revenue appropriately. Finally, the voter discounts future payoffs with factor $0 \leq \delta_v < 1$.

Voter's information and elections. To break the link between periods and simplify the model, I assume that $\phi_{t-1}^{P_t}$ is publicly observed at the beginning of period t if $P_t = P_{t-1}$, and to avoid signaling incentives for politicians, I assume that no player observes $\phi_t^{P_t}$ until period $t + 1$ (this approach follows Rogoff (1990)).

What limits the voter's willingness to finance government spending is the possibility that the governing party may induce civil servants to engage in partisan spending. The voter can always fail to reelect poorly behaved governments and he has no demand for partisan spending. Therefore, if elections are effective, he should only fear the misallocation of tax revenue if he cannot fully distinguish it from public goods spending, in which case he runs the risk of rewarding governments for bad behaviour. My key

assumption about the voter is that he is sophisticated but poorly informed: the voter anticipates the equilibrium behaviour of parties and the civil service and allocates tax revenue optimally against this, but he only observes noisy proxies of their actual interactions. Specifically, I assume that the voter knows the amount of tax that he forwards to the government but nothing else: he cannot observe civil service compensation or government spending, he cannot distinguish between public goods spending and partisan spending, he does not observe the productivity θ_t of partisan spending, and he does not observe current valence $\phi_t^{P_t}$.

Given public spending (X_t, Y_t, w_t) financed by tax revenue T and delivered by governing party P_t with valence $\Phi_t^{P_t}$, the voter receives a signal

$$Z_t = U_t + \theta_t Y_t.$$

Notice that because $\underline{\theta} < 1 < \bar{\theta}$, a government that wants to maximise the signal received by the voter would support public goods spending if $\theta_t = \underline{\theta}$ and engage in partisan spending if $\theta_t = \bar{\theta}$. Therefore, while the voter only values public goods provision, he can be influenced by partisan spending: in particular, partisan spending can confound the voter's inferences about the governing party's valence. To recap, when making his electoral decision, the voter observes signal Z_t and knows T and $\phi_{t-1}^{P_t}$, but nothing else.

The signal-jamming property of partisan spending can accommodate different interpretations of the nature of partisan goods. As described above, partisan goods are pure waste from the point of view of the voter, so that the production of partisan goods can represent civil servants using their proximity to voters to deceptively promote the achievements of the governing party. But, as discussed in the example of unemployment insurance in the Introduction, partisan goods could be interpreted as wasteful public spending that provides benefits to *some*, but not *all* voters. As a stylised example, suppose that the electorate is divided into multiple constituencies, and that in each period some constituencies have a need for a genuine public service (e.g., some cost-benefit approved infrastructure project), while all constituencies always have available some wasteful public project (e.g., some unnecessary infrastructure project which nevertheless brings economic activity to the constituency). Suppose that voters in all constituencies cannot distinguish valuable from wasteful projects, and that part of their electoral decisions involve making inferences about the government's competence

by observing spending that benefits their constituency. In any given election, the constituencies that are electorally pivotal need not correspond to those constituencies that have a genuine need for public spending, and the incumbent government will always prefer to produce in the latter constituencies. If constituencies' tax levies are lower than the expected value of a genuine project and higher than the expected value of a wasteful project, then the representative constituency (i.e., all ex ante uninformed constituency) will agree to fund governmental provision of public services if and only if there are no partisan distortions of spending. In this sense, my model with a single voter and purely wasteful partisan spending can be interpreted as the reduced form of a model with many voters and privately beneficial partisan spending.

Payoffs and information of parties. Parties are purely office-motivated, and I normalise their payoffs so that they obtain a utility of 1 in period t if in office and 0 if in opposition. Parties discount future payoffs with factor $0 \leq \delta_p < 1$. Party P_t makes its hiring and wage decisions at t before learning θ_t and without knowing $\phi_t^{P_t}$. Party P_t does not observe whether civil servants exert effort or how they spend tax revenue (that is, (ℓ_t, ℓ_t^s) , (x_t, x_t^s) and (y_t, y_t^s) are private): this captures civil servants' informational advantage derived from their intermediary position between voters and parties.

Payoffs and information of civil servants. Civil servants value wages derived from employment and bear costs from tampering with public funds for partisan purposes. Specifically, at the beginning of period t and before learning partisan productivity θ_t , each civil servant in office can invest in the ability to engage in partisan spending at cost $K > 0$, and this investment decision is private. The payoff at t to a civil servant is $u(w_t) - K$ if she invests in partisan activity and $u(w_t)$ if she does not, where $u(0) = 0$, $u' > 0$ and $u'' < 0$. Furthermore, to simplify some of my results I assume that u has constant absolute aversion to risk, i.e., that $u(w_t) = 1 - e^{-aw_t}$, where $a > 0$ is the coefficient of absolute risk-aversion.⁵ After making her partisan investment and before making her spending decisions, the civil servant observes θ_t . If she has invested in partisan activity, then she can direct public funds to help the incumbent (i.e., $y_t, y_t^s \geq 0$), but if she has not invested in partisan activity then any tax revenue that she allocates (conditional on exerting effort) must go into the provision of public goods

⁵Both in the text and in the Appendix, I will make it clear when my results depends on this assumption.

(i.e., $y_t, y_t^s = 0$). Finally, civil servants discount future payoffs with factor $0 \leq \delta_c \leq 1$.

My key assumptions about civil servants' motivations and abilities are that allocating funds towards public goods provision is costless while partisan activities are costly. In this sense, an appropriate interpretation of my model is that it captures the state of civil service systems after the initial round of reforms that imposed basic qualification and political independence standards for civil servants. These were meant to ensure that civil servants had the skills necessary to perform their tasks and that they were free of explicit obligations towards governing parties. For example, the 1883 Pendleton Act in the United States imposed entrance exams and banned the practice of "assessments", through which civil servants were obligated to deliver a fraction of their salaries to the party that appointed them.⁶ In other words, these initial reforms can be seen as increasing both (i) the productivity of civil servants' public goods provision and (ii) the frictions in their relationships with politicians. One final note is that by assuming that civil servants bear no effort costs to public goods provision, I abstract from the incentive costs of tenure systems, a recurring theme in criticisms of government bureaucracies. In this sense, my results can be interpreted as providing an upper bound on the value of civil service protections.⁷

2.1 Strategies and Equilibrium

I focus on subgame perfect equilibria of the game that have strong stationarity and symmetry properties. To simplify the exposition, I only define strategies that satisfy my refinement.

Definition 1. A *simple strategy profile* consists of the following.

1. A *taxation strategy* for the voter is $\tau^* \geq 0$.
2. A *wage strategy* for party P is $\omega^*(T) \in [0, T]$. In words, the compensation decisions of governments of any party depend only on tax revenue.

⁶Competitive examinations were also a central recommendation the 1854 Northcote-Trevelyan Report in the U.K., which spurred civil service reform there.

⁷The effectiveness of high-powered incentives in public organisations is open to debate, as such contracts can interact with the recruitment and productivity of public-spirited civil servants, as studied in, e.g., Besley and Ghatak (2005) and Francois (2000).

3. A *civil servant hiring strategy* for party P is $(\sigma_P^*(t), \sigma_P^{s*}(t)) \in I_t \times I_{t-1}$. In words, the identity of hired civil servants depends only on calendar time and party identity.
4. *Partisan participation strategies* for civil servants (j, s) are $(\kappa^*(T, w), \kappa^{s*}(T, w)) \in \{0, K\}^2$. In words, civil servants' partisanship decisions depend only on their seniority, their wages and on the government's revenue.
5. *Effort and spending strategies* of civil servants (j, s) are

$$\begin{aligned}
&(\lambda^*(T, w, k, \theta_t), \lambda^{s*}(T, w, k, \theta_t)) \in \{0, 1\}^2, \\
&(\chi^*(T, w, k, \theta_t), \chi^{s*}(T, w, k, \theta_t)) \in [0, \min\{T - w, \bar{T}\}]^2, \text{ and} \\
&(\gamma^*(T, w, k, \theta_t), \gamma^{s*}(T, w, k, \theta_t)) \in [0, \min\{T - w, \bar{T}\}]^2,
\end{aligned}$$

which are such that

$$\begin{aligned}
&\chi^*(T, w, k, \theta_t) + \gamma^*(T, w, k, \theta_t) \leq T - w, \text{ and} \\
&\chi^{s*}(T, w, k, \theta_t) + \gamma^{s*}(T, w, k, \theta_t) \leq T - w,
\end{aligned}$$

and $\gamma^*(T, w, k, \theta_t), \gamma^{s*}(T, w, k, \theta_t) \neq 0$ only if $k = K$. In words, civil servants' effort and spending decisions depend only on their seniority and on tax revenue, wages, partisan investments and the current productivity of government spending.

6. Finally, a *reelection strategy* for the voter is $\rho^*(T, Z) \in \{0, 1\}$. In words, the voter's reelection strategy depends only on tax revenue and his signal.

A *simple equilibrium* is a subgame perfect equilibrium in simple strategies.

Simple equilibrium is a refinement of Markov perfect equilibrium, in that there is (potentially) payoff relevant variables, like party identities, that simple strategies do not allow players to condition their decisions on.⁸ A few further notes. First, simple equilibrium is not strictly speaking a party-symmetric Markov perfect equilibrium, in that it requires, for example, that civil servant selection strategies are independent of tax revenue. Second, (i) because of the non-stationary nature of the overlapping generations

⁸This is not a refinement that is found in the literature. Rather, I adopt it to simplify the analysis and presentation of my results.

of potential civil servants, civil service hiring strategies must depend on calendar time, and (ii) because of parties' incentives for inducing partisanship in civil servants through their hiring strategies in the absence of civil service protections, civil service hiring strategies must depend on party identity. Fourth, note that governing parties' past commitments to wages and retention decisions impose constraints on feasible hiring and wage decisions in any given period. Instead of detailing these constraints explicitly, which would involve cumbersome notation, I interpret the strategies above as applying only for parties that are free of previous commitments, for which the typical case is an opposition party that has just been voted into office. Fifth, equilibrium multiplicity can persist even in simple strategies, so that in such cases my results will focus on voter-optimal simple equilibria.

