From Weber to Kafka: Political Activism and the Emergence of an Inefficient Bureaucracy

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Abstract

This paper models the relationship between legislative activity and bureaucracy. We characterize the Weberian Steady State and the Kafkian Steady State, and we show what type of shocks can lead to a transition from a good Weberian economy to a Kafkian one. The main message is that excessive political activism (frequent reforms and new laws, due for example to political instability) reduce bureaucratic efficiency, and this in turn creates more incentives for incompetent politicians to further increase their legislative activities, which bring to further inefficiency.

1 Introduction

"Corruptissima re publica plurimae leges"[1]
Cornelius Tacitus, Annals, Book III, 27

With the term "bureaucracy" we usually refer to the body of non-elective government officials who provide important services to individuals like regulation, certification, enforcement and implementation of laws. In other words, politicians "choose" (policies or laws, hence think of legislative as well as executive branch) and bureaucrats are called to "implement".

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[1]Translation: When the republic is at its most corrupt the laws are most numerous

Broadly speaking, we can say that there are two main views about bureaucracy. On the one hand, the German sociologist Max Weber argued that bureaucracy constitutes the most efficient and rational way in which human activity can be organized. He argued that having systematic processes and organized hierarchies is necessary to maintain order, maximize efficiency and eliminate favoritism in economies.[2] The second view, which is dominant these days, is that bureaucracies sometimes become too complex, and too inflexible. The dehumanizing effects of excessive bureaucracy were a major theme in the work of Franz Kafka in his two classic unfinished novels titled "Der Process" (the Trial) (published in 1925) and "Das Schloss" (the Castle) (published in 1926). A Kafkian bureaucracy is marked by a senseless disorienting, often menacing complexity, which ultimately leads to a country's stagnation.

This paper offers a theoretical explanation and an empirical investigation of the main causes of a transition from a Weberian bureaucracy to an inefficient Kafkian one. Moreover, we do so by focusing primarily on the role of political instability and political activism by legislators, rather than zooming on the bureaucracy organization as a set of specific agencies with different career concerns.[3]

In the 19th century, the bureaucracy of the Habsburg Monarchy was taken as an example of bureaucratic efficiency (see e.g. Becker, Boeckh, Hainz and Woessmann, forthcoming). But at a point the system collapsed.[4] What could be the reason of this sharp transformation happening just before Kafka's books? The answer that we will provide will refer to a set of political instability shocks reported by historians: in the Austro-Hungarian empire ethnic conflicts became open political confrontations in that period, and substantial nationalistic pressures from more than 12 different ethnicities and tensions between different ideologies (liberalism versus ancient regime) gave rise to a big jump in political instability. As a result the number of political parties exploded—for example there were 50 political parties participating to the election of 1911—and the number of MPs in the Lower house increased substantially—from 203 to 516 over the 1867-1918 period. Over the same period, Austria had 29 Ministers Presidents.

Can political instability be the source of the transition from Weber to Kafka? This pa-

[2]Even Weber saw unfettered bureaucracy as a threat to individual freedom, in which an increase in the bureaucratization of human life cantrap individuals in an "iron cage" of rule-based, rational control, but his overall evaluation remained one of necessity and efficiency.

[3]For an overview of the large literature on the agency problems in the construction of a bureaucracy, see Gailmard and Patty (2012).

[4]The payment of a simple tax in Wien at the beginning of the 20th century required the contribution of 27 public officials; the cost of collecting taxes in Dalmacia was superior to the amount of tax revenue collected; in 1903, the English Embassy had to wait 10 months before receiving information on how to pay taxes to import Canadian Whiskey (MacMillan, 2013).

per says definitely yes. We propose a dynamic model in which political activism in the form of multiplication of laws and reforms can affect bureaucratic efficiency and we characterize the consequent politics bureaucracy nexus. We will see that (1) starting from a Weberian steady state characterized by high bureaucratic efficiency there exist shocks in terms of political instability and/or need of reforms that could increase legislative activism enough to make bureaucracy collapse and converge towards a Kafkian steady state; (2) moreover, even when an increase in reforms and new laws comes from competent technocrats, the effect on the deterioration of bureaucracy is still present, and could induce further bad reforms by bad politicians going forward; (3) the probability of bad reforms is decreasing in the efficiency of bureaucracy and the length of a legislature.

Bureaucracy is more powerful and/or more inefficient when the amount of laws increase. In turn, we emphasize that whenever bureaucracy is more inefficient, politicians are more active in passing new laws. This two-way connection leads naturally to the possibility of multiple equilibria in the short run and multiple steady states in the dynamic analysis.

There could be multiple mechanisms underpinning the finding that a more inefficient bureaucracy generates greater legislative activism: one mechanism was already emphasized by Tacito: when bureaucracy is corrupt, politicians introduce new laws useful to attack political enemies, to protect vested interests and to appropriate rents in the economy. Another mechanism is trivial: politicians introduce more laws to simply reform the inefficient powerful bureaucracy. The third mechanism, which has been overlooked and is key in our analysis, is the following: An essential feature of bureaucracy in advanced economies is to provide a high quality monitoring of political activity. When bureaucracy is powerful (or inefficient), politicians are inaccurately monitored and politicians become tempted to inundate the system with a tsunami of laws to build up their reputation of skillful reformers. This third mechanism that we emphasize has the testable implication that the increase of reform incentives when bureaucracy is inefficient should come primarily from low quality politicians, and this is a micro test that we will undertake.

Model characterization Our model is characterized by two schedules, that can be both depicted in the h-$1/\alpha$ space (h in x-axis and $1/\alpha$ in y-axis). Think of h as a measure of political activism or *amount of regulation* in the economy. Think that $1/\alpha$ measures the inefficiency or the *Power of bureaucracy*. The latter is one interpretation for why α decreases when there are more laws in the system (when h goes up). Now the steady state of the economy is characterized by two lines. One is a technological constraint, that we call the Power of bureaucracy line (the PB-line thereafter). This line says that the higher is h, the less efficient (or more powerful) is bureaucracy (higher $1/\alpha$). Given our assump-

tions, this is a stepwise increasing function with just one step corresponding to h^w. But generally we should think that the PB line is positively sloped: bureaucracy is more powerful and/or more inefficient when the amount of regulation (laws, political activism) increases. The second line is instead a relation that says that whenever bureaucracy is more inefficient, politicians are more active in passing new laws. This establishes (another) positively sloped relation between $1/\alpha$ and h. We call this the Tacito line (T-line thereafter). There are several reasons that explain why this line is positively sloped. One is emphasized by Tacito: when bureaucracy is corrupted, politicians introduce new laws useful to attack political enemies, to protect vested interests and to appropriate rents in the economy. Another is trivial: politicians introduce more laws to simply reform the inefficient powerful bureaucracy. We emphasize another one. An essential feature of bureaucracy in advanced economies is to provide a high quality monitoring of political activity. When bureaucracy is powerful (or inefficient), politicians are unaccurately monitored and politicians become tempted to inundate the system with a tsunami of laws to build up their reputation of skill-full reformers. This increases the amount of regulation in the system. Since both the T-line and the PB-line are positively sloped, multiple equilibria are possible (Weber vs Kafka equilibria). We emphasize that some parameters shift the T-line (while leaving the PB-line unchanged), and in particular we emphasize that political instability makes the T-line flatter and makes more likely that the Kafkian equilibrium emerges. Luigi has provided some evidence in favor of the existence of the PB line: there is a positively sloped relation between amount of regulation in the economy and the power of bureaucracy. The former is measured by the number of procedures needed to start-up businesses, to register property, to get electricity and to obtain a construction permit (using the Doing Business World Bank Dataset). The latter is measured by how opaque and little transparent is bureaucracy in the country. We are trying to show that countries that have experienced higher past political instability (short lived governments) are more likely to end up in a situation where bureaucracy is inefficient and regulation is pervasive. END

A few notes on the relationship with the literature are in order. Our results are obtained when thinking about (and modeling) bureaucracy as complementary rather than substitute to politics. Maskin and Tirole (2004), Alesina and Tabellini (2007; 2008) ask under what conditions it is better to delegate choices to a bureaucracy and under what conditions it is instead better to let elected officials make the policy calls. We believe instead that most policies require *both* a legislative or executive decision by politicians *and* necessary procedures of enforcement, implementation and alike by the non-elective bureaucracy. Castanheira, Herrera, and Ting (2015) start from the same premise about

complementarity of politicians and bureaucrats in policy making, and also start from the empirical observation of a negative correlation between length of legislatures and bureaucratic performance, but focus the analysis on the role of ideology and on the choice between patronage system and civil service. On the other hand, we assume a simple form of bureaucracy, of the civil service type (appointed for life) and avoid dealing with ideology altogether, focusing instead on the politicians' incentives to legislate even when there is no need of reforms.

Nath (2015) provides evidence that electoral competition affects negatively bureaucratic performance, but the mechanism she focuses on relates to the internal functioning of the bureaucracy rather than on the legislators' incentives. She emphasizes that incumbents with longer tenure can use sort of dynamic contracts, rewarding bureaucrats with future payoffs or threatening implicitly to change their jobs in case of delay. Given that our theoretical analysis focuses on political activism, we provide empirical evidence not only about the direct consequences of more legislative activism on bureaucratic performance, but also on the feedback effect, namely on the greater incentives to make reforms by bad politicians when the expected duration of office is low and bureaucracy is already slow.

Persson, Tabellini, and Trebbi (2003) explore the effects of electoral institutions on corruption, but do not address the effects of electoral turnover.

2 Model

2.1 Setup

We consider an infinitely lived economy where the production of output requires *public capital*,[5] which is jointly produced by politicians and bureaucracy.

Time is continuous and indexed by $\tau \geq 0$.

Politicians The economy is ran by a continuum of ministries indexed over the unit interval, $i \in [0, 1]$. Ministry i is ran by a politician who remains in power for one legislature.[6] The duration of each legislature equals $\ell \geq \underline{\ell} > 0$.[7] Legislatures are indexed by

[5]We intend public capital to capture the whole body of public regulations, organizations, and infrastructures that facilitate production and trade.

[6]See Appendix B for a robustness exercise looking at a two-period model in which politicians can be reelected.

[7]The lower bound $\underline{\ell}$ is determined by technological constraints on the functioning of ministries and the electoral system.

$t = 1, 2, \ldots$, where legislature t starts at date $\tau_t \equiv (t-1)\,\ell$.

At the beginning of legislature t, a new politician is elected to run each ministry. For simplicity, we refer to the politician elected in ministry i in legislature t as "minister it." Minister it privately knows her type $\theta_{it} \in \{0, 1\}$. If $\theta_{it} = 1$, then minister it is *competent*. Otherwise, she is incompetent. Each minister is competent with identical probability π.

At the start of her mandate, minister it is endowed with a reform. With probability $p\theta_{it}$, the reform is *good*; otherwise it is *bad*. The minister then immediately chooses whether to *start* the reform.[8] Notice that only competent politicians can start good reforms, but all politicians can start bad reforms. The probability p is meant to capture the economy's *need for reforms*.

Bureaucracy Reforms are completed by the bureaucracy. Reforms started at beginning of legislature t are completed at Poisson arrival rate $\alpha_t = \alpha(h_t)$, where h_t is the stock of incomplete reforms inherited from the previous legislature. Notice that α_t is constant over legislature t. The value α_t measures the *efficiency of the bureaucracy* during legislature t.

The function α is decreasing in h_t: a higher stock of uncompleted reforms reduces the completion rate of reforms. There are several reasons why the efficiency of bureaucracy is decreasing in the amount of political activism. One could be technological: more reforms congestion the bureaucratic apparatus that becomes inefficient due to its limited ability to handle an excessive stock of information. But we can also think that more political reforms h_t give more *power to bureaucracy* and a more powerful bureaucracy becomes opaque, complex and obsessed with formalism. This is the natural reaction of an institution that builds up complexity to preserve its power. One way or the other, more political activism makes bureaucracy more inefficient which explains why the function $\alpha(h_t)$ is decreasing in h_t. For simplicity we omit modeling the instinct of preservation and power building of bureaucracies, because, in practice, the exact reason for why bureaucratic efficiency falls with political activism is irrelevant to explain why countries might experience a transition from a Weberian to a Kafkian bureaucracy. For simplicity we assume that α_t can assume only two values, $\underline{\alpha}$ and $\overline{\alpha}$, with $0 < \underline{\alpha} < \overline{\alpha}$. The function $\alpha : \mathbb{R}_+ \to \{\underline{\alpha}, \overline{\alpha}\}$ can then be expressed as

$$\alpha(h_t) = \begin{cases} \overline{\alpha} & \text{if } h_t \leq \overline{h}^K, \\ \underline{\alpha} & \text{if } h_t > \overline{h}^K \end{cases} \tag{1}$$

[8]The assumption that reforms must be started at the beginning of the legislature greatly simplify the analysis by eliminating unintuitive (and not robust) equilibria in which good reforms are delayed for reputational concerns.

where $\overline{h}^K$ is the *Kafkian* threshold of hanging reforms beyond which bureaucratic efficiency collapses—i.e., the completion rate of reforms falls from $\overline{\alpha}$ to $\underline{\alpha}$. We refer to a bureaucracy with $\alpha_t = \overline{\alpha}$ as *Weberian* and to a bureaucracy with $\alpha_t = \underline{\alpha}$ as Kafkian.

