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Abstract

A well functioning bureaucracy can promote prosperity, as Max Weber maintained. But when bureaucracy gets jammed—a Kafkian situation—it causes stagnation. We propose a dynamic theory of the interaction between legislation and the efficiency of bureaucracy. When bureaucracy is inefficient, the effects of politicians' legislative acts are hard to assess. Incompetent politicians thus have strong incentives of passing laws to acquire the reputation of skillful reformers. But a plethora of often contradictory laws can itself lead to a collapse in bureaucratic efficiency. This interaction can spawn both Weberian and Kafkian steady states. A temporary surge in political instability, which increases the likelihood of a premature end of the legislature, exerts pressure for reforms, or results in the appointment of short-lived technocratic governments can determine a permanent shift towards the nightmare Kafkian steady state. The aggregate experience of Italy in its transition from the so-called First to the Second Republic fits the narrative of the model quite well. Using micro-data for Italian MPs, we also provide evidence consistent with the claim that when political instability is high, politicians signal their competence through legislative activism, which leads to the overproduction of laws and norms.

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May 29, 2017

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1 Introduction

Corruptissima re publica plurimae leges

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

Tacitus, Annals, Book III, 27

The term "bureaucracy" typically refers to all institutions which provide services to individuals and firms, such as regulation and certification, or enforce and implement laws. Max Weber (1922) argued that a well-functioning bureaucracy reduces organization and transaction costs in the economy, guarantees order, maximizes efficiency, and eliminates favoritism.[1] But this Weberian view is by no means pervasive. In fact, bureaucracy is often associated with Franz Kafka's description of the Habsburg Monarchy administration at the beginning of the 20th century, characterized by disorienting and often menacing complexity, ultimately leading to the kingdom's stagnation.[2] In practice, the nature of bureaucracy can change over time. In the 19th century, the bureaucracy of the Habsburg Monarchy was considered a model of administrative efficiency (Becker, Boeckh, Hainz and Woessmann, 2016). But by Kafka's time the Habsburg bureaucracy had collapsed: the payment of a simple tax in Vienna required the involvement of 27 public officials; the cost of collecting taxes in Dalmatia exceeded the tax revenue (MacMillan, 2013). Bureaucrats' actions, as Kafka's novels suggest, had become disconnected from reality, hard to predict, at times absurd. What can cause the transition from the Weberian ideal to the Kafkian nightmare? And once it has occurred, is such a transition difficult to reverse?

We argue that the answers to these questions depend at least in part on the connection between bureaucratic efficiency and the legislative activism of politicians. When bureaucratic institutions are inefficient, laws are implemented slowly and their quality is hard to learn. Thus, politicians, especially the least competent ones, have strong incentives to try to acquire a reputation as skillful reformers by passing laws that the inefficient bureaucracy will implement slowly, if at all. A plethora of often contradictory laws can itself lead to the collapse of a country's bureaucracy. Thus, an inefficient bureaucracy induces excessive legislation which in turn makes bureaucracy inefficient. This dual linkage naturally implies the existence of both Weberian and Kafkian steady states, which arise and persist over time due to the accidents of history.

[1] To be fair, Weber was well aware that an excessive bureaucratization of human life can trap individuals in an "iron cage" of rule-based, rational control, but his overall evaluation of bureaucracy remained one of necessity and efficiency.

[2] This characterization is contained in Kafka's unfinished novels Der Process (The Trial), published in 1925 and Das Schloss (The Castle), published in 1926.

We model bureaucracy as a technology that implements the reforms initiated by politicians.[3] The technology is characterized by decreasing returns: the larger the stock of past reforms, the harder it is for the bureaucracy to carry the reforms out. The idea is that the accumulation of laws and regulations (often on the same matter) mechanically *demands* more and more difficult bureaucratic tasks in terms of implementation, interpretation, or enforcement, slowing down the bureaucracy's delivery of services and creating space for biased decisions and abuses. Figure 1 provides some support for this intuitive relation: the countries with more laws and regulations also tend to have a more inefficient bureaucracy. The focus of the model is on a novel *supply-side* feedback mechanism: where bureaucracy is more inefficient, politicians, especially the less competent, tend to supply more laws/reforms.

