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The King Can Do No Wrong: On Criminal Immunity of Leaders*

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Abstract

In its recent anti-corruption campaign, China removed the criminal immunity originally enjoyed by its leaders. Absent fundamental changes in the political institution—where incumbent leaders, instead of citizens at large, select the next leaders—such a partial reform pays off only if (*i*) it takes place at the "right" time, (*ii*) it goes easy on corrupt low-rank officials, and (*iii*) the government is reasonably centralized. Failing any of these, such a partial reform would lead to rampant corruption throughout the government hierarchy, an outcome far worse than retaining leader immunity.

Keywords: leader immunity, hostage motive, corruption, autocracy, party elites

JEL: D02, H11, J45, P37

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1 Introduction

An anti-corruption campaign has swept across China since 2012, sending shockwaves throughout its political institution. It does so not only thanks to its massive scale—more than 100,000 officials have been indicted—but more importantly due to the *depth* of the campaign. In 2015, the campaign handed a life sentence to a retired member of the Politburo Standing Committee (PSC).[1] In doing so, the campaign broke the unspoken norm of "PSC Criminal Immunity" (in Chinese *Xing Bu Shang Chang Wei*) that had shielded incumbent as well as retired PSC members from criminal investigations since the end of the Cultural Revolution. As the campaign roars on, the world wonders how such a bold move will affect governance in China, and what long-term impacts it will leave for China's (and in association the world's) economic health.

How should one evaluate such a bold move of removing leader immunity? One view emphasizes its costs. According to this view, leader immunity is what makes China's celebrated merit-based pomotion system possible.[2] Specifically, it encourages leaders to promote the best bureaucrats without repercussion. Removing leader immunity hence may backfire as China's promotion system may no longer be as merit-based as before. The opposite view emphaizes the benefits instead. According to this view, leader immunty actually contaminates China's merit-based promotion system, because many bureaucrats who work hard to get promoted are actually patient crooks waiting for the opportunities to abuse absolute power at the top of the government. Removing leader immunity hence can only further improve China's merit-based promotion system. Both views seem to hold some grains of truth. The objective of this paper is to reconcile them, and to clarify what it takes to reap the benefits of removing leader immunity without incurring the costs.

We study such a question using an overlapping principal-agent model, where today's principal was selected by yesterday's principal out of yesterday's agents, and will select tomorrow's principal out of today's agents. This captures the very essence of a Chinese-style political institution. We assume agents (called *bureaucrats*) are heterogeneous in their civic-mindedness, which is unobservable. What is observable is their behavior, either corrupt or not. The principal (called the *leader*) selects his successor based on the observable

[1] The PSC is the highest decision-making body of the Chinese Communist Part and hence also of China.

[2] China's merit-based pomotion system has been lauded by many researchers as the driving force behind its strong economic performance in recent decades. See, for example, Li and Zhou (2005) and Xu (2011).

behavior of his bureaucrats. The crucial assumption is that a corrupt successor, having his previous corruption as hostage, would not become serious in criminal investigations on corruption, lest such investigations turn up something that implicates himself.[3]

We then compare two different regimes, one with leader immunity that shields any previous leader from criminal prosecution, and another without. When there is leader immunity, there is a unique equilibrium, and a unique steady state associated with it: (*i*) incumbent leaders, corrupt or clean, are never afraid of selecting clean successors; (*ii*) such a successor will be serious in criminal investigations on corruption; (*iii*) anticipating that, bureaucrats engage in little corruption out of fear; (*iv*) fear among bureaucrats makes leaders' successor-selection problem difficult, and occasionally the selected successor is not genuinely civic-minded, and will embezzle big time once becoming the next leader. We refer to such a steady state the *mediocre steady state*.

Under the regime without leader immunity, there is also a unique equilibrium but possibly two steady states. In equilibrium, (*i*) a clean incumbent leader, having nothing to fear, selects a clean successor; but (*ii*) a corrupt incumbent leader, not being protected by any immunity, selects a corrupt successor; (*iii*) bureaucrats anticipate serious criminal investigations on corruption and hence engage in little corruption out of fear only when the incumbent leader is clean.

This equilibrium is associated with a bad steady state and, depending on parameters, possibly a good steady state as well. The *bad steady state* always exists, where leaders are always corrupt, and always select corrupt successors. Corruption is widespread throughout the government hierarchy, and citizens fare worse than in the mediocre steady state.

In the *good steady state*, if it exists, leaders are always clean, and always select clean successors, who then stay clean as next leaders. Criminal investigations on corruption are always serious, and bureaucrats engage in little corruption out of fear.

Removing leader immunity pays off only if a good steady state exists, and only if the economy starts with an appropriate initial condition that leads to it.[4] A good steady state exists only if law enforcement against corrupt bureaucrats is sufficiently lax. The

[3] Lui (1986) made a similar assumption in his analysis of the difficulty of corruption deterrence when corruption is pervasive, albeit in a setting different from ours. He observed that corrupt officials would not provide collaborating evidence against their corrupt colleagues.

[4] The relevant initial condition in this context is whether the leader newly assuming office comes with a tainted record (i.e., whether he has ever engaged in corruption when he was a bureaucrat).

intuition is that too much fear among bureaucrats makes leaders' successor-selection problem difficult, and one poor selection suffices to lead the economy down the spiral into the bad steady state.[5] If bureaucrats are allowed to embezzle without much fear, then only reasonably civic-minded ones would be clean, and if any of them is selected as the successor, he will continue to be a clean leader, making the aforementioned good steady state possible.

Assume that law enforcement against corrupt bureaucrats is exogenous—say because it is determined by some exogenously given crime-detecting technology—and is the same across regimes. Then the good steady state will be better than the mediocre steady state whenever the former exists. This is because, in the good steady state, leaders never embezzle, while a same mass of bureaucrats embezzle. This justifies our names of "good" versus "mediocre" steady states.

Alternatively, we can also assume that law enforcement against corrupt bureaucrats, instead of being exogenous, is another policy variable, and can be tailored for different regimes. Then welfare comparison between the "good" and the "mediocre" steady states becomes ambiguous, and depends on the degree of political centralization. This is because removing leader immunity, *even in the best scenario*, is actually buying more discipline at the top of the government at the expense of discipline at the bottom. We show that a "good" steady state is better than a "mediocre" one only when the government is sufficiently centralized, and hence good governance at the top is sufficiently important. If the government is sufficiently decentralized, on the other hand, removing leader immunity never pays off.

In summary, our paper suggests that, in order for a Chinese-style political institution to benefit from removing leader immunity, not only that the reform must take place at the right juncture, it must be accompanied by complementary policy measures as well. For example, there needs to be sufficient tolerance for corrupt bureaucrats, so that the reform has a chance to bring the economy to the good steady state. Meanwhile, tolerance for corrupt bureaucrats requires that the government is reasonably centralized, so that the

[5] When there is too much fear among bureaucrats, even some of those less civic-minded ones would refrain from embezzling. If one of these less civic-minded ones is ever selected as the next leader (which happens with positive probability, as they are behaviorally indistinguishable from the genuinely civic-minded ones), he would subsequently engage in corruption as a leader, and would try to protect himself from criminal investigations by selecting a corrupt successor, which kicks start the vicious cycle that characterizes the bad steady state.

benefits of less corruption at the top can overwhelm the costs of more corruption at the bottom.

Since the main reason why removing leader immunity may backfire is that it creates a *hostage motive* for corrupt leaders to select corrupt successors, it is natural to ask whether a change in the timing of successor-selection would help nullify such a motive. In an extension (Section 5), we study an alternative timing of the game, where a leader has to select his successor at the beginning (instead of at the end) of his tenure, and before his bureaucrats make their embezzlement decisions. We show that such a regime of early appointment does not guarantee better governance. The reason is that early appointment brings noise into the successor-selection process. At the top of the government, such noise means that the selected leaders are often not civic-minded enough to stay clean. At the bottom of the government, such noise means that bureaucrats' discipline is weak, because they understand that criminal investigations on corruption are often not serious.

Our model also sheds some light on why it may even help to randomly designate some officials as party members, and allow them to stay above the law. Such an arrangement, repulsive as it may be, serves two purposes that are complementary to a Chinese-style political institution where incumbent leaders, instead of citizens at large, select the next leaders. Intuitively, allowing party members to stay above the law is a way to tighten the law on the remaining officials without inducing fear among party members. The first purpose this serves is to keep most of the (non-party-member) bureaucrats on their toes. The second purpose is to avoid worsening the successor-selection problem—a retiring leader intending to select a genuinely civic-minded successor can do so by choosing among the clean party-member bureaucrats, resting assured that the latters refrained from engaging in corruption even when they were above the law implies that they must be genuinely civic-minded. We formalize this intuition in Section 6.

This paper tries to foretell the likely consequences of an unprecedented political event of a major economic power, whose peculiar political institution defies traditional categorization (as evidenced by how its economic performance has surprised most if not all). Given the unique nature of such an exercise, our analysis is purely theoretical, at least for the time being. Empirical tests may have to wait, possibly until years later, and possibly until many consequences can no longer be reversed. For researchers, there is always a tradeoff between telling an after-fact story with lots of empirical evidences but also with the risk of being irrelevant, and making logical analysis based on well-known characteristics of the institution but while such analysis can still have an impact. In this instance, we opt for the latter.

Our paper contributes to the literature on corruption. With a few exceptions, much of the existing literature has taken a principal-agent approach in devising policies against corruption, either through crime punishment, or by redesigning bureaucrats' incentive pay and their sets of discretions.[6] Thus, implicitly, the literature views corruption as an agency problem faced by benevolent leaders. As Rauch (2001) rightly pointed out, "The standard assumption of such work is that the principal himself is not corrupt, which misses the entire problem of the predatory state. If we are to retain the utility of the principal-agent model without being irrelevant, we must therefore model corruption on the part of the principal."

While there are also some works that explicitly "model corruption on the part of the principal" (see, for example, Shleifer and Vishny (1993, 1998)), what remains unchanged is the assumption that leaders have an exogenously fixed propensity to (not) engage in corruption.[7] Recent empirical studies however have revealed a much more complex picture. An assortment of studies have shown not only that people have different intrinsic motivations, but also that people with different intrinsic motivations may be attracted into public services differently, depending on the details of the political institution (Banuri and Keefer (2013), Hanna and Wang (2013), Cowley and Smith (2014), and Finan, Olken, and Pande (2015)). Echoing these empirical findings, we depart from the literature by allowing leaders' propensity to engage in corruption to be endogenously determined as a result of leadership selection, and leadership selection to be shaped by institutional details such as the presence/absence of leader immunity.

An important implication emerging from our analysis is that it may be unproductive to try to completely eradicate corruption in a Chinese-style political institution. Our finding resonates with those in the existing literature that "a single-minded focus on corruption may be too narrow" and that "optimal policy design may not involve minimizing corruption" (Bardhan and Mookherjee (2006)). The reasons behind our finding, however, differ

[6]See, for example, Klitgaard (1988), Besley and McLaren (1993), Mookherjee and Png (1995), Banerjee (1997), Bardhan (1997), Bliss and Di Tella (1997), Acemoglu and Verdier (1998), Rose-Ackerman (1999), Besley and Ghatak (2005), Banerjee, Mullainathan, and Hana (2012), and Persson, Rothstein, and Teorell (2013).

[7]A notable exception is Caselli and Morelli (1997).

from those studied in the literature. In Besley and McLaren (1993), it was too expensive to incentivize dishonest bureaucrats to behave honestly. In Mookherjee and Png (1995), zero tolerance for corruption could backfire as it induces over-zealous enforcement by bureaucrats against business. In Acemoglu and Verdier (2000), the government would tolerate corruption by dishonest bureaucrats so as to reduce efficiency wage payments to honest ones. Our paper presents two new reasons why some corruption should be tolerated. The first reason is that, without leader immunity, there needs to be some tolerance for corrupt bureaucrats in order for incumbent leaders to better identify civic-minded successors. The second reason is that leader immunity, which by itself constitutes a particular form of tolerance for corruption, may help mitigate the hostage motive of incumbent leaders to sabotage future criminal investigations on corruption by selecting corrupt successors.

Viewed as an institutional protocol that the absolute authority may not be subject to prosecution, leader immunity is not an invention of China. Leader immunity reminds us of a legal doctrine in Common Law called "sovereign immunity", by which the sovereign is exempt from any criminal investigation without its own consent. The doctrine emerged at the time when the leadership of the state, the crown, assumed absolute authority, and is commonly expressed as "*rex non potest peccare*" or "the King can do no wrong", with the reasoning that it would be logically anomalous for the King to enforce a legal order against himself (Jaffe, 1963). As countries transit towards more democratic political institutions, whether to retain such a doctrine is a contested issue. Behind the controversy are two opposing concerns much similar to our earlier discussion. On the one hand, there is demand for justice and accountability. On the other hand, there is the concern that, fearing prosecution after the transition, the old leadership may refuse to relinquish their absolute authorities and hold hostage the transition (see, for example, O'Neill (2002), Young (2002), and Davis (2005)). While such controversies have been studied by legal scholars, they have received no attention among economists. However imperfect a parallel it may be, our study represents a first step towards the understanding of the complexity behind sovereign immunity in a broader context.

Finally, our paper also adds to the emerging theoretical works on non-democratic political institutions with non-violent leadership-turnover.[8] When analyzing non-democratic political institutions, the existing political economy literature often assumes either a long-

[8]For recent contributions see, for example, Li (2016), Li, Yu, and Zhang (2016), and Roland (2016).

lasting dictator, or insecure leadership (subject to, say, violent challenges by the leader's subordinates from time to time), making itself inadequate to examine Chinese-style political institutions, where leadership-turnover has by and large been institutionalized, and is conducted in a non-violent, albeit non-democratic, manner. In such non-democracies, incumbent leaders not only rule the country during their tenure, but also select future leaders, thus making an overlapping-generations framework a natural choice of modelling.