The Economy and Welfare The economy is populated by a representative household with zero discount rate, no access to savings, and income at time τ given by

$$A\tilde{k}_\tau \tag{2}$$

where $\tilde{k}_\tau > 0$ is the stock of public capital at τ and $A > 0$. Aggregate welfare is therefore given by average-over-time long-run aggregate income.

Once completed, a good reform yields q units of public capital. Bad reforms produce no economic outcomes, even when completed. Competent ministers maintain their good uncompleted reforms up-to-date during their mandate, but after their mandate expires, good (either completed or uncompleted) reforms turn into bad at Poisson arrival rate ν. The idea is that competent politicians have the skill of keeping alive their good reforms by adapting their reforms to the changing economic environment. After the mandate of the politician expires, reforms are out of the control of the politician who proposed them and reforms depreciate at rate ν. The idea is that reforms are good just in a determined economic context. As the economy evolves they eventually get obsolete and useless.

Public Reputation At the end of each legislature t and for each ministry $i \in [0,1]$, the public observes whether the incumbent politician has started a reform, whether the reform has been completed and if so the amount of capital services it has produced. We denote by ρ_{it} the beliefs of the public about minister it being competent at the end of legislature t—at time $\tau_t + \ell$.

Politicians in power have reputational concerns. Minister it's payoff is given by

$$E_t \left[\phi\rho_{it} - \gamma\theta_{it}\mathbb{I}\left(\rho_{it} = 0\right)\right] \tag{3}$$

where $\mathbb{I}$ denotes the indicator function while E_t is the expectation operator conditional on the information available at the start of legislature t. Here $\phi > 0$ measures the private value of reputation to politicians while γ is the moral cost suffered by a competent politician, $\theta = 1$, if the public believes she is incompetent ($\rho_{it} = 0$). There are several reasons why reputation matters to politicians. For example reputation could have value in the private market and politician with higher reputation can extract higher rents in the

market once their mandate expires.[9] In this interpretations ϕ just measures the market value of reputation. The specification in (3) is also consistent with the idea that politicians are motivated by re-election concerns,[10] provided that re-election probabilities are strictly increasing in the reputation of politicians. In either interpretation the value of reputation ϕ would be endogenous, but since ϕ does not play any specific role in the analysis below—of course provided it remains strictly positive, $\phi > 0$—we omit characterizing the equilibrium value of reputation.[11]

We intepret γ as a moral cost. Alternatively, it can be thought of as a competent politician's cost of losing access to a labor market in which competence is revealed with strictly positive probability.[12] In the analysis below we assume that the moral cost γ is high enough so that the following assumption holds:

Assumption 1. Assume that $\gamma > \phi$.

Assumption 1 guarantees that competent politicians start a reform only if they have the opportunity of a good reform.

Given Assumption 1, the only strategic choice in the model is the incompetent politicians' choice of whether to start a reform. We denote by $\sigma_t \equiv \sigma_{it}(\alpha_t)$ the probability that minister it starts a reform when the the level of efficiency of the bureaucracy equals α_t. The focus on symmetric and stationary strategies is without loss of generality.

We focus on perfect Bayesian equilibria with neutral off-equilibrium beliefs:

Definition 1. An *equilibrium* is a strategy σ and belief ρ_{it}, $\forall i \in [0,1]$, $t \in \mathbb{N}$ such that

$$\sigma_t = \arg\max_{\sigma \in [0,1]} E_t \left[\phi \rho_{it} - \gamma \theta_{it} \mathbb{I} \left(\rho_{it} = 0 \right) \right]$$

and ρ_{it} is derived by Bayes' rule whenever possible, and $\rho_{it} = \pi$ otherwise.

[9] See e.g. Mattozzi and Merlo (2008).

[10] An implicit assumption if we interpreted ϕ as value of reelection is that being a good politician today does not increase the probability of being a competent politician tomorrow over π (for example because skills in time of crisis may be uncorrelated with skills in time of boom), because otherwise the public would always reelect the same politician revealed to be competent once, and hence the fix probability π across periods would be an inconsistent assumption. See appendix B for a robustness exercise looking at a two-period model in which indeed π may depend on the revealed information on incumbent when reelected.

[11] It is important to stress that the gains from reputation to politicians should be interpreted as a transfer from households to politicians, so aggregate welfare at time τ is still given by (2).

[12] Details are available upon request.

3 Dynamics

To better understand the analysis, it is useful to separately study some non-strategic dynamics of the model.

Recall that the level of efficiency of the bureacracy α_t depends on the stock of unrealized reforms inherited by legislature t from all previous legislatures, h_t (i.e. h_t is the stock of hanging reforms just before time τ_t). For any $t = 1, 2, \ldots$, h_t evolves according to the following first order difference equation:

$$h_t = e^{-\alpha_{t-1}\ell} \left(h_{t-1} + r_{t-1} \right) \tag{4}$$

This says that the stock of unrealized reforms immediately before the beginning of legislature t is equal to the fraction $e^{-\alpha_{t-1}\ell}$ of reforms present at the beginning of the $t-1$th legislature that have not come to completion. The amount of uncompleted reforms at the beginning of the $t-1$th legislature is equal to the sum of uncompleted reforms inherited from all the legislatures prior to the $t-1$th, equal to h_{t-1}, plus the mass of newly started reforms in the $t-1$th legislature

$$r_{t-1} = \pi p + (1 - \pi)\, \sigma_{t-1} \tag{5}$$

which is equal to the sum of the good reforms started by competent politicians πp plus the mass of bad reforms started by incompetent politicians, equal to $(1 - \pi)\, \sigma_{t-1}$. The law of motion in (4) implies that the steady state number of uncompleted reforms at the start of each legislature is equal to $h_t = h_{t-1} = h^*$:

Lemma 1. *The steady state stock of uncompleted reforms at the start of each legislature is given by*

$$h^* = \frac{r^*}{e^{\alpha^* \ell} - 1} \tag{6}$$

where $r^* = \pi p + (1 - \pi)\, \sigma^*$ denotes the steady state flow of new reforms started at the beginning of each legislature where σ^* denotes the steady state probability that an incompetent politician starts a reform.

We are interested in determining aggregate welfare. Recall that aggregate welfare is monotonically increasing in capital, which is produced when good reforms are completed. For any $\tau \in [\tau_t, \tau_t + \ell)$ we denote by $\tilde{g}_\tau$ the stock of good uncompleted reforms inherited from previous legislature at time τ and by $\tilde{n}_\tau$ the stock at time τ of uncompleted good reforms which have been newly started in the current legislature. The stock of good old reforms during the t-th legislature $\tilde{g}_\tau$ decreases at rate $\alpha_t + \nu$, because some of them

are completed at Poisson arrival rate α_t while some get obsolete and bad at Poisson arrival rate ν. This implies that for any $\tau \in [\tau_t, \tau_t + \ell)$ the stock of good uncompleted old reforms is equal to

$$\tilde{g}_\tau = e^{-(\alpha_t+\nu)(\tau-\tau_t)} g_t \tag{7}$$

where g_t is the stock of good reforms at the beginning of legislature t. The amount of newly started uncompleted good reforms at time τ is equal to

$$\tilde{n}_\tau = e^{-\alpha_t(\tau-\tau_t)} \pi p. \tag{8}$$

Therefore,

$$g_t = e^{-(\alpha_{t-1}+\nu)\ell} g_{t-1} + e^{-\alpha_{t-1}\ell} \pi p. \tag{9}$$

Finally, for any $\tau \in [\tau_t, \tau_t + \ell)$, we have that the stock of capital evolves as

$$\frac{d\tilde{k}_\tau}{d\tau} = q\alpha_t \left(\tilde{g}_\tau + \tilde{n}_\tau\right) - \nu \tilde{k}_\tau. \tag{10}$$

We can now substitute (8) and (7) into (10) to obtain that $\forall \tau \in [\tau_t, \tau_t + \ell)$

$$\frac{d\tilde{k}_\tau}{d\tau} = q\alpha_t e^{-\alpha_t(\tau-\tau_t)} \left[e^{-\nu(\tau-\tau_t)} g_t + \pi p\right] - \nu \tilde{k}_\tau \tag{11}$$

Notice that (9) and (11) represent a recursive system: given g_t and α_t, use (11) to obtain

$$\tilde{k}_\tau = \tilde{k}_{\tau_t} e^{-\nu(\tau-\tau_t)} + \frac{q\alpha_t \pi p}{(\nu - \alpha_t)} \left[e^{-\alpha_t(\tau-\tau_t)} - e^{-\nu(\tau-\tau_t)}\right] + q g_t \left[e^{-\nu(\tau-\tau_t)} - e^{-(\alpha_t+\nu)(\tau-\tau_t)}\right] \tag{12}$$

where $\tilde{k}_{\tau_t}$ denotes the capital stock at the beginning of legislature t. By evaluating this expression at $\tau_{t+1} = \tau_t + \ell$ and after remembering that by continuity we have $k_t = \tilde{k}_{\tau_t}$, we can also write the following first order difference equation in the beginning of legislature capital stock k_t :

$$k_{t+1} = e^{-\nu\ell} k_t + \frac{q\alpha_t \pi p}{(\nu - \alpha_t)} \left[e^{-\alpha_t \ell} - e^{-\nu\ell}\right] + q g_t \left[e^{-\nu\ell} - e^{-(\alpha_t+\nu)\ell}\right], \tag{13}$$

Now we can use (9) to conclude that in steady state g_t is equal to

$$g^* = \frac{e^{-\alpha^*\ell} \pi p}{1 - e^{-(\alpha^*+\nu)\ell}} \tag{14}$$

where α^* denotes the steady state completion rate of reforms. We can now use the expression for g^* in (14) to replace g_t in (13). After imposing that the steady state capital stock

at the beginning of legislature should satisfy $k_t = k_{t-1} = k^*$ we obtain that

$$k^* = \frac{q\pi p}{1 - e^{-\nu\ell}} \left[\frac{\alpha^* \left(e^{-\alpha^*\ell} - e^{-\nu\ell} \right)}{\nu - \alpha^*} + \frac{1 - e^{-\alpha^*\ell}}{e^{(\alpha^*+\nu)\ell} - 1} \right]. \tag{15}$$

We can now calculate the steady state average-over-time capital sock:

Lemma 2. *The steady state average-over-time capital stock is equal to*

$$\overline{k}^* = \frac{\int_0^\ell \tilde{k}_{\tau_t+s} ds}{\ell} = \frac{q\pi p}{\nu\ell} \left(1 - \frac{\nu e^{-\alpha^*\ell}}{\alpha^* + \nu} \right). \tag{16}$$

Proposition 1. *Aggregate welfare is monotonically increasing in the steady state completion rate of reforms α^*.*

Even if agents have a zero discount rate, a higher α^* increases welfare because higher α^* means that good reforms yields greater expected income, because a higher α^* reduces the risk that good reforms becomes obsolete before they are completed, which would lead to no output gains.

3.1 First best

With no asymmetric information, there are no reputation concerns because the type of politicians is perfectly observable. So (i) incompetent politicians do not start any reforms and (ii) competent politicians start reforms only if they have the opportunity for a good reform, which occurs with probability p at the start of each legislature. As a result, and given Assumption 2, we have that the long-run completion rate of reforms α^* is equal to $\overline{\alpha}$. This implies that aggregate welfare as measured by $\overline{k}^*$ in (16) is maximum. We can also calculate what it would be the optimal duration of a legislature in this first best environment. We can derive $\overline{k}^*$ in (16) with respect to ℓ to obtain

$$\frac{\partial \overline{k}^*}{\partial \ell} = -\frac{q\pi p}{\nu\ell^2} \left[1 - \frac{\nu}{\nu + \overline{\alpha}} \left(1 + \overline{\alpha}\ell \right) e^{-\overline{\alpha}\ell} \right] < 0$$

This derivative is negative because the function $(1 + \overline{\alpha}\ell)\, e^{-\overline{\alpha}\ell}$ is strictly decreasing in ℓ for any $\ell \geq 0$ and it is smaller than one. Figure 1 plots the profile of the average capital stock in the economy $\overline{k}^*$ as a function of the duration of the legislature ℓ at the Weberian completion rate of reforms $\overline{\alpha}$ and at the Kafkian one $\underline{\alpha}$.