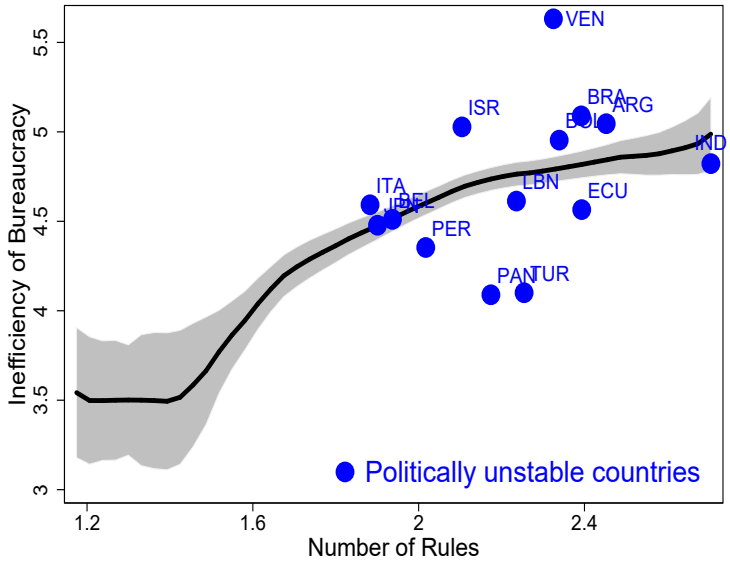
We model this supply-side mechanism assuming that all politicians in office can initiate reforms, but only the more competent ones design reforms that are useful. Competence is private information, fully revealed to the public only if the reform is implemented by the bureaucracy by the end of the current legislative term. If instead a reform remains incomplete, the public observes only that the politician has initiated it. At the end of the term, the public update their beliefs about the politician's competence. All politicians care about their reputation for competence either because it determines career opportunities outside politics (as in Mattozzi and Merlo, 2008) or simply because they want to be reelected.[4] In equilibrium, competent politicians never propose bad reforms, while the incompetent face a trade-off: initiating a bad reform that remains uncompleted by the end of the mandate signals competence, but if the reform is actually implemented, it reveals the incompetence of its proponent. The first effect is more important when competent politicians are more likely to initiate reforms themselves, the second less important when bureaucracy is more inefficient. Therefore incompetent politicians are more active both when a greater need for reforms heightens the activism of competent politicians as well as when the bureaucracy is more inefficient. Moreover, the frequency of bad reforms in equilibrium decreases with the expected length of the legislature—a proxy for the degree of political stability.

Figure 1 suggests that this mechanism may help explain some of the international variation in the efficiency of bureaucracy. The figure plots as a bullet point all the countries in the top quartile of the distribution of political instability, as measured by the number of

[3]We will us the terms "laws" and "reforms" interchangeably to denote politicians activism; when we refer to reforms, we do not necessarily mean "good" policies.

[4]The main text gives the full characterization of a model in which politicians are motivated by career concerns. The analogous characterization of the model in which they can stay in power for two mandates and reelection gives them private benefits is deferred to the Appendix.

Figure 1: Number of Rules and Bureaucratic efficiency



Notes. Number of rules is measured by the average number of procedures needed to start businesses, to register property, to get electricity, and to obtain a construction permit. Inefficiency of bureaucracy is the average time (in days) it takes to provide these services. Both data are for 2012 from the World Bank's Doing Business Dataset. The area in grey corresponds to the 90 percent confidence interval. Political instability is measured by the number of major government crises (domestic4) per year over the period 1980-2006, as obtained from the Cross-National Time-Series (CNTS) data archive 2014. Government crises are defined as any rapidly developing situation that threatens to bring the downfall of the present government, excluding situations of revolt aimed explicitly at its overthrow. The dots in the plot correspond to the countries in the top quartile of the distribution of political instability in the sample. To be in the sample, countries must have a civilian government, long time-series coverage, and political parties.

major government crises over the period 1980-2006. Politically unstable countries tend to have a greater number of laws and regulations as well as a highly inefficient bureaucracy. If we define a "Kafkian" country as one in the top quartile of the global joint distribution of number of rules and bureaucratic inefficiency, the data indicate that politically unstable countries are fifteen times more likely than others to be Kafkian, with an odds ratio approximately equal to eighteen. This cross-country correlation, while consistent with our mechanism, is by no means evidence for it. We discuss specific historical episodes where the key forces at work in the model have played a role and focus our empirical analysis on Italy's political and legislative history since World War II, which we argue represents a natural experiment for identifying our mechanism.