Rauch (2001) is perhaps the first to introduce an overlapping-generations model to study leadership selection in such an environment. But he assumes exogenously that an incumbent leader always wants to pick a good successor. Adopting an overlapping-generations model as well, Che, Chung, and Qiao (2013) showed that the difference in how leadership selection is conducted helps explain why there are bigger variations both across autocracies and within individual autocracies vis-á-vis democracies; while Che, Chung, and Qiao (2014) studied how political career concerns may generate discipline even at the top of the government in a Chinese-style political institution, notwithstanding the fact that career concerns by definition do not exists for officials at that level.

The rest of the paper is organized as follows. Section 2 introduces the model. Section 3 studies the equilibria, and their associated steady states, under two different regimes: one with leader immunity, and another without. Section 4 explains why centralization complements the regime without leader immunity. Section 5 explains why requiring incumbent leaders to select their successors earlier would not resolve the dilemma between retaining and removing leader immunity. Section 6 explains why it may even help to randomly designate some officials as party members and allow them to stay above the law. Section 7 concludes.

2 The Model

Consider an overlapping-generations economy. Every citizen lives for three periods: when he is young, middle-aged, and old, respectively.

The government is consisted of a single leader and a unit mass of bureaucrats. Therefore, relative to the bureaucrats, the leader is of measure zero.[9] Relative to the citizens,

[9]That the leader is of measure zero relative to the bureaucrats shuts down any political career concern

the bureaucrats are also of measure zero.[10] Government officials' payoffs are hence not factored into our welfare analysis. We assume that all period-t bureaucrats are selected randomly from period-t young citizens. After serving for one period, a bureaucrat either is selected to be the next-period leader, or retires and becomes a generic (middle-aged) citizen.

We assume that the leader must be a middle-aged citizen selected from last period's bureaucrats, perhaps because leadership requires certain administrative experiences that can only be acquired by first serving as a bureaucrat. The assumption implies that a leader cannot choose to stay in power for more than one period, and must retire when he turns old. At first glance this renders our model applicable only to some non-democracies (such as post-Deng China[11]) but not to others (such as pre-Deng China). However, assuming that a leader must retire and spend his old age under the leadership of his successor is merely a convenient way, but definitely not the only way, to ensure that a leader is not indifferent in who he selects as his successor. Even if a leader is to rule until he dies, he may still care about the political/economic privileges enjoyed by his surviving family members, and/or a posthumous reputation which he may or may not deserve, and hence will still not be indifferent in who he selects as his successor.

Upon retirement, the leader becomes an ordinary citizen. Note that our analysis does *not* hinge on a (clean) leader selecting his successor based on the same interest as an ordinary citizen. What is essential to our analysis is the sorting pattern where, other things being equal, corrupt leaders are *more* likely to select corrupt successors. That is, a successor's previous corrupt conducts have an *extra* value to a retiring leader if the latter is also corrupt. This sorting pattern is robust to many alternative model setups. In general, we expect a clean successor to be more likely to investigate the corrupt conducts of his predecessor and confiscate the latter's rents from office; whereas a corrupt successor, even if he is tempted to do the same, perhaps as an excuse to eliminate competition from his predecessor's surviving political faction, would find his hands more tied due to his own previous corrupt conducts. Therefore, *other things being equal*, selecting a corrupt

on the part of the bureaucrats, as every bureaucrat has zero probability to be selected as the next leader. We discuss how introducing political career concerns may affect our analysis in Section 7.

[10]For example, we can think of the citizens as populating in a two-dimensional space, while the bureaucrats a one-dimensional space, and the leader a single point.

[11]Deng Xiaoping famously institutionalized an age limit on leaders of the Chinese Communist Party, which has so far been respected by all the leaders after Deng.

successor can be a valuable instrument for a leader to protect his posthumous interests, and is more valuable the more corrupt the leader is. This sorting pattern is all what we need to drive our subsequent analysis.

Bureaucrats are heterogeneous, and each is born with different civic-mindedness $\lambda > 0$, which is his private type. We assume that, in any given period, bureaucrats' types have the same, time-invariant cumulative distribution F, which admits a differentiable density f. We further assume that F has full support on $\mathbb{R}_{++}$ for convenience, and that $\frac{f}{1-F} < 1$ to guarantee uniqueness of equilibrium.[12] At times it will be more convenient to work with the *de*cumulative distribution G, defined by $G(\lambda) := 1 - F(\lambda)$, with derivative $g(\lambda) = -f(\lambda)$. We use λ_t^L to denote the civic-mindedness of the period-t leader.

Every government official is entrusted with some public resources, which he can either embezzles or not. If the period-t bureaucrat with civic-mindedness λ embezzles, we write $e_t^\lambda = 1$, otherwise $e_t^\lambda = 0$. Similarly, if the period-t leader embezzles, we write $e_t^L = 1$, otherwise $e_t^L = 0$.

The more government officials embezzle, the fewer the public goods provided by the government. Specifically, we assume that a generic citizen's payoff in period t is the same as the total public goods provided in period t, which in turn equals to:

$$v_t = k(1 - e_t^L) + (1 - k) \int_0^\infty (1 - e_t^\lambda) dF(\lambda),$$

where $k \in (0, 1)$ measures the relative importance of public goods provided by the leader. Intuitively, k is larger when more authorities are left for the leader, or when more decisions are to be made at the top of the government. On the other hand, more political decentralization would result in a smaller k.[13]

For the period-t bureaucrat with civic-mindedness λ, his period-t payoff is

$$u_t^\lambda = \lambda(1 - e_t^\lambda) + \eta e_t^\lambda,$$

[12] For example, if F is the exponential distribution with rate parameter θ, then $\frac{f}{1-F} = \theta$, and the assumption will be satisfied iff $\theta < 1$. Uniqueness of equilibrium is not necessary for our analysis, but makes the economic logic behind our results especially clear. In the Online Appendix, we present an alternative model where multiple equilibria naturally arise even with parametric restrictions on the distribution F. We show that all our results continue to hold for any equilibrium we select.

[13] Political centralization, as measured by k, does not play an active role until Section 4, when we compare the regime with leader immunity (which achieves more discipline at the bottom of the government at the expense of discipline at the top) against the best scenario of the regime without leader immunity (which achieves more discipline at the top of the government at the expense of discipline at the bottom).

where for convenience we shall assume that η is strictly greater than 2 (see Footnote 21 for where this assumption is used). Note that a more civic-minded bureaucrat (i.e., one with a larger λ) puts a higher weight on the public goods he helps to provide, and hence is less inclined to embezzle. We emphasize that this is only the bureaucrat's *momentary* payoff, and we shall specific his life-time payoff shortly.

Similarly, for the period-t leader, his period-t payoff is

$$u_t^L = \lambda_t^L(1 - e_t^L) + \eta e_t^L.$$

Any agent's life-time payoff is the simple sum (without discounting) of his momentary payoffs in the three periods of his life.

We assume that embezzlement is observable.[14] Every ex-official, after serving for at least one period, will have a record that is either *tainted* (1) or *clean* (0), depending on whether he has ever embezzled before. We denote by α_t the period-t leader's *initial* record at the beginning of period t, and by ω_t his *final* record at the end of period t. Formally,

$$\begin{aligned} \alpha_t &= e_{t-1}^{\lambda_t^L}, \\ \omega_t &= \max\left\{\alpha_t, e_t^L\right\}; \end{aligned}$$

that is, he will retire with a tainted record iff he embezzled while being a period-$(t-1)$ bureaucrat (i.e., $e_{t-1}^{\lambda_t^L} = 1$), or while being the period-t leader (i.e., $e_t^L = 1$), or both.[15]

An ex-official with a tainted record is vulnerable in an anti-corruption campaign. We assume that, at the beginning of any period t, if, and only if, the new leader's initial record is clean (i.e., he did not embezzle as a period-$(t-1)$ bureaucrat), he will *mechanically* launch

[14]This is not as unrealistic an assumption as it looks at first glance, because being observable is much weaker than being verifiable. Even in a non-democracy without press freedom, the public have fairly good sense regarding which officials are corrupt.

[15]The assumption that officers' records, once tainted, will remain tainted plays a similar role as does an analogous assumption in Tirole (1996) regarding individual reputations. Both assumptions result in the second corrupt act being less costly for a perpetrator than the first corrupt act. Note that, this similarity aside, Tirole's (1996) focus is very different from ours. He is interested in how collective reputations both serve as aggregates of individual reputations and affect individuals' incentives to maintain their own reputations. Collective reputations, however, play no role in our model, because officers as a group do not interact with any other group in the society.

an anti-corruption campaign, possibly as a convenient way to get a popularity boost.[16,17] Any ex-official whose record is clean can survive the campaign intact. A period-($t-1$) bureaucrat with a tainted record will be purged during the campaign with probability $p \in (0,1]$, while a period-($t-1$) leader with a tainted final record will be purged with probability q, where $q \in \{0,1\}$ depends on whether there is leader immunity. If there is leader immunity, the ex-leader will never be purged regardless of his final record (i.e., $q = 0$). If there is no leader immunity, the ex-leader will be purged during the campaign if and only if his final record is tainted (i.e., $q = 1$).[18,19]

It is easy to further endogenize the anti-corruption campaign, but doing so adds few extra insights. For example, one can assume directly that a new leader gains some psychological payoff from seeing justice done, and hence will launch an anti-corruption campaign unless it may accidentally implicate himself. Alternatively, one can assume that citizens gain some psychological payoff from seeing justice done, and that a new leader can get a popularity boost by launching an anti-corruption campaign (and will do so unless it may accidentally implicate himself). Either of these will complicate our model without changing our results. Similarly, one can postulate that a clean new leader launches an anti-corruption campaign out of a reputational concern: if he does not do so, everyone will then believe that no future new leader will ever launch any anti-corruption campaign again, which will encourage more future bureaucrats to embezzle and hence reduce the amount of public goods he will enjoy when he is old. Introducing such a reputational concern would generate multiple equilibria without qualitatively changing the equilibrium that we are interested in. Therefore, we opt for the simplest and most

[16] An equivalent way to set up the model is to postulate that any new leader with a tainted initial record would muzzle any criminal investigation on corruption engaged in the last period, worrying that any discovery from such investigations may accidentally implicate himself.

[17] It is not essential to assume that a new leader with a tainted initial record would never launch any anti-corruption campaign. We can allow such a new leader to also launch an anti-corruption campaign with positive probability, say as an excuse to eliminate political competitors. All we need here is that such a new leader will be less likely to launch an anti-corruption campaign when compared to one with a clean initial record.

[18] There is an apparent asymmetry in the probabilities that an ex-bureaucrat and an ex-leader with tainted records being purged during an anti-corruption campaign (which are $p \in (0,1]$ and $q \in \{0,1\}$, respectively). The technical reason for such asymmetry is that pure-strategy equilibrium may not exist if q takes more general values. We avoid this extra algebraic complexity by sticking to a simpler model.

[19] Another asymmetry between p and q is that, while q is apparently the policy variable that is the central focus of this paper, we are ambivalent to whether p should be treated as a technological parameter or as a policy variable like q. In most of the analysis in this paper p will be treated as a technological parameter. However, in Section 4, we shall also take an alternative view and treat p as a policy variable.

mechanical way to introduce an anti-corruption campaign into our model.

When an ex-official is purged, he suffers a disutility d. We shall make the assumption that $1 < d < \eta - 1$ in order to simplify our subsequent analysis (see Footnote 21 for where this assumption is used).[20] Our results do not depend on the assumption that this disutility is an exogenously given constant. In the Online Appendix, we present an alternative model where the consequence for an ex-official of being purged is to forgo his payoff as a generic citizen for one period, possibly because he spends that period in jail. We show that all our results continue to hold in the alternative model.

The timing of the game within any given period t is as follows:

1. The new leader (selected by the retiring leader at the end of the last period) assumes office.

2. If, and only if, the (new) leader's initial record is clean (i.e., he did not embezzle as a bureaucrat in the last period), he mechanically launch an anti-corruption campaign, in which case every last-period bureaucrat with a tainted record is purged with probability p, and the last-period leader with a tainted final record is purged with probability q.

3. A unit mass of young citizens are randomly selected into the government as bureaucrats.

4. The leader chooses whether to embezzle ($e_t^L = 1$) or not ($e_t^L = 0$).

5. Bureaucrats observe the leader's final record, and then simultaneously choose whether to embezzle ($e_t^\lambda = 1$) or not ($e_t^\lambda = 0$).

6. Agents (citizens and officials) receive their momentary payoffs of this period. A retired bureaucrat or leader receives the same momentary payoff as a generic citizen unless he is purged, in which case disutility d is deducted from his momentary payoff.

[20] The reader may wonder whether all corruption would go away as long as d is sufficiently large. The answer is no. Under the regime with leader immunity, there are always some bureaucrats engaging in corruption for any finite d. Under the regime without leader immunity, a large d actually will lead to widespread corruption, for exactly the same reason why a high p would paradoxically lead to widespread corruption (Proposition 4). This is another example where conventional wisdom applicable to democracies does not necessarily apply to non-democracies.

7. Upon observing the actions of the bureaucrats, the leader decides whether to select (necessarily randomly) one of those who have embezzled (i.e., to select a *corrupt* successor, in which case we write $s_t = 1$), or one of those who have not embezzled (i.e., to select a *clean* successor, in which case we write $s_t = 0$), as the next-period leader.