Clearly, in all subgame perfect equilibria, it must be the case that senior civil servants do not engage in partisan activities. That is, in any simple equilibrium we have that $\kappa^{s*}(T, w) = 0$ for all T and w . Furthermore, in all subgame perfect equilibria senior civil servants are indifferent between exerting effort or not and between all allocations to the public good of the tax revenue they receive. Therefore, I restrict attention to voter-optimal simple equilibria such that $\lambda^{s*}(T, w, k, \theta) = 1$, $\chi^{s*}(T, w, k, \theta) = \min\{T - w, \bar{T}\}$ and $\gamma^{s*}(T, w, k, \theta) = 0$ for all T, w, k and θ . From here on, I ignore the decisions of senior civil servants.

3 Preliminaries: Public Spending and Elections

I start by discussing those properties of simple equilibria that are independent of whether civil servants are protected from politicians or not, which cover principally the spending decisions of civil servants. To ease the presentation and the discussion, I restrict the statements in the text to players' actions on the equilibrium path, but the proofs of my results in the Appendix derive the full equilibrium strategies.

Proposition 1. *In all simple equilibria,*

1. *Junior civil servants exert effort (i.e., $\lambda^*(\tau^*, \omega^*(\tau^*), k, \bar{\theta}) = 1$ for all k).*
2. *If either (i) $\theta = \underline{\theta}$ or if (ii) $\theta = \bar{\theta}$ and junior civil servants do not engage in partisan activities (i.e., $\kappa^*(\tau^*, \omega^*(\tau^*)) = 0$), then junior civil servants devote all of*

their budgets to public goods spending (i.e., $\chi^*(\tau^*, \omega^*(\tau^*), k, \underline{\theta}) = \chi^*(\tau^*, \omega^*(\tau^*), 0, \bar{\theta}) = \tau^* - \omega^*(\tau^*)$ for all k).

3. If $\theta = \bar{\theta}$ and junior civil servants engage in partisan activities (i.e., $\kappa^*(\tau^*, \omega^*(\tau^*)) = K$), then junior civil servants devote all of their budgets to partisan spending (i.e., $\gamma^*(\tau^*, \omega^*(\tau^*), K, \bar{\theta}) = \tau^* - \omega^*(\tau^*)$).
4. Governments are reelected with probability $1/2$.

It is easy to see that that civil servants must exert effort in equilibrium as long as $\tau^* > 0$. Otherwise, the voter would know that any tax revenue is wasted because of shirking by an (anti-)partisan civil servant, and therefore he would refuse to forward any funds to the government. The ability of junior civil servants not to provide effort has important implications off the equilibrium path, because this sets a lower bound on the wages set by governments. My results below will show that the stringency of this bound depends on the strength of civil service protections. On the one hand, a protected civil servant whose career prospects are insulated from the party in power can have strong preferences for the opposition party if the governing party sets low wages. On the other hand, if an unprotected civil servant's advancement is tied to the electoral fortunes of the governing party, this party has all the bargaining power and can exploit the civil servant's lack of outside options and guarantee her performance even though low compensation.

In any simple equilibrium, the voter returns the incumbent party to power at the end of some period t if the signal he receives exceeds the signal he expects given the strategies of parties and civil servants. Given any simple equilibrium, any taxation level T and any period, let $\mathcal{X}^*(T)$ denote the expected aggregate production of public goods in that period, which is calculated using equilibrium strategies given that tax T is forwarded by the voter at the beginning of the period, and where the expectation is taken with respect to the partisan shock θ . Similarly, let $\mathcal{Y}^*(T)$ denote the expected production of partisan goods by junior civil servant.⁹ Because $\mathbb{E}[\phi_t^P] = 0$, the expected equilibrium signal received by the voter is

$$\mathbb{E}[Z] = \phi_{t-1}^P + \mathcal{X}^*(T) + \mathcal{Y}^*(T).$$

⁹Both $\mathcal{X}^*(T)$ and $\mathcal{Y}^*(T)$ are defined formally in the Appendix.

Now fix any spending decisions by junior civil servants and let $\bar{\mathcal{X}}(T)$ and $\bar{\mathcal{Y}}(T)$ denote the aggregate public goods and partisan goods production given these actions (which may be out of equilibrium), conditional on $\theta = \bar{\theta}$. Let $\underline{\mathcal{X}}(T)$ and $\underline{\mathcal{Y}}(T)$ denote the corresponding quantities conditional on $\theta = \underline{\theta}$. Conditional on $\theta = \bar{\theta}$, the signal received by the voter is

$$\bar{Z} = \Phi_{t-1}^P + \bar{\mathcal{X}}(T) + \bar{\mathcal{Y}}(T),$$

and conditional on $\theta = \bar{\theta}$, the signal received by the voter is

$$\underline{Z} = \Phi_{t-1}^P + \underline{\mathcal{X}}(T) + \underline{\mathcal{Y}}(T).$$

Therefore, conditional on $\theta = \bar{\theta}$, the governing party is reelected whenever

$$\phi_t^P \geq -[\bar{\mathcal{X}}(T) + \bar{\mathcal{Y}}(T) - [\mathcal{X}^*(T) + \mathcal{Y}^*(T)]] .$$

Because $\bar{\theta} > 1$, this implies that conditional on $\theta = \bar{\theta}$ the governing party's probability of winning is maximised if (i) a partisan junior civil servant devotes all tax revenue to partisan goods and (ii) a nonpartisan junior civil servant devotes all tax revenue to public goods. Note that in all simple equilibria, junior civil servants must make spending decisions (but not partisan participation decisions) that maximise the probability of winning of the governing party. On the one hand, because junior civil servants must provide effort in equilibrium, they cannot strictly prefer the opposition party to win the election. On the other hand, if junior civil servants were indifferent between the governing and opposition parties and yet chose to invest tax revenue in a way that did not maximise the governing party's probability of winning, an arbitrarily small wage increase would break the civil servant's indifference in favour of the governing party. Similarly, conditional on $\theta = \underline{\theta}$, the governing party is reelected whenever

$$\phi_t^P \geq \mathcal{X}^*(T) + \mathcal{Y}^*(T) - [\bar{\mathcal{X}}(T) + \bar{\mathcal{Y}}(T)].$$

Because $\underline{\theta} < 1$, this implies that conditional on $\theta = \underline{\theta}$ the governing party's probability of winning is maximised if all junior civil servants, whether partisan or not, put all tax revenue into public goods.

Note that

$$\underline{\mathcal{X}}(T) + \underline{\mathcal{Y}}(T) \leq \mathcal{X}^*(T) + \mathcal{Y}^*(T) \leq \bar{\mathcal{X}}(T) + \bar{\mathcal{Y}}(T),$$

with the inequalities strict if and only if junior civil servants engage in partisan spending. If junior civil servants are nonpartisan, then $\bar{Z} = \underline{Z}$ and the governing party is reelected if and only if $\phi_t^P \geq 0$. That is, in the absence of partisan spending, elections select governments efficiently: only those parties with valences above the expected valence of the opposition party are reelected. If junior civil servants are partisan, then $\bar{Z} > \underline{Z}$ and government selection is distorted by partisan spending. Conditional on $\theta = \bar{\theta}$, some lower-valence governments win elections by defeating higher-valence opposition parties, and conditional on $\theta = \underline{\theta}$, some higher-valence governments are replaced by lower-valence opposition parties. While partisan spending allows government parties to increase their probability of reelection ex post, it has no effect ex ante. Prior to the realisation of θ , a governing politician is reelected with probability $1/2$ because, in equilibrium,

$$q\mathbb{E}[\bar{Z}] + (1 - q)\mathbb{E}[\underline{Z}] = \mathbb{E}[Z],$$

where the expectations on the lefthand side are with respect to the valence shock ϕ_t^P .

4 Benchmark: Direct Spending by Politicians

Consider the benchmark in which parties need not delegate public spending to civil servants. In this model, each party directly spends the tax revenue allocated by the voter whenever they are in power. To have a consistent comparison with my main model with a civil service, in which I select simple equilibria in which senior civil servants produce public goods, I assume that the governing party in the absence of civil servants only controls fraction $1/2$ of tax revenues, with the remainder being exogenously devoted to public goods. One interpretation of this benchmark is that it captures government production prior to merit-based hiring rules that impose competence and qualification requirements on civil servants. In such systems, civil servants need not have any particular affinity for public goods provision or any distaste for partisan spending, and are typically hired for partisan reasons alone: in my model, this would correspond to setting $K = 0$ in the absence of civil service protections.

I first introduce an assumption on the model's parameters that is maintained throughout the paper. Specifically, I assume that political manipulation of public spending is

sufficiently costly for the voter that he would not consent to any taxation if certain that tax revenues would be put to partisan use when $\theta_t = \bar{\theta}$. Note that if the voter forwards tax T to the government and these funds are allocated to public goods when $\theta_t = \underline{\theta}$ and to partisan spending when $\theta_t = \bar{\theta}$, then his payoff is $[1/2(1 - q) + 1/2]T - \Psi T$. Therefore, I maintain the following assumption throughout the paper.

Assumption 1. $1 - 1/2q < \Psi$.

Given Assumption 1, the following result can be obtained as a Corollary of Proposition 3, which characterises simple equilibria without civil service protections.

Proposition 2. *In all simple equilibria of the benchmark without a civil service, $\tau^* = 0$.*

As described in Section 3, given any level of tax T forwarded by the voter, spending on partisan goods when $\theta = \bar{\theta}$ maximises the governing party's probability of reelection. Therefore, governing parties distort spending for political ends in all simple equilibria without civil servants and, anticipating this manipulation, the voter refuses to fund any government expenditures.

5 No Civil Service Protections

In the absence of a civil service, the provision of public goods is impossible. Can the introduction of a competent but career-concerned civil service improve matters for the voter, even if civil servants' jobs are not protected from politicians by a tenure system? The following result shows that under these conditions the voter's demand for public goods can be partially met, but that politicians' power over civil servants' career prospects imposes substantial constraints on the production of public goods.

Proposition 3. *There exists tax $0 < \tilde{T} < \bar{T}$ such that, in all simple equilibria without civil service protections,*

1. $\tau^* = \tilde{T}$, and junior civil servants receive no rents (i.e., $\omega^*(\tau^*) = 0$) and do not engage in partisan activities (i.e., $\kappa^*(\tau^*, \omega^*(\tau^*)) = 0$).
2. Opposition parties that come to power never promote the junior civil servants from the defeated government (i.e., $\sigma_P^{s*}(t) \neq \sigma_{-P}^*(t - 1)$).