Between 1948 and 1992, the Italian republic was characterized by a stable balance of power: a large Christian Democratic party led every government coalition, while the

second largest party, the Communist Party, was unable to compete or enter coalitions for the simple reason that Communist parties could not govern a Western-bloc country (the "*K-factor*"). The end of the Cold War represents an exogenous shock to this equilibrium, which brought Italy's so-called First Republic (1948-1992) to an end and produced a power vacuum, marked by significant political instability during the long transition dubbed the Second Republic. We provide evidence that the resulting political instability set our mechanism in motion, leading to a pronounced increase in legislative activism, a worsening in the quality of laws and a deterioration of bureaucratic efficiency associated with a sharp fall in TFP growth. Italy's Second Republic also provides a natural laboratory to test one of the model's key strategic mechanisms, namely that bills are proposed in order to signal activism and that greater political instability amplifies this incentive, resulting in overproduction of laws by bad politicians. To test this prediction we exploit variations in the degree of political instability and in the quality of politicians. During the Second Republic, some legislatures have been more stable than others, which provides variation in MPs' incentives to rely on legislative activism to signal their competence: of the seven legislatures covered by our sample, three ended within two years, well before the natural term of five years. Specifically, the duration of legislatures depends on the size of the majority on which the governing coalition can count in the Senate. The margin is random (a result of the election) but once realized it allows one to predict the duration of the legislature quite effectively.[5] Following a large literature in labor, we measure politicians quality by their labor market earnings, which over the sample period is information not easily available to the public. We then perform a Difference-in-Differences analysis and compare the relative performance (in terms of legislative activity and reelection outcomes) of low-quality and high-quality politicians, in complete and uncompleted legislatures. We find that in shorter legislatures, low-quality politicians present 18% more bills per capita, promote 30% more laws, and have a re-election probability 8-9 percentage points higher than average. This provides support for the claim that political instability heightens low-quality politicians' incentives to produce (possibly harmful) legislation, which can push the economy towards a Kafkian equilibrium.

The theoretical analysis sets out the conditions for the existence of a Weberian steady state—with efficient bureaucracy and little incentive to propose useless reforms—and of a Kafkian steady state—with a high frequency of useless reforms and an inefficient bureaucracy. We also describe the conditions for the co-existence of the two steady states and characterize the way in which large temporary shocks can trigger a permanent drift

[5]Because pension entitlements only mature if the legislature lasts for at least two years, not surprisingly all incomplete legislatures end exactly after two years.

towards the Kafkian steady state. We emphasize that at times of political instability (i) legislatures are likely to terminate prematurely, (ii) there is strong pressure for reforms, and (iii) political power is sometimes delegated to short-lived technocratic governments. We then show that these three effects (either in isolation or in combination) imply that a short period of substantial political instability can drive the economy to a Kafkian state. In all three cases, too many laws in a too brief time span (bad laws in the first two cases, but possibly good ones in the third) suddenly increase the number of reforms that the bureaucracy is called on to handle. And this initial increase can in turn raise the frequency of bad reforms thereafter, through the supply-side mechanism described above, paving the way to a Kafkian future.

In our baseline model, the excessive promulgation of laws results in a fall in production by increasing the workload of the bureaucracy. This simple mechanical effect may be reinforced through other mechanisms. If we endogenize the supply of bureaucrats and politicians, we uncover a sort of *Gresham's law*, whereby "bad bureaucracy drives out good politicians": a decline in bureaucratic efficiency lowers the supply of competent politicians, because it reduces their expected reputation gain from being in office. Moreover, it is conceivable that politicians' incentive to reform an inefficient bureaucracy vanishes when the quality of politicians in office falls below some critical threshold, because it is low quality politicians who benefit the most from the status quo. This can condemn the country to secular polity inefficiency.