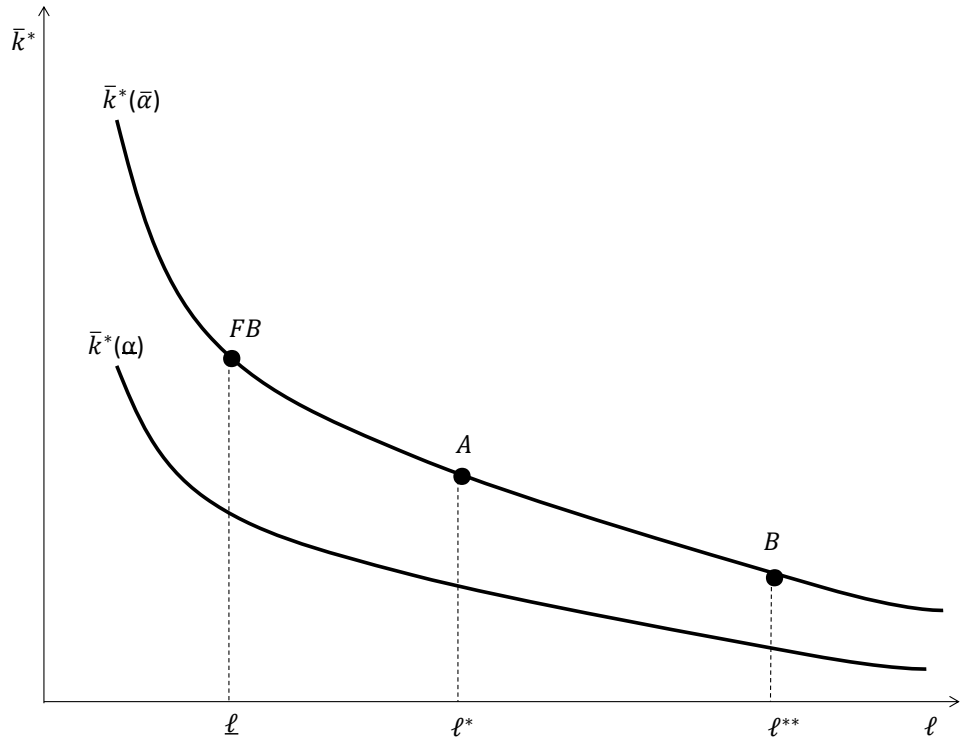

Figure 1: Welfare and the duration of the legislature

Since $\bar{k}^*$ is strictly decreasing in ℓ, we have that the optimal duration of a legislature is the lowest as possible, $\ell_{FB} = \underline{\ell}$, which corresponds to point FB in Figure 1. This is because a shorter legislature allows to maximize the flows of good reforms into the system. We can summarize all these considerations by stating the following proposition:

Proposition 2. *Under Assumption 2, in the economy with no asymmetric information, all competent politicians with a good reform, and only them, start a reform. This leads to a first best average-over time capital stock equal to*

$$\bar{k}^*_{FB} \equiv \frac{q\pi p}{\nu\ell}\left(1 - \frac{\nu e^{-\bar{\alpha}\ell}}{\bar{\alpha}+\nu}\right).$$

The length of the legislature which maximizes steady state welfare in the economy with no asymmetric information is $\ell_{FB} = \underline{\ell}$, where $\underline{\ell}$ is the minimal feasible duration of a legislature.

4 Political Equilibrium

We now turn to the analysis of the equilibrium of the model with reputational concerns due to asymmetric information. We start by characterizing the optimal strategy of an

incompetent politician.

By Assumption 1, competent politicians do not start bad reforms. We also know that competent politicians always start good reforms whenever an opportunity arrives. Notice that if $\sigma_t = 0$ (all bad politicians never start reforms), the reputation at the end of the mandate of a politician who has not started a reform is equal to $\underline{\rho} \equiv \frac{\pi(1-p)}{1-\pi p}$. This is simply the ratio between the probability that the politician is good and and he did not have a good reform—which happens with probability $\pi(1-p)$—over the probability that no good reform was available to the politician—which happens with probability $1-\pi p$. We can extend the same logic for an arbitrary value of σ_t. By Bayes' rule, we then obtain

$$\rho_{it} = \begin{cases} \rho_t^n \equiv \frac{\pi(1-p)}{\pi(1-p)+(1-\pi)(1-\sigma_t)} & \text{if no reform is started} \\ \rho_t^y \equiv \frac{\pi p}{\pi p+(1-\pi)\sigma_t} & \text{if a reform is started and is not completed} \\ \theta & \text{if a reform is started and is completed.} \end{cases} \tag{17}$$

Here ρ_t^n is simply the ratio between the probability that the politician is competent and and he did not have a good reform, over the probability that no reform was started (either because the politician is competent and did not have any good reform to pursue or because the politician is incompetent and decided not to start any reform). By a similar logic we can calculate the reputation of a politician in case a reform is started but did not come to realization during the legislature, which is denoted by ρ_t^y. By Bayes' rule, ρ_t^y is the ratio between the probability that the politician is competent and and he started a reform, over the probability that a reform was started by either a competent or an incompetent politician.

Given (3), the incompetent politician chooses σ_t so as to maximize his expected reputation at the end of the mandate. If an incompetent politician does not start any reform his reputation at the end of the legislature is equal to ρ_t^n while if she starts a reform, his expected reputation at the end of her legislature is equal to $e^{-\alpha_t \ell}\rho_t^y$, where $e^{-\alpha_t \ell}$ is the probability that the reform was not completed over the mandate of the politician. Notice that it is never optimal to choose $\sigma_t = 1$, because under $\sigma_t = 1$ and given (17) we have $\rho_t^y e^{-\alpha_t \ell} < \rho_t^n$, which immediately implies a contradiction. The incompetent politician chooses $\sigma_t = 0$ if $\rho_t^y e^{-\alpha_t \ell} < \rho_t^n$, which is equivalent to

$$\alpha_t \ell > -\ln\left(\underline{\rho}\right). \tag{18}$$

Otherwise, $\sigma_t \in (0,1)$ is determined by the indifference condition

$$e^{-\alpha_t \ell} \rho_t^y = \rho_t^n \tag{19}$$

Notice that (18) together with (19) implies that σ_t is continuous in any change of parameters. We can then summarize these considerations by stating the following proposition, fully proved in the Appendix, that characterizes the optimal strategy of an incompetent politician:

Proposition 3. *The equilibrium probability that an incompetent politician starts a reform equals*

$$\sigma_t \equiv \sigma(\alpha_t) = \begin{cases} 0, & \text{if } \alpha_t \ell > -\ln\left(\underline{\rho}\right) \\ p - \frac{p(1-p)\left(1-e^{-\alpha_t \ell}\right)}{(1-\pi)\left[1-p\left(1-e^{-\alpha_t \ell}\right)\right]}, & \text{otherwise.} \end{cases} \tag{20}$$

The probability σ_t has the following properties: (i) it is smaller than p; (ii) it is increasing in the need of reforms of the country as measured by p; while (iii) it is decreasing in the duration of the legislature ℓ, in the probability that a politician is competent π, and the completion rate of reforms α_t. Finally we have (iv) that the difference $p - \sigma_t$ is (weakly) increasing in the duration of the legislature ℓ and the completion rate of reforms α_t, while it is decreasing in the need of reforms of the country as measured by p.

5 Equilibirum Dynamics

We turn now to the analysis of the long run steady-state behavior. We say that a steady-state is Weberian if in it the bureacuracy is Weberian and politicians only start good reforms. In contrast, a steady-state is Kafkian if in it the bureaucracy is Kafkian and politicians start bad reforms with strictly positive probability. Our ultimate goal is to understand what causes a Weberian economy to become Kafkian. In order to do so, we impose upon the model parameters sufficient and necessary conditions for the existence of a Weberian steady state.

Assumption 2. *The Weberian completion rate reforms $\overline{\alpha}$ is such that*

$$\frac{\pi p}{e^{\bar{\alpha}\underline{\ell}} - 1} \leq \overline{h}^K$$

and $\overline{\alpha}\underline{\ell} \geq -\ln\left(\underline{\rho}\right)$.

To see why Assumption 2 guarantees the existence of a Weberian steady state for any $\ell \geq \underline{\ell}$, notice that for a Weberian steady state to exist we need to satisfy two conditions: (i) that a Weberian economy remains Weberian if only good reforms are started, and (ii) that in equilibrium only good reforms are started in a Weberian economy. Recall that if only good reforms are started, then the steady state stock of hanging reforms at the beginning of a new legislature h^* equals

$$\frac{\pi p}{e^{\bar{\alpha}\ell} - 1} \leq \frac{\pi p}{e^{\bar{\alpha}\underline{\ell}} - 1} \leq \overline{h}^K.$$

Thus, the first condition in Assumption 2 says that if only good reforms are started whenever the bureaucracy is Weberian, then the bureacuracy remains Weberian. From Proposition (3), it is easy to see that the second condition in Assumption 2 says that, in equilibrium, when the bureaucracy is Weberian, only good reforms are started.

Notice that Assumption 2 also guarantees that all steady states are either Weberian or Kafkian.

5.1 The emergence of a Kafkian equilibrium

An important implication of Proposition 3 is that an inefficient bureaucracy (lower α_t) gives incompetent politicians the incentive to start bad reforms. This effect will be more important the shorter the legislature ℓ. An efficient bureaucracy allows the public to evaluate the activity of politicians. But when bureaucracy is inefficient, the public becomes unable to evaluate whether reforms are successful and as a result incompetent politicians inundate the system with a "tsunami of reforms", which will eventually cause a collapse of the bureaucratic apparatus and the emergence of a Kafkian bureaucracy. We now better investigate this mechanism.

The law of motion of the stock of uncompleted reforms h_t is given in (4). The mass of reforms introduced in the system at the start of legislature t is equal to r_t in (5), which, given Proposition (3), can be expressed as equal to

$$r_t = \begin{cases} \pi p, & \text{if } \alpha_t \ell > \ln\left(\underline{\rho}\right) \\ \frac{p}{p+(1-p)e^{\alpha_t \ell}}, & \text{otherwise.} \end{cases} \tag{21}$$

Now notice that

$$\frac{\partial \ln\left(\underline{\rho}\right)}{\partial p} = \frac{p\left(1-\pi\right)}{\left(1-\pi p\right)\left(1-p\right)} > 0$$

while

$$\frac{\partial \ln\left(\underline{\rho}\right)}{\partial \pi} = -\frac{1}{\pi\left(1-\pi p\right)} < 0$$

which says that incompetent politicians are more likely to start a reform when p is high or π is low. It is interesting to notice that (21) implies that when $\sigma_t > 0$ the flow of new reforms introduced in the system is independent of π. The steady state mass of uncompleted reforms at the start of each legislature is given in (6), with r^* satisfying (21). After using Proposition 3 and (21) we can now state the following Proposition:

Proposition 4. *There always exists a Weberian steady-state with*

$$h^W \equiv \frac{\pi p}{e^{\overline{\alpha}\ell} - 1} \leq \overline{h}^K. \tag{22}$$

A Kafkian steady state exists if and only if both

$$\underline{\alpha}\ell < \ln\left(\frac{1-\pi p}{\pi\left(1-p\right)}\right) \tag{23}$$

and

$$h^K \equiv \frac{p}{\left[p + (1-p)\, e^{\underline{\alpha}\ell}\right]\left(e^{\underline{\alpha}\ell} - 1\right)} > \overline{h}^K \tag{24}$$

The Kafkian steady-state is more likely to exist when (i) the need for reforms is high (p high), (ii) legislatures are short (ℓ low), (iii) there are few competent politicians (π low), and (iv) a Kafkian bureaucracy is highly inefficient ($\underline{\alpha}$ low).

High p, low ℓ and low $\underline{\alpha}$ make more likely that both conditions (23) and (24) are satisfied, while low π makes more likely that the Kafkian equilibrium can arise by making condition (23) more likely to be satisfied.

In Figure 2 we characterize the law of motion of h_t in (4) as a function of h_{t-1}, when both the Weberian and the Kafkian equilibrium can arise, so that both (23) and (24) hold. Notice that (4) implies that h_t is always flatter than the 45 degree line. The Weberian equilibrium corresponds to point W in Figure 2, the Kafkian equilibrium to point K.