This result relies on Assumption 2, which is best presented and discussed following additional results below: this assumption guarantees that governing parties have sufficient electoral gains from partisan civil servants to provide them with the incentives to produce partisan goods (if possible, which is not the case in equilibrium given tax $\tau^* = \tilde{T}$).

In equilibrium, civil servants are nonpartisan. However, the threat of partisanship is the critical constraint that caps the scale of government activities below what the voter would prefer. In the absence of civil service protections, governing parties can use both hiring and compensation decisions to tie the fortunes of civil servants to that of the government, thereby generating incentives for junior civil servants to engage in partisan spending. The model reproduces a well-known feature of historical patronage systems, in that in all simple equilibria without civil service protections, individual civil servants are perfectly identified with a specific party: a governing party always promotes its junior civil servants to its senior positions if reelected (by assumption), and an opposition party that gains access to power never retains the defeated government's civil servants.

Politicians' discretion in hiring decisions gives them substantial leverage over civil servants, whether or not civil servants are partisan on the equilibrium path. If an equilibrium has civil servants engaging in partisan activities, then a governing party never has the incentive to hire a junior civil servant at t that is slated to be hired as a senior civil servant if the opposition party gains office at $t + 1$, as this drives up the incentive costs of partisanship. The wage offered to junior civil servants must still be high enough to overcome their cost K to partisanship, but they receive no compensation at all if the governing party loses power. If an equilibrium has nonpartisan civil servants, then politicians still benefit from their ability to control hiring because the competition between potential civil servants drives down the equilibrium wage (to 0 in equilibrium, given that civil servants produce public goods at no cost).

To understand the trade-offs that underly Proposition 3, suppose that a simple equilibrium has tax τ^* , and fix any period, any wage w set by the governing party and any partisan participation decision k by the junior civil servant, let $\mathbb{P}^*(\tau^*, w, k)$ be the expected reelection probability of the governing party, which is computed using equilibrium strategies and where the expectation is with respect to the partisan shock θ

and the valence shock ϕ_t . Wage w provides incentives for junior civil servants to engage in partisan activities if

$$\delta_c [\mathbb{P}^*(\tau^*, w, K) - \mathbb{P}^*(\tau^*, w, 0)] u(w) \geq K, \quad (1)$$

and, among those wages that lead to partisan junior civil servants, the lowest such wage $\underline{w}^{K,n}(\tau^*)$ is optimal for the governing party and is such that

$$\underline{w}^{K,n}(\tau^*) = \min \{0 \leq w \leq \tau^* : K = \delta_c [\mathbb{P}^*(\tau^*, w, K) - \mathbb{P}^*(\tau^*, w, 0)] u(w)\}.$$

The wage $\underline{w}^{K,n}(\tau^*)$ must balance two concerns. On the one hand, this wage cannot be too low because a junior civil servant is partisan if future compensation is attractive enough (i.e., (1) fails if $w \approx 0$ because $u(0) = 0$). On the other hand, this wage cannot be too high because if government resources are tied up in civil service compensation there is too little revenue left over for civil servants to successfully tip electoral outcomes through partisan spending (i.e., (1) fails if $w \approx \tau^*$ because $\mathbb{P}^*(\tau^*, \tau^*, K) - \mathbb{P}^*(\tau^*, \tau^*, 0) = 0$). In other words, to bind civil servants to them, governing parties need to divert public resources towards two competing but complementary ends: civil service payouts and partisan spending. Furthermore, the equilibrium government size τ^* is what determines whether these two ends can be met simultaneously or not. In particular, there exists tax \tilde{T} such that the wage $\underline{w}^{K,n}(\tau^*)$ is well-defined if and only if $\tau^* \geq \tilde{T}$. If we conjecture that there are multiple simple equilibria with different government sizes, we have that for $\tau^* \geq \tilde{T}$, $\underline{w}^{K,n}(\tau^*)$ is decreasing in τ^* . When the government has more resources, the conflict of interest between parties and civil servants is reduced, which follows from the complementarity of personal compensation and partisan spending in civil servants' incentives for partisan participation.

Given a conjectured simple equilibrium with tax $\tau^* \geq \tilde{T}$, do governing parties have an incentive to set wage $\underline{w}^{K,n}(\tau^*)$ in order to recruit civil servants' partisan help? In any simple equilibrium, the governing party chooses among two options: (i) divide tax revenue τ^* between wage bill $\underline{w}^{K,n}(\tau^*)$ and public spending $\tau^* - \underline{w}^{K,n}(\tau^*)$, which is partisan if $\theta = \bar{\theta}$, and (iii) set wage $w = 0$ and devote the entire tax revenue τ^* to public goods spending. Option (i) is optimal for the governing party if

$$1/2q[\bar{\theta} - 1] [T - \underline{w}^{K,n}(\tau^*)] \geq \underline{w}^{K,n}(\tau^*).$$

The lefthand side of this inequality is a measure of the electoral benefit of a partisan civil service, which contains both the net productivity of partisan spending and its amount. The righthand side is a measure of the opportunity cost of a partisan civil service, which consists of the public goods production foregone through the incentives for partisanship provided to civil servants. The following assumption is maintained in the rest of the paper.

Assumption 2. $1/2q[\bar{\theta} - 1] > \frac{\underline{w}^{K,n}(\tilde{T})}{\tilde{T} - \underline{w}^{K,n}(\tilde{T})}$ and $\tilde{T} < \bar{T}$.

Assumption 2 states that the benefit of partisan spending always exceed its cost so that, if civil servants can be induced to become partisan, then parties always want to do so. Furthermore, because the first part of Assumption 2 imposes that $\underline{w}^{K,n}(\tilde{T})$ is well-defined, we must have that $\tilde{T} \leq \bar{T}$. I make the (minimal) further assumption that the voter's demand for public goods \bar{T} is large enough that this inequality is strict: without civil service protections, the voter's demand for public goods cannot be met with a nonpartisan civil service. Because $\underline{w}^{K,n}(\tau^*)$ is decreasing in $\tau^* \geq \tilde{T}$, it follows that setting wage $\underline{w}^{K,n}(\tau^*)$ is optimal for all $\tau^* \geq \tilde{T}$ if the governing party expects the civil servant to become partisan.

If the voter sets tax $T \leq \tilde{T}$, all simple equilibria have $\omega^*(T) = 0$ and $\kappa^*(T, \omega^*(T)) = 0$, with all tax revenues being spent on public goods provision (the voter's payoff drops discontinuously at \tilde{T} , so that, by standard arguments, the civil servant must set $k = 0$ if $T = \tilde{T}$). In any such equilibria, the voter is better off than if no civil servant was present: the moral hazard problem between the parties and civil servants is severe enough that no partisan waste of public funds occurs. However, this only occurs if government revenue is low and public goods are correspondingly underprovided. In this case, relative to the benchmark without civil servants, the presence of a civil servant benefits the voter. The voter sets a tax levy low enough that the civil servant and the parties cannot come to an agreement regarding partisan activities, so that the voter benefits from the failure of that contractual arrangement.

If the voter sets tax $T > \tilde{T}$, all simple equilibria have $\omega^*(T) = \underline{w}^{K,n}(T) > 0$ and $\kappa^*(T, \omega^*(T)) = K$, with $T - \omega^*(T)$ of the tax revenue being diverted into partisan activities by junior civil servants if $\theta = \bar{\theta}$. For all such equilibria, the voter is worse off than if no civil servant was present. The civil servant ends up behaving in exactly the

same way as a party would behave alone, but the civil servant extracts compensation for her partisanship that are financed by foregone public goods provision.

Finally, to see that all simple equilibria must have $\tau^* = \tilde{T}$, note that the fact that $\Psi < 1$ ensures that the voter prefers setting \tilde{T} to setting any $T < \tilde{T}$, and Assumption 1 ensures that the voter prefers setting \tilde{T} to setting any $T > \tilde{T}$.

6 Civil Service Protections

My results in the last section established that the voter can leverage the frictions in the relationship between governing parties and unprotected civil servants to produce some public goods, but that the corruptibility of civil servants limits the scale of government activities. Can the introduction of civil service protections, by insulating civil servants' careers from politicians, resolve these issues and lead to efficient public goods production? The main result of this section shows that while civil service protections can lead the government to produce the public goods that the voter demands, they do not ensure that this production is efficient. Driving this result is the observation that while civil service tenure removes a critical instrument of partisan influence, governing parties can still attempt to recruit the help of civil servants through favourable agreements on their compensation. In equilibrium, this threat is warded off by inefficiently high wages in the civil service.

Before characterising simple equilibria with civil service protections, define

$$\hat{T} = \min\{T \geq 0 : \text{given tax } T, \text{ there exists a simple equilibrium with } \mathcal{X}^*(T) = \bar{T}\}.$$

In words, \hat{T} is the lowest tax T for which, fixing the voter's tax strategy to T , there exists a simple equilibrium (of the players' remaining strategies) in which public goods are provided at the efficient level. If \hat{T} is well-defined (recall that without civil service protections, no such \hat{T} exists because of there is partisan spending for all $T > \tilde{T}$), it will be such that $\hat{T} > \bar{T}$ because the compensation of civil servants must also be financed from \hat{T} .

Proposition 4. *In all voter-optimal simple equilibria with civil service protections, either*

1. $\tau^* = \hat{T}$, and equilibrium outcomes are identical to those without civil service protections.
2. $\tau^* = \hat{T}$, public goods are provided at the efficient level, and civil servants do not engage in partisan activities (i.e., $\kappa^*(\tau^*, \omega^*(\tau^*)) = 0$) but receive rents (i.e., $\omega^*(\tau^*) > 0$).

In all simple equilibria with civil service protections, civil servants are nonpartisan. To see this, fix any simple equilibrium, any period, any tax T set by the voter, wage w set by the governing party and any partisan participation decision k by the junior civil servant. Analogously to (1), wage w provides incentives for junior civil servants to engage in partisan activities if

$$\delta_c [\mathbb{P}^*(T, w, K) - \mathbb{P}^*(T, w, 0)] [u(w) - u(\omega^*(T))] \geq K. \quad (2)$$

However, because in equilibrium $T = \tau^*$ and $w = \omega^*(\tau^*)$, it follows that (2) is never satisfied so that $\kappa^*(\tau^*, \omega^*(\tau^*)) = 0$. Because the civil servant expects to be retained, and at the equilibrium wage, irrespective of the election's outcome, governing parties have no leverage over them. In other words, guaranteed tenure and promotion is incompatible with partisanship in a career-concerned civil service.