The thesis that more inefficient bureaucratic institutions may lead to the proliferation of laws is consistent with our epigraph: Tacitus' conviction was that when bureaucracy is inefficient and corrupt, the legislators have stronger incentives to pass laws to fight political enemies, protect vested interests or appropriate economic rents. Our mechanism is different and more likely to be relevant in advanced modern democracies, as our evidence for Italy suggests. In our model an efficient bureaucracy provides an effective monitoring technology to evaluate politicians' *acts* (laws produced) on the basis of *facts* (the consequences of the laws). But when bureaucracy is inefficient, facts are harder to observe, encouraging low quality politicians to try to build up their reputation by acts that deliver no facts.

Section 2 describes the economy. Section 3 solves the problem of newly elected politicians in office. Section 4 analyzes the model's possible multiple steady state equilibria. Section 5 analyzes transitional dynamics and the Gresham's law of bureaucracy. Section 6 discusses case studies from history and Italy's post war experience. Section 7 sets out the empirical analysis of Italian MPs. Section 8 concludes and discusses the relation to the literature. The Appendix contains some proofs, the full characterization of the re-election

model, and further details on the data.

2 The model

The economy Time is continuous, indexed by $\tau \geq 0$. There is a representative household with zero discount rate that has instant utility given by aggregate income

$$A\tilde{k}_\tau \tag{1}$$

where $A > 0$ and $\tilde{k}_\tau > 0$ is the time-τ stock of (public) *capital*. Our analysis focuses on the joint production of capital by politics and bureaucracy.

Politicians' competence and the quality of reforms Time is divided into *legislatures* of length $\ell \geq \underline{\ell} > 0$. Each legislature $t = 1, 2, \ldots$ begins at time $\tau_t \equiv (t-1)\,\ell$ and is conducted by a unit mass of politicians, indexed by $i \in [0, 1]$.[6] We denote a politician i who is newly elected in legislature t as politician it. Politicians differ in competence θ and in the quality ω of the reform they can promulgate. In particular, politician it is *competent* ($\theta_{it} = 1$) with probability π, and *incompetent* ($\theta_{it} = 0$) with probability $1 - \pi$. Competence is constant through the politician's life. Politician it can pass at most one reform per each legislature in office. The reform is *good* ($\omega_{it} = 1$) with probability $p\theta_{it}$, and *bad* ($\omega_{it} = 0$) with probability $1 - p\theta_{it}$—independently of the politician's past history. We interpret p as measuring the economy's *need for reforms*. Notice that only competent politicians can get good reforms enacted. Both competence and the quality of reforms are the politician's private information.

At the start of legislature t, a newly elected politician of competence θ_{it} observes the quality ω_{it} of the reform to enact in this legislature, and chooses whether to *initiate* this reform or not.[7]

Politicians' payoff We consider two alternative reasons why newly elected politicians care about their reputation at the end of their first mandate. First, even if they cannot be reelected, reputation matters because competence has value in the private market after

[6] Positing a continuum of politicians guarantees deterministic aggregate dynamics.

[7] We assume that politicians can start their reforms only at the beginning of the legislature and that politicians with a good reform cannot initiate a bad one. Both assumptions are without loss of generality: if politicians could delay their reforms or start a bad one when they have a good one, they would not do so in any equilibrium that survives standard refinements (see Appendix B for greater details). In our empirical analysis in the appendix we also tested for the hypothesis that incompetent politicians strategically decide to postpone the initiation of their reforms and we find little evidence that low quality politicians time their bills strategically.

one's political career is over (see Mattozzi and Merlo, 2008 and Gagliarducci and Nannicini, 2013). We call this the *career concern* model. Second, if they can be reelected, reputation matters as the determinant of the chance of winning reelection. We call this the *reelection* model. The two models yield very similar predictions, but it is useful to note the two different interpretations, since their actual relative importance might vary depending on the political context.[8]