5.2 Transitory shocks

A key feature of the model is that, when (23) and (24) hold, transitory shocks can lead the economy to a transition from a Weberian equilibrium to a Kafkian equilibrium, which will then persist. Generally this happens because a temporary increase in the amount of new reforms introduced in the system can lead to a fall in bureaucratic efficiency, which

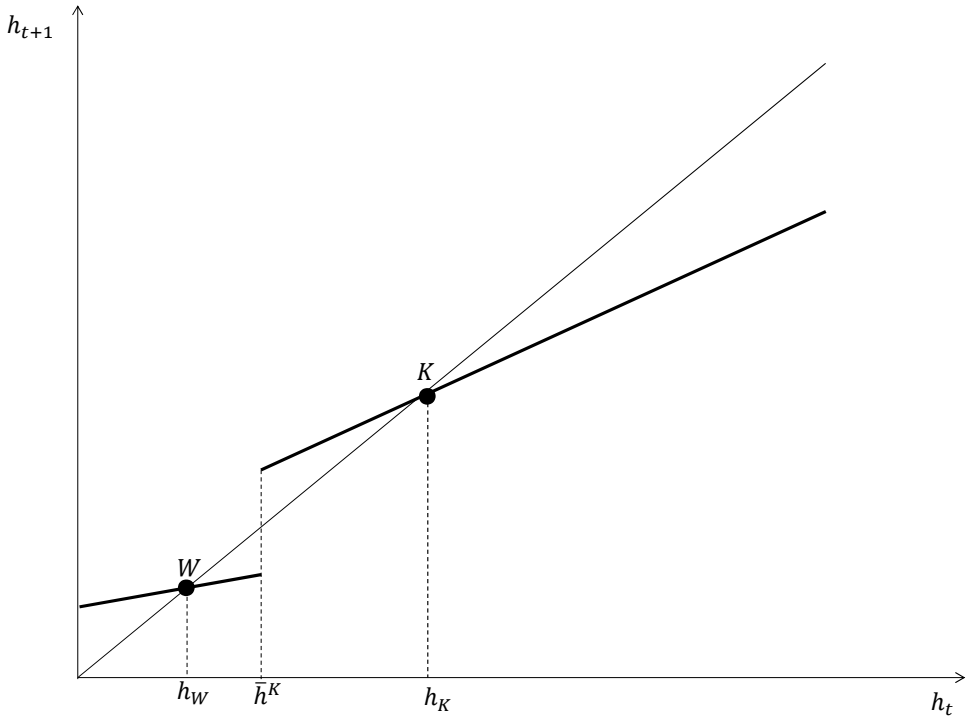

Figure 2: Phase Diagram

makes α_t fall. But with a lower α incompetent politicians start to introduce bad reforms (see Proposition 3), which inundates the system with a "tsunami of reforms", that further collapses bureaucracy and makes the Kafkian equilibrium persist.

We now isolate three transitory shocks that could lead to transition towards the Kafkian equilibrium: (i) a temporary increase in p, which we associate with an increase in the need of reforms of the country; (ii) a temporary reduction in the duration of legislature ℓ, which we associate with a temporary surge in political instability; and (iii) a transitory increase in π, which we associate with a temporary increase in the competence of governments, say because the government is temporarily led by technocrats. We now analyze these three cases in detail.

Too many reform opportunities When (23) and (24) hold a Kafkian steady state exists. Now suppose that during legislature t, p increases to $p_t > p$. Also assume that the economy is initially in a Weberian steady state with a stock of hanging reform h^W as defined in (22). Then the transitory shock surely leads to a Kafkian steady state if

$$h_{t+1} = e^{-\bar{\alpha}\ell}\left(h^W + \pi p_t\right) > \bar{h}^K.$$

These considerations immediately lead to the following proposition:

Proposition 5 (The reform opportunity fallacy)**.** *Suppose that conditions* (23) *and* (24) *hold and the economy is initially in a Weberian steady state with a mass of hanging reforms* h^W*. Then, a temporary increase in* p *in legislature* t *to a value* $p_t > p^K$ *equal to*

$$p^K \equiv \frac{e^{\bar{\alpha}\ell}\bar{h}^K - h^W}{\pi} \tag{25}$$

leads the economy to a Kafkian steady-state.

Figure 3 characterizes the dynamic response of the system to the once-and-for-all temporary increase in p during legislature t.

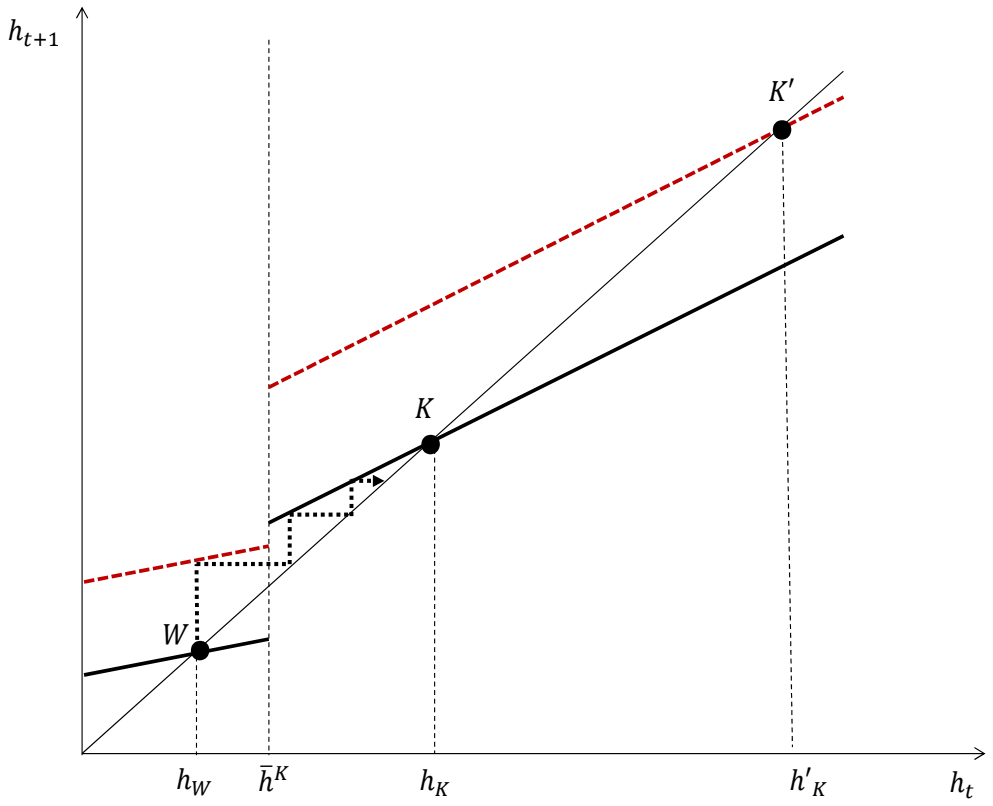

Figure 3: Transition to a Kafkian equilibrium due to a once and for all legislature shock in p

The temporary increase in the number of hanging reforms during legislature t makes bureaucratic efficiency fall. But with an inefficient bureaucracy politicians now find optimal to introduce bad reforms that eventually collapses the efficiency of the bureaucratic apparatus, even when the transitory shock vanishes. This makes the Kafkian equilibrium persist.

Notice that Proposition 5 just sets a sufficient condition for a transition from a Weberian to a Kafkian steady state. Given (20) an increase in p makes more likely that incompetent politicians start introducing bad reforms in the system (since $\partial \underline{\rho}/\partial p < 0$), which could lead to $\sigma_t > 0$ and thereby make more likely that the next period stock of hanging reforms h_{t+1} is above the critical Kafkian threshold $\overline{h}^K$, that leads to a collapse in bureaucracy.

A temporary surge in political instability The same logic can be applied to a temporary reduction in the duration of the legislature t, which characterizes a temporary surge in political instability. This allows to conclude that

Proposition 6 (A surge in political instability)**.** *Suppose that conditions* (23) *and* (24) *hold and the economy is initially in a Weberian steady state with a mass of hanging reforms h^W. Then, a temporary reduction in the duration of the legislature t to a value $\ell_t < \ell^K$ equal to*

$$\ell^K = \frac{1}{\underline{\alpha}} \ln \left(\frac{h^W + \pi p}{\overline{h}^K} \right) \tag{26}$$

causes the economy to move to a Kafkian steady-state.

Notice that, once again, Proposition 5 just sets a sufficient condition for a transition from a Weberian to a Kafkian steady state. Given (20) a reduction in ℓ makes more likely that incompetent politicians start introducing bad reforms in the system (since $\underline{\alpha}\ell$ obviously falls), which could lead to $\sigma_t > 0$ and thereby make more likely that the next period stock of hanging reforms h_{t+1} is above the critical Kafkian threshold $\overline{h}^K$. For simplicity we avoid stating the necessary and sufficient conditions whereby a temporary surge in political instability lead to a transition from a Weberian to a Kafkian steady state.

Short-lived governments led by technocrats Recently many economies have experienced an increase in the probability that governments are led by technocrats that remain in power for a short legislature. These governments are typically formed by highly competent ministers (say the government is characterized by high π) who are asked to reform the country in a short amount of time. By applying the same considerations as above we can then conclude that

Proposition 7 (The malady of short-lived technocratic governments)**.** *Suppose that conditions* (23) *and* (24) *hold and the economy is in a Weberian steady state with a mass of hanging reforms h^W. Then, a temporary increase in the competence of government in legislature t to a*

value $\pi_t > \pi^K$ *equal to*

$$\pi^K \equiv \frac{e^{\bar{\alpha}\ell}\overline{h}^K - h^W}{p} \tag{27}$$

leads the economy to a Kafkian steady-state.

Notice that, differently from Proposition 6 and 5, Proposition 7 sets a necessary and sufficient condition for a transition from a Weberian to a Kafkian steady state. Given (20) and the fact that $\partial\underline{\rho}/\partial\pi > 0$, an increase in π makes less likely that incompetent politicians start introducing bad reforms in the system, which implies that σ_t remains equal to zero even in the legislature that experiences the temporary increase in π to π_t.

The simplest intuition for our result about technocratic governments is that a jump up in π makes it impossible to continue to have $\sigma = 0$ in equilibrium, because the incentive of the bad politicians to mimick the good ones goes up. Once the Weberian steady state existence condition is violated due to this, the precipitation towards the Kafkian steady state is unavoidable.

5.3 Reforming the system

Once the economy is stuck in a Kafkian steady state with a highly inefficient bureaucracy, the system needs to be shocked with a sufficiently large parametric change (especially if temporary) in the opposite direction (jump down in p or jump up in ℓ for example) in order to cause a transition back to a Weberian steady state.

Beside the possibility of exogenous shocks in the opposite direction to those causing the Kafkian collapse, we can consider some types of policy interventions:

1. *Banning reforms* Once the economy is in a Kafkian steady state it is optimal to ban all types of reforms even the good ones. This would allow to decongestion the bureaucratic apparatus. In this situation "no reform is better than a good reform". How can we give politicians the incentive to stop reforming the system ? How can we temporarily stop even competent politicians from starting their good reforms? Which incentives can the public provide to them? In the model this could be obtained by modifying the utility function of politicians: in a world where the public becomes aware of the direct and indirect consequences of reforms on the bureaucracy, a reputation cost γ' should be added to discourage reforms.

2. *Dropping old reforms* Once the system is in a Kafkian steady state, dropping an old sometimes obsolete reform is better than introducing a new good reform. How can

the public reward politicians in power for dropping old obsolete reforms rather than for introducing new reforms?

3. *Reforming bureaucracy* Investing resources to increase $\overline{h}^K$ and $\underline{\alpha}$.