Even though nonpartisanship is a necessary condition for simple equilibria with civil service protections, politicians' ability to contract over compensation privately with civil servants imposes constraints on the equilibrium wage: this wage must be such that any attempt by governing parties to align civil servants to their interests must fail. This inflated equilibrium wage delivers rents for the civil service. These rents are not necessary for the civil servant to exert effort in her duties, as providing public goods is costless for her. Neither are these rents part of an efficiency wage, as the tenured civil servant cannot be fired for poor performance. Instead, inflated wages for civil servants is tolerated by voters as an indirect tool for controlling governing party's attempts to politicise the civil service.

In the absence of civil service protections, the government's power over civil service hiring, which linked political and bureaucratic turnover, also ensured that all simple equilibria shared the same equilibrium path. With civil service protections, the equilibrium wage sets civil servants' expectations about future outcomes and multiple equilibria are a robust feature of the model. In particular, given some simple equilibrium no

party would deviate to a wage lower than the equilibrium wage: in this case junior civil servants would strictly prefer for the government to be defeated, so that they would not provide any effort. Therefore, I focus on the simple equilibria that maximise the voter's payoff (over all simple equilibria).

Given any simple equilibrium, all tax revenues are spent on public goods and civil service compensation. Therefore, if we assume that the equilibrium tax is τ^* , identifying voter-optimal simple equilibria reduces to finding the lowest equilibrium wage $\underline{w}^{0,r}(\tau^*)$ that leave governing parties with no opportunity to privately recruit the help of civil servants. Given an equilibrium wage $\underline{w}^{0,r}(\tau^*)$, let

$$\underline{w}^{K,r}(\tau^*) = \arg \max_{0 \leq w \leq \tau^*} \delta_c [\mathbb{P}^*(\tau^*, w, K) - \mathbb{P}^*(\tau^*, w, 0)] [u(w) - u(\underline{w}^{0,r}(\tau^*))]$$

be the most attractive wage that the governing party can offer to the voter in exchange for partisan participation. As I show in the Appendix, Assumption 2 ensures that governing parties have the incentive to offer this wage to civil servants.¹⁰ To thwart all attempts at politicising the civil service, the voter-optimal equilibrium wage must be such that

$$\underline{w}^{0,r}(\tau^*) = \min \left\{ 0 \leq w \leq \tau^* : \delta_c [\mathbb{P}^*(\tau^*, \underline{w}^{K,r}(\tau^*), K) - \mathbb{P}^*(\tau^*, \underline{w}^{K,r}(\tau^*), 0)] \cdot [u(\underline{w}^{K,r}(\tau^*)) - u(w)] \leq K \right\}.$$

From Section 5, we have that $\underline{w}^{0,r}(\tau^*) = 0$ for all $\tau^* \leq \tilde{T}$, and I verify in the Appendix that $\underline{w}^{0,r}(\tau^*)$ is strictly increasing for $\tau^* > \tilde{T}$. As was the case in Section 5, larger governments facilitate civil service partisanship by reducing the agency costs faced by governments for recruiting civil servants. Without civil service protections civil servants are partisan in equilibrium and governing parties extract the rents from larger government revenues, which leads to decreasing civil service compensation for $\tau^* > \tilde{T}$. With civil service protections civil servants are not partisan in equilibrium, but larger government revenues still generate gains from partisanship. To ward off the threat of partisan spending, these gains are delivered as rents to civil servants through inflated compensation.

¹⁰This depends on an incentive constraint for governing parties that is quite similar to the one in Section 5, except that it also depends on the equilibrium wage $\underline{w}^{0,r}(\tau^*)$. Additionally, CARA utility for civil servants is used here as it simplifies computations.

I also show that wage $\underline{w}^{0,r}(\tau^*)$ is strictly concave for $\tau^* > \tilde{T}$, which implies that the voter's payoff from voter-optimal equilibria is strictly convex.¹¹ Therefore, voter-optimal simple equilibria either (i) have partial public goods provision and minimal civil service compensation (i.e., $\tau^* = \tilde{T}$ and $\omega^*(\tau^*) = 0$) or (ii) have full public goods provision and inflated civil service compensation (i.e., $\tau^* = \hat{T}$ and $\omega^*(\tau^*) = \underline{w}^{0,r}(\tau^*)$). The voter cannot be made worse off by civil service protections, and he is made strictly better off if he chooses to have public goods provided at the efficient level. A key determinant of the voter's strict preference for a protected civil service is his demand \bar{T} for public goods.

Proposition 5. *There exists a demand for public goods $T^R > 0$ such that the voter strictly prefers a protected civil service if and only if $\bar{T} > T^R$.*

Notice that \tilde{T} , the highest tax revenue that leaves the government sufficiently underfunded that governing parties cannot recruit the help of civil servants, is determined solely by civil servants' incentives: it depends only on the preferences of civil servants and on the effect of partisan spending on government reelection. As the voter's demand \bar{T} grows, there is a growing gap between the scale of government activities that is inconsistent with collusion between politicians and civil servants and the voter's ideal scale \bar{T} of government spending. Civil service reform should be expected when this gap is large. While this reform is followed by an expansion of taxation and government spending, as well as favourable compensation and working conditions for civil servants, the voter is strictly better off.

7 Conclusion

The main message of this paper is simple: isolating civil servants from politicians through civil service protections is a necessary condition for expansions in government activity. However, the benefits of civil service reforms are not unambiguous. Even if governments lose their ability to hire and fire civil servants at will, their position as employers leaves them with considerable power over the working conditions of the

¹¹This is the other claim whose verification depends on the assumption of CARA utility for civil servants.

civil service. Tenure rules come at a cost to voters, because protecting the jobs of civil servants is not equivalent to protecting the civil service from partisan influence. Avoiding the misallocation of public funds requires accentuating the frictions between politicians and civil servants. On the one hand, this can be achieved by starving the government of tax revenue, which limits the inducements that politicians can offer to civil servants. On the other hand, large governments generate potential rents that politicians and civil servants can capture through collusion, which voters can thwart only by preemptively inflating civil service compensation.

In this paper, the channels through which civil servant partisanship affects voters' evaluations of government performance are modeled in reduced form. This is appropriate for my purpose, which is to focus on the relationship between government size and civil service protections. However, extending my model to include a more detailed specification of partisan activities by civil servants is a fruitful avenue for future research. In particular, in my model civil service protections are reduced to tenure and nonpartisan hiring. While such rules are the cornerstones of modern civil service systems, these usually feature much more specific prescriptions that regulate civil servants' behaviour, such as bans on political speech or rules that limit politicians' involvement in managerial issues within the civil service. Therefore, a richer modeling of civil servants' activities would lead to a correspondingly richer set of evaluations of and predictions about the effects of the detailed institutional features of civil service protections.

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A Appendix

General properties of simple equilibria. Here, I derive the properties of simple equilibria that do not depend on whether civil servants are protected or not. Most of these results deal with the equilibrium effort and spending decisions of civil servants that are listed in Proposition 1, but I also present results on wage strategies for parties and tax strategies for voters that set the stage for the more specific equilibrium results before and after civil service reform, which are listed in Propositions 3 and 4.

Fix a simple equilibrium with tax T , as well as some period t and partisan shock θ . Define

$$\begin{aligned} \mathcal{X}^*(T) &= \lambda^*(\omega^*(T)) \mathbb{E} \left[\frac{1}{2} \chi^*(T, \omega^*(T), \kappa(T, \omega^*(T)), \theta) \right. \\ &\quad \left. + \frac{1}{2} \min\{T - \omega^*(T), \bar{T}\} \right], \text{ and} \\ \mathcal{Y}^*(T) &= \frac{1}{2} \lambda^*(w) \mathbb{E} [\theta \gamma^*(T, \omega^*(T), \kappa(T, \omega^*(T)), \theta)], \end{aligned}$$

which are, respectively, the expected aggregate production of public and partisan goods in this simple equilibrium given tax T (where the expectation is taken with respect to the partisan shock θ).

Step 1. To study the reelection decision of the voter, fix a simple equilibrium with tax T , and consider the end of some period t with party P in power with signal Z_t . Given simple strategies, the voter's payoff $U_v^P(T, Z_t)$ from returning party P to power for period $t + 1$ depends only on T and Z_t , and the voter's payoff from electing opposition party $-P$ is history-independent and is given by $U_v^{-P}(T)$. We have that

$$U_v^P(T, Z_t) = \delta_v \left[\mathbb{E}[\phi_t^P | Z_t] + \mathcal{X}^*(T) - \Psi T + \delta_v \mathbb{E} [\max \{U_v^P(T, Z_{t+1}), U_v^{-P}(T)\}] \right],$$

where I use the fact that $\mathbb{E}[\phi_{t+1}^P | Z_t] = 0$. We also have that

$$\begin{aligned} U_v^{-P}(T) &= \delta_v \left[\mathbb{E}[\Phi_{t+1}^{-P}] + \mathcal{X}^*(T) - \Psi T + \delta_v \mathbb{E} \left[\max \{ U_v^{-P}(T, Z_{t+1}), U_v^P(T) \} \right] \right] \\ &= \delta_v \left[\mathcal{X}^*(T) - \Psi T + \delta_v \mathbb{E} \left[\max \{ U_v^P(T, Z_{t+1}), U_v^{-P}(T) \} \right] \right], \end{aligned}$$

where the second equality follows from $\mathbb{E}[\Phi_{t+1}^{-P}] = 0$ and from the independence of civil servant's strategies from party identities. It follows that the voter's reelection strategy is such that $\rho^*(T, Z_t) = 1$ only if $\mathbb{E}[\phi_t^P | Z_t] \geq 0$, which, because

$$\mathbb{E}[\phi_t^P | Z_t] = Z_t - \phi_{t-1}^P - [\mathcal{X}^*(T) + \mathcal{Y}^*(T)],$$

follows if and only if

$$Z_t \geq \phi_{t-1}^P + \mathcal{X}^*(T) + \mathcal{Y}^*(T). \quad (3)$$

Step 2. To study the effort and public spending decisions of junior civil servants, fix a simple equilibrium and consider a period t in which party P is newly elected and has tax revenue T . Suppose that the party hires junior civil servant j in that stint and that it commits to wage w . Finally, suppose that civil servant j has paid partisan cost $k \in \{0, K\}$ and that the current partisan shock is θ . It follows that the effort and spending decision of civil servant j must be a solution to

$$\begin{aligned} \max_{\ell \in \{0,1\}, x, y \geq 0} \delta_c \left[\mathbb{P}[P_{t+1} = P] u(w) + \mathbb{P}[P_{t+1} = -P] \mathbb{I}_{\sigma_{-P}^{**}(t+1)=j} u(\omega^*(T)) \right] \\ \text{subject to } x + y \leq T - w. \end{aligned}$$