Let ρ_{it} denote the *reputation* of politician it at the end of the first mandate, i.e., the public belief that politician it is competent at time τ_{t+1}. In the career concern model, ρ_{it} matters because competence is rewarded at a price ϕ in the private market. So $\phi\rho_{it}$ measures the pay-off of politician it after the end of her political career. In the reelection model, a politician can be reelected for a second legislature (but not for a third). A politician cares about ρ_{it} at the end of the first mandate because, as in models with voters' uncertainty (see for example Rogoff, 1990; Rogoff and Sibert, 1988; and Morelli and Van Weelden, 2013), politician it is reelected with probability ρ_{it}, and reelection yields private benefits ϕ. So $\phi\rho_{it}$ measures the (expected) payoff of politician it from reelection. Either way, the expected continuation payoff of politician it in the first mandate is equal to

$$u_{it}\left(\theta_{it}, \omega_{it}\right) = \phi\rho_{it} \tag{2}$$

where $\phi > 0$ measures the private value of reputation to politician it (with differing interpretations in the career concern and the reelection model).[9] Since the value of reputation ϕ does not play any specific role in our analysis, we simply take it as an exogenous parameter.

Bureaucracy and public capital After a reform is initiated, it is completed by the bureaucracy at a Poisson arrival rate

$$\alpha_t \equiv \alpha\left(h_t\right), \text{for all } \tau \in \left[\tau_t, \tau_{t+1}\right)$$

where h_t is the stock of uncompleted reforms inherited from previous legislatures and $\alpha : \mathbb{R}_+ \to \mathbb{R}_+$ is non-increasing, which means that a larger stock of reforms from the past makes it more difficult for the bureaucracy to complete the new reforms initiated.

[8] We could also consider a hybrid model in which the two motives are jointly present. As will become clear from the analysis below, the hybrid model would yield conclusions similar to those obtained in the two separate models.

[9] The utility specification in (2) implies that politician it cares about reputation only at the end of the mandate. Any further update after the end of the mandate is limited, because the quality of reforms depreciates randomly over time and because the mass of past reforms that simultaneously come to completion makes it hard to distinguish and determine the contribution of each single past reform to capital accumulation.

We interpret α_t as the level of *bureaucratic efficiency* in legislature t. There are several reasons why the efficiency of bureaucracy is decreasing in h_t. One is *bureaucratic overload*: more reforms increase the workload of the apparatus, which becomes inefficient owing to limited capacity to handle an excessive stock of norms that must be interpreted or a larger stock of laws to be implemented. A second reason why a larger stock of pending reforms h_t can slow down their completion is that more reforms assign more tasks to the bureaucrats, which in turn may give them more power, or may make it harder for politicians (as principal) to monitor or incentivize the bureaucrat (as agent).[10] A more powerful or less monitorable bureaucracy could then become opaque, complex, obsessed with formalism, and harder to reorganize to rebuild efficiency as discussed in Section 5.3.

Once completed, reforms can produce public capital. The quantity of public capital produced by a completed reform depends both on its quality and on the time that has elapsed since the end of the legislature in which it was initiated: a reform initiated by politician it (in legislature t) and completed at time τ yields an expected amount of capital equal to

$$\begin{cases} q\omega_{it} & \text{for all } \tau \in [\tau_t, \tau_{t+1}) \,; \\ q\omega_{it} e^{-\nu(\tau-\tau_{t+1})} & \text{for all } \tau \geq \tau_{t+1}. \end{cases}$$

Note that bad reforms produce no capital, even when completed. A good reform, when completed, yields up to q additional units of capital. The depreciation process is as follows: competent politicians keep their good reforms up to date during their mandate by adapting them to the changing environment; thereafter, good reforms (either completed or uncompleted) become obsolete and useless at the Poisson arrival rate $\nu > 0$. So $e^{-\nu(\tau-\tau_{t+1})}$ is the probability of good reforms not having depreciated by time $\tau \geq \tau_{t+1}$.[11]

Observable events and beliefs At the end of each legislature t and for each politician it, the public observes (i) whether politician it has initiated a reform, (ii) whether the reform has been completed, and (iii), if completed, the amount of capital it has produced. This means that there are four possible events that might occur by the end of the legislature:

[10] We do not model the degree of delegation to the bureaucracy or the moral hazard between politicians and bureaucrats (see Huber and Shipan, 2015 for a survey of this literature). We leave it for future research to study the effects of political instability on the scope of delegation and the intensity of moral hazard, but it is worth noting that the empirical evidence (see Volden, 2002; and Gilardi, 2002) suggests that greater uncertainty leads to more delegation and therefore greater power for the bureaucracy.