5.4 The optimal duration of legislatures

In Section 3.1 we have studied the optimal duration of a legislature ℓ, when the type of politicians is perfectly observable to the public. As shown in Proposition 2, in the absence of any asymmetric information, it is optimal to minimize the duration of legislatures as much as possible in order to maximize the flow of new (good) reforms introduced in the economy. This arises because, for given α, $\overline{k}^*$ in (16) is a strictly decreasing function in ℓ. But in an economy where the type of politicians is unobservable, the duration of a legislature ℓ can also affect the incentives of incompetent politicians to start bad reforms which could ultimately lead to a collapse in the bureaucratic apparatus, as measured by the completion rate of reforms α. In this sense the completion rate of reforms becomes functions of ℓ. Proposition 4 has established sufficient conditions for the existence of an equilibrium where the completion rate of reforms is maximum and equal to $\overline{\alpha}$ and $\underline{\ell}$ is optimal as in the first best economy without asymmetric information. But in choosing the optimal duration of legislatures, we might not only want to maximize steady welfare but also eliminate the risk of ending up in Kafkian trap, where welfare is low because of the excessive amount of reforms which are progressively introduced in the system by incompetent politicians. To rule out a Kafkian equilibrium and given (23) and (24) in Proposition 4, it has to be that the duration of the legislature ℓ is either greater than

$$\ell^* = \frac{-\ln\left(\underline{\rho}\right)}{\underline{\alpha}} \tag{28}$$

(so that incompetent politicians never start a reform) or greater than the threshold ℓ^{**} that solves

$$\frac{p}{\left[p + (1-p)\, e^{\underline{\alpha}\ell^{**}}\right]\left(e^{\underline{\alpha}\ell^{**}} - 1\right)} = \overline{h}^K, \tag{29}$$

which guarantees that the flows of bad reforms started by incompetent politicians is low enough to lead to a steady state mass of hanging reforms in the system which remains lower than the critical Kafkian threshold $\overline{h}^K$, beyond which bureaucratic efficiency collapses. In brief this means that, to rule out a Kafkian equilibrium, the duration of the legislature ℓ should be greater than $\min\{\ell^*, \ell^{**}\}$. A planner might then want to maximize the aggregate average-over-time capital stock $\overline{k}^*$ in (16) subject to the constraint

that a Kafkian equilibrium can never be sustained. Under this welfare criterion we can conclude that

Proposition 8. *The optimal length of legislatures in the economy with asymmetric information is generally bigger than under complete information and it is equal to*

$$\ell_O = \max\{\ell_{FB}, \min\{\ell^*, \ell^{**}\}\}$$

where ℓ^* and ℓ^{**} are the unique lengths of legislatures that solve (28) *and* (29)*, respectively.*

In Figure 1 the optimal duration of a legislature that rules out the risk of ending up in a Kafkian trap is equal to ℓ^*. The resulting equilibrium amount of average over time capital in the economy $\overline{k}^*$ corresponds to point A in the Figure. The difference between the value of $\overline{k}^*$ in FB and the value in A measures the loss in welfare in the Weberian equilibrium that the society pays to rule out the risk of ending up in a Kafkian trap.

6 The Gresham's law of bureaucracy

An essential feature of an efficient bureaucracy is to allow the public to properly measure the talent of politicians. So an inefficient bureaucracy discourages talented people from starting a career in politics but also in the bureaucratic apparatus. We call this the Gresham's law of bureaucracy whereby "Bad bureaucracy drives out good politicians (as well as good bureaucrats)". We now study this mechanism more in detail.

So far we have assumed that the fraction of competent politicians in the economy π is exogenous. In practice this will depend on the relative supply of politicians. We now show that when bureaucracy becomes inefficient the relative supply of bad politicians increases and π falls. This is what we call the Gresham's law of bureaucracy whereby "bad bureaucracy drives out good politicians."

Let U_1 denote the expected utility of a good politician in power. This is equal to

$$U_1 = \phi p\left[1 - \left(1 - \rho_t^y\right) e^{-\alpha_t \ell}\right] + \phi(1-p)\rho_t^n \tag{30}$$

where ρ_t^y and ρ_t^n are given in (17). Similarly let U_0 denote the expected utility of a bad politician in power. This is equal to

$$U_0 = \phi\sigma_t e^{-\alpha_t \ell}\rho_t^y + \phi(1-\sigma_t)\rho_t^n \tag{31}$$

In general the probability that a politician is competent depends on the supply of

competent relative to incompetent politicians. We can think that the supply of each type of politicians depends on the utility that she expects to obtain once in power. So we can postulate that the relative supply of competent politicians is given by $L(U_1/U_0)$ so that in equilibrium

$$\pi = L\left(\frac{U_1}{U_0}\right) \tag{32}$$

where $L : \mathbb{R}_+ \to [0,1]$ is strictly increasing and convex.[13] The following proposition, fully proved in the Appendix, states that π falls when α_t falls:

Proposition 9 (The Gresham's law of bureaucracy)**.** *A fall in the efficiency of bureaucracy α_t leads to a fall in the relative supply of competent politicians, so π falls.*

Notice that (21) implies that when $\sigma_t > 0$ the flow of new reforms introduced in the system is independent of π. This means that the fall in π does not alter the amount of hanging reforms in the system. It just reduces the inflow of good reforms in the system.

We could also endogenize the quality of bureaucrats along the same lines. For example we could assume that in the economy there are bureaucrats of different skill s. A bureaucrat of skill s completes reforms at Poisson arrival rate

$$\alpha_t(h_t)\, s$$

where $\alpha_t(h_t)$ is as in (1). The equilibrium completion rate of reforms is then equal to

$$\widetilde{\alpha}_t = \alpha_t(h_t)\, \bar{s}_t$$

where $\bar{s}_t$ denotes the average quality of bureaucrats in society. Now suppose that bureaucrats are promoted on the basis of merit, as measured by the amount of completed reforms. When $\alpha_t(h_t)$ falls then the return to bureaucratic skills falls and as a result the average quality of bureaucrats $\bar{s}_t$ falls which leads to a fall in the equilibrium completion rate of reforms $\widetilde{\alpha}_t$. This further increases the amount of hanging reforms in the system, that further reduces the quality of bureaucrats and worsens the welfare properties of the Kafkian equilibrium. So the Gresham's law of bureaucracy apply to both good politicians and good bureaucrats, and eventually we have that "Bad bureaucracy drives out both good politicians and good bureaucrats". This further exacerbates the negative welfare consequences of a Kafkian equilibrium.

[13] This intuitive mapping from relative utility for different types from an occupation and the incentives of such different types to apply for such an occupation is consistent with multiple occupational choice models. See e.g. Caselli and Morelli (2004).

In practice the Gresham's law of bureaucracy implies that excessive political activism by incompetent politicians can lead the economy to a Kafkian trap also through self-selection of individuals into political and bureaucratic careers.

7 Empirical Evidence

In this section we provide evidence about the key mechanism through which political instability can drift an economy from the Weberian efficient bureaucracy to a Kafkian equilibrium. We do so by relying on Italy's members of parliament (MPs) legislative activity with data covering 26 years and 7 legislatures, from the X to the XVI. Italian data are particularly fit for our task. First, Italy is the country that, according to the Cross National Time Series Data Archive has the highest number major government crisis over the past 40 years, with an average number of 1.2 per years (Figure 4). If our mechanism is present, this latent political instability offers a good chance for it to be detected. In fact, the length of the legislatures varies as some terminate before their natural term. This provides variation in MPs incentives to rely on legislation activism. Over our sample period three out of seven legislatures have ended before the 5-year normal term, in all cases after two years from start. Third, using within country data has the great advantage of holding constant a large number of institutional features (formal and informal) that would be a source of confound if cross country data were used. Finally, we have access to MPs individual level information on their earnings capacity both during term and, most importantly, before, with separate details on the compensation as MP and the earning from any market activity. This will proves important to obtain a measure of MPs ability: we identify it with their ability to produce market income, as in Gagliarducci and Nannicini (2013). We first discuss the empirical model, then the data and finally the evidence.

7.1 Empirical model

The main prediction that we want to test is that bad politicians have stronger incentives to rely on legislative activism when they anticipate a shorter legislature. We test this implication of our theory by estimating variants of the following empirical model

$$A_{itl} = \alpha + \beta Z_{itl} + \gamma B_{itl} + \delta L_l \times B_{itl} + f_l + \epsilon_{itl}$$

where A_{itl} is a measure of legislative activism by MP i, in year t and legislature l. The vector Z_{itl} includes a number of characteristics of the MPs, except their quality. This

is measured by B_{itl} which is an index of bad politicians, while L is the length of the l^{th} legislature, f_l a set of legislature dummies and ϵ_{itl} an error term. We have no prediction regarding the direct effect of bad politicians on activism—i.e. on the parameter γ. Our model instead has a distinct implication for δ—the coefficient on the interaction term between the length of the legislature and the index of bad politicians. The latter should be less active when they anticipate a longer legislature, i.e. when there is less political instability. It is this specific prediction that we will be testing.

7.2 Data

We have data on all Italian MPs, for both chambers, the house of representatives and the senate. These data come into separate files. The first reports for each bill proposed in each of the legislatures in the sample, data on the date of presentation, when and whether it was discussed in a Commission, presented to the chambers and approved (If not turned down) as law and when. For each bill we have also the identifies of the main MP signer. The second dataset reports for each MP her demographic characteristics (age, gender, marital status, number of kids, level of education, and region of birth) and indicators of her parliamentary career and appointments (previous parliamentary experience, whether is a life senator, appointment at a party at national or local level, president or secretary of a committee, member of a committee, deputy or minister in government, political affiliation), legislative activity), which we use as controls in model (xx).

7.2.1 Measuring legislative activity

We use the first dataset to obtain measures of legislature activity for each MP and over a legislature. In particular, we measure legislative activity A_{itl} by the number of bills presented by MP i in year t in legislature l; as an additional measures we use the number of laws instead of the number of bills.

7.2.2 Measuring politicians quality

One unique feature of this dataset is that, because MPs have to disclose their incomes, we have data on the various sources of income of each politician. Not only we observe the compensation as MPs but also all the earnings for any market activity they held during term and the incomes from labor they earned in the year before appointment, gross and net of tax. We use this data to obtain an estimate of the ability of MPs. Drawing on a large literature in labor (e.g. xxx) , we infer politicians ability from their earnings

capacity in the market. Because we have a panel of observations for all MPs, with their incomes varying over time and covering both the earnings while in term as well as (for those newly elected) the income from labor in the year before the term, we run mincerian regressions on total earnings. Because we control for total compensation as MP, the residual variation only reflects market earnings. We explain the latter with time fixed effects to capture common time variation and individual fixed effects. We take the latter as our measure of politicians ability. From this continuous measure we define B_{itl} - the indicator of low quality politician - to be equal to 1 if the estimated fixed effect is below the cross sectional median; a tighter definition uses the 25th percentile as a threshold for low quality. Alternatively, we run the same regressions without the fixed effects but adding a vector of individual controls in addition to the time dummies. We than take the residuals from these regression and define two similar alternative indicators of B_{itl}. We call the first the fixed-effect indicator and the second the "residual" indicator. Empirically the two measures are highly correlated (correlation xx). Table 1 shows summary statistics for our data.

7.3 Results

Table 2 show the results of the estimates of our model. The first column uses the fixed-effect measure of politicians quality, the second that based on the average residuals. For brevity, we only report the relevant coefficients. Being a low quality politician in itself has no effect on legislative activism. However, low quality politicians are systematically and significantly less active when operating in a complete legislature. When the legislature ends prematurely and thus shortens their horizon, low quality politicians are more active in presenting bills. Economically, a low quality politician in a shorter legislature presents 1.2 more bills than a high quality politician. Because MPs present on average 6.7 bills, this effect amounts to 18

These results support the idea in the model that when the legislature is too short, low quality MPs have a stronger incentive to rely on bills and laws to signal their activism because laws, like durable goods, reveal their quality only with time. Hence, poor laws are more likely to be found to be so only after the end of the legislature.

Table 3 reports some robustness exercises. The first three columns use the fixed-effect based measure of quality and the other three the residuals-based measure. As a first robustness check, we define low quality as those MPs with a fixed-effect (or average residual) below the 25th percentile of the cross sectional distribution. Second, we drop 51 outliers observations of MPs that are very active in originating bills; third we restrict the

sample to MPs that present at least one bill, loosing 1239 cases of MPs/legislature that presented no bills. Results are basically unchanged. The effect is somewhat smaller than in Table 1, but of the same order of magnitude. Not surprising precision is lost when we drop those that presented no bills but even in this case the point estimate of the effect is of the same size. Results are similar using the residual based measure.

Table 4 measures activism with the number of laws instead of the number of bills; results go through also using this alternative measure: low quality politicians are more active in signing and proposing new bills that translate into laws when the length of legislature is shorter. On average they propose 0.3 more laws in an aborted legislature compared to a high quality politicians. Since the mean number of laws per MP is 0.91, this difference is quite sizeable as it amount to 1/3 of the sample mean.

Finally, in Table 5 we try to provide some validation of our measure of MPs quality. Only a fraction of the bills presented make it into laws and they have to pass a number of filters that, among other things, screen for quality. If our measure of politicians quality actually captures some notion of ability, we would expect that bills signed by low quality politicians are less likely to end up as laws. The table shows Tobit estimates of the share of bills proposed by each MP that are approved as laws, which is a measure of the success rate of the bills signed. We unambiguously find that bills proposed by low quality politicians and less likely to be successful. The difference in the probability of success is between 2 and 6 percentage points depending on the definition of politician quality. An effect that ranges between 25

It would be tempting to think that law quality politicians anticipating that early presentation of bills of dubious value raises the chances that this is found out, time bills presentation, procrastinating it, particularly during complete legislatures. Hence, if so low quality politicians should reveal a higher survival rate of the bills presented compared to higher quality MPs, particularly in complete legislatures. Our model however predicts that this strategy is unlikely to be observed. In fact, because the timing of presentation of the bills is observed, delaying it would reveal the quality of the politician. To avoid this bad politicians should mimic good politicians and follow the same timing as their. Figure 5 shows Kaplan-Meier survival estimates according to politicians quality and by legislature completion. The figures concords with the model: low quality politicians mimic closely the behavior of their colleagues. Table 6 reaches this conclusions using formal regressions.