Because the signal received by the voter after period t is

$$Z_t = \Phi_t^P + \ell \left[1/2 \left[\min\{x, \bar{T}\} + \theta_t \min\{y, \bar{T}\} \right] + 1/2 \left[\min\{T - w, \bar{T}\} \right] \right],$$

it follows from (3) that

$$\begin{aligned} \mathbb{P}[P_{t+1} = P] &= \mathbb{P}[Z_t \geq 0] \\ &= \mathbb{P} \left[\phi_t^P \geq \mathcal{X}^*(T) + \mathcal{Y}^*(T) - \ell \left[1/2 [x + \theta y] + 1/2 \min\{T - w, \bar{T}\} \right] \right] \\ &= \frac{1}{2\tilde{\phi}} \left[\tilde{\phi} - \left[\mathcal{X}^*(T) + \mathcal{Y}^*(T) - \ell \left[1/2 [\min\{x, \bar{T}\} + \theta \min\{y, \bar{T}\}] \right. \right. \right. \\ &\quad \left. \left. \left. + 1/2 \min\{T - w, \bar{T}\} \right] \right] \right]. \end{aligned} \quad (4)$$

Notice that for any value of k , the probability that P is reelected is increasing in the effort ℓ , public goods spending $x < \bar{T}$ and partisan spending $y < \bar{T}$. It follows that, in any simple equilibrium, the effort decisions of junior civil servants satisfy

$$\lambda^*(T, w, k, \theta) = \begin{cases} 1 & \text{if } u(w) > \mathbb{I}_{\sigma_{-P}^{s*}(t+1)=j} u(\omega^*(T)), \\ 0 & \text{if } u(w) < \mathbb{I}_{\sigma_{-P}^{s*}(t+1)=j} u(\omega^*(T)), \end{cases} \quad (5)$$

with $\lambda^*(T, w, k, \theta) \in \{0, 1\}$ otherwise, and the spending decisions of junior civil servants satisfy

$$(\chi^*(T, w, 0, \theta), \gamma^*(T, w, 0, \theta)) = \begin{cases} (\min\{T - w, \bar{T}\}, 0) & \text{if } u(w) > \mathbb{I}_{\sigma_{-P}^{s*}(t+1)=j} u(\omega^*(T)) \\ (x, 0) \text{ for any } 0 \leq x \leq T & \text{otherwise,} \end{cases} \quad (6)$$

and

$$(\chi^*(T, w, 0, \theta), \gamma^*(T, w, 0, \theta)) = \begin{cases} (0, \min\{T - w, \bar{T}\}) & \text{if } u(w) > \mathbb{I}_{\sigma_{-P}^{s*}(t+1)=j} u(\omega^*(T)) \\ (x, y) \text{ for any } x, y \geq 0 \text{ with } x + y \leq T & \text{otherwise.} \end{cases} \quad (7)$$

A final claim is that junior civil servants provide effort on the equilibrium path of all simple equilibria, i.e., $\lambda^*(\tau^*, \omega^*(\tau^*), \kappa^*(\tau^*), \theta) = 1$. Note that in any simple equilibrium with $\tau^* = 0$, having junior civil servants provide effort is without loss of generality for equilibrium payoffs. Now suppose, towards a contradiction, that $\tau^* > 0$ but that junior civil servants do not provide effort in equilibrium. It follows that $\mathcal{X}^*(\tau^*) = 0$, so that the voter is made strictly better off by setting $T = 0$, yielding the desired contradiction. *Step 3.* To study the optimal partisan participation decisions of civil servants, fix a simple equilibrium and consider a period t in which party P is newly elected and has tax revenue T . Suppose that the party hires junior civil servant j and that it commits to wage w . Given equilibrium effort decision λ^* and spending decisions (χ^*, γ^*) as defined by (5), (6) and (7), define

$$\mathbb{P}^*(T, w, k, \theta) = \mathbb{P}[P_{t+1} = P | k, \theta],$$

which is the reelection probability of party P following the public spending stage of period t conditional on partisan participation decision k of the junior civil servant and

partisan shock realisation θ . Furthermore, let the unconditional reelection probability of party P be

$$\mathbb{P}^*(T, w, k) = q\mathbb{P}^*(T, w, k, \bar{\theta}) + (1 - q)\mathbb{P}^*(T, w, k, \underline{\theta}).$$

The payoff to junior civil servant j from engaging in partisan activity is

$$u(w) - K + \delta_c \left[\mathbb{P}^*(T, w, K)u(w) + (1 - \mathbb{P}^*(T, w, K))\mathbb{I}_{\sigma_{-P}^{s^*}(t+1)=j}u(\omega^*(T)) \right],$$

whereas her payoff from not engaging in partisan activity is

$$u(w) + \delta_c \left[\mathbb{P}^*(T, w, 0)u(w) + (1 - \mathbb{P}^*(T, w, 0))\mathbb{I}_{\sigma_{-P}^{s^*}(t+1)=j}u(\omega^*(T)) \right].$$

It follows that, in any simple equilibrium, junior civil servants' partisan participation strategies satisfy

$$\kappa^*(T, w) = \begin{cases} K & \text{if } K < \delta_c [\mathbb{P}^*(T, w, K) - \mathbb{P}^*(T, w, 0)] \left[u(w) - \mathbb{I}_{\sigma_{-P}^{s^*}(t+1)=j}u(\omega^*(T)) \right] \\ 0 & \text{if } K > \delta_c [\mathbb{P}^*(T, w, K) - \mathbb{P}^*(T, w, 0)] \left[u(w) - \mathbb{I}_{\sigma_{-P}^{s^*}(t+1)=j}u(\omega^*(T)) \right], \end{cases} \quad (8)$$

with $\kappa^*(T, w) \in \{0, K\}$ otherwise.

For future reference, note that the gain in reelection probability due to partisan activity, $\mathbb{P}^*(T, w, K) - \mathbb{P}^*(T, w, 0)$, has a simple expression. To see this, fix any simple equilibrium, any tax T and any wage w . We have that

$$\begin{aligned} \mathbb{P}^*(T, w, K) = & \frac{1}{2\tilde{\phi}} \left[\tilde{\phi} - \left[\mathcal{X}^*(T) + \mathcal{Y}^*(T) - \lambda^*(w)\mathbb{E}[1/2[\chi^*(T, w, K, \theta) + \theta\gamma^*(T, w, K, \theta)]] \right. \right. \\ & \left. \left. + 1/2[\min\{T - w, \bar{T}\}] \right] \right], \end{aligned}$$

and

$$\begin{aligned} \mathbb{P}^*(T, w, 0) = & \frac{1}{2\tilde{\phi}} \left[\tilde{\phi} - \left[\mathcal{X}^*(T) + \mathcal{Y}^*(T) - \lambda^*(w)\mathbb{E}[1/2[\chi^*(T, w, 0, \theta) + \theta\gamma^*(T, w, 0, \theta)]] \right. \right. \\ & \left. \left. + 1/2\min\{T - w, \bar{T}\}] \right] \right], \end{aligned}$$

so that computations yield

$$\mathbb{P}^*(T, w, K) - \mathbb{P}^*(T, w, 0) = \frac{\lambda^*(w)}{2\tilde{\phi}} [1/2q[\bar{\theta} - 1] \min\{T - w, \bar{T}\}]. \quad (9)$$

Step 4. To study the wage decisions of governing parties (their hiring decisions cannot be treated conveniently without specifying the civil servant protection regime), fix a simple equilibrium and consider a period t in which party P is newly elected and has tax revenue T . Let $U_P^P(T, w)$ denote the payoff to party P if it commits to wage w . Also, let U_P^{-P} denote the payoff to party P if it loses power to the opposition party. It can be verified that

$$U_P^P(T, w) = \frac{1}{1 - \delta_p \mathbb{P}^*(T, w, \kappa^*(T, w))} [1 + \delta_p (1 - \mathbb{P}^*(T, w, \kappa^*(T, w))) U_P^{-P}],$$

where κ^* is given by (8). Furthermore, $U_P^P(T, w)$ is strictly increasing in $\mathbb{P}^*(T, w, \kappa^*(T, w))$ because $1 > U_P^{-P}(1 - \delta_p)$ (recall that both parties' benefit from holding office in any period is 1). Therefore, the wage strategy of party P will maximise its probability of being reelected in period t .

Given tax T , define

$$\begin{aligned} \underline{w}^K(T) &= \min\{w \geq 0 : \kappa^*(T, w) = K\}, \text{ and} \\ \underline{w}^0(T) &= \min\{w \geq 0 : \lambda^*(w) = 1\}. \end{aligned} \tag{10}$$

Some remarks follow. First, for a given simple equilibrium and a given tax T , neither $\underline{w}^K(T)$ nor $\underline{w}^0(T)$ are necessarily well-defined. Second, from (5) and (8), $\underline{w}^0(T)$ is well-defined whenever $\underline{w}^K(T)$ is well-defined. Third, again from (5) and (8), we have that $\underline{w}^0(T) < \underline{w}^K(T)$ when both are well-defined. Fourth, if $\underline{w}^0(T)$ is not well-defined, then the governing party is indifferent between all wage offers to civil servants. Also, it will never be optimal for the voter to set $T > 0$ such that $\lambda^*(\omega^*(T)) = 0$. Fifth, if only $\underline{w}^0(T)$ is well-defined, then because by (4), (6) and (7) the governing party's winning probability is decreasing in the wage w , it follows that $\underline{w}^0(T)$ is optimal for that party. Sixth, if both $\underline{w}^0(T)$ and $\underline{w}^K(T)$ are well-defined, then the governing party's optimal wage policy can be reduced to comparing the probabilities of winning associated to (i) setting wage $w = \underline{w}^K(T) > 0$ and having civil servants engage in partisan activities (if such a wage exists) and (ii) setting wage $w = \underline{w}^0(T)$ and having civil servants not engage in partisan activities.