[11] We shall see that some depreciation of uncompleted good reforms is necessary in order for bureaucratic efficiency to affect aggregate welfare—which is equal to average long-run aggregate income.

y: reform initiated but not yet completed;
n: reform not initiated;
b: bad reform completed;
g: good reform completed.

We denote by ρ_{it}^{e} the value of ρ_{it} after event $e \in \{y, n, b, g\}$ has occurred.

Strategies and solution concept In what follows, we first characterize the equilibrium behavior of a newly elected politician in legislature t, taking the level of bureaucratic efficiency α_t as given. We then turn to the aggregate equilibrium dynamics in which α_t evolves endogenously due to the dynamics of the stock of uncompleted reforms h_t. The equilibrium dynamics will depend on whether the model is career concern or reelection. In the main text we focus on the former, deferring the full discussion of the reelection model to Appendix A.[12]

A strategy for politician it is a function $\sigma_{it} : \{0,1\}^2 \times \mathbb{R}_+ \to [0,1]$ where $\sigma_{it}(\theta, \omega)$ is the probability that, at the start of legislature t, when bureaucratic efficiency is α_t, a politician of type θ endowed with a reform of quality ω will initiate a reform. In every legislature t, our model admits multiple perfect Bayesian equilibria. We focus on the unique symmetrical equilibrium, $\sigma_{it} = \sigma_t \ \forall i$, in which a competent politician starts the reform if and only if it is good (henceforth *equilibrium*). Essentially this eliminates two types of equilibrium: that in which no reform is ever started because the public believes that only incompetent politicians would initiate one; and that in which bad reforms are initiated by both competent and incompetent politicians. The former can be ruled out by standard equilibrium refinements such as divinity (Banks and Sobel, 1987; Cho and Kreps, 1987); the latter by assuming (as we show in Proposition 13 in the Appendix) that initiating a bad reform involves a cost that is arbitrarily smaller for incompetent than for competent politicians. Finally, we note that among all equilibria in which any reform is ever initiated, our equilibrium features the maximum number of good reforms and the minimum number of reforms initiated, which we think is the appropriate benchmark given that the focus of the paper is on the forces that lead to excessive political activism.

[12]The model in the Appendix is solved under the assumption that reelected politicians have no further incentives to posture and signal their type, so that they will initiate a new reform only if it is good.

3 The political equilibrium

We now characterize the unique equilibrium of the model.[13] We begin by describing how public beliefs affect politician it's incentives to initiate a reform. Let $E_t\left[u_{it}\left(\theta_{it},\omega_{it}\right)\mid\sigma_{it}\right]$ denote the expected utility of a politician it with competence θ_{it} and a reform of quality ω_{it} who decides to initiate with probability $\sigma_{it}\equiv\sigma_{it}\left(\theta_{it},\omega_{it}\right)$. Given (2), the expected payoff from not initiating is equal to

$$E_t\left[u_{it}\left(\theta_{it},\omega_{it}\right)\mid 0\right]=\phi\rho_{it}^{n} \tag{3}$$

where ρ_{it}^{n} denotes the value of ρ_{it} after event n (a reform was not initiated). If the reform is completed and revealed to be good, the politician is known to be competent for sure, which implies $\rho_{it}^{g}=1$. Thus, politician it's expected payoff from initiating a reform is

$$E_t\left[u_{it}\left(\theta_{it},\omega_{it}\right)\mid 1\right]=\phi\left\{e^{-\alpha_t\ell}\rho_{it}^{y}+\left(1-e^{-\alpha_t\ell}\right)\left[\omega_{it}+\left(1-\omega_{it}\right)\rho_{it}^{b}\right]\right\}. \tag{4}$$