To conclude, the microeconomic evidence lends support to the mechanism highlighted in the model. Bills and laws are proposed to signal activism and when political instability becomes more marked this incentive is amplified, resulting in overproduction of laws.

8 Concluding Remarks

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A Omitted Derivations

A.1 Proof of Lemma 2

We derive first (12), then (15), and finally prove the lemma.

A.1.1 Derivation of (12)

We solve for $\tilde{k}_\tau$ in (11) by guessing and then verifying that for $\forall \tau \in [\tau_t, \tau_t + \ell)$

$$\tilde{k}_\tau = ae^{-\nu(\tau-\tau_t)} + be^{-\alpha_t(\tau-\tau_t)} + ce^{-(\alpha_t+\nu)(\tau-\tau_t)} \tag{33}$$

Clearly we also have the initial condition that says that

$$a + b + c = \tilde{k}_{\tau_t} \tag{34}$$

Under the guess in (33) we have that (11) reads as follows

$$\begin{aligned}\frac{d\tilde{k}_\tau}{d\tau} &= -\nu ae^{-\nu(\tau-\tau_t)} - \alpha_t be^{-\alpha_t(\tau-\tau_t)} - (\alpha_t+\nu)\, ce^{-(\alpha_t+\nu)(\tau-\tau_t)} \\ &= q\alpha_t \left[e^{-(\alpha_t+\nu)(\tau-\tau_t)} z_t + e^{-\alpha_t(\tau-\tau_t)} \pi p\right] - \nu ae^{-\nu(\tau-\tau_t)} - \nu be^{-\alpha_t(\tau-\tau_t)} - \nu ce^{-(\alpha_t+\nu)(\tau-\tau_t)}\end{aligned}$$

which is equivalent to

$$\begin{aligned}&- \alpha_t be^{-\alpha_t(\tau-\tau_t)} - (\alpha_t+\nu)\, ce^{-(\alpha_t+\nu)(\tau-\tau_t)} \\ &= q\alpha_t \left[e^{-(\alpha_t+\nu)(\tau-\tau_t)} z_t + e^{-\alpha_t(\tau-\tau_t)} \pi p\right] - \nu be^{-\alpha_t(\tau-\tau_t)} - \nu ce^{-(\alpha_t+\nu)(\tau-\tau_t)}\end{aligned}$$

So we have that our guess is verified if and only if

$$\begin{aligned}(\nu-\alpha_t)\, b &= q\alpha_t \pi p \\ -(\alpha_t+\nu)\, c &= q\alpha_t z_t - \nu c\end{aligned}$$

After using (34), we conclude that our guess is verified if

$$\begin{aligned}b &= \frac{q\alpha_t \pi p}{(\nu-\alpha_t)} \\ c &= -qz_t \\ a &= \tilde{k}_{\tau_t} - \frac{q\alpha_t \pi p}{(\nu-\alpha_t)} + qz_t\end{aligned}$$

This implies that (33) reads as follows

$$\tilde{k}_\tau = \tilde{k}_{\tau_t} e^{-\nu(\tau-\tau_t)} + \frac{q\alpha_t \pi p}{(\nu-\alpha_t)}\left[e^{-\alpha_t(\tau-\tau_t)} - e^{-\nu(\tau-\tau_t)}\right] + qg_t\left[e^{-\nu(\tau-\tau_t)} - e^{-(\alpha_t+\nu)(\tau-\tau_t)}\right]$$

which proves (12).

A.1.2 Derivation of (15)

By using (13) and after imposing $k_t = k_{t-1} = k^*$ we obtain that in steady state the beginning of period capital stock in the economy is equal to

$$\begin{aligned} k^* &\equiv \frac{1}{\left(1-e^{-\nu\ell}\right)} \cdot \left\{ \frac{q\alpha^*\pi p}{(\nu-\alpha^*)}\left(e^{-\alpha^*\ell} - e^{-\nu\ell}\right) + \frac{e^{-\alpha^*\ell} q\pi p\left[e^{-\nu\ell} - e^{-(\alpha^*+\nu)\ell}\right]}{1-e^{-(\alpha^*+\nu)\ell}} \right\} \\ &= \frac{q\pi p}{1-e^{-\nu\ell}}\left[\frac{\alpha^*\left(e^{-\alpha^*\ell} - e^{-\nu\ell}\right)}{\nu-\alpha^*} + \frac{1-e^{-\alpha^*\ell}}{e^{(\alpha^*+\nu)\ell}-1}\right] \end{aligned}$$

which immediately proves (15).

We can now calculate the average capital stock over a legislature when the capital stock at the beginning of its legislature is in steady state, $k_t = k_{t-1} = k^*$. We then obtain

$$\begin{aligned} \bar{k}^* &= \frac{\int_0^\ell \tilde{k}_{\tau_t+s} ds}{\ell} = \frac{k^*}{\nu\ell}\left(1-e^{-\nu\ell}\right) + \frac{\alpha^* q\pi p}{\alpha^*-\nu}\left[\frac{1-e^{-\nu\ell}}{\nu\ell} - \frac{1-e^{-\alpha^*\ell}}{\alpha^*\ell}\right] \\ &\quad + qg^*\left[\frac{1-e^{-\nu\ell}}{\nu\ell} - \frac{1-e^{-(\alpha^*+\nu)\ell}}{(\alpha^*+\nu)\,\ell}\right] \\ &= \frac{q\alpha^*\pi p}{\nu\ell\,(\nu-\alpha^*)} \cdot \left(e^{-\alpha^*\ell} - e^{-\nu\ell}\right) + \frac{q\pi p\left(1-e^{-\alpha^*\ell}\right)}{\nu\ell\left[e^{(\alpha^*+\nu)\ell}-1\right]} + \frac{\alpha^* q\pi p}{\alpha^*-\nu}\left[\frac{1-e^{-\nu\ell}}{\nu\ell} - \frac{1-e^{-\alpha^*\ell}}{\alpha^*\ell}\right] \\ &\quad + \frac{e^{-\alpha^*\ell} q\pi p}{1-e^{-(\alpha^*+\nu)\ell}}\left[\frac{1-e^{-\nu\ell}}{\nu\ell} - \frac{1-e^{-(\alpha^*+\nu)\ell}}{(\alpha^*+\nu)\,\ell}\right] \end{aligned}$$

where in the first row we used the expression for $\tilde{k}_\tau$ in (12) and in the second we used (15)

to replace k^* and (14) to replace g^*. After manipulating the above expression we obtain

$$\begin{aligned}\overline{k}^* &= \frac{q\alpha^*\pi p}{\nu\ell\left(\nu-\alpha^*\right)}\cdot\left(e^{-\alpha^*\ell}-e^{-\nu\ell}\right)+\frac{q\pi p e^{-(\alpha^*+\nu)\ell}\left(1-e^{-\alpha^*\ell}\right)}{\nu\ell\left[1-e^{-(\alpha^*+\nu)\ell}\right]}\\ &+\frac{\alpha^* q\pi p}{\alpha^*-\nu}\left[\frac{1-e^{-\nu\ell}}{\nu\ell}-\frac{1-e^{-\alpha^*\ell}}{\alpha^*\ell}\right]\\ &+\frac{q\pi p}{\nu\ell\left[1-e^{-(\alpha^*+\nu)\ell}\right]}\cdot\left[e^{-\alpha^*\ell}-e^{-(\alpha^*+\nu)\ell}\right]-\frac{e^{-\alpha^*\ell}q\pi p}{\left(\alpha^*+\nu\right)\ell}\end{aligned}$$

which can be written as follows:

$$\begin{aligned}\overline{k}^* &= \frac{\alpha^* q\pi p}{\left(\alpha^*-\nu\right)\nu\ell}\cdot\left(e^{-\nu\ell}-e^{-\alpha^*\ell}\right)+\frac{\alpha^* q\pi p}{\alpha^*-\nu}\left[\frac{1-e^{-\nu\ell}}{\nu\ell}-\frac{1-e^{-\alpha^*\ell}}{\alpha^*\ell}\right]\\ &+\frac{q\pi p}{\nu\ell\left[1-e^{-(\alpha^*+\nu)\ell}\right]}\cdot\left[e^{-\alpha^*\ell}-e^{-(2\alpha^*+\nu)\ell}\right]-\frac{e^{-\alpha^*\ell}q\pi p}{\left(\alpha^*+\nu\right)\ell}\end{aligned}$$

After some manipulation we obtain

$$\begin{aligned}\overline{k}^* &= \frac{\alpha^* q\pi p}{\left(\alpha^*-\nu\right)\nu\ell}\cdot\left(1-e^{-\alpha^*\ell}\right)-\frac{\alpha^* q\pi p}{\left(\alpha^*-\nu\right)\alpha^*\ell}\cdot\left(1-e^{-\alpha^*\ell}\right)\\ &+\frac{q\pi p}{\nu\ell\left[1-e^{-(\alpha^*+\nu)\ell}\right]}\cdot\left[e^{-\alpha^*\ell}-e^{-(2\alpha^*+\nu)\ell}\right]-\frac{e^{-\alpha^*\ell}q\pi p}{\left(\alpha^*+\nu\right)\ell}\end{aligned}$$

which can be further simplified to obtain

$$\begin{aligned}\overline{k}^* &= \frac{q\pi p}{\nu\ell}\cdot\left(1-e^{-\alpha^*\ell}\right)\\ &+\frac{q\pi p}{\nu\ell\left[1-e^{-(\alpha^*+\nu)\ell}\right]}\cdot\left[e^{-\alpha^*\ell}-e^{-(2\alpha^*+\nu)\ell}\right]-\frac{e^{-\alpha^*\ell}q\pi p}{\left(\alpha^*+\nu\right)\ell}\end{aligned}$$

which can also be written as follows

$$\overline{k}^* = \frac{q\pi p}{\nu\ell}\cdot\left(1-e^{-\alpha^*\ell}\right)+\frac{e^{-\alpha^*\ell}q\pi p}{\nu\ell}-\frac{e^{-\alpha^*\ell}q\pi p}{\left(\alpha^*+\nu\right)\ell}$$

After simplifying we obtain

$$\overline{k}^* = \frac{q\pi p}{\nu\ell}-\frac{e^{-\alpha^*\ell}q\pi p}{\left(\alpha^*+\nu\right)\ell}$$

which proves (16).

A.2 Proof of Proposition 3

Using (17), the indifference condition in (19) is given by

$$\begin{aligned}\frac{(1-p)}{\pi(1-p)+(1-\pi)(1-\sigma_t)} &= e^{-\alpha l}\frac{p}{\pi p+(1-\pi)\sigma_t}\\ \sigma_t &= p\frac{(1-\pi p)e^{-\alpha_t \ell}-\pi(1-p)}{(1-\pi)\left[1-p\left(1-e^{-\alpha_t \ell}\right)\right]}\\ &= p-\frac{p(1-p)\left(1-e^{-\alpha_t \ell}\right)}{(1-\pi)\left[1-p\left(1-e^{-\alpha_t \ell}\right)\right]}\end{aligned}$$

which is the expression in Proposition 3.

Given (20), all the comparative statics results are obvious with the possible exception of the result that σ_t is increasing in p. But from taking the derivative of σ_t in (20) with respect to p, we immediately see that

$$\frac{\partial \sigma_t}{\partial p}=\frac{\sigma_t}{p}+\frac{pe^{-\alpha_t \ell}\left(1-e^{-\alpha_t \ell}\right)}{(1-\pi)\left[1-p\left(1-e^{-\alpha_t \ell}\right)\right]^2}>0$$

This concludes the proof of Proposition 3

A.3 Proof of Proposition 9

First, notice that U_1 and U_2 are continuous in α_t because ρ_t^y, ρ_t^n, and σ_t are continuous in α_t. We divide the proof in two cases.