8. All officials retire and become generic citizens, except for the single bureaucrat who was selected as the next-period leader.[21]

Our solution concept is pure-strategy Markov perfect equilibrium, where agents' equilibrium strategies are functions of only the payoff-relevant parts of the past history. Specifically,

- leaders' equilibrium embezzlement decisions are the same, time-invariant function of only their own types and their initial records: $\forall t$, $e_t^L = \varepsilon^L(\lambda_t^L, \alpha_t)$;
- bureaucrats' equilibrium embezzlement decisions are the same, time-invariant function of only their own types and the final records of their leaders: $\forall t$, $e_t^\lambda = \varepsilon^B(\lambda, \omega_t)$;
- leaders' equilibrium successor-selection decisions are the same, time-invariant function of only their final records: $\forall t$, $s_t = \sigma(\omega_t)$.[22]

A pure-strategy Markov perfect equilibrium (or simply an *equilibrium*) in our model is hence a vector of *Markov strategies*, $(\varepsilon^L, \varepsilon^B, \sigma)$, such that every official maximizes his life-time payoff given the equilibrium strategies of contemporary and future officials.[23]

Finally, to simplify our exposition, we also restrict our attention to equilibria that satisfy the tie-breaking rule that, when a retiring leader is indifferent between selecting a clean successor and a corrupt one, he breaks the tie by selecting a clean one. This tie-breaking rule has bite only for non-generic values of k (the degree of political centralization).[24]

[21] Our assumption that $d < \eta - 1$ guarantees that the selected bureaucrat will be willing to accept the leadership position. If he accepts the position, he can guarantee himself a payoff of $\eta - d > 1$ by embezzling as the next leader, even if he will go to jail as a result of that. If he turns down the offer, he will become a generic middle-aged citizen, whose payoff is bounded from above by 1.

[22] We could have allowed σ to be a function also of the observed masses of contemporary bureaucrats who embezzled and who did not, respectively. But this generality would not affect our analysis, because it takes uncountably many bureaucrats to deviate at the same time in order to generate any perceivable difference in those masses.

[23] It should be emphasized that agents are allowed to use strategies that are contingent on the whole public history of the economy. It is the equilibrium strategies that are required to be contingent only on a parsimonious set of state variables.

[24] Alternatively, we can qualify all of our results as holding only for generic values of k.

3 Equilibrium

We consider the problem of a period-t bureaucrat first.

Our assumption that the leader is of measure zero relative to the bureaucrats implies that every bureaucrat has zero probability to be selected as the next leader. This in particular shuts down any political career concern on the part of the bureaucrats.[25] Given that a bureaucrat's embezzlement decision can affect neither his own prospect of being selected as the next leader, nor the identities of future leaders (and hence payoffs of generic citizens in the future), he makes this decision by merely trading off his private gain from embezzlement and the risk of being purged at the beginning of the next period. The bureaucrat hence will embezzle iff[26]

$$\lambda \leq \eta - (1 - s_t)pd.$$

If the leader follows a Markov strategy, then s_t will depend on the past history only via ω_t, and hence it will indeed be optimal for any individual bureaucrat to follow a Markov strategy that contingent on past history only via ω_t. Moreover, the bureaucrat's Markov strategy $\varepsilon^B(\lambda, \omega_t)$ can be characterized by cutoffs $\overline{\lambda}(\omega_t)$, $\omega_t = 1, 0$, such that

$$\varepsilon^B(\lambda, \omega_t) = \begin{cases} 1 & \text{if } \lambda \leq \overline{\lambda}(\omega_t) \\ 0 & \text{otherwise} \end{cases},$$

where

$$\overline{\lambda}(\omega_t) := \eta - (1 - \sigma(\omega_t))pd > 0, \quad \omega_t = 1, 0. \tag{1}$$

Let's make a quick observation that we shall use repeatedly later:

Lemma 1 *In any equilibrium, we have* $0 < \overline{\lambda}(\omega_t) \leq \eta$, *with* $\overline{\lambda}(\omega_t) = \eta$ *iff* $\sigma(\omega_t) = 1$.

[25]Simple as this observation seems, its proof can be a bit tedious. One first proves that, in any equilibrium, bureaucrats who embezzle, and those who do not, partition $\mathbb{R}_{++}$ (the space of λ) into a lower and an upper interval, respectively. Each of these intervals either has positive measure, or is empty. A bureaucrat who embezzles (respectively, who does not embezzle) will have positive probability to be selected as the next leader only if the lower (respectively, the upper) interval is empty, and if the retiring leader intends to select a corrupt (respectively, a clean) successor. But then any bureaucrat with λ sufficiently small (respectively, sufficiently large) will deviate from not embezzling (respectively, embezzling) to embezzling (respectively, not embezzling), contradicting the supposition of equilibrium.

[26]We assume wlog that an official will embezzle when he is indifferent. This assumption is immaterial as ties are non-generic.

In other words, η is an upper bound for the types of those bureaucrats who embezzle. For bureaucrats with $\lambda > \eta$, the material benefits of embezzlement, η, are not even worth the pride of serving the society, λ. When $\sigma(\omega_t) = 1$, bureaucrats embezzle *maximally* (upon observing ω_t) in the sense that any one with $\lambda \leq \eta$ embezzles.

We now turn to the leader's embezzlement decision. Let $\mathrm{E}[v_{t+1}|\omega_t]$ be the expected payoff of a generic citizen in the next period, where expectation is taken immediately after the retiring leader's final record ω_t is observed, conditional on all agents' equilibrium strategies in the continuation game. A leader with initial record $\alpha_t = 1$ cannot affect his final record (because we must have $\omega_t = 1$), and hence he will embezzle maximally; i.e., iff $\lambda_t^L \leq \eta$. On the other hand, a leader with initial record $\alpha_t = 0$ will embezzle iff

$$\lambda + \mathrm{E}[v_{t+1}|\omega_t = 0] \leq \eta - (1 - \sigma(1))qd + \mathrm{E}[v_{t+1}|\omega_t = 1]$$

where $q = 0$ when there is leader immunity, and $q = 1$ when there is not.

Therefore, the leader's embezzlement strategy $\varepsilon^L(\lambda_t^L, \alpha_t)$ can also be characterized by cutoffs $\overline{\lambda^L}(\alpha_t)$, $\alpha_t = 1, 0$, such that

$$\varepsilon^L(\lambda_t^L, \alpha_t) = \begin{cases} 1 & \text{if } \lambda_t^L \leq \overline{\lambda^L}(\alpha_t) \\ 0 & \text{otherwise} \end{cases},$$

where

$$\begin{aligned} & \overline{\lambda^L}(1) := \eta, \\ \text{and} \quad & \overline{\lambda^L}(0) := \eta - (1 - \sigma(1))qd + \mathrm{E}[v_{t+1}|\omega_t = 1] - \mathrm{E}[v_{t+1}|\omega_t = 0]. \end{aligned} \tag{2}$$

We can now express the period-$(t+1)$ expected payoff of a generic citizen, conditional on the period-t leader's final record ω_t and his successor-selection decision s_t (which may or may not equal to what he is supposed to do in equilibrium, $\sigma(\omega_t)$), in terms of cutoffs

$\overline{\lambda}(1)$, $\overline{\lambda}(0)$, $\overline{\lambda^L}(1)$, and $\overline{\lambda^L}(0)$:

$$
\begin{aligned}
\mathrm{E}[v_{t+1}|\omega_t, s_t] &= \begin{cases} (1-k)Pr\left\{\lambda > \overline{\lambda}(1)\right\} & \text{if } s_t = 1 \\ Pr\left\{\lambda \le \overline{\lambda^L}(0)|\lambda > \overline{\lambda}(\omega_t)\right\}\left[0 + (1-k)Pr\left\{\lambda > \overline{\lambda}(1)\right\}\right] & \\ \qquad +Pr\left\{\lambda > \overline{\lambda^L}(0)|\lambda > \overline{\lambda}(\omega_t)\right\}\left[k + (1-k)Pr\left\{\lambda > \overline{\lambda}(0)\right\}\right] & \text{if } s_t = 0 \end{cases} \\
&= \begin{cases} (1-k)G\left(\overline{\lambda}(1)\right) & \text{if } s_t = 1 \\ F\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(\omega_t)\right)\left[0 + (1-k)G\left(\overline{\lambda}(1)\right)\right] & \\ \qquad +G\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(\omega_t)\right)\left[k + (1-k)G\left(\overline{\lambda}(0)\right)\right] & \text{if } s_t = 0 \end{cases}
\end{aligned} \tag{3}
$$

To understand these expressions, let's consider the case of $s_t = 1$ first. Since the leader selects a corrupt successor, this successor will be someone with type $\lambda^L_{t+1} \le \overline{\lambda}(\omega_t)$, and will assume office with initial record $\alpha_{t+1} = 1$. He will then embezzle with conditional probability $F\left(\overline{\lambda^L}(1)|\lambda \le \overline{\lambda}(\omega_t)\right)$, and will not embezzle with conditional probability $G\left(\overline{\lambda^L}(1)|\lambda \le \overline{\lambda}(\omega_t)\right)$. Moreover, this successor will retire with final record $\omega_{t+1} = 1$ regardless of his embezzlement decision. Therefore, total public goods provided by his bureaucrats amount to $(1-k)G\left(\overline{\lambda}(1)\right)$. Putting these together, $\mathrm{E}[v_{t+1}|\omega_t, s_t]$ is hence $kG\left(\overline{\lambda^L}(1)|\lambda \le \overline{\lambda}(\omega_t)\right) + (1-k)G\left(\overline{\lambda}(1)\right)$. Since $\overline{\lambda^L}(1) = \eta \ge \overline{\lambda}(\omega_t)$ (where the inequality follows from Lemma 1), we have $G\left(\overline{\lambda^L}(1)|\lambda \le \overline{\lambda}(\omega_t)\right) = 0$ (any official who embezzled as a bureaucrat must also embezzle as a leader), and hence $\mathrm{E}[v_{t+1}|\omega_t, s_t] = (1-k)G\left(\overline{\lambda}(1)\right)$.

Then consider the case of $s_t = 0$. Since the leader selects a clean successor, this successor will be someone with type $\lambda^L_{t+1} > \overline{\lambda}(\omega_t)$, and will assume office with initial record $\alpha_{t+1} = 0$. He will then embezzle with conditional probability $F\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(\omega_t)\right)$, and will not embezzle with conditional probability $G\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(\omega_t)\right)$. In the former event, his final record will be $\omega_{t+1} = 1$, and hence total public goods provided by his bureaucrats amount to $(1-k)G\left(\overline{\lambda}(1)\right)$. In the latter event, his final record will be $\omega_{t+1} = 0$, and hence total public goods provided by his bureaucrats amount to $(1-k)G\left(\overline{\lambda}(0)\right)$. This results in the expression in (3).

Therefore, characterizing a Markov perfect equilibrium boils down to characterizing cutoffs $\overline{\lambda}(1)$, $\overline{\lambda}(0)$, $\overline{\lambda^L}(1)$, and $\overline{\lambda^L}(0)$, together with the leader's successor-selection rules $\sigma(1)$ and $\sigma(0)$. We now proceed to characterize the Markov perfect equilibria under the regimes with and without leader immunity, respectively.

3.1 The Regime with Leader Immunity ($q = 0$)

Proposition 1 below describes the unique equilibrium under the regime with leader immunity. Under such a regime, retiring leaders harbor no fear in selecting a clean successor, and indeed they will do so because a clean successor is more likely to be civic-minded, less likely to embezzle as the next leader, and hence on average provides more public goods for the enjoyment of the retired leaders as generic citizens. That leaders are always selected from clean bureaucrats, however, does not mean that they for sure will not embezzle. Some of them refrained from embezzling when they were bureaucrats because they were genuinely civic-minded, but some did so merely out of fear—they knew that the next leader for sure would have a clean initial record and hence would launch an anti-corruption campaign, so they refrained from embezzling in fear of being purged during such a campaign. Since a retiring leader cannot distinguish these two kinds of bureaucrats, occasionally a successor will be selected out of the second kind. Once a successor of the second kind assumes the top office, he will no longer be deterred from embezzling, thanks especially to leader immunity. In summary, in a Chinese-style political institution where tomorrow's leader is selected by today's leader out of today's bureaucrats, leader immunity helps generate discipline at the bottom of the government (bureaucrats know that there will always be an anti-corruption campaign ahead of them), but such discipline is bought at the expense of more corruption at the top of the government.[27]

Proposition 1 *With leader immunity, there is a unique equilibrium, where*

1. *a leader embezzles maximally regardless of his initial record:* $\overline{\lambda^L}(1) = \overline{\lambda^L}(0) = \eta$;
2. *a bureaucrat embezzles iff his civic-mindedness falls below a cutoff that is independent of the leader's final record:* $\overline{\lambda}(1) = \overline{\lambda}(0) = \lambda^* := \eta - pd \in (0, \eta)$; *and*
3. *a retiring leader always selects a clean successor:* $\sigma(1) = \sigma(0) = 0$.

The proof of Proposition 1, and all the other proofs, can be found in the Appendix.

[27] At first glance, this result may look similar to the general finding in dynamic principal-agent problems that back-loaded rewards (possibly in the form of future opportunities to embezzle) can help alleviate the moral-hazard problem on the part of the agent. Our result, however, has a very different underlying mechanism. For starter, causality does not flow from future rewards to current discipline, because the probability of being selected as the next leader is 0. Instead, it is the (fear-induced) current discipline that makes it difficult to select genuinely civic-minded successors, which breeds corruption at the top of the government.

It is easy to see that the unique equilibrium described in Proposition 1 induces a unique stationary distribution of the payoff-relevant state variable ω_t (this stands in sharp contrast to the equilibrium under the regime without leader immunity, where multiple stationary distributions are possible). Here, and in other parts of this paper, we rather informally refer to any such stationary distribution, and the associated players' behavior, collectively as a "steady state". Corollary 1 below describes the unique steady state under the regime with leader immunity. When compared with steady states to be described in the next subsection, this steady state is merely mediocre in terms of welfare: the probability that leaders embezzle is higher than that in the best scenario, while the probability that bureaucrats embezzle is lower than that in the worst scenario, under the regime without leader immunity (see Proposition 3 in the next section). We shall hence refer to this steady state as the *mediocre steady state*.