The first term is the payoff when the reform is not completed by the end of the legislature, which depends on the value of ρ_{it} after event y (a reform is initiated but not completed); the second is the payoff when the reform is completed, which depends on the quality of the reform ω_{it}. Notice that the expected payoff from non-initiation in (3) is independent both of the politician's competence θ_{it} and of the quality of the reform ω_{it}. On the other hand, the expected payoff from initiating a reform in (4) depends on both θ_{it} and ω_{it} so that, for any ρ_{it}^{y} and ρ_{it}^{b}, we have

$$E_t\left[u_{it}\left(1,1\right)\mid 1\right]\geq E_t\left[u_{it}\left(0,0\right)\mid 1\right]=E_t\left[u_{it}\left(1,0\right)\mid 1\right], \tag{5}$$

where the inequality holds strictly if $\rho_{it}^{b}<1$. This inequality simply means that competent politicians with a good reform are those with the strongest incentives to initiate a reform, since a good reform carries no risk and when completed fully reveals the competence of the politician to the public. In contrast, the launch of a bad reform entails the risk that if the reform is completed, the public may infer that the politician is incompetent. This inequality is the key to characterizing the politicians' behavior in the unique equilibrium of the model, summarized by the following proposition (for the proof see Appendix B):

[13] The equilibrium strategies are unique, sustained by multiple beliefs ρ_{it}^{b} when initiating a bad reform is off the equilibrium path.

Proposition 1 (Equilibrium in legislature t)**.** *In the unique equilibrium,*

1. *competent politicians initiate a reform if and only if it is good;*

2. *incompetent politicians initiate a (bad) reform with probability*

$$\sigma(\alpha_t) \equiv \begin{cases} 0 & \text{if } \alpha_t \ell > -\ln\left(\underline{\rho}\right); \\ p - \frac{p(1-p)\left(1-e^{-\alpha_t \ell}\right)}{(1-\pi)\left[1-p\left(1-e^{-\alpha_t \ell}\right)\right]} & \text{otherwise} \end{cases} \tag{6}$$

   where $\underline{\rho} \equiv \frac{\pi(1-p)}{1-\pi p} \in [0,1]$*;*

3. *public beliefs are given by*

$$\begin{aligned} \rho_{it}^{y} &= \left[1 + \frac{1-\pi}{\pi}\frac{\sigma(\alpha_t)}{p}\right]^{-1} \\ \rho_{it}^{n} &= \left[1 + \frac{1-\pi}{\pi}\frac{1-\sigma(\alpha_t)}{1-p}\right]^{-1} \\ \rho_{it}^{b} &= 0 \text{ and } \rho_{it}^{g} = 1. \end{aligned}$$

The unique equilibrium is stationary in the sense that the strategies of politicians in legislature t do not depend on t and may vary over time only as function of changes in the efficiency of the bureaucracy α_t. Now let us setout the key elements for constructing the equilibrium in Proposition 1. If $\alpha_t \ell > -\ln\left(\underline{\rho}\right)$, the equilibrium strategies are such that only competent politicians with good reforms initiate, which implies that $\rho_t^y = 1$, $\rho_t^b = 0$ and $\rho_t^n = \underline{\rho} \equiv \frac{\pi(1-p)}{1-\pi p} \in [0,1]$. To see why competent politicians find optimal to initiate in this case, notice that the expected payoff for a competent politician is $\phi\rho_t^y = \phi$, which is obviously greater than the expected payoff of not initiating $\phi\rho_t^n = \phi\underline{\rho} < \phi$. Instead, an incompetent politician faces a trade-off: while launching a reform signals competence, as $\rho_t^y = 1$, the reform will be revealed to be bad with probability $1 - e^{-\alpha_t \ell}$. As the public believes that bad reforms come from incompetent politicians, $\rho_t^b = 0$, an incompetent politician's expected payoff from initiating a reform equals $\phi e^{-\alpha_t \ell}$. This implies a (strict) preference not to initiate if $\phi e^{-\alpha_t \ell} < \phi\underline{\rho}$, which is equivalent to the condition $\alpha_t \ell > -\ln\left(\underline{\rho}\right)$ in Proposition 1. Notice that (5) also guarantees that a competent politician with a bad reform strictly prefers not to initiate it.