Given any simple equilibrium in which both $\underline{w}^0(T)$ and $\underline{w}^K(T)$ are well-defined, we

have that

$$\begin{aligned} \mathbb{P}^*(T, \underline{w}^K(T), K) = & \frac{1}{2\tilde{\phi}} \left[\tilde{\phi} - \left[\mathcal{X}^*(T) + \mathcal{Y}^*(T) - \mathbb{E}[1/2[\chi^*(T, \underline{w}^K(T), K, \theta) \right. \right. \\ & \left. \left. + \theta\gamma^*(T, \underline{w}^K(T), K, \theta)] + 1/2 \min\{T - \underline{w}^K(T), \bar{T}\}] \right] \right], \end{aligned}$$

and

$$\begin{aligned} \mathbb{P}^*(T, \underline{w}^0(T), 0) = & \frac{1}{2\tilde{\phi}} \left[\tilde{\phi} - \left[\mathcal{X}^*(T) + \mathcal{Y}^*(T) - \mathbb{E}[1/2[\chi^*(T, \underline{w}^0(T), 0, \theta) \right. \right. \\ & \left. \left. + \theta\gamma^*(T, \underline{w}^0(T), 0, \theta)] + 1/2 \min\{T - \underline{w}^0(T), \bar{T}\}] \right] \right], \end{aligned}$$

so that computations yield that

$$\begin{aligned} \mathbb{P}^*(T, \underline{w}(T), K) - \mathbb{P}^*(T, \underline{w}^0(T), 0) = & \frac{1}{2\tilde{\phi}} \left[1/2q[\bar{\theta} - 1] \min\{T - \underline{w}^K(T), \bar{T}\} \right. \\ & \left. - [\min\{T - \underline{w}^0(T), \bar{T}\} - \min\{T - \underline{w}^K(T), \bar{T}\}] \right]. \end{aligned}$$

It follows that, in this case, the parties' wage policies are such that

$$\omega^*(T) = \begin{cases} \underline{w}^K(T) & \text{if } 1/2q[\bar{\theta} - 1] > \frac{\min\{T - \underline{w}^0(T), \bar{T}\} - \min\{T - \underline{w}^K(T), \bar{T}\}}{\min\{T - \underline{w}^K(T), \bar{T}\}}, \\ \underline{w}^0(T) & \text{if } 1/2q[\bar{\theta} - 1] < \frac{\min\{T - \underline{w}^0(T), \bar{T}\} - \min\{T - \underline{w}^K(T), \bar{T}\}}{\min\{T - \underline{w}^K(T), \bar{T}\}}, \end{cases} \quad (11)$$

with $\omega^*(T) \in \{\underline{w}^K(T), \underline{w}^0(T)\}$ otherwise.

Step 5. To study the optimal tax revenue delivered to governments by voters, fix a simple equilibrium and consider a period t in which party P is newly elected and has previous competence ϕ_{t-1}^P (which is 0 in expectation if P was in opposition in $t-1$). Let $U_v(\phi_{t-1}^P, T)$ be the voter's payoff at t if he delivers tax revenue T to the government. We have that

$$\begin{aligned} U_v(\phi_{t-1}^P, T) = & \phi_{t-1}^P + \mathcal{X}^*(T) - \Psi T + q\delta_v \mathbb{E}[U_v(\phi_t, T) | \theta = \bar{\theta}] \\ & + (1 - q)\delta_v \mathbb{E}[U_v(\phi_t, T) | \theta = \underline{\theta}], \end{aligned}$$

where I use the fact that $\mathbb{E}[\phi_t^P | \phi_{t-1}] = 0$. Also, I omit the party superscript on competence ϕ_t in the last two terms because the expectation is also taken with respect to electoral outcomes, so that if party P is not reelected the relevant competence term will

belong to party $-P$. Notice that $U_v(\phi_{t-1}^P, T) - \phi_{t-1}^P$ is independent of ϕ_{t-1}^P . In words, although the voter benefits from a higher competence ϕ_{t-1}^P in period t , it does not affect the governing party's performance at t , or the behaviour of future governing parties. Define $V_v(T) = U_v(\phi_{t-1}^P, T) - \phi_{t-1}^P$, so that

$$\begin{aligned} V_v(T) &= \mathbb{E}[\mathcal{X}^*(T)] - \Psi T + q\delta_v \mathbb{E}[V_v(T) + \phi_t | \theta = \bar{\theta}] + (1-q)\delta_v \mathbb{E}[V_v(T) + \phi_t | \theta = \underline{\theta}] \\ &= \frac{1}{1-\delta_v} \left[\mathbb{E}[\mathcal{X}^*(T)] - \Psi T + q\delta_v \mathbb{E}[\phi_t | \theta = \bar{\theta}] + (1-q)\delta_v \mathbb{E}[\phi_t | \theta = \underline{\theta}] \right], \end{aligned}$$

Define

$$\begin{aligned} \Delta^*(T) &= \chi^*(T, \omega^*(T), \kappa^*(T, \omega^*(T)), \bar{\theta}) + \bar{\theta} \gamma^*(T, \omega^*(T), \kappa^*(T, \omega^*(T)), \bar{\theta}) \\ &\quad - [\chi^*(T, \omega^*(T), \kappa^*(T, \omega^*(T)), \underline{\theta}) + \underline{\theta} \gamma^*(T, \omega^*(T), \kappa^*(T, \omega^*(T)), \underline{\theta})] \\ &\geq 0, \end{aligned}$$

which is the difference in signals received by the voter conditional on partisan shock $\bar{\theta}$ or $\underline{\theta}$ being realised. Note that by (3) we have that conditional on $\theta = \bar{\theta}$, the governing party is reelected whenever $\phi_t^P \geq -1/2\lambda^*(\omega^*(T))(1-q)\Delta^*(T)$, while conditional on $\theta_t = \underline{\theta}$, the governing party is reelected whenever $\phi_t \geq 1/2\lambda^*(\omega^*(T))q\Delta^*(T)$. Therefore, we have that

$$\begin{aligned} \mathbb{E}[\phi_t | \theta_t = \bar{\theta}] &= \int_{-\tilde{\phi}}^{-1/2\lambda^*(\omega^*(T))(1-q)\Delta^*(T)} \mathbb{E}[\phi_t^{-P}] d\frac{\phi_t}{2\tilde{\phi}} + \int_{-1/2\lambda^*(\omega^*(T))(1-q)\Delta^*(T)}^{\tilde{\phi}} \phi_t d\frac{\phi_t}{2\tilde{\phi}} \\ &= \frac{1}{4\tilde{\phi}} \left[\tilde{\phi}^2 - [1/2\lambda^*(\omega^*(T))(1-q)\Delta^*(T)]^2 \right], \text{ and} \\ \mathbb{E}[\phi_t | \theta_t = \underline{\theta}] &= \int_{-\tilde{\phi}}^{1/2\lambda^*(\omega^*(T))q\Delta^*(T)} \mathbb{E}[\phi_t^{-P}] d\frac{\phi_t}{2\tilde{\phi}} + \int_{\lambda^*(1/2\omega^*(T))q\Delta^*(T)}^{\tilde{\phi}} \phi_t d\frac{\phi_t}{2\tilde{\phi}} \\ &= \frac{1}{4\tilde{\phi}} \left[\tilde{\phi}^2 - [1/2\lambda^*(\omega^*(T))q\Delta^*(T)]^2 \right]. \end{aligned}$$

It follows that

$$V_v(T) = \frac{1}{1-\delta_v} \left[\mathcal{X}^*(T) - \Psi T + \frac{\delta_v}{4\tilde{\phi}} \left[\tilde{\phi}^2 - q(1-q)[1/2\lambda^*(\omega^*(T))\Delta^*(T)]^2 \right] \right]. \quad (12)$$

The first two terms are the voter's expected benefits and costs from public spending and the third term is his payoff from party selection. It follows that given any valence

shock ϕ_{t-1}^P for the governing party P at time t , the tax revenue allocated to parties must be such that

$$\tau^* \in \arg \max_{T \geq 0} V_v(T).$$

Notice that if there exists tax \hat{T} such that $\chi^*(\hat{T}, \omega^*(\hat{T}), \kappa^*(\hat{T}, \omega^*(\hat{T})), \underline{\theta}) = \bar{T}$, then for all $T > \hat{T}$ we have that $\mathcal{X}^*(\hat{T}) = \mathcal{X}^*(T)$ and $\Delta^*(\hat{T}) = \Delta^*(T)$, so that $V_v(\hat{T}) < V_v(T)$. Because no such choice \hat{T} can be optimal for the voter in any simple equilibrium, in what follows we restrict attention to taxes T and wages w such that $T - w \leq \bar{T}$.

Simple equilibria without civil service protections. Here, I characterise simple equilibria without civil service protections, which provides the proofs for the results listed in Proposition 3.

Step 1. I characterise the hiring strategies of governing parties. First, note that, given any tax T , a simple equilibrium has junior civil servants engaging in partisan activities (i.e., $\kappa^*(\tau^*, \omega^*(T)) = K$) only if there are no civil service protections, and furthermore in this case it must be that $\sigma_{-P}^{s*}(t+1) \neq \sigma_P^*(t)$. Both claims follow immediately by evaluating (8) at wage $w = \omega^*(T)$. Second, note that if there are no civil service protections and a simple equilibrium has junior civil servants not engaging in partisan activities (i.e., $\kappa^*(T, \omega^*(T)) = 0$), then it must be the case that $\omega^*(T) = 0$. To see this suppose, towards a contradiction, that $\kappa^*(T, \omega^*(T)) = 0$ but that $\omega^*(T) > 0$. Consider a deviation by party P at t in which it hires junior civil servant $j' \in I_t$ that is never hired in equilibrium (i.e., such that $j' \notin \{\sigma_P^*(t), \sigma_P^{s*}(t+1)\}$ for all P , and note that such a civil servant must exist because there is a continuum of them). By (5) this civil servant would strictly prefer setting $\ell = 1$ for any wage $w = \epsilon$, so that she must set $\ell = 1$ for wage $w = 0$. By (4) and (6), this deviation leads to higher public goods provision and hence it strictly increases the winning probability of party P , yielding the desired contradiction. Third, no governing party has an incentive to deviate from these hiring strategies. The only relevant such deviation would be for a governing party P at t to hire, and commit to retain in case of reelection, a junior civil servant j that would be hired in a senior position by party $-P$ at time $t+1$. However, because this civil servant expects wage $\omega^*(T)$ from $-P$, and the junior civil servant hired in equilibrium by P expects wage 0 in that eventuality, the incentive costs for P are always lower under its equilibrium hiring strategy. Fourth, as long as there is some tax T such that

$\omega^*(T) > 0$, these hiring strategies are uniquely optimal. That there exist such values of T will follow from Assumption 2 and the arguments leading to (15) below. Finally, let $\underline{w}^{0,n}(T)$ denote the minimal wage $\underline{w}^0(T)$ that ensure public goods provision from (10), evaluated in a simple equilibrium without civil service protections. Note that the two previous claims ensure that, in any simple equilibrium without civil service protections (i.e., whether it has partisan participation by civil servants or not), we can set $\underline{w}^{0,n}(T) = 0$ for all taxes T .