Corollary 1 *With leader immunity, regardless of initial conditions, the economy will in finite time arrive at the only steady state. In this steady state, the leader embezzles with probability* $F(\eta|\lambda > \lambda^*)$ *that is strictly between 0 and 1, while* $\mu^* := F(\lambda^*) < F(\eta)$ *of bureaucrats embezzle, where* λ^* *is as defined in Proposition 1. The leader always selects a clean successor upon retirement. Anti-corruption campaign is always launched, and an intermediate level* $V^* := kG(\eta|\lambda > \lambda^*) + (1-k)G(\lambda^*)$ *of public goods are provided.*

3.2 The Regime without Leader Immunity ($q = 1$)

Proposition 2 below describes the unique equilibrium under the regime without leader immunity. The major change in this regime is that a retiring leader will select a corrupt successor iff his final record is tainted—while a retiring leader with a clean final record continues to have nothing to fear, a retiring leader with a tainted final record would rather select a corrupt successor in order to avoid being purged in an anti-corruption campaign.

Proposition 2 *Without leader immunity, there is a unique equilibrium, where*

1. *a leader with a tainted initial record embezzles maximally:* $\overline{\lambda^L}(1) = \eta$*; whereas a leader with a clean initial record embezzles iff his civic-mindedness falls below the cutoff* $\overline{\lambda^L}(0)$*, where* $\overline{\lambda^L}(0) \in (0, \eta)$ *is the unique solution to the following equation:*

$$\overline{\lambda^L}(0) = \eta - G\left(\overline{\lambda^L}(0)|\lambda > \lambda^*\right)(k + (1-k)[G(\lambda^*) - G(\eta)]), \tag{4}$$

where $\lambda^* := \eta - pd < \eta$ is the same as defined in Proposition 1;

2. *if the leader is to retire with a tainted final record, a bureaucrat embezzles maximally: $\overline{\lambda}(1) = \eta$; whereas if the leader is to retire with a clean final record, a bureaucrat embezzles iff his civic-mindedness falls below the cutoff $\overline{\lambda}(0) = \lambda^*$;*

3. *a retiring leader selects a corrupt successor iff his final record is tainted: $\sigma(1) = 1$ and $\sigma(0) = 0$.*

Unlike the unique equilibrium under regime with immunity, the equilibrium described in Proposition 2 can potentially admit multiple steady states. Regardless of parameters, a *bad steady state* always exists. Depending on parameters, a second, *good steady state* may also exist. These steady states are described formally in the next proposition, in which μ^* and V^* refer to quantities mentioned in Corollary 1, which in turn describes the mediocre steady state under the regime with leader immunity.

Proposition 3 *Consider the unique equilibrium under the regime without leader immunity.*

1. *There always exists a bad steady state where leaders always embezzle, a large number $\mu^b := F(\eta) > \mu^*$ of bureaucrats embezzles, and a retiring leader always selects a corrupt successor. Anti-corruption campaign is never launched, and a low level $V^b := (1-k)G(\eta) < V^*$ of public goods are provided every period. When compared with the mediocre steady state, fewer public goods are provided, not only because leaders embezzle more often, but also because more bureaucrats embezzle in every period.*

2. *If $\overline{\lambda^L}(0) > \lambda^*$, the bad steady state is the only steady state. If $\overline{\lambda^L}(0) \leq \lambda^*$, there exists a second, good steady state where leaders never embezzle. A retiring leader always selects a clean successor. As a result, anti-corruption campaign is always launched. In every period, μ^* of bureaucrats embezzle, and a high level $V^g := k + (1-k)G(\lambda^*) > V^*$ of public goods are provided. When compared with the mediocre steady state, more public goods are provided because leaders embezzle less often, although the same number of bureaucrats embezzle in every period.*

Apparently, if only the bad steady state exists, then it is never worthwhile to rid leaders of their immunity. The only chance that removing leader immunity can do the society any good is when the good steady state exists, which according to Proposition 3 happens iff $\overline{\lambda^L}(0) \leq \lambda^*$. This condition is easy to interpret. Recall that λ^* is the minimum civic mindedness for a bureaucrat to be clean when he knows that the leader is to select a clean successor. A successor selected randomly from the clean bureaucrats hence has civic-mindedness $\lambda > \lambda^*$. Whereas $\overline{\lambda^L}(0)$ is the minimum civic-mindedness for a clean successor to stay clean as a leader. If $\overline{\lambda^L}(0) > \lambda^*$, then a successor selected randomly from among the clean bureaucrats may or may not stay clean as a leader, depending on whether his civic-mindedness is above $\overline{\lambda^L}(0)$ or is in between λ^* and $\overline{\lambda^L}(0)$, respectively. Once a leader fails to stay clean, he will start selecting a corrupt successor in order to avoid being purged, and the economy will be absorbed into the bad steady state. Therefore, in order for the good steady state to exist, it is necessary to have $\overline{\lambda^L}(0) \leq \lambda^*$, which makes sure that a successor selected randomly from among the clean bureaucrats will stay clean as a leader for sure.

This begs the question of when will the condition $\overline{\lambda^L}(0) \leq \lambda^*$ hold in the unique equilibrium under the regime without leader immunity. It turns out that the condition holds when the technology of catching corrupt ex-bureaucrats is sufficiently inferior; i.e., when p is sufficiently small. Intuitively, when p is small, bureaucrats are less afraid of the looming anti-corruption campaign, and hence refrain less from embezzling. Therefore, when a particular bureaucrat does not embezzle, it is more likely that he is genuinely civic-minded. A successor selected from the clean bureaucrats is hence more likely to continue as a clean leader. In other words, an inferior technology of catching corrupt ex-bureaucrats can be a blessing because it helps solve a retiring leader's successor-selection problem—it makes it easier for him to guarantee that the next leader is a clean one simply by selecting one of his clean bureaucrats as his successor. This intuition is formalized in the proof of the following proposition.

Proposition 4 *Consider the unique equilibrium under the regime without leader immunity. There exists a cutoff* $\overline{p} \in (0, 1)$ *such that* $\overline{\lambda^L}(0) \leq \lambda^*$ *iff* $p \leq \overline{p}$.

4 Decentralization and Leader Immunity

In light of Proposition 4, some care should be taken in interpreting Proposition 3. Implicit in Proposition 3 is that p is treated as a technological parameter instead of a policy variable. As such, p reflects some technological constraints that do not vary across regimes.

Therefore, although existence of a good steady state requires a sufficiently small p, and a small p depresses V^g (because a weaker threat of being purged in an anti-corruption campaign encourages bureaucrats to embezzle more and hence depresses public goods provision), this does not cause problem to the claim that $V^g > V^*$, because the same small p implies a small V^* as well.

However, in some contexts it may be more appropriate to treat p as a policy variable instead. That is, a small p reflects not the lack of state capacity to purge all corrupt ex-bureaucrats, but rather the willingness to go easy on them during an anti-corruption campaign. Such an interpretation of p begs a kind of comparison between the two regimes that is different from what is documented in Proposition 3.

Specifically, under certain conditions (for an example, see the proof of Proposition 5 below), the level of public goods provision V^* in the mediocre steady state under the regime with leader immunity is increasing in p, and hence the regime's full potential is realized with $p = 1$. On the other hand, although the level of public goods provision V^g in the good steady state under the regime without leader immunity is also increasing in p, existence of the good steady state requires a sufficiently small p—specifically, it requires that $p \leq \overline{p}$ according to Proposition 4—and hence the regime's full potential is realized at $p = \overline{p}$, which is strictly smaller than 1. It is hence not clear at all from Proposition 3 whether the regime without leader immunity at a p small enough to admit a good steady state would perform better than the regime with leader immunity at its full potential.

It turns out that the answer depends on the degree of political decentralization. Intuitively, the economic logic behind the regime with leader immunity is to achieve more discipline at the bottom of the government (by guaranteeing that an anti-corruption campaign is launched every period) at the expense of discipline at the top of the government (because granting immunity in effect invites leaders to embezzle maximally). The economic logic behind the regime without leader immunity, on the other hand, is just the opposite: it achieves more discipline at the top of the government at the expense of discipline at the bottom of the government (because implementing a small p in effect means going easy on corrupt ex-bureaucrats). The relative merits of the two regimes hence depend on whether it is more important to achieves more discipline at the top or at the bottom of the government, which in turn is a question about the degree of political decentralization.

This intuition is formalized in Proposition 5 below. Recall that $k \in (0,1)$ measures the relative importance of public goods provided by the leader. When k is larger, more authorities are left for the leader, or more decisions are to be made at the top tier of the government. Symmetrically, more political decentralization would result in a smaller k. The size of k hence determines whether more discipline at the top of the government, brought along by ridding leaders of their immunity, at the expense of discipline at the bottom of the government, is worthwhile. Proposition 5 below confirms our intuition that it is worthwhile precisely when k is sufficiently large (the government is sufficiently centralized).[28]

Proposition 5 *Let V^*_{sup} be the supremum of V^* across all p's. Let V^g_{sup} be the supremum of V^g across all p's that admit a good steady state under the regime without leader immunity. Then*

$$V^*_{sup} = \max\left\{k + (1-k)G(\eta), k\frac{G(\eta)}{G(\eta-d)} + (1-k)G(\eta-d)\right\},$$

$$\text{and} \quad V^g_{sup} = k + (1-k)G\left(\eta - \overline{p}d\right),$$

where $\overline{p}$ is as defined in Proposition 4 (i.e., V^g is maximized at the upper bound, $\overline{p}$, of p). There exists a cutoff $\overline{k} \in (0,1)$ such that $V^*_{sup} > V^g_{sup}$ iff $k < \overline{k}$. In other words, it is worth ridding leaders of their immunity only if the government is sufficiently centralized.

5 Early Appointment

Since the main reason why removing leader immunity may backfire is that it creates a *hostage motive* for corrupt leaders to select corrupt successors, it is natural to ask whether a change in the timing of successor-selection would help nullify such a motive. Specifically, we study in this section the consequences of changing the timing of successor-selection so that a leader has to select his successor at the beginning (instead of at the end) of a period, before his bureaucrats make their embezzlement decisions. Under this new timing, a leader necessarily selects his successor in the dark, without knowing who will and who

[28] In this paper, we treat k as an exogenous parameter. If k is instead regarded as a policy variable as well, Proposition 5 would imply that there is some complementarity between a policy that rids leaders of their immunity and a policy that centralizes authorities. We find this result especially intriguing because it is widely observed that the Xi Jinping administration of China has been actively re-centralizing authorities at the same time when it removes leader immunity.

will not embezzle as a bureaucrat subsequent to the selection. As a result, a corrupt leader will no longer be able to select a corrupt successor for sure even if he intends to do so out of the hostage motive. Admittedly such a timing is rare in reality,[29] but in a design exercise like this one it is important to understand its costs and benefits.

Apparently, under this new timing, all a leader can do is to select randomly one of the bureaucrats as his successor. Since this is true regardless of the presence/absence of leader immunity, there is no longer any hostage motive to justify leader immunity. Similarly, there is no longer any reason to go easy on corrupt ex-bureaucrats, as doing so can no longer improve the expected civic-mindedness of the next leader. We shall therefore focus on the case with $p = q = 1$. We call the new timing, together with $p = q = 1$, as the *regime of early appointment*.

Let's call the lucky bureaucrat who gets selected at the beginning of a given period the *prince*, who together with the other bureaucrats simultaneously choose whether to embezzle or not after observing the leader's final record. However, a little pondering should reveal that the leader's final record is no longer payoff-relevant under this new timing, because it can no longer affect the prince's identity. The equilibrium Markov strategy of a bureaucrat hence boils down to a single cutoff $\overline{\lambda_e}$ such that he embezzles iff his civic-mindedness is no larger than this cutoff.[30]

As for the prince, it should be easy to see that he either (*i*) embezzles both as a bureaucrat and as the leader, or (*ii*) does not embezzle in either position. So his equilibrium Markov strategy also boils down to a single cutoff $\overline{\lambda_e^L}$ such that he embezzles in both positions iff his civic-mindedness is no larger than this cutoff.

Given the prince's equilibrium Markov strategy, there is a time-invariant probability that an anti-corruption campaign will be launched in any given period, namely $G\left(\overline{\lambda_e^L}\right)$. In any equilibrium, $\left(\overline{\lambda_e}, \overline{\lambda_e^L}\right)$ must then solve the following system of equations:

$$\overline{\lambda_e} = \eta - G\left(\overline{\lambda_e^L}\right) d, \tag{5}$$

$$\overline{\lambda_e^L} = \eta - G\left(\overline{\lambda_e^L}\right) d/2, \tag{6}$$

[29] The closest example we are aware of is that, when Deng Xiaoping, China's supreme leader after Mao Zedong, named Jiang Zemin as his successor, he at the same time also named Hu Jintao as the successor of Jiang. In other words, Hu was named China's supreme leader more than a decade before he assumed that position.

[30] We use subscript e to stand for the regime of *e*arly appointment.

and the resulting time-invariant expected total amount of public goods is given by

$$V_e = kG\left(\overline{\lambda_e^L}\right) + (1-k)G\left(\overline{\lambda_e}\right).$$

Existence of an equilibrium is guaranteed by the Brouwer's fixed point theorem, while multiplicity is possible because of strategic complementarity among leaders in different periods. However, in any equilibrium, by comparing (5) and (6), we have $\overline{\lambda_e} < \overline{\lambda_e^L}$, and hence on average princes are more corrupt than their fellow bureaucrats.

Note from (6) that $\overline{\lambda_e^L}$ is bounded from below by 3/2.[31] Therefore, with probability at least $F(3/2)$, the leader will embezzle in any given period. Recall that in the best scenario under the regime without leader immunity, the leader never embezzles. Therefore, if the top of the government is sufficiently important (i.e., if k is sufficiently close to 1), citizens would fare worse under the regime of early appointment than in the good steady state under the regime without leader immunity.