Case 1: $\sigma_t = 0$**.** If $\sigma_t = 0$, then ρ_t^y and ρ_t^n are independent of σ_t and it is easy to see that $dU_1/d\alpha_t > 0$ and $dU_0/d\alpha_t = 0$. Therefore $dL\left(U_1/U_0\right)/d\alpha_t > 0$. Furthermore, using (17)

$$\begin{aligned}\frac{U_1}{U_0} &= \frac{p}{\rho_t^n}+\phi(1-p)\\ &= \frac{p\left[(1-p)+\left(\frac{1}{\pi}-1\right)\right]}{1-p}+\phi(1-p)\end{aligned}$$

which is decreasing in π. Thus, since in equilibrium

$$\pi = L\left(\frac{U_1}{U_0}\right)$$

an increase in α_t causes an increase in π.

Case 1: $\sigma_t > 0$**.** If $\sigma_t > 0$, by Proposition 3

$$U_1 = \phi p \left(1 - e^{-\alpha_t \ell}\right) + \phi e^{-\alpha_t \ell} \rho_t^y = \phi p - \phi \left(p - \rho_t^y\right) e^{-\alpha_t \ell} \tag{35}$$

and

$$\frac{dU_1}{d\alpha_t} = \left[\left(p - \rho_t^y\right) \ell + \frac{d\rho_t^y}{d\sigma_t} \cdot \frac{d\sigma_t}{d\alpha_t}\right] \phi e^{-\alpha_t \ell}$$

Now (17) immediately implies that ρ_t^y is decreasing in σ_t, while Proposition 3 implies that σ_t is decreasing in the completion rate of reforms of α_t. Therefore $dU_1/d\alpha_t > 0$. Furthermore, $U_0 = \phi \rho_t^n$ and

$$\frac{dU_0}{d\alpha_t} = \phi \frac{d\rho_t^n}{d\sigma_t} \cdot \frac{d\sigma_t}{d\alpha_t}$$

Now (17) immediately implies that ρ_t^n is increasing in σ_t, while Proposition 3 implies that σ_t is decreasing in the completion rate of reforms of α_t. Therefore $dU_0/d\alpha_t < 0$. We can conclude that $L\left(U_1/U_0\right)$ is increasing in α_t.
Furthermore,

$$\frac{U_1}{U_0} = 1 + \frac{p\left(e^{\alpha_t \ell} - 1\right)}{\rho_t^y} \tag{36}$$

where ρ_t^y is given in ((17)) so that after substituting for σ_t in Proposition (3) we obtain that

$$\rho_t^y = \frac{p}{p + p\frac{\left(\frac{1}{\pi} - p\right)e^{-\alpha_t \ell} - (1-p)}{\left[1 - p\left(1 - e^{-\alpha_t \ell}\right)\right]}}$$

which is increasing in π. Thus, $L\left(U_1/U_0\right)$ is decreasing in π. Since in equilibrium

$$\pi = L\left(\frac{U_1}{U_0}\right)$$

an increase in α_t causes an increase in π.

B Reelection Extension

We study a two-legislature extension of our model where voters can re-elect politicians for multiple legislatures. We show that our main message holds in this context: a less efficient bureaucracy and shorter legislatures today lead to more reforms being started by incompetent politicians today and an even less efficient bureaucracy tomorrow.

We consider a simple two-legislature version of our model with re-election. There are two legislatures, $t = 1, 2$, each lasting $\ell \geq \underline{\ell}$. In each legislature, the economy is ran

by a continuum of ministries indexed over the unit interval, $i \in [0,1]$. At the beginning of legislature 1, new politicians are drawn to run ministries $i \in [0,1]$. Each politician is competent with probability π and incompetent with probability $1-\pi$.

At the start of her mandate, minister i chooses whether to start a reform. At the end of legislature 1, voters can either keep the incumbent politician or replace her with a new one whose type is drawn from an identical distribution.

Each competent politician in each election has an independent probability p of having an opportunity for a good reform. Voters are forward looking and care about the amount of future good reforms and a random realization of a bias either for the incumbent or for the new draw. That is, voters keep the incumbent politician in ministry i with probability $P(\rho_{i1}) \in [0,1]$, where $P : [0,1] \to [0,1]$ is an increasing function of voters' beliefs, with $P(0) = 0$ and $P(1) = 1$.

Politicians value re-election: the expected payoff of a politician of type $\theta = 0,1$ in ministry i elected in legislature 1 is given by:

$$P(\rho_{i1})\left[\phi_R - \gamma\theta\mathbb{I}(\rho_{i1,2} = 0)\right] - \left[1 - P(\rho_{i1})\right]\gamma\theta\mathbb{I}(\rho_{i1} = 0)$$

where ϕ_R is the value of re-election and $\rho_{i,2}$ is the public's belief about the politician elected in legislature 1 at the end of legislature 2. We keep the assumption that competent politicians do not start bad reforms and start a good reform whenever they have the opportunity to do so.

Assumption 3. *Competent politicians start a reform if and only if they have the opportunity of a good reform.*

We study the unique symmetric perfect Bayesian equilibrium of this model. We show how the equilibrium probability that an incompetent politician starts a reform in legislature 1 and the equilibrium stock of hanging reforms in legislature 2 depend on the initial efficiency of the bureaucracy α_1, the length of the legislature ℓ, and the need for reforms p.

For an incompetent politician, the expected payoff of starting starting a reform and not starting a reform are respectively given by

$$\begin{aligned} E[u(\text{reform})] &= e^{-\alpha_1\ell}P(\rho^y)\phi_R; \\ E[u(\text{no reform})] &= P(\rho^n)\phi_R \end{aligned}$$

where equilibrium beliefs ρ_1^y and ρ_y^n are given by Bayes' rule as

$$\begin{aligned}\rho^y &= \frac{\pi p}{\pi p + (1-\pi)\sigma_1};\\ \rho^n &= \frac{\pi(1-p)}{\pi(1-p) + (1-\pi)(1-\sigma_1)}.\end{aligned}$$

As in Section 3.1, we notice that if $\sigma_t = 0$ (all incompetent politicians never start reforms), the reputation at the end of the mandate of a politician who has not started a reform is equal to $\underline{\rho} \equiv \frac{\pi(1-p)}{1-\pi p}$.

The following lemma characterizes the expected payoff functions for an incompetent politician.

Lemma 3. *For an incompetent politician, (1) the expected payoff of starting a reform is decreasing in σ_1 and (2) the expected payoff of not starting a reform is increasing in σ_1. Furthermore, we have (3):*

$$E\left[u\left(\textit{reform}\right) \mid \sigma_1 = 0\right] < E\left[u\left(\textit{no reform}\right) \mid \sigma_1 = 0\right]$$

if an only if $\alpha_1 \ell > -\ln\left(\underline{\rho}/\phi_R\right)$ and (4):

$$E\left[u_n\left(\textit{reform}\right) \mid \sigma_1 = 1\right] < E\left[u_n\left(\textit{no reform}\right) \mid \sigma_1 = 1\right].$$

Proof. Parts (1) and (2) follow from ρ^y being decreasing in σ_1 and ρ^n being increasing in σ_1 for all $\sigma_1 \in (0,1)$, respectively. Thus,

$$\begin{aligned}\frac{dE\left[u_n\left(\text{reform}\right)\right]}{d\sigma_1} &= e^{-\alpha_1\ell}\frac{dP\left(\rho^y\right)}{d\rho^y}\frac{d\rho^y}{d\sigma_1}\phi_R < 0;\\ \frac{dE\left[u_n\left(\text{no reform}\right)\right]}{d\sigma_1} &= \frac{dP\left(\rho^n\right)}{d\rho^n}\frac{d\rho^n}{d\sigma_1}\phi_R > 0\end{aligned}$$

for all $\sigma \in (0,1)$.

Part (3) is given by

$$E\left[u\left(\text{reform}\right) \mid \sigma_1 = 0\right] = e^{-\alpha_1\ell}\phi_R < \underline{\rho} = E\left[u\left(\text{no reform}\right) \mid \sigma_1 = 0\right].$$

Part (4) is given by

$$E\left[u_n\left(\text{reform}\right) \mid \sigma_1 = 1\right] = e^{-\alpha_1\ell}P\left(\frac{\pi p}{\pi p + (1-\pi)}\right)\phi_R < \phi_R = E\left[u_n\left(\text{no reform}\right) \mid \sigma_1 = 1\right]$$

where the inequality follows from $e^{-\alpha_1\ell} < 1$ and $P\left(\rho\right) \leq 1$ for all $\alpha_1\ell > 0$ and $\rho \in$

$[0,1]$. □

We now turn to the characterization of the unique equilibrium. Proposition 10 says that when bureaucracy is sufficiently efficient or the legislature is sufficiently long, in equilibrium, the risk an incompetent politician faces when starting a reform is too large and she prefers not to start one.

Proposition 10. *The probability σ_1 that an incompetent politician starts a reform in legislature 1 is (i) 0 if $\alpha_1 \ell > -\ln\left(\underline{\rho}/\phi_R\right)$ and (ii) strictly decreasing in the efficiency of the bureaucracy and the length of the legislature otherwise.*

Proof. Step 1: From Lemma 3, Part 4, there is no equilibrium with $\sigma_1 = 1$. Thus, in equilibrium we either have $\sigma_1 = 0$ and

$$E\left[u\left(\text{reform}\right) \mid \sigma_1 = 0\right] = e^{-\alpha_1 \ell}\phi_R < \underline{\rho} = E\left[u\left(\text{no reform}\right) \mid \sigma_1 = 0\right] \tag{37}$$

or $\sigma_1 \in [0,1)$ solves

$$E\left[u_n\left(\text{reform}\right)\right] = E\left[u_n\left(\text{no reform}\right)\right]. \tag{38}$$

Step 2: From Lemma 3, Parts 1, 2, and 3, equation (38) has exactly one solution in $[0,1)$ if $e^{-\alpha_1 \ell}\phi_R \geq \underline{\rho}$ and no solution in $[0,1)$ otherwise.

Step 2: Suppose $e^{-\alpha_1 \ell}\phi_R < \rho$, then in equilibrium $\sigma_1 = 0$, proving part (i). Suppose $e^{-\alpha_1 \ell}\phi_R \leq \underline{\rho}$. Then σ_1 solves equation (38). Since $E\left[u_n\left(\text{reform}\right)\right]$ is decreasing in $\alpha_1 \ell$, then also is σ_1, proving part (ii). □

The total amount of reforms started in legislature 1 is given by $\pi p + (1-\pi)\sigma_1$. The following proposition shows how the total amount of reforms started in legislature 1 changes with the efficiency of the bureaucracy and the length of the legislature.

Proposition 11. *The amount of reforms started in legislature 1 is (i) given by $p\pi$ if $\alpha_1 \ell > -\ln\left(\underline{\rho}/\phi_R\right)$ and (ii) strictly decreasing in the efficiency of the bureaucracy and the length of the legislature otherwise.*

Proof. Follows immediately from Proposition 10. □

We now turn our attention to the stock of uncompleted reforms at the beginning of legislature 2 (i.e., before politicians choose whether to start reforms in legislature 2). Recall that when this stock is higher, then bureaucracy is slower in legislature 2 (α_2 is smaller).

Notice that when legislature 1 is longer (ℓ greater) or the bureaucracy is more efficient (α_1 smaller), the probability that a reform is completed by the end of the legislature $1 - e^{-\alpha_1 \ell}$ is greater. Thus, fixed the number of reforms r_1 started at the beginning of legislature

1, a longer legislature or a more efficient bureaucracy reduce the stock of uncompleted reforms at the beginning of legislature 2, $r_1\left(1-e^{-\alpha_1\ell}\right)$. From Proposition 11, the amount of reforms started at the beginning of legislature 1 is also decreasing in the length of the legislature and the efficiency of the bureaucracy. Thus, the total stock of uncompleted reforms at the beginning of legislature 2

$$e^{-\alpha_1\ell}\left[\pi p+(1-p)\,\sigma_1\right]$$

is also decreasing in the length of the legislature and the efficiency of the bureaucracy. This proves the following proposition.

Proposition 12. *The stock of uncompleted reforms at the beginning of legislature* 2 *is (i) given by* $e^{-\alpha_1\ell}p\pi$ *if* $\alpha_1\ell > -\ln\left(\underline{\rho}/\phi_R\right)$ *and (ii) strictly decreasing in the initial efficiency of the bureaucracy and the length of legislature* 1 *otherwise.*

Intuitively, a longer legislature and a more efficient bureaucracy contemporaneously decrease the amount of reforms started (Proposition 11) *and* how many of these reforms are still hanging by the end of the legislature.

Recall that

$$\underline{\rho}\equiv\frac{\pi\,(1-p)}{1-\pi p}$$

and notice that $\underline{\rho}$ is decreasing in p. Thus, incompetent politicians are more likely to start bad reforms with positive probability ($\alpha_1\ell < -\ln\left(\underline{\rho}/\phi_R\right)$) when the need for reforms p is larger. Also, the amount of reforms started in legislature 1, $r_1=\pi p+(1-p)\,\sigma_1$, and the stock of uncompleted reforms at the beginning of legislature 2, $e^{-\alpha_1\ell}r_1$ are both increasing in p.