Step 2. To study optimal civil servant partisanship and wages, note that it follows from the previous steps that, in any simple equilibrium without civil service protections, junior civil servants' partisan participation strategies (8) can be rewritten as

$$\kappa^*(T, w) = \begin{cases} K & \text{if } K < \delta_c [\mathbb{P}^*(T, w, K) - \mathbb{P}^*(T, w, 0)] u(w), \\ 0 & \text{if } K > \delta_c [\mathbb{P}^*(T, w, K) - \mathbb{P}^*(T, w, 0)] u(w), \end{cases}$$

with $\kappa^*(T, w) \in \{0, K\}$ otherwise. Furthermore, let $\underline{w}^{K,n}(T)$ denote the minimal wage $\underline{w}^K(T)$ that ensure the production of partisan goods from (10), evaluated in a simple equilibrium without civil service protections. If well-defined, we have that

$$\underline{w}^{K,n}(T) = \min \{w \geq 0 : K = \delta_c [\mathbb{P}^*(T, w, K) - \mathbb{P}^*(T, w, 0)] u(w)\}. \quad (13)$$

It remains to determine the conditions under which $\underline{w}^{K,n}(T)$ is well-defined. Notice that

$$K > \delta_c [\mathbb{P}^*(T, 0, K) - \mathbb{P}^*(T, 0, 0)] u(0),$$

which follows because $u(0) = 0$, and that

$$K > \delta_c [\mathbb{P}^*(T, T, K) - \mathbb{P}^*(T, T, 0)] u(T),$$

which follows because $\chi^*(T, T, k, \theta) = \gamma^*(T, T, k, \theta) = 0$ for all k and θ . Therefore, $\underline{w}^{K,n}(T)$ is well-defined if and only if

$$W(T) \equiv \max_{0 \leq w \leq T} \delta_c [\mathbb{P}^*(T, w, K) - \mathbb{P}^*(T, w, 0)] u(w) \geq K. \quad (14)$$

By the envelope theorem, at an optimal solution $0 < w^* < T$ to the above problem we

have that

$$\begin{aligned}
W'(T) &= \frac{\partial}{\partial T} [\delta_c [\mathbb{P}^*(T, w^*, K) - \mathbb{P}^*(T, w^*, 0)] u(w^*)] \\
&= \frac{\delta_c}{2\tilde{\phi}} [1/2q[\bar{\theta} - 1]] u(w^*) \\
&> 0.
\end{aligned}$$

Therefore, if $\underline{w}^{K,n}(T)$ is well-defined for some tax revenue T , $\underline{w}^{K,n}(T')$ must be well-defined for any $T' > T$. Furthermore, because $W(0) = 0$, there are two cases: (i) $W(\bar{T}) < K$, so that $\underline{w}^{K,n}(T)$ is never defined; (ii) there exists tax revenue $0 < \tilde{T} \leq \bar{T}$ such that $\underline{w}^{K,n}(T)$ is well-defined if and only if $T \geq \tilde{T}$. As I show below, in any simple equilibrium under case (ii) in which the voter sets $T = \tilde{T}$, it must be the case that civil servants are nonpartisan (even though they are indifferent). Therefore, to unify notation, I will also define $\tilde{T} = \bar{T}$ under case (i), although here given this tax revenue junior civil servants strictly prefer to be nonpartisan.

A claim is that $\underline{w}^{K,n}(T)$ is decreasing for $T \geq \tilde{T}$: in the absence of civil service protections, when public resources are higher, the conflict of interest between parties and civil servants is reduced. To see this, suppose, towards a contradiction, that $T' > T \geq \tilde{T}$ but that $\underline{w}^{K,n}(T') > \underline{w}^{K,n}(T)$. By (13), we have that

$$\begin{aligned}
K &= \frac{1}{2\tilde{\phi}} [1/2q[\bar{\theta} - 1][T' - \underline{w}^{K,n}(T')]] u(\underline{w}^{K,n}(T')) \\
&= \frac{1}{2\tilde{\phi}} [1/2q[\bar{\theta} - 1][T - \underline{w}^{K,n}(T)]] u(\underline{w}^{K,n}(T)).
\end{aligned}$$

It follows that

$$\frac{1}{2\tilde{\phi}} [1/2q[\bar{\theta} - 1][T' - \underline{w}^{K,n}(T)]] u(\underline{w}^{K,n}(T)) > K,$$

and, because

$$\frac{1}{2\tilde{\phi}} [1/2q[\bar{\theta} - 1]T'] u(0) = 0,$$

there must exist $w' < \underline{w}^{K,n}(T)$ such that

$$\frac{1}{2\tilde{\phi}} [1/2q[\bar{\theta} - 1][T' - w']] u(w') = K,$$

which contradicts (13).

We can rewrite the parties' wage policies from (11) as

$$\omega^*(T) = \begin{cases} \underline{w}^{K,n}(T) & \text{if } T \geq \tilde{T} \text{ and } 1/2q[\bar{\theta} - 1] > \frac{\underline{w}^{K,n}(T)}{T - \underline{w}^{K,n}(T)}, \\ 0 & \text{if } T < \tilde{T} \text{ or if } T \geq \tilde{T} \text{ and } 1/2q[\bar{\theta} - 1] < \frac{\underline{w}^{K,n}(T)}{T - \underline{w}^{K,n}(T)}, \end{cases} \quad (15)$$

with $\omega^*(T) \in \{0, \underline{w}^{K,n}(T)\}$ otherwise. Note that $\frac{\underline{w}^{K,n}(T)}{T - \underline{w}^{K,n}(T)}$ is decreasing for $T \geq \tilde{T}$ because $\underline{w}^{K,n}(T)$ is decreasing, so that, by Assumption 2, $1/2q[\bar{\theta} - 1] > \frac{\underline{w}^{K,n}(T)}{T - \underline{w}^{K,n}(T)}$ for all $T \geq \tilde{T}$.

Step 3. To study the optimal taxation decision of the voter, a first claim is that if $\tau^* \leq \tilde{T}$, then it must be that $\tau^* = \tilde{T}$. Referring to the voter's payoff from (12), note that for any $T \leq \tilde{T}$, we have that $\Delta^*(T) = 0$, so that

$$V_v(T) = T[1 - \Psi] + \frac{\delta_v \tilde{\phi}}{4} + \delta_v V_t(\tau^*),$$

which is maximised at $T = \tilde{T}$ because $\Psi < 1$.

A second claim is that there cannot be a simple equilibrium with $\tau^* > \tilde{T}$. To see this, note that for any $T > \tilde{T}$ such that $T - \underline{w}^{K,n}(T) \leq \bar{T}$, we have that $\Delta^*(T) = [\bar{\theta} - 1][T - \underline{w}^{K,n}(T)] > 0$. Suppose, towards a contradiction, that $\tau^* > \tilde{T}$. It follows that

$$\begin{aligned} V_v(\tau^*) &= \frac{1}{1 - \delta_v} \left[(1 - 1/2q)[T - \underline{w}^{K,n}(T)] + \frac{\delta_v}{4\tilde{\phi}} \left[\tilde{\phi}^2 - 1/2q(1 - q)\Delta^*(\tau^*)^2 \right] - \Psi\tau^* \right] \\ &< \frac{1}{1 - \delta_v} \left[[1 - 1/2q - \Psi]\tau^* + \frac{\delta_v \tilde{\phi}}{4} \right] \\ &< \frac{1}{1 - \delta_v} \left[\frac{\delta_v \tilde{\phi}}{4} \right], \end{aligned}$$

where the first inequality follows because, given $\tau^* > \tilde{T}$, we have that both $\underline{w}^{K,n}(\tau^*) > 0$ and $\Delta^*(\tau^*) = [\bar{\theta} - 1][\tau^* - \underline{w}^{K,n}(\tau^*)] > 0$, and the second inequality follows by Assumption 1. Notice that the expression following the final inequality is the voter's payoff from setting $T = 0$, yielding the desired contradiction. Finally, the previous arguments establish that $\tau^* = \tilde{T}$.

Simple equilibria with civil service protections. Here, I characterise simple equilibria with civil service protections, which provides the proofs for the results listed in Proposition 4.

Step 1. To study the impact of exogenous civil servant selection, first note that with civil service protections and given any tax T there are no simple equilibria in which junior civil servants engage in partisan activities. This follows immediately by substituting $w = \omega^*(T)$ in (8), given the fact that all junior civil servants are retained if the governing party is replaced. Second, in contrast to the case with no civil service protections, it is not the case that $\omega^*(T) = 0$ in all simple equilibria with civil service protections. This occurs for two reasons: (i) a low wage without partisan participation in the absence of civil service protections follows because governments need not provide high-powered incentives to have civil servants provide public goods effort and their ability to fire civil servants implies that wages offered to future civil servants by opposition parties are irrelevant, and (ii) higher wages are necessary to deter the (off the equilibrium path) coopting of civil servants by government. Let $\underline{w}^{0,r}(T)$ denote the minimal wage $\underline{w}^0(T)$ that ensure public goods provision from (10), evaluated in a simple equilibrium with civil service protections. It follows from (i) that in the absence of civil service protections, we have that $\underline{w}^{0,r}(T) = \omega^*(T)$ in all simple equilibria. Therefore, this setting has multiple equilibria differentiated by civil servants' expected future wages. To circumvent this issue, I will characterise the simple equilibrium that is optimal for the voter. I will do this in two steps: first, I will identify the equilibrium path actions of this voter-optimal equilibrium through the solution of a reduced problem, and second, I will complete the description of the full equilibrium profile.