On the other hand, if we take the limit $k \searrow 0$, then $V_e = G\left(\overline{\lambda_e}\right)$, while $V^*_{sup} = G(\eta - d)$ by Proposition 5. From (5), we have $\overline{\lambda_e} > \eta - d$, and hence $V_e < V^*_{sup}$. By continuity, when k is sufficiently close to 0, citizens would still fare worse under the regime of early appointment than under the regime with leader immunity. Intuitively, under the regime with leader immunity, there is an anti-corruption campaign in every period, and hence bureaucrats have a lot of discipline; whereas in the regime under early appointment, an anti-corruption campaign is launched with a probability strictly less than 1, which results in weaker discipline.

We summarize our discussion above with the following proposition.

Proposition 6 *Consider the regime of early appointment.*

- *An equilibrium exists but may not be unique.*
- *In any equilibrium, on average princes are more corrupt than their fellow bureaucrats.*
- *If the government is sufficiently centralized (i.e., if k is sufficiently close to 1), citizens fare worse in this regime than in the best scenario under the regime without leader immunity.*

[31] By (6), $\overline{\lambda_e^L} = \eta - G\left(\overline{\lambda_e^L}\right)d/2 > \eta - d/2 > d + 1 - d/2 = 1 + d/2 > 1 + 1/2 = 3/2$.

- *If the government is sufficiently decentralized (i.e., if k is sufficiently close to 0), citizens fare worse in this regime than in the regime with leader immunity.*

In summary, early appointment is not a surefire solution to the dilemma between retaining and removing leader immunity. It is true that early appointment nullifies any reason to go easy on corrupt officials, including both leaders and bureaucrats. However, early appointment, even when coupled with $p = q = 1$, does not guarantee better governance. The reason is that early appointment brings noise into the successor-selection process. At the top of the government, such noise means that the selected leaders are often not civic-minded enough to stay clean. When the government is centralized (i.e., when corruption at the top of the government is especially damaging), early appointment is worse than the best scenario under the regime without leader immunity, where leaders are always clean. Similarly, at the bottom of the government, such noise means that the anti-corruption campaign is often not launched, and hence bureaucrats' discipline is weak. When the government is decentralized (i.e., when discipline at the bottom of the government is important), early appointment is worse than the regime with leader immunity, where an anti-corruption campaign is launched in every period. Proposition 6 is silent about whether the regime of early appointment may be better than the other two regimes when k (the level of political centralization) is intermediate. However, the costs and benefits of early appointment identified in Proposition 6 are relevant in those cases as well.

6 A Role for Party Elites

Our model also sheds some light on why it may even help to randomly designate some officials as party members, and allow them to stay above the law. Such an arrangement, repulsive as it may be, serves two purposes that are complementary to a Chinese-style political institution where incumbent leaders, instead of citizens at large, select the next leaders. Intuitively, allowing party members to stay above the law is a way to tighten the law on the remaining officials without inducing fear among party members. The first purpose this serves is to keep most of the (non-party-member) bureaucrats on their toes. The second purpose is to avoid worsening the successor-selection problem—a retiring leader intending to select a genuinely civic-minded successor can do so by choosing among the clean party-member bureaucrats, resting assured that the latters refrained from engaging in corruption even when they were above the law implies that they must be genuinely civic-minded.

To formalize this intuition, let's consider an alternative regime where bureaucrats are randomly divided into two groups: $\epsilon \in (0, 1)$ of them are designated as party members, and the rest are non-members.[32] Party members are above the law—they are immune from any criminal investigation throughout their lives—and this right can even be enshrined in the constitution. In sharp contrast, any corrupt non-party-member ex-bureaucrat will be purged with maximum probability (i.e., $p = 1$) in an anti-corruption campaign. Ex-leaders, regardless of their party-membership, enjoy immunity from any criminal investigation (equivalently, a leader, even if he is selected from among non-party-member bureaucrats, becomes a party member automatically). Let's call this alternative setup the *regime with party elites*.

It is easy to see that, in the regime with party elites, there is a unique equilibrium. This unique equilibrium in turn admits a unique steady state, which we describe in the following proposition. We omit the proof as the reader should be fairly familiar with our analytical framework by now.

Proposition 7 *In the regime with party elites, there is a unique equilibrium, where*

1. *a leader embezzles maximally regardless of his initial record;*

2. *regardless of the leader's final record, a party-member bureaucrat always embezzles maximally, whereas a non-party-member bureaucrat embezzles iff his civic-mindless falls below $\eta - d$; and*

3. *regardless of his final record, a retiring leader always selects a clean party-member bureaucrat as his successor.*

In the unique steady state of this equilibrium, the leaders never embezzle. In every period, $(1-\epsilon)F(\eta - d) + \epsilon F(\eta) \approx F(\eta - d)$ of bureaucrats embezzle, which is the smallest possible number within our model. As $\epsilon \to 0$, the highest possible level of public goods are provided: $V = k + (1-k)G(\eta - d)$.

[32]We assume that these designations are publicly observable, which among other things allows a leader to select a party-member successor if he so intends.

In other words, the regime with party elite is better than all the other regimes we studied in previous sections. Indeed, within our model, it is hard to imagine how to further improve upon the performance of this regime. In particular, introducing democracy, together with $p = q = 1$, would only achieve the same level of public goods but not more. There are many reasons why the picture painted in Proposition 7 is too rosy. After all, our model is not built to compare a Chinese-style political institution and a democracy, but is built instead to highlight the potential pitfalls of ridding leaders of their immunity when the essence of a Chinese-style political institution remains intact. That said, Proposition 7 does shed some light on why citizens within a Chinese-style political institution may have surprisingly high tolerance towards a party that is often seen as above the law.

7 Conclusion

Using an overlapping principal-agent model, we have analyzed some of the likely long-term impacts when a Chinese-style political institution rids its leaders of their criminal immunity without changing its fundamental political institution where incumbent leaders, instead of citizens at large, select the next leaders. We showed that such a partial reform can produce good political outcomes only if it takes place at the "right" time, is accompanied by tolerance for corrupt low-rank government officials, and by effective centralization of the government. Failing these, such a partial reform can eventually lead to rampant corruption throughout the government hierarchy in the end, an outcome far inferior to that when leader immunity is retained.

One may wonder whether, among our qualitative results, the importance of initial conditions in the success of such a partial reform is merely an artifact of "insufficient noise" in our model.[33] Technically it is true that by tossing in sufficient noise we can make any finite Markov chain aperiodic and irreducible and hence guarantee unique stationary distribution. However, such an exercise would only make it more difficult to articulate the underlying economic insights instead of invalidating them. Intuitively, an economy that has to spend many periods under the rule of corrupt leaders, before the arrival of a (low-probability) shock that brings in a clean leader, can be approximated by an economy that is stuck in a bad steady state with leaders being perpetually corrupt.

[33] We thank some seminar participants for raising this issue to us.

Our model is admittedly stylized. A couple of possible extensions come to mind and are worth exploring in future research.

First, in our model, each bureaucrat has zero probability to be selected as the next leader, and hence career concerns play no role in our analysis. This is an handy simplification, but does not sit well with the existing literature that emphasizes political career concerns as a main driving force behind good governance in non-democracies such as China (Li and Zhou (2005) and Xu (2011)). To allow for career concerns, we need a model where each bureaucrat has a strictly positive probability to be promoted, which is possible if, for example, there are finitely many bureaucrats, or the leadership is consisted of a positive measure of leaders (in the latter case, how such a leadership is assumed to make collective decisions may sensitively affect the model's predictions). We did not pursue such an extension here, but we conjecture that new, interesting phenomena may arise. For example, even a genuinely civic-minded bureaucrat may want to engage in corruption in order to earn the opportunity to get promoted if he knows that the incumbent corrupt leader will only select a corrupt successor. However, we also conjecture that our qualitative results will not be interfered by these new phenomena.

Second, in our model, corruption and public goods provision have a very simplistic, monotonic relationship, with higher levels of public goods always come with lower levels of corruption. In reality, their relationship is not always monotonic. For starter, low levels of public goods drive away businesses, which in turn reduces corruption opportunities. A do-nothing government also generates few corruption opportunities for its officials, who often rely on infrastructure construction to collect kickbacks, and on regulations to collect bribes. Our welfare analysis may need to be qualified once such non-monotonicity is taken into account.

Third, in our model, bureaucrats are heterogeneous only along one dimension, namely their civic-mindedness. In reality, they are likely to be heterogeneous along multiple dimensions, including competence and ideology as well. We do not immediately see how introducing other dimensions of heterogeneity may interfere with our qualitative results, but this is definitely an important issue to explore in the future.

Appendix A: Omitted Proofs

Before we characterize the Markov perfect equilibria under the regimes with and without leader immunity, respectively, we first prove a lemma that will be useful for the analysis under both regimes.

Lemma 2 *In any equilibrium, if* $\sigma(1) = 1$*, then* $\sigma(0) = 0$*.*

Proof: We first observe that, in any equilibrium, if $\sigma(1) = 1$, then $\overline{\lambda}(1) \geq \overline{\lambda}(0)$:

$$\begin{aligned}\overline{\lambda}(1) := \eta - (1 - \sigma(1))pd &= \eta \\ &\geq \eta - (1 - \sigma(0))pd =: \overline{\lambda}(0).\end{aligned}$$

When $\omega_t = 0$, the retiring leader's final record is clean, and his continuation payoff is v_{t+1} regardless of the regime. Hence $\sigma(0) = 0$ if $\mathrm{E}[v_{t+1}|\omega_t = 0, s_t = 0] > \mathrm{E}[v_{t+1}|\omega_t = 0, s_t = 1]$, which is indeed the case when $\overline{\lambda}(1) \geq \overline{\lambda}(0)$:

$$\begin{aligned}\mathrm{E}[v_{t+1}|\omega_t = 0, s_t = 0] &= F\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(0)\right)\left[0 + (1-k)G\left(\overline{\lambda}(1)\right)\right] \\ &\quad + G\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(0)\right)\left[k + (1-k)G\left(\overline{\lambda}(0)\right)\right] \\ &\geq F\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(0)\right)\left[0 + (1-k)G\left(\overline{\lambda}(1)\right)\right] \\ &\quad + G\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(0)\right)\left[k + (1-k)G\left(\overline{\lambda}(1)\right)\right] \\ &> (1-k)G\left(\overline{\lambda}(1)\right) \\ &= \mathrm{E}[v_{t+1}|\omega_t = 0, s_t = 1].\end{aligned}$$

■

Proof of Proposition 1: We first argue that $\sigma(1) = \sigma(0) = 0$. With leader immunity, a retiring leader will survive any anti-corruption campaign regardless of his final record, ω_t, and hence his next-period payoff is also the same as that of a generic citizen, v_{t+1}. Therefore, $\sigma(\omega_t) = 0$ iff $\mathrm{E}[v_{t+1}|\omega_t, s_t = 0] \geq \mathrm{E}[v_{t+1}|\omega_t, s_t = 1]$.[34] Investigation of (3) reveals

[34] The inequality is weak because of our tie-breaking rule that a retiring leader selects a clean successor when he is indifferent.

that, regardless of ω_t,

$$
\begin{aligned}
& \mathrm{E}[v_{t+1}|\omega_t, s_t = 0] \geq \mathrm{E}[v_{t+1}|\omega_t, s_t = 1] \\
\iff \quad & k + (1-k)G\left(\overline{\lambda}(0)\right) \geq (1-k)G\left(\overline{\lambda}(1)\right)
\end{aligned}
$$

because $G\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(\omega_t)\right) > 0$ by the full-support assumption. We hence have $\sigma(1) = \sigma(0)$. Since $\sigma(1) = 1$ would have implied $\sigma(0) = 0$ by Lemma 2, we must have $\sigma(1) = \sigma(0) = 0$ as claimed.

By (1), we hence have $\overline{\lambda}(1) = \overline{\lambda}(0) = \lambda^* := \eta - pd \in (0, \eta)$. By (3), this in turn implies $\mathrm{E}[v_{t+1}|\omega_t = 1] = \mathrm{E}[v_{t+1}|\omega_t = 0]$. By (2), we then have $\overline{\lambda^L}(1) = \overline{\lambda^L}(0) = \eta$. ■

Proof of Proposition 2: Without leader immunity, a retiring leader with final record $\omega_t = 1$ will be purged for sure in an anti-corruption campaign if he selects a clean successor, resulting in $\mathrm{E}[v_{t+1}|\omega_t = 1, s_t = 0] - d$ next-period payoff, which is strictly negative because v_{t+1} is bounded from above by 1 while $d > 1$. If he selects a corrupt successor, on the other hand, there will be no anti-corruption campaign, and his next-period payoff will be the same as that of a generic citizen, which in expectation equals to $\mathrm{E}[v_{t+1}|\omega_t = 1, s_t = 1] > 0$. This, together with Lemma 2, implies $\sigma(1) = 1$ and $\sigma(0) = 0$.

That $\left(\overline{\lambda^L}(1), \overline{\lambda}(1), \overline{\lambda}(0)\right) = (\eta, \eta, \lambda^*)$ and that $\overline{\lambda^L}(0)$ is a solution to (4) then follow from (1), (2), and (3).

It remains to prove that equation (4) has a unique solution $\overline{\lambda^L}(0) \in (0, \eta)$. Since both $G\left(\overline{\lambda^L}(0)|\lambda > \lambda^*\right)$ and $k + (1-k)\left[G(\lambda^*) - G(\eta)\right]$ are both strictly positive and bounded from above by 1, the RHS of (4) is strictly in between 0 and η. Furthermore, the derivative of the RHS of (4) wrt to $\overline{\lambda^L}(0)$ is 0 when $\overline{\lambda^L}(0) < \lambda^*$, and is

$$
\frac{f\left(\overline{\lambda^L}(0)\right)}{1 - F(\lambda^*)}\left(k + (1-k)\left[G(\lambda^*) - G(\eta)\right]\right) \leq \frac{f\left(\overline{\lambda^L}(0)\right)}{1 - F(\lambda^*)} < \frac{f\left(\overline{\lambda^L}(0)\right)}{1 - F\left(\overline{\lambda^L}(0)\right)} < 1
$$

when $\overline{\lambda^L}(0) > \lambda^*$, where the last inequality follows from the assumption that $\frac{f}{1-F} < 1$. Therefore, a unique solution to (4) exists and is strictly in between 0 and η. ■

Proof of Proposition 3: By Proposition 2, in equilibrium $\sigma(1) = 1$ and $\overline{\lambda^L}(1) = \overline{\lambda}(1) = \eta$. Start from an initial condition where a leader is to retire with a tainted final record $\omega_t = 1$.