Proposition 13. *A higher need for reforms induces (i) both competent and incompetent politicians to start more reforms in legislature* 1 *and (ii) a higher stock of uncompleted reforms at the beginning of legislature* 2*.*

C Empirical evidence

Table 1. Summary statistics

Variable	Mean	Median	sd
Number of bills	6.69	3	11.71
Number of laws	0.91	0	2.12
Success rate	0.08	0	0.179

Table 2. Legislative activism, legislature duration and politicians quality

The table shows the results of OLS estimates of the number of bills presented by MPs on members of parliament quality, measured by gross market return to human capital. All regressions control for MPs demographic characteristics (age, gender, marital status, number of kids, level of education, dummies for region of birth), dummies for chamber of parliament, life senator, previous parliament experience, appointment in party at nation and local level, dummies member of European parliament, president or secretary of a committee, member of a committee, deputy-president or minister in government, dummies for political affiliation (left or right), and a full set of legislature dummies. Regression compute robust standard errors; *p*-values are shown in parenthesis : *** significant<= 1%; ** significant< 5% ; * significant< =10%.

	Whole sample		Sample splits	
	Quality measure: fixed effect	Quality measure: Mean residual	Complete Legislature	Incomplete Legislature
Low quality politician	-0.63	0.00	-2.10**	-0.36
	(0.266)	(0.995)	(0.027)	(0.507)
Complete legislature * low quality politician	-1.21**	-1.10**		
	(0.036)	(0.044)		
Observations	4,903	4,903	2,610	2,293
R-squared	0.104	0.103	0.090	0.080

Table 3. Robustness

The table shows the results of OLS estimates of the number of bills presented on members of parliament quality. In the first column this is measures by net of tax income prior to election. In columns 2 and 3 by gross income prior to election. Column 2 drops observations with more than 54 bills (the 99th percentile of the number of bills distribution); the third column only considers MPs with a positive number of bills presented. All regressions control for MPs demographic characteristics (age, gender, marital status, number of kids, level of education, dummies for region of birth), dummies for chamber of parliament, life senator, previous parliament experience, appointment in party at nation and local level, dummies member of European parliament, president or secretary of a committee, member of a committee, deputy-president or minister in government, dummies for political affiliation (left or right), and a full set of legislature dummies. Regression compute robust standard errors; *p*-values are shown in parenthesis : *** significant<= 1%; ** significant< 5% ; * significant< =10%.

	Quality measured with fixed effects			Quality measured with average residuals		
	Low quality Fe <25th	No outliers	At least one bill	Low quality Resid <25th	No outliers	At least one bill
Low quality politician	-0.44	-0.32	-1.13	-0.36	-0.37	0.17
	(0.369)	(0.399)	(0.136)	(0.417)	(0.207)	(0.753)
Complete legis. * low quality polit.	-0.99*	-0.97**	-0.88	-0.99	-0.81**	-1.12*
	(0.089)	(0.014)	(0.227)	(0.117)	(0.036)	(0.09)
Observations	4,903	4,852	3,613	4,903	4,852	3,613
R-squared	0.103	0.131	0.100	0.103	0.132	0.098

Table 4. The effect on the number of laws

The table shows the results of OLS estimates of the number of laws presented by MPs on members of parliament quality, measured by gross market return to human capital. All regressions control for MPs demographic characteristics (age, gender, marital status, number of kids, level of education, dummies for region of birth), dummies for chamber of parliament, life senator, previous parliament experience, appointment in party at nation and local level, dummies member of European parliament, president or secretary of a committee, member of a committee, deputy-president or minister in government, dummies for political affiliation (left or right), and a full set of legislature dummies. Regression compute robust standard errors; *p*-values are shown in parenthesis : *** significant<= 1%; ** significant< 5% ; * significant< =10%.

	FE < median	FE 25th pct	Resid median	Resid 25h pct
Low quality politician	0.01	0.05	-0.02	0.01
	(0.921)	(0.441)	(0.753)	(0.853)
Complete legislature * low quality politician	-0.32**	-0.32**	-0.15	-0.44***
	(0.016)	(0.012)	(0.255)	(0.004)
Observations	3,613	3,613	3,613	3,613
R-squared	0.161	0.160	0.160	0.163

Table 5. Successful bills and politician quality

The table shows the results of Tobit estimates of the share of approved bills on members of parliament quality, measured by gross market return to human capital. All regressions control for MPs demographic characteristics (age, gender, marital status, number of kids, level of education, dummies for region of birth), dummies for chamber of parliament, life senator, previous parliament experience, appointment in party at nation and local level, dummies member of European parliament, president or secretary of a committee, member of a committee, deputy-president or minister in government, dummies for political affiliation (left or right), and a full set of legislature dummies. Regression compute robust standard errors; *p*-values are shown in parenthesis : *** significant<= 1%; ** significant< 5% ; * significant< =10%.

	FE < median	FE < 25th pct	Resid < median	Resid < 25h pct
Low quality politician	-0.04***	-0.06***	-0.02***	-0.04***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	3,612	3,612	3,612	3,612

Table 6. Timing the legislature when presenting a bill

The table shows the results of a Cox proportional hazard model estimate where OLS regression on the number of days to the end of the legislature when a bill was presented on a dummy for of the probability of not surviving the presentation of a bill after n days since the start of the legislature. All regressions control for MPs demographic characteristics (age, gender, marital status, number of kids, level of education, dummies for region of birth), dummies for chamber of parliament, life senator, previous parliament experience, appointment in party at nation and local level, dummies member of European parliament, president or secretary of a committee, member of a committee, deputy-president or minister in government, dummies for political affiliation (left or right), and a full set of legislature dummies. Robust standard errors are clustered at the MP level. *p*-values in parenthesis. *** significant<= 1%; ** significant< 5% ; *** significant 10%

	Low politician quality measure			
	FE < median	FE < 25th pct	Resid < median	Resid < 25h pct
Low quality politician	-0.03	-0.02	0.06***	0.06***
	(0.425)	(0.599)	(0.007)	(0.007)
Complete legislature * low quality politician	0.04	0.07	-0.10**	-0.10**
	(0.337)	(0.127)	(0.043)	(0.043)
Observations	35,301	35,301	35,301	35,301

Figure 4. Political instability across countries

Average number of major government crisis per year between 1970 and 2013 from the Cross National Time Series Data Archive. The figures shows the data for the countries with at least one crisis.

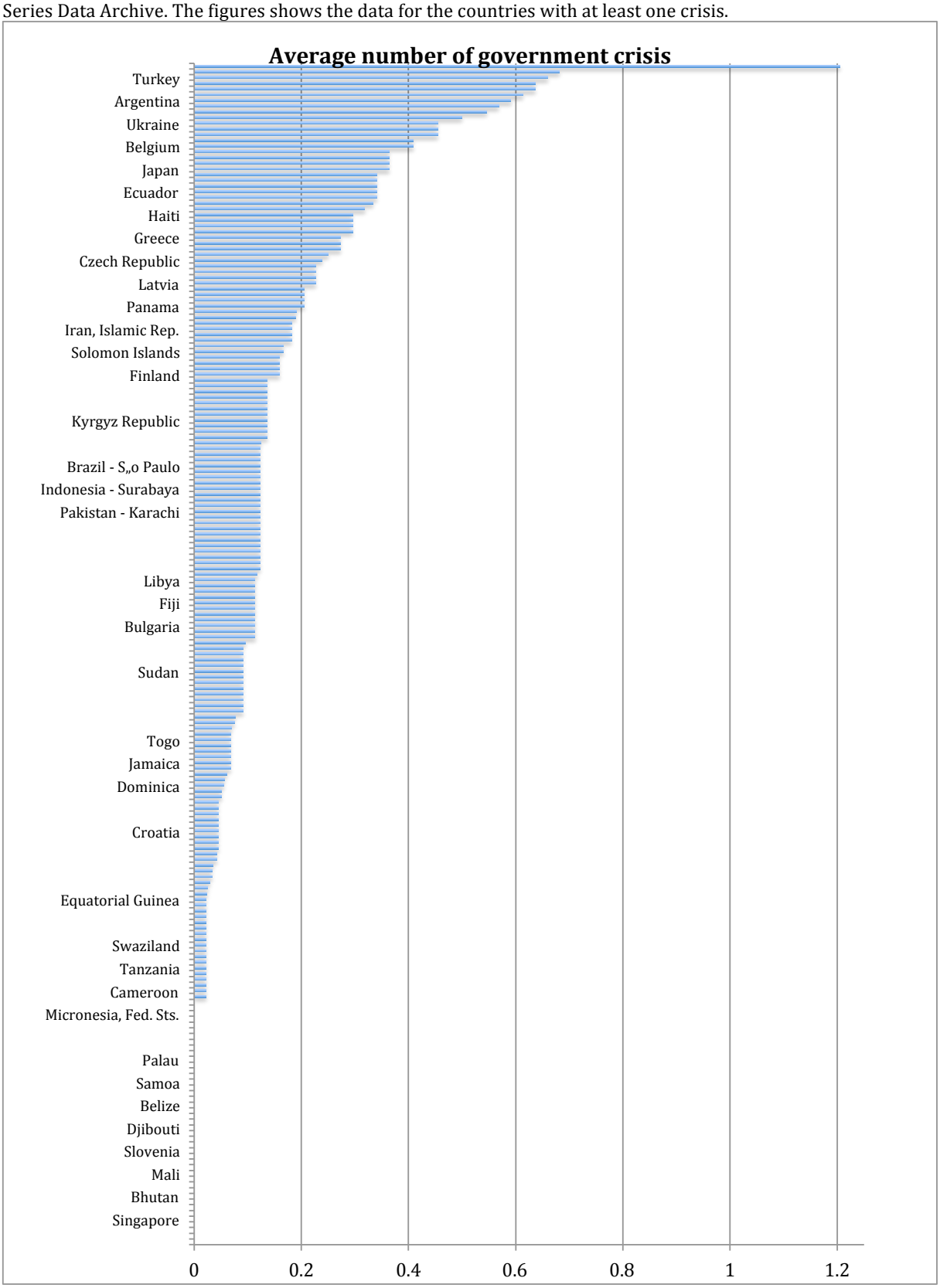
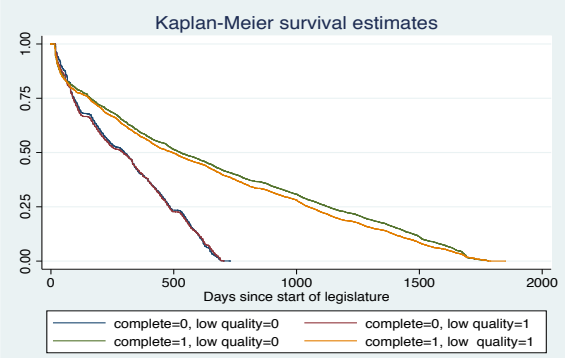


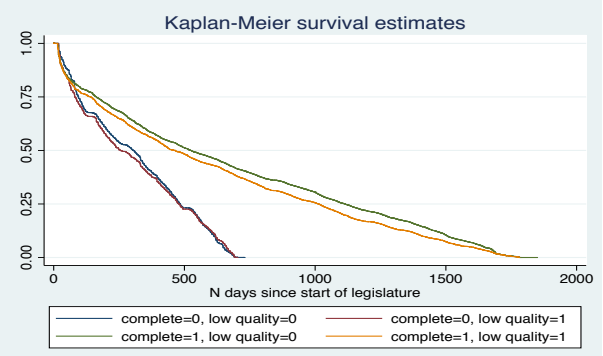
Figure 5. Survival analysis

Kaplan- Meier survival estimates by legislature completion and politician quality

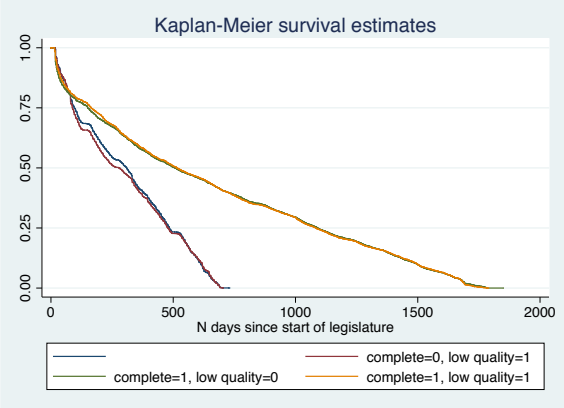
Low quality: FE < 50th



Low quality: FE <25th



Low quality: Resid < 50th



Low quality: Resid <25th