Step 2. I will first assign outcomes to all tax levels T . For any tax T , the goal is to describe two wage functions $w^E(T)$ and $\underline{w}^E(T)$. In words, $w^E(T)$ will correspond to the equilibrium wage associated with tax T and $\underline{w}^E(T)$ will correspond to the best (deviation) wage that politician can offer to junior civil servants in order to induce them to engage in partisan spending. For any tax T , wage w and partisan participation decision $k \in \{0, K\}$, define $\mathbb{P}^E(T, w, k)$ as the analog of $\mathbb{P}^*(T, w, k)$, but with $w^E(T)$ replacing $\omega^*(T)$ in the civil servants' spending strategies from (6) and (7). Given any

tax T , define $(w^E(T), \underline{w}^E(T))$ such that

$$\underline{w}^E(T) = \arg \max_{0 \leq w \leq T} \delta_c [\mathbb{P}^E(T, w, K) - \mathbb{P}^E(T, w, 0)] [u(w) - u(w^E(T))], \text{ and} \quad (16)$$

$$w^E(T) = \min \left\{ 0 \leq w \leq T : \delta_c [\mathbb{P}^E(T, \underline{w}^E(T), K) - \mathbb{P}^E(T, \underline{w}^E(T), 0)] \cdot [u(\underline{w}^E(T)) - u(w)] \leq K \right\}. \quad (17)$$

It needs to be determined whether $(w^E(T), \underline{w}^E(T))$ are well-defined. Given any tax T , let

$$W^E(T, w^E) = \max_{0 \leq w \leq T} \delta_c [\mathbb{P}^E(T, w, K) - \mathbb{P}^E(T, w, 0)] [u(w) - u(w^E)]$$

Recalling (14), first note that $W^E(T, 0) = W(T) \leq K$ for all $T \leq \tilde{T}$ and that $W^E(T, 0) = W(T) > K$ for all $T > \tilde{T}$. Second, by the envelope theorem, we have that $W^E(T, w^E)$ is strictly decreasing in w^E (because u is strictly increasing) and furthermore $W^E(T, T) = 0$. Therefore, (i) if $T \leq \tilde{T}$ we have that $W^E(T, w^E) \leq K$ for all w^E and $w^E(T) = 0$, and (ii) if $T > \tilde{T}$, there exists a unique value \hat{w} such that

$$W^E(T, w^E) \begin{cases} > K & \text{if } w^E < \hat{w}, \\ = K & \text{if } w^E = \hat{w}, \\ < K & \text{if } w^E > \hat{w}, \end{cases}$$

and we have that $w^E(T) = \hat{w}$. Third, from (9), we have that

$$\mathbb{P}^E(T, w, K) - \mathbb{P}^E(T, w, 0) = \frac{1}{2\tilde{\phi}} [1/2q[\bar{\theta} - 1][T - w]],$$

so that, given the strict concavity of u , it can be verified that the objective in (16) is strictly concave. Therefore, given any tax T , $\underline{w}^E(T)$ is uniquely defined as the solution to the first-order condition

$$-[u(\underline{w}^E(T)) - u(w^E(T))] + [T - \underline{w}^E(T)]u'(\underline{w}^E(T)) = 0. \quad (18)$$

Now restrict attention to taxes $T > \tilde{T}$, for which $W^E(T, w^E(T)) = K$. It follows by the envelope theorem that $\frac{d}{dT}W^E(T, w^E(T)) = 0$, which can be rewritten as

$$[u(\underline{w}^E(T)) - u(w^E(T))] - [T - \underline{w}^E(T)]u'(w^E(T))w^{E'}(T) = 0. \quad (19)$$

Combining (19) with (18) yields that

$$\begin{aligned}
w^{E'}(T) &= \frac{u'(\underline{w}^E(T))}{u'(\underline{w}^E(T))} \\
&= e^{-a(\underline{w}^E(T)-w^E(T))} \\
&< 1,
\end{aligned} \tag{20}$$

where the second equality follows from the fact that $u(x) = 1 - e^{-ax}$ and the inequality follows from the fact that $\underline{w}^E(T) > w^E(T)$. Taking the derivative of (18) with respect to T (and using (20)) yields that

$$\begin{aligned}
\underline{w}^{E'}(T) &= \frac{u'(\underline{w}^E(T))}{u'(\underline{w}^E(T)) - 1/2[T - \underline{w}^E(T)]u''(\underline{w}^E(T))} \\
&= \frac{1}{1 + a/2[T - \underline{w}^E(T)]} \\
&= \frac{1}{1 + 1/2[e^{a(\underline{w}^E(T)-w^E(T))} - 1]} \\
&< 1,
\end{aligned} \tag{21}$$

where the second equality follows from the fact that $u(x) = 1 - e^{-ax}$, and the third equality follows from using (18) to substitute for $T - \underline{w}^E(T)$. It can be verified by computation that $\underline{w}^{E'}(T) > w^{E'}(T)$. From this, it follows that

$$\begin{aligned}
w^{E''}(T) &= -ae^{-a(\underline{w}^E(T)-w^E(T))} [\underline{w}^{E'}(T) - w^{E'}(T)] \\
&< 0.
\end{aligned}$$

Recall from the steps leading up to (11) that $\mathbb{P}^E(T, \underline{w}^E(T), K) - \mathbb{P}^E(T, w^E(T), 0) \geq 0$ if and only if

$$1/2q[\bar{\theta} - 1] \geq \frac{\underline{w}^E(T) - w^E(T)}{T - \underline{w}^E(T)}$$

It can be verified by computation that

$$\frac{d}{dT} \left[\frac{\underline{w}^E(T) - w^E(T)}{T - \underline{w}^E(T)} \right] < 0$$

if and only if

$$\begin{aligned} a &> \frac{1 - e^{-a(\underline{w}^E(T) - w^E(T))}}{\underline{w}^E(T) - w^E(T)} \\ &= \frac{u(\underline{w}^E(T) - w^E(T))}{\underline{w}^E(T) - w^E(T)}, \end{aligned}$$

which holds because the strict concavity of u implies that

$$\begin{aligned} a &= u'(0) \\ &> \frac{u(\underline{w}^E(T) - w^E(T))}{\underline{w}^E(T) - w^E(T)}. \end{aligned}$$

Therefore, using the fact that $w^E(\tilde{T}) = 0$, Assumption 2 implies that, for all $T > \tilde{T}$,

$$\begin{aligned} 1/2q[\bar{\theta} - 1] &> \frac{\underline{w}^E(\tilde{T}) - w^E(\tilde{T})}{T - \underline{w}^E(\tilde{T})} \\ &> \frac{\underline{w}^E(T) - w^E(T)}{T - \underline{w}^E(T)}. \end{aligned}$$

Step 3. Finally, I consider the voter's payoff from any pair $(\underline{w}^E(T), w^E(T))$. Define tax \hat{T} such that $\hat{T} - w^E(\hat{T}) = \bar{T}$. Suppose that in all periods the voter allocates a tax $0 \leq T \leq \hat{T}$ to the government, and that civil servants receive wage $w^E(T)$ and spend all remaining tax revenue on public goods. From arguments as those that lead to (12), we have that

$$V_v^E(T) = \frac{1}{1 - \delta_v} [T[1 - \Psi] - w^E(T)].$$

Let $T^* \in \arg \max_{0 \leq T \leq \hat{T}} V_v^E(T)$. Because $w^E(T) = 0$ for all $T \leq \tilde{T}$, it must be that $T^* \geq \tilde{T}$. Because $w^E(T)$ is strictly concave for $T \geq \tilde{T}$, it follows that $V_v^E(T)$ is strictly convex, so that

$$T^* = \begin{cases} \hat{T} & \text{if } \frac{w^E(\hat{T}) - w^E(\tilde{T})}{\hat{T} - \tilde{T}} < 1 - \Psi, \\ \tilde{T} & \text{if } \frac{w^E(\hat{T}) - w^E(\tilde{T})}{\hat{T} - \tilde{T}} > 1 - \Psi, \end{cases} \quad (22)$$

with $T^* \in \{\tilde{T}, \hat{T}\}$ otherwise.

Step 4. Now I will show how to use the results derived in the preceding reduced problem to construct the voter-optimal simple equilibrium with civil service protections. Fix

any $T \geq \tilde{T}$. A first claim is that if there exists a simple equilibrium with tax T and wage $\omega^*(T) = w^E(T)$, then (i) the civil servants' equilibrium spending and partisan participation strategies are given by (6), (7) and (8), with the additional restriction that $\kappa^*(T, \underline{w}^E(T)) = 0$ (i.e., when offered wage $\underline{w}^E(T)$, junior civil servants resolve their indifference in favour of non-participation) (ii) parties' equilibrium wage policies are described by (11) and setting $\omega^*(T) = w^E(T)$ in all periods is optimal for the governing party, and (iii) no other simple equilibrium with tax T yields higher payoffs to the voter. To see (ii), note that, by the construction of $w^E(T)$ and given tax revenue T , no wage offer w can lead the civil servant to engage in partisan spending. Furthermore, junior civil servants shirk for any wage $w < w^E(T)$, as it induces junior civil servants to strictly prefer the opposition party to win, so that the wage $w^E(T) = \underline{w}^0(T)$ (i.e., it is the lowest wage for which junior civil servants spend on public goods provision). Finally, note that (iii) follows because all simple equilibria with civil service protections have nonpartisan civil servants, and, by construction of $w^E(T)$ in (17), it is the lowest wage that guarantees non-participation given tax revenue T . A second claim is that for $\tau^* = T^*$, the strategy profile from above is a simple equilibrium. Given the first claim, it remains only to verify that the voter finds it optimal to set tax T^* , but this was shown in Step 3.

Step 5. The final step is to complete the proof of Proposition 5. First, note that because $\hat{T} - w^E(\hat{T}) = \bar{T}$ and $w^{E'}(T) > 0$, we have that \hat{T} is increasing in \bar{T} . Second, as noted in text, \tilde{T} is independent of \bar{T} . Third, from (22), it only remains to establish that

$$\frac{d}{d\hat{T}} \left[\frac{w^E(\hat{T}) - w^E(\tilde{T})}{\hat{T} - \tilde{T}} \right] < 0,$$

which is satisfied because $w^E(T)$ is strictly concave for $T \geq \tilde{T}$.