His bureaucrats will embezzle iff $\lambda \leq \overline{\lambda}(1) = \eta$, and hence a mass of $F(\eta) =: \mu^b$ of his bureaucrats will embezzle. By $\sigma(1) = 1$, he will select one of these corrupt bureaucrats as his successor, who in turn assumes office in the next period with a tainted initial record. Since $\overline{\lambda^L}(1) = \eta$, this successor will embezzle for sure as a leader, and will again retire with a tainted final record. The same behavior then repeats itself in every subsequent period. The level of public goods provided in every period is hence $0 + (1-k)G(\eta) =: V^b$. That $\mu^b > \mu^*$ and $V^b < V^*$, where $\mu^* := F(\lambda^*)$ and $V^* := kG(\eta|\lambda > \lambda^*) + (1-k)G(\lambda^*)$ are defined in Corollary 1, follow from $\lambda^* = \eta - pd < \eta$.

If $\overline{\lambda^L}(0) > \lambda^*$, the bad steady state is also the unique steady state. Regardless of the initial condition ω_t, there is a strictly positive probability that $\omega_{t+1} = 1$. Indeed, if $\omega_t = 1$, then $\omega_{t+1} = 1$ for sure according to the above paragraph. If $\omega_t = 0$, then the next leader will be selected from among those bureaucrats with $\lambda > \lambda^*$, and will assume office with a clean initial record $\alpha_{t+1} = 0$. He will then embezzle with probability $F\left(\overline{\lambda^L}(0)|\lambda > \lambda^*\right)$, which is strictly positive because, by assumption, $\overline{\lambda^L}(0) > \lambda^*$. Therefore, the economy will be absorbed into the bad steady state in finite time with probability 1.

Suppose $\overline{\lambda^L}(0) \leq \lambda^*$ instead. Start from the initial condition where a leader is to retire with a clean final record $\omega_t = 0$. His bureaucrats will embezzle iff $\lambda \leq \lambda^*$, and hence a mass of $F(\lambda^*) =: \mu^*$ of his bureaucrats will embezzle. By $\sigma(0) = 0$, he will select one of the clean bureaucrats as his successor, who in turn assumes office in the next period with a clean initial record. Since $\overline{\lambda^L}(0) \leq \lambda^*$ by assumption, this successor will embezzle with probability $F\left(\overline{\lambda^L}(0)|\lambda > \lambda^*\right) = 0$ as a leader, and will for sure retire with a clean final record. The same behavior then repeats itself in every subsequent period. The level of public goods provided in every period is hence $k + (1-k)G(\lambda^*) =: V^g$. That $V^g > V^* := kG(\eta|\lambda > \lambda^*) + (1-k)G(\lambda^*)$ follows from direct comparison. ■

Proof of Proposition 4: Inspection of (4) reveals that $\overline{\lambda^L}(0) \leq \lambda^*$ iff the RHS of (4) is less than or equal to the LHS at the point $\overline{\lambda^L}(0) = \lambda^*$. At the point $\overline{\lambda^L}(0) = \lambda^*$, the LHS is simply λ^*, whereas the RHS is

$$\eta - (k + (1-k)[G(\lambda^*) - G(\eta)]) =: J(\lambda^*).$$

Therefore, we have $\overline{\lambda^L}(0) \leq \lambda^*$ iff $J(\lambda^*) \leq \lambda^*$. Differentiating $J(\lambda^*)$ w.r.t. λ^*, we have

$$\frac{dJ(\lambda^*)}{d\lambda^*} = (1-k)f(\lambda^*) < f(\lambda^*) < \frac{f(\lambda^*)}{1-F(\lambda^*)} < 1,$$

where the last inequality follows from the assumption that $\frac{f}{1-F} < 1$. Therefore, there exists a unique cutoff $\overline{\lambda^*}$ such that $J(\lambda^*) \leq \lambda^*$ iff $\lambda^* \geq \overline{\lambda^*}$. Moreover, it can be shown that $\overline{\lambda^*} \in (\eta - d, \eta)$. To see this, it suffices to observe that $k + (1-k)\left[G(\lambda^*) - G(\eta)\right]$ is strictly between 0 and 1, and hence $\eta - d < \eta - 1 < J(\lambda^*) < \eta$ for any λ^*.

Define $\overline{p} := \left(\eta - \overline{\lambda^*}\right)/d$. We then have $\lambda^* \geq \overline{\lambda^*}$ iff $p \leq \overline{p}$. That $\overline{\lambda^*} \in (\eta - d, \eta)$ implies that $\overline{p} \in (0, 1)$. ■

Proof of Proposition 5: For any $p \in (0, 1]$, by Corollary 1, $V^* = kG(\eta)/G(\lambda^*) + (1-k)G(\lambda^*)$, where $G(\eta) < G(\lambda^*) \leq G(\eta - d)$ because $\lambda^* := \eta - pd \in [\eta - d, \eta)$ by Proposition 1. Let $H : [G(\eta), G(\eta - d)] \to \mathbb{R}$ be defined by

$$H(x) := kG(\eta)/x + (1-k)x, \qquad x \in [G(\eta), G(\eta - d)].$$

Differentiating H wrt x, we have

$$H'(x) = -kG(\eta)/x^2 + (1-k) \gtreqless 0 \quad \Longleftrightarrow \quad x \gtreqless \sqrt{kG(\eta)/(1-k)},$$

and hence H is quasi-convex,[35] and is maximized at the extreme points. Therefore,

$$\begin{aligned} V^*_{sup} &= \max\{H(G(\eta)), H(G(\eta - d))\} \\ &= \max\left\{k + (1-k)G(\eta), k\frac{G(\eta)}{G(\eta - d)} + (1-k)G(\eta - d)\right\}. \end{aligned}$$

On the other hand, for any p that admits a good steady state under the regime without leader immunity, by Proposition 2, $V^g = k + (1-k)G\left(\lambda^*\right)$, which is decreasing in $\lambda^* := \eta - pd$, and hence is increasing in p. Therefore, $V^g_{sup} = k + (1-k)G\left(\eta - \overline{p}d\right)$, where $\overline{p}$ is as defined in Proposition 4.

[35] If the cutoff $\sqrt{kG(\eta)/(1-k)}$ is smaller than $G(\eta)$ (respectively, larger than $G(\eta - d)$), then H is monotonically increasing (respectively, decreasing). If the cutoff is within the domain $[G(\eta), G(\eta - d)]$, then H first decreases and then increases. In either case, H is quasi-convex.

Comparing V^*_{sup} and V^g_{sup}, we first observe that $H(G(\eta)) < V^g_{sup}$ for all $k \in (0,1)$ because $G(\eta) < G(\eta - \overline{p}d)$.[36] Therefore $V^*_{sup} > V^g_{sup}$ iff $H(G(\eta - d)) > V^g_{sup}$. Since

$$\lim_{k \searrow 0} H(G(\eta - d)) = G(\eta - d) > G(\eta - \overline{p}d) = \lim_{k \searrow 0} V^g_{sup},$$
$$\text{and} \quad \lim_{k \nearrow 1} H(G(\eta - d)) = \frac{G(\eta)}{G(\eta - d)} < 1 = \lim_{k \nearrow 1} V^g_{sup},$$

$H(G(\eta - d))$ and V^g_{sup} as functions of k must cross at least once. To see that they cross only once, note that V^g_{sup} is everywhere steeper than $H(G(\eta - d))$:

$$\begin{aligned}
\frac{dV^g_{sup}}{dk} &= 1 - G(\eta - \overline{p}d) + (1-k)f(\eta - \overline{p}d)d\frac{d\overline{p}}{dk} \\
&> 1 - G(\eta - \overline{p}d) \\
&> \frac{G(\eta)}{G(\eta - d} - G(\eta - \overline{p}d) \\
&> \frac{G(\eta)}{G(\eta - d} - G(\eta - d) \\
&= \frac{dH(G(\eta - d))}{dk},
\end{aligned}$$

where the first inequality follows from the fact that $d\overline{p}/dk > 0$, which in turn follows from the observation that the J function in the proof of Proposition 4 shifts up when k increases.

Therefore, $H(G(\eta - d))$ crosses V^g_{sup} once and from above. There hence exists $\overline{k} \in (0,1)$ such that $H(G(\eta - d)) > V^*_{sup}$ iff $k < \overline{k}$. ■

[36] If we allow k to take values of 0 and 1, then we have $H(G(\eta)) = V^g_{sup}$ at these two points. That $H(G(\eta)) = V^g_{sup} = 1$ at $k = 1$ is easy to see. That $H(G(\eta)) = V^g_{sup} = G(\eta)$ at $k = 0$ follows from that fact that $\overline{p} = 0$ at $k = 0$, which in turn follows from the observation that η is a fixed point of the J function in the proof of Proposition 4 when $k = 0$:

$$J(\eta) = \eta - (0 + (1-0)[G(\eta) - G(\eta)]) = \eta.$$

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Online Appendix

This Online Appendix contains an alternative model setup, where the consequence for an ex-official of being purged is to forgo his payoff as a generic citizen for one period, possibly because he spends that period in jail. So a period-$(t-1)$ bureaucrat, if purged at the beginning of period t, forgoes his payoff as a generic citizen in period t (when he is middle-aged), but lives as a generic citizen in period-$(t+1)$ (when he is old). Similarly for the period-$(t-1)$ leader.

In this alternative model, we replace the original assumption of $\frac{f}{1-F} < 1$ with the assumption that f is weakly decreasing.

The bureaucrat will embezzle iff[37]

$$\lambda + \mathrm{E}[v_{t+1}|\omega_t] \leq \eta + (s_t + (1-s_t)(1-p))\mathrm{E}[v_{t+1}|\omega_t],$$

or, equivalently,

$$\lambda \leq \eta - (1-s_t)p\mathrm{E}[v_{t+1}|\omega_t].$$

If other agents follow Markov strategies, both s_t and $\mathrm{E}[v_{t+1}|\omega_t]$ will depend on the past history only via ω_t, and hence it will indeed be optimal for any individual bureaucrat to follow a Markov strategy that contingent on past history only via ω_t. Moreover, the bureaucrat's Markov strategy $\varepsilon^B(\lambda, \omega_t)$ can be characterized by cutoffs $\overline{\lambda}(\omega_t)$, $\omega_t = 1, 0$, such that

$$\varepsilon^B(\lambda, \omega_t) = \begin{cases} 1 & \text{if } \lambda \leq \overline{\lambda}(\omega_t) \\ 0 & \text{otherwise} \end{cases},$$

where

$$\overline{\lambda}(\omega_t) := \eta - (1-\sigma(\omega_t))p\mathrm{E}[v_{t+1}|\omega_t] > 0, \quad \omega_t = 1, 0. \tag{7}$$

In this alternative model, Lemma 1 remains true.

The leader's embezzlement strategy $\varepsilon^L(\lambda_t^L, \alpha_t)$ can also be characterized by cutoffs

[37] Since the bureaucrat, if purged, will forgo his payoff as a generic citizen for only *one* period; i.e., he will be in jail only in his middle-aged period. As a result, he will enjoy the payoff as a generic citizen when he is old regardless of what he does as a (young) bureaucrat. Therefore, we can suppress his third-period payoff when studying his incentives.

$\overline{\lambda^L}(\alpha_t)$, $\alpha_t = 1, 0$, such that

$$\varepsilon^L(\lambda_t^L, \alpha_t) = \begin{cases} 1 & \text{if } \lambda_t^L \leq \overline{\lambda^L}(\alpha_t) \\ 0 & \text{otherwise} \end{cases},$$

where

$$\begin{aligned} & \overline{\lambda^L}(1) := \eta, \\ \text{and} \quad & \overline{\lambda^L}(0) := \eta + [\sigma(1) + (1 - \sigma(1))(1 - q)]\mathrm{E}[v_{t+1}|\omega_t = 1] - \mathrm{E}[v_{t+1}|\omega_t = 0]. \end{aligned} \tag{8}$$

In this alternative model, the expression of $\mathrm{E}[v_{t+1}|\omega_t, s_t]$ remains the same, as described by (3). Therefore, once again, characterizing a Markov perfect equilibrium boils down to characterizing cutoffs $\overline{\lambda}(1)$, $\overline{\lambda}(0)$, $\overline{\lambda^L}(1)$, and $\overline{\lambda^L}(0)$, together with the leader's successor-selection rules $\sigma(1)$ and $\sigma(0)$.

In this alternative model, Lemma 2 remains true. On the other hand, Proposition 1 in the main text is now replaced by the following proposition.

Proposition 8 *With leader immunity, there is a unique equilibrium, where*

1. *a leader embezzles maximally regardless of his initial record:* $\overline{\lambda^L}(1) = \overline{\lambda^L}(0) = \eta$*;*

2. *a bureaucrat embezzles iff his civic-mindedness falls below a cutoff that is independent of the leader's final record:* $\overline{\lambda}(1) = \overline{\lambda}(0) = \lambda^*$*, where* $\lambda^* \in (0, \eta)$ *is the unique solution to*

$$\lambda^* = \eta - p\left[kG\left(\eta|\lambda > \lambda^*\right) + (1 - k)G\left(\lambda^*\right)\right];$$

   and

3. *a retiring leader always selects a clean successor:* $\sigma(1) = \sigma(0) = 0$*.*

Proof: We first argue that $\sigma(1) = \sigma(0) = 0$. With leader immunity, a retiring leader will survive any anti-corruption campaign regardless of his final record, ω_t, and hence his next-period payoff is also the same as that of a generic citizen, v_{t+1}. Therefore, $\sigma(\omega_t) = 0$

iff $\mathrm{E}[v_{t+1}|\omega_t, s_t = 0] \geq \mathrm{E}[v_{t+1}|\omega_t, s_t = 1]$.[38] Investigation of (3) reveals that, regardless of ω_t,

$$\begin{aligned} & \mathrm{E}[v_{t+1}|\omega_t, s_t = 0] \geq \mathrm{E}[v_{t+1}|\omega_t, s_t = 1] \\ \Longleftrightarrow \quad & k + (1-k)G\left(\overline{\lambda}(0)\right) \geq (1-k)G\left(\overline{\lambda}(1)\right) \end{aligned} \tag{9}$$

because $G\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(\omega_t)\right) > 0$ by the full-support assumption. We hence have $\sigma(1) = \sigma(0)$. Since $\sigma(1) = 1$ would have implied $\sigma(0) = 0$ by Lemma 2, we must have $\sigma(1) = \sigma(0) = 0$ as claimed.

By (7), $\overline{\lambda}(\omega_t)$, $\omega_t = 1, 0$, are then given by

$$\overline{\lambda}(\omega_t) = \eta - p\mathrm{E}[v_{t+1}|\omega_t], \tag{10}$$

$$\begin{aligned} \text{where} \quad \mathrm{E}[v_{t+1}|\omega_t] = & F\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(\omega_t)\right)\left[0 + (1-k)G\left(\overline{\lambda}(1)\right)\right] \\ & + G\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(\omega_t)\right)\left[k + (1-k)G\left(\overline{\lambda}(0)\right)\right]. \end{aligned} \tag{11}$$

We next prove that $\overline{\lambda}(1) = \overline{\lambda}(0)$. Since $\sigma(1) = \sigma(0) = 0$, (9) must hold. If (9) holds as an equality, then $\mathrm{E}[v_{t+1}|\omega_t]$ will be independent of ω_t by (11), and hence $\overline{\lambda}(1) = \overline{\lambda}(0)$ by (10). Suppose (9) holds as a strict inequality instead. Note that $G\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(\omega_t)\right)$ is weakly increasing in $\overline{\lambda}(\omega_t)$. If, for example, $\overline{\lambda}(1) > \overline{\lambda}(0)$, then we will have $\mathrm{E}[v_{t+1}|\omega_t = 1] \geq \mathrm{E}[v_{t+1}|\omega_t = 0]$ by (11), and hence $\overline{\lambda}(1) \leq \overline{\lambda}(0)$ by (10), a contradiction. Similar contradiction can be obtained in the case of $\overline{\lambda}(1) < \overline{\lambda}(0)$. We hence have $\overline{\lambda}(1) = \overline{\lambda}(0) = \lambda^*$ for some $\lambda^* \in (0, \eta)$, and $\mathrm{E}[v_{t+1}|\omega_t = 1] = \mathrm{E}[v_{t+1}|\omega_t = 0] = V^*$ for some V^*.

By (8), we then have $\overline{\lambda^L}(1) = \overline{\lambda^L}(0) = \eta$. By (10) and (11), λ^* solves

$$\lambda^* = \eta - pV^* = \eta - p\left[kG\left(\eta|\lambda > \lambda^*\right) + (1-k)G\left(\lambda^*\right)\right]. \tag{12}$$

It remains to prove that there exists a unique solution to (12). Since $\eta > 2$ by our maintained assumption, $\eta - pV^*$ as a function of λ^* is a continuous mapping from $[0, \eta]$ to $[0, \eta]$, by Brouwer's fixed point theorem a solution to (12) exists. Moreover, since $\eta - pV^* > 0$ at $\lambda^* = 0$, and $< \eta$ at $\lambda^* = \eta$, all solutions to (12) lie in $(0, \eta)$. To prove uniqueness, it suffices to prove that there exists $\lambda^{**} \in [0, \eta]$ such that $\eta - pV^*$ is strictly concave at any $\lambda^* < \lambda^{**}$ and is decreasing at any $\lambda^* > \lambda^{**}$.[39]

[38]The inequality is weak because of our tie-breaking rule that a retiring leader selects a clean successor when he is indifferent.

[39]To see that this is sufficient for uniqueness, let λ_1^* be the smallest solution to (12). Then, at $\lambda^* = \lambda_1^*$,

Differentiate V^* w.r.t. λ^*, we have

$$\frac{dV^*}{d\lambda^*} = f(\lambda^*)\left[\frac{kG(\eta)}{G(\lambda^*)^2} - (1-k)\right] =: f(\lambda^*)H(\lambda^*),$$

where f is the density function of λ. Note that H is strictly increasing in λ^*. Therefore, there exists $\lambda^{**} \in [0, \eta]$ such that $\eta - pV^*$ is strictly increasing at any $\lambda^* < \lambda^{**}$, and is strictly decreasing at any $\lambda^* > \lambda^{**}$.[40] Differentiate V^* twice, we have $d^2V^*/d\lambda^{*2} = f'H + fH'$. At any $\lambda^* < \lambda^{**}$, since $H < 0$ and $f' \leq 0$, we have $d^2V^*/d\lambda^{*2} > 0$, and hence $\eta - pV^*$ is strictly concave. ■

Accordingly, Corollary 1 in the main text is now replaced by the following corollary.

Corollary 2 *With leader immunity, regardless of initial conditions, the economy will in finite time arrive at the only steady state. In this steady state, the leader embezzles with a probability strictly between 0 and 1, an intermediate number* $\mu^* := F(\lambda^*) < F(\eta)$ *of bureaucrats embezzle, where* λ^* *is as defined in Proposition 8. The leader always selects a clean successor upon retirement. Anti-corruption campaign is always launched, and an intermediate level* $V^* := kG(\eta|\lambda > \lambda^*) + (1-k)G(\lambda^*)$ *of public goods are provided.*

Similarly, Proposition 2 in the main text is now replaced by the following proposition.

Proposition 9 *Without leader immunity, an equilibrium exists but may not be unique. In any equilibrium,*

1. *a leader with a tainted initial record embezzles maximally:* $\overline{\lambda^L}(1) = \eta$*; whereas a leader with a clean initial record embezzles iff his civic-mindedness falls below* $\overline{\lambda^L}(0) < \eta$*;*

2. *if the leader is to retire with a tainted final record, a bureaucrat embezzles maximally:* $\overline{\lambda}(1) = \eta$*; whereas if the leader is to retire with a clean final record, a bureaucrat embezzles iff his civic-mindedness falls below* $\overline{\lambda}(0) < \eta$*;*

$\eta - pV^*$ must be crossing the 45-degree line from above; i.e., the slope of $\eta - pV^*$ must be less than 1. But then at any $\lambda^* > \lambda_1^*$, the slope of $\eta - pV^*$ will be strictly less than 1, and hence $\eta - pV^*$ cannot cross the 45-degree line the second time.

[40] This statement is still true even if $H(\lambda^*) < 0$ for every $\lambda^* \in [0, \eta]$ (in which case we can set $\lambda^{**} = \eta$) or if $H(\lambda^*) > 0$ for every $\lambda^* \in [0, \eta]$ (in which case we can set $\lambda^{**} = 0$).

3. $\left(\overline{\lambda^L}(0), \overline{\lambda}(0)\right)$ *is one of the possibly multiple solutions to the following system of equations:*

$$\begin{aligned}
\overline{\lambda^L}(0) &= \eta + (1-k)G(\eta) - V, \\
\overline{\lambda}(0) &= \eta - pV, \\
V &= (1-k)G(\eta) + \frac{G\left(\max\left\{\overline{\lambda^L}(0), \overline{\lambda}(0)\right\}\right)}{G\left(\overline{\lambda}(0)\right)} \left\{k + (1-k)\left[G\left(\overline{\lambda}(0)\right) - G(\eta)\right]\right\};
\end{aligned} \tag{13}$$

4. *a retiring leader selects a corrupt successor iff his final record is tainted:* $\sigma(1) = 1$ *and* $\sigma(0) = 0$.

Proof: Without leader immunity, a retiring leader with final record $\omega_t = 1$ will be purged for sure in an anti-corruption campaign (which will be launched mechanically if he selects a clean successor), resulting in 0 next-period payoff. If he selects a corrupt successor, on the other hand, there will be no anti-corruption campaign, and his next-period payoff will be the same as that of a generic citizen, which in expectation equals to $\mathrm{E}[v_{t+1}|\omega_t = 1, s_t = 1] > 0$. This, together with Lemma 2, implies $\sigma(1) = 1$ and $\sigma(0) = 0$.

That $\left(\overline{\lambda^L}(1), \overline{\lambda}(1)\right) = (\eta, \eta)$ and that $\left(\overline{\lambda^L}(0), \overline{\lambda}(0)\right)$ is a solution to (13) follow from (7), (8), and (3), where $\mathrm{E}[v_{t+1}|\omega_t = 1] = (1-k)G(\eta)$ and $\mathrm{E}[v_{t+1}|\omega_t = 0] = V$. Existence of solutions to (13) follows from simple application of Brouwer's fixed point theorem. ■

Note that, in this alternative model, without further structure imposed on the cumulative distribution F of λ (or, equivalently, on the decumulative distribution G), we cannot rule out the possibility of multiple equilibria under the regime where leaders do not enjoy immunity. However, all equilibria share the common feature that a retiring leader selects a corrupt successor iff his final record is tainted. Notwithstanding this common successor-selection rule, officials may coordinate on different equilibrium embezzlement strategies. The reason of multiplicity lies in the strategic complementarity among officials in different periods: if future officials are expected to embezzle more (i.e., their embezzlement cutoffs $\overline{\lambda^L}(0)$ and $\overline{\lambda}(0)$ are higher), then future expected payoff of a generic citizen $\mathrm{E}[v_{t+1}|\omega_t = 0]$ will be lower, and hence the loss from being purged will be lower, which encourages current officials to embezzle more (i.e., their embezzlement cutoffs $\overline{\lambda^L}(0)$ and $\overline{\lambda}(0)$ are also higher). Such strategic complementarity appears in the regime with leader immunity as well. There, the assumption that f is weakly decreasing somehow manages to tame the positive feedback that may otherwise generate multiple equilibria. Here, in the regime without leader immunity, we have not been able to identify easy-to-interpret restrictions on F that can similarly tame the positive feedback mentioned above.

Notwithstanding the possibility of multiple equilibria, our analysis proceeds in a manner similar to that in the main text. Specifically, let's divide all equilibria into two kinds: those with $\overline{\lambda^L}(0) \leq \overline{\lambda}(0)$, and those with $\overline{\lambda^L}(0) > \overline{\lambda}(0)$. Let's call the former the *benign* equilibria, and the latter the *malign* ones.

In the next proposition, μ^* and V^* refer to quantities mentioned in Corollary 2, which in turn describes the mediocre steady state under the regime with leader immunity.

Proposition 10 *Consider the regime without leader immunity.*

1. *In any equilibrium, benign or malign, there exists a bad steady state where leaders always embezzle, a large number $\mu^b > \mu^*$ of bureaucrats embezzles, and a retiring leader always selects a corrupt successor. Anti-corruption campaign is never launched, and a low level $V^b < V^*$ of public goods are provided every period. In any malign equilibrium, this bad steady state is also the only steady state.*

2. *In any benign equilibrium, there exists a second, good steady state where leaders never embezzle, only a small number $\mu^g < \mu^*$ of bureaucrats embezzle, and a retiring leader always selects a clean successor. Anti-corruption campaign is always launched, and a high level $V^g > V^*$ of public goods are provided every period.*[41]

Proof: By Proposition 9, every equilibrium shares the common property that $\sigma(1) = 1$ and $\overline{\lambda^L}(1) = \overline{\lambda}(1) = \eta$. Start from an initial condition where a leader is to retire with a tainted final record $\omega_t = 1$. His bureaucrats will embezzle iff $\lambda \leq \overline{\lambda}(1) = \eta$, and hence a mass of $F(\eta) =: \mu^b$ of his bureaucrats will embezzle. By $\sigma(1) = 1$, he will select one of these corrupt bureaucrats as his successor, who in turn assumes office in the next period with a tainted initial record. Since $\overline{\lambda^L}(1) = \eta$, this successor will embezzle for sure as a leader, and will again retire with a tainted final record. The same behavior then repeats itself in every subsequent period. The level of public goods provided in every period is hence $0 + (1-k)G(\eta) =: V^b$. That $\mu^b > \mu^*$ and $V^b < V^*$, where μ^* and V^* are defined in Corollary

[41]While μ^b and V^b do not depend on the specific equilibrium, the exact values of μ^g and V^g may vary across equilibria. However, the inequalities hold regardless of the equilibrium being considered.

2, follow from

$$\lambda^* < \eta \quad \Longrightarrow \quad \mu^b = F(\eta) > F(\lambda^*) = \mu^*,$$

where λ^* is defined in Proposition 8, and from

$$\lambda^* < \eta \quad \Longrightarrow \quad V^b = (1-k)G(\eta) < (1-k)G(\lambda^*) < k\frac{G(\eta)}{G(\lambda^*)} + (1-k)G(\lambda^*) = V^*.$$

In any malign equilibrium, regardless of the initial condition ω_t, there is a strictly positive probability that $\omega_{t+1} = 1$. Indeed, if $\omega_t = 1$, then $\omega_{t+1} = 1$ for sure according to the above paragraph. If $\omega_t = 0$, then the next leader will be selected from among those bureaucrats with $\lambda > \overline{\lambda}(0)$, and will assume office with a clean initial record $\alpha_{t+1} = 0$. He will then embezzle with probability $F\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(0)\right)$, which is strictly positive because, by definition, $\overline{\lambda^L}(0) > \overline{\lambda}(0)$ in any malign equilibrium. Therefore, the economy will be absorbed into the bad steady state in finite time with probability 1.

Next consider a benign equilibrium. Start from the initial condition where a leader is to retire with a clean final record $\omega_t = 0$. His bureaucrats will embezzle iff $\lambda \leq \overline{\lambda}(0)$, and hence a mass of $F\left(\overline{\lambda}(0)\right) =: \mu^g$ of his bureaucrats will embezzle. By $\sigma(0) = 0$, he will select one of the clean bureaucrats as his successor, who in turn assumes office in the next period with a clean initial record. Since, by definition, $\overline{\lambda^L}(0) \leq \overline{\lambda}(0)$ in any benign equilibrium, this successor will embezzle with probability $F\left(\overline{\lambda^L}(0)|\lambda > \overline{\lambda}(0)\right) = 0$ as a leader, and will again retire with a clean final record. The same behavior then repeats itself in every subsequent period. The level of public goods provided in every period is hence $k+(1-k)G\left(\overline{\lambda}(0)\right) =: V^g$.

To see that $\mu^g = F\left(\overline{\lambda}(0)\right) < F\left(\lambda^*\right) = \mu^*$, note that $\overline{\lambda}(0)$ is a fixed point of the following function M^g:

$$\begin{aligned}
\overline{\lambda}(0) &= \eta - p\left[(1-k)G(\eta) + \frac{G\left(\max\left\{\overline{\lambda^L}(0), \overline{\lambda}(0)\right\}\right)}{G\left(\overline{\lambda}(0)\right)}\left\{k + (1-k)\left[G\left(\overline{\lambda}(0)\right) - G(\eta)\right]\right\}\right] \\
&= \eta - p\left[k + (1-k)G\left(\overline{\lambda}(0)\right)\right] \\
&=: M^g\left(\overline{\lambda}(0)\right),
\end{aligned}$$

where the second equality follows from $\overline{\lambda^L}(0) \leq \overline{\lambda}(0)$, which holds by definition in any benign equilibrium; whereas μ^* is the unique fixed point of the following function M^*:

$$\lambda^* = \eta - p\left[k\frac{G(\eta)}{G(\lambda^*)} + (1-k)G(\lambda^*)\right] =: M^*(\lambda^*),$$

where both M^g and M^* map $[0,\eta]$ into $[0,\eta]$. Since both $\overline{\lambda}(0)$ and λ^* lie in $(0,\eta)$, it suffices to prove that M^g lies pointwise strictly below M^* in the range $(0,\eta)$, which is indeed the case because

$$M^g(x) = \eta - p\left[k + (1-k)G(x)\right] < \eta - p\left[k\frac{G(\eta)}{G(x)} + (1-k)G(x)\right] = M^*(x), \qquad \forall x \in (0,\eta).$$

That $V^g > V^*$ then follows from

$$V^g = k + (1-k)G\left(\overline{\lambda}(0)\right) > k\frac{G(\eta)}{G(\lambda^*)} + (1-k)G\left(\overline{\lambda}(0)\right) > k\frac{G(\eta)}{G(\lambda^*)} + (1-k)G(\lambda^*) = V^*,$$

where the inequalities in turn follow from $G\left(\overline{\lambda}(0)\right) > G(\lambda^*) > G(\eta)$. ■

Since there can be multiple equilibria, we can no longer identify a single cutoff $\overline{p}$ such that all equilibria are benign if $p \leq \overline{p}$ and all are malign if $p > \overline{p}$. Instead, Proposition 4 in the main text is replaced by the following proposition, where $\overline{p}$ is replaced by two different cutoffs.

Proposition 11 *Consider the regime without leader immunity.*

1. *If $p \leq k$, all equilibria are benign.*

2. *If $p \geq 1-(1-k)G(\eta)$, all equilibria are malign.*

Proof: By Proposition 9, in any equilibrium, $\left(\overline{\lambda^L}(0), \overline{\lambda}(0)\right)$ is a solution to (13). Note that V in (13) is a convex combination between $(1-k)G(\eta)$ and $k + (1-k)G\left(\overline{\lambda}(0)\right)$, with the weight on the latter strictly positive. Since $(1-k)G(\eta) < (1-k)G\left(\overline{\lambda}(0)\right) < k + (1-k)G\left(\overline{\lambda}(0)\right)$, we have $V > (1-k)G(\eta)$, and hence $\overline{\lambda^L}(0) < \eta$. We hence have[42]

$$1 \geq G\left(\overline{\lambda}(0)\right) \geq G\left(\max\left\{\overline{\lambda^L}(0), \overline{\lambda}(0)\right\}\right) > G(\eta),$$

[42]The last inequality below follows from $\overline{\lambda}(0) < \eta$ according to Lemma 1.

which implies

$$
\begin{aligned}
V &= (1-k)G(\eta) + \frac{G\left(\max\left\{\overline{\lambda^L}(0), \overline{\lambda}(0)\right\}\right)}{G\left(\overline{\lambda}(0)\right)}\left\{k + (1-k)\left[G\left(\overline{\lambda}(0)\right) - G(\eta)\right]\right\} \\
&> (1-k)G(\eta) + G(\eta)\left\{k + (1-k)\left[G\left(\overline{\lambda}(0)\right) - G(\eta)\right]\right\} \\
&> G(\eta).
\end{aligned}
$$

If $p \leq k$, we will have

$$
\overline{\lambda^L}(0) = \eta + (1-k)G(\eta) - V < \eta + (1-k)V - V \leq \eta - pV = \overline{\lambda}(0).
$$

Since this is true for any arbitrary equilibrium, we conclude that all equilibria are benign.

We can also bound V in (13) from above. That V is a convex combination between $(1-k)G(\eta) < 1$ and $k+(1-k)G\left(\overline{\lambda}(0)\right) < 1$ implies that $V < 1$. Therefore, if $p \geq 1-(1-k)G(\eta) \in (k, 1)$, we will have

$$
\overline{\lambda^L}(0) = \eta + (1-k)G(\eta) - V \geq \eta + (1-p) - V > \eta + (1-p)V - V = \eta - pV = \overline{\lambda}(0).
$$

Since this is true for any arbitrary equilibrium, we conclude that all equilibria are malign when $p \geq 1-(1-k)G(\eta)$. ■

Similar to the analysis in the main text, we can also treat p as a policy variable instead and allow it to be optimized differently across regimes. Because of multiple equilibria, we also can no longer identify a single cutoff $\overline{k}$ such that the regime with immunity (with its optimized p) performs better than the best case scenario under the regime without immunity (also with its optimized p) iff $k < \overline{k}$. Instead, Proposition 5 in the main text is replaced by the following two propositions, where $\overline{k}$ is replaced by two different cutoffs.

Proposition 12 *Let V^*_{sup} be the supremum of V^* across all p's. Let V^g_{inf} be the infimum of V^g across all p's that admit benign equilibria, and across all benign equilibria at such p's. Then $V^*_{sup} \leq V^g_{inf}$ as long as $k > 1/2$.*

Proof: For any p, by Corollary 2, $V^* = kG(\eta)/G(\lambda^*) + (1-k)G(\lambda^*)$, where λ^* is as defined in Proposition 9. Note that $G(\eta) < G(\lambda^*) < 1$ because $0 < \lambda^* < \eta$. Let $H : [G(\eta), 1] \to \mathbb{R}$ be defined by

$$H(x) := kG(\eta)/x + (1-k)x, \qquad x \in [G(\eta), 1].$$

Differentiating H wrt x, we have

$$H'(x) = -kG(\eta)/x^2 + (1-k) \gtreqless 0 \quad \Longleftrightarrow \quad x \gtreqless \sqrt{kG(\eta)/(1-k)},$$

and hence H is quasi-convex,[43] and is maximized at the extreme points. Since $H(G(\eta)) = k + (1-k)G(\eta)$ and $H(1) = kG(\eta) + (1-k)$ we have $V^*_{sup} \leq \max\{k + (1-k)G(\eta), kG(\eta) + (1-k)\}$.

On the other hand, for any p that admits benign equilibria, and in any benign equilibrium at such p, by Proposition 9, $V^g = k + (1-k)G\left(\overline{\lambda}(0)\right) > k + (1-k)G(\eta)$, where the inequality follows from $\overline{\lambda}(0) < \eta$ according to Lemma 1. When $k > 1/2$, we have $k + (1-k)G(\eta) > kG(\eta) + (1-k)$, and hence $V^*_{sup} \leq k + (1-k)G(\eta) \leq V^g_{inf}$ as claimed. ∎

Proposition 13 *Let V^*_{sup} be the supremum of V^* across all p's. Let V^g_{sup} be the supremum of V^g across all p's that admit benign equilibria, and across all benign equilibria at such p's. Then there exists $\underline{k} > 0$ such that $V^*_{sup} > V^g_{sup}$ for all $k < \underline{k}$.*

Proof: We prove the inequality $V^*_{sup} > V^g_{sup}$ at the limit $k \searrow 0$, and the proposition follows from continuity.

At the limit $k \searrow 0$, for any $p \in (0, 1]$, we have $V^* = G(\lambda^*)$ by Corollary 2, where λ^* is the unique solution to the equation

$$\lambda = \eta - pG(\lambda) \tag{14}$$

by Proposition 8. Since V^* is strictly decreasing in λ^*, while the solution to (14) is strictly decreasing in p, V^*_{sup} is attained at $p = 1$. Let λ_1 be the solution to (14) with $p = 1$, and hence $V^*_{sup} = G(\lambda_1)$.

At the limit $k \searrow 0$, for any $p \in (0, 1]$ that admits benign equilibria, and in any benign equilibrium at such p, we have $V^g = G\left(\overline{\lambda}(0)\right)$ by the proof of Proposition 10, where $\overline{\lambda}(0)$ is a solution (actually the unique solution) to exactly the same equation (14) by Proposition 9. Recall from Proposition 11 that p admits benign equilibria only if $p < 1 - (1-k)G(\eta) =$

[43] If the cutoff $\sqrt{kG(\eta)/(1-k)}$ is smaller than $G(\eta)$ (respectively, larger than 1), then H is monotonically increasing (respectively, decreasing). If the cutoff is within the domain $[G(\eta), 1]$, then H first decreases and then increases. In either case, H is quasi-convex.

$1 - G(\eta)$. Since V^g is strictly decreasing in $\overline{\lambda}(0)$, while the solution to (14) is strictly decreasing in p, we have $V^g_{sup} < G(\lambda_2)$, where λ_2 is the solution to (14) with $p = 1 - G(\eta)$.

That $V^*_{sup} > V^g_{sup}$ then follows readily from $\lambda_1 < \lambda_2$. ■

We can similarly study the regime of early employment as in the main text. In this alternative model, an equilibrium is a pair $\left(\overline{\lambda_e}, \overline{\lambda^L_e}\right)$ that solves a new system of equations:

$$\overline{\lambda_e} = \eta - G\left(\overline{\lambda^L_e}\right) V_e, \tag{15}$$

$$\overline{\lambda^L_e} = \eta - G\left(\overline{\lambda^L_e}\right) V_e/2, \tag{16}$$

where V_e is the time-invariant total amount of public goods given by

$$V_e = kG\left(\overline{\lambda^L_e}\right) + (1-k)G\left(\overline{\lambda_e}\right). \tag{17}$$

Existence of an equilibrium is once again guaranteed by the Brouwer's fixed point theorem, while multiplicity is possible because of strategic complementarity among officials in different periods. Once again, comparison between (15) and (16) reveals that $\overline{\lambda_e} < \overline{\lambda^L_e}$ in any equilibrium, and hence on average princes are more corrupt than their fellow bureaucrats.

Note from (17) that V_e is bounded from above by 1, and hence from (16) that $\overline{\lambda^L_e}$ is bounded from below by 3/2.[44] Therefore, with probability at least $F(3/2)$, the leader will embezzle in any given period. Recall that in the good steady state of any benign equilibrium (which exists for $p \leq k$ by Proposition 11) under the regime without leader immunity, the leader never embezzles. Therefore, if the top of the government is sufficiently important (i.e., k sufficiently close to 1), citizens would fare worse under the regime of early appointment than in the good steady state of any benign equilibrium under the regime without leader immunity.

On the other hand, if we take the limit $k \searrow 0$, then $V_e = G\left(\overline{\lambda_e}\right)$, and hence (15) becomes

$$\overline{\lambda_e} = \eta - G\left(\overline{\lambda^L_e}\right) G\left(\overline{\lambda_e}\right). \tag{18}$$

Recall that in the mediocre steady state under the regime with leader immunity, at

[44]By (16), $\overline{\lambda^L_e} = \eta - G\left(\overline{\lambda^L_e}\right) V_e/2 \geq \eta - V_e/2 \geq \eta - 1/2 > 2 - 1/2 = 3/2$.

the same limit $k \searrow 0$, total public goods provision is $V^* = G(\lambda^*)$, where λ^* is the unique solution to

$$\lambda^* = \eta - pG(\lambda^*),$$

which becomes

$$\lambda^* = \eta - G(\lambda^*) \tag{19}$$

if we similarly set $p = 1$. Comparing (18) and (19), we have $\overline{\lambda_e} > \lambda^*$, and hence $V_e < V^*$. By continuity, when k is sufficiently close to 0, citizens would still fare worse under the regime of early appointment than under the regime with leader immunity.

We therefore have the following proposition, which is almost the same as Proposition 6.

Proposition 14 *Consider the regime of early appointment.*

- *An equilibrium exists but may not be unique.*
- *In any equilibrium, on average princes are more corrupt than their fellow bureaucrats.*
- *If the government is sufficiently centralized (i.e., k is sufficiently close to 1), citizens fare worse in this regime than in the good steady state of any benign equilibrium under the regime without leader immunity.*
- *If the government is sufficiently decentralized (i.e., k is sufficiently close to 0), citizens fare worse in this regime than in the regime with leader immunity.*