When instead $\alpha_t \ell \leq -\ln\left(\underline{\rho}\right)$, incompetent politicians are indifferent between launching and not. Hence, the following indifference condition holds:

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

which, applying Bayes's rule, can be rewritten as

$$e^{-\alpha_t \ell} \frac{\pi p}{\pi p + (1-\pi)\,\sigma(\alpha_t)} = \frac{\pi(1-p)}{\pi(1-p) + (1-\pi)(1-\sigma(\alpha_t))}.$$

Solving for $\sigma(\alpha_t)$ we obtain

$$\sigma(\alpha_t) = p - \frac{p(1-p)\left(1-e^{-\alpha_t \ell}\right)}{(1-\pi)\left[1-p\left(1-e^{-\alpha_t \ell}\right)\right]} \tag{7}$$

which corresponds to the expression in the second line of (6). Finally, (5) guarantees that a competent politician with a bad reform (weakly) prefers not to launch it.

Proposition 1 immediately implies the following simple comparative statics on the probability that incompetent politicians will initiate a bad reform $\sigma(\alpha_t)$:

Proposition 2 (Comparative statics)**.** *The probability of an incompetent politician's initiating a bad reform $\sigma(\alpha_t)$ is*

1. *increasing in the need for reforms p;*
2. *decreasing in the duration of the legislature ℓ, the probability that the politician is competent π, and the level of bureaucratic efficiency α_t.*

The difference $p - \sigma(\alpha_t)$ is

1. *strictly positive;*
2. *increasing in the duration of the legislature ℓ and the level of bureaucratic efficiency α_t;*
3. *decreasing in the need for reforms p.*

The comparative statics in Proposition 2 are the result of the trade-off faced by incompetent politicians: on the one hand they want to launch a reform to mimic competent politicians, but on the other they run the risk of being exposed as incompetent if the reform should be completed before the end of the legislature. A more efficient bureaucracy (higher α_t) or a longer legislature (longer ℓ) heighten this risk and discourage incompetent politicians from initiating reforms. When competent politicians have a good reform with higher probability (higher p), they are more likely to be active; when this occurs, incompetent politicians are more likely to launch their own reforms, because political activism is now a better signal of competence. All these comparative statics play a key role in determining the dynamic processes that lead an economy to shift from a Weberian to

a Kafkian steady state equilibrium. Before turning to the dynamic analysis, we first characterize the conditions for the existence and coexistence of Weberian and Kafkian steady states. For simplicity, in the rest of the analysis we assume that α_t can take only two values, $\underline{\alpha}$ and $\overline{\alpha}$, with $0 < \underline{\alpha} < \overline{\alpha}$, so that

$$\alpha(h_t) = \begin{cases} \overline{\alpha} & \text{if } h_t \leq \overline{h}^K, \\ \underline{\alpha} & \text{if } h_t > \overline{h}^K \end{cases} \tag{8}$$

where $\overline{h}^K$ is the *Kafkian threshold* of uncompleted reforms beyond which bureaucratic efficiency collapses from $\overline{\alpha}$ to $\underline{\alpha}$. The bureaucracy with $\alpha_t = \overline{\alpha}$ is *Weberian* , that with $\alpha_t = \underline{\alpha}$ is *Kafkian*.

4 Steady state equilibrium

First, let us recall that reforms initiated at the start of legislature t are completed at the Poisson arrival rate $\alpha_t = \alpha(h_t)$, for all $\tau \in [\tau_t, \tau_{t+1})$, where h_t is the endogenously evolving stock of uncompleted reforms inherited from previous legislatures. For any $t = 1, 2, \ldots$, h_t evolves according to the following first order difference equation:

$$h_t = e^{-\alpha_{t-1}\ell}(h_{t-1} + r_{t-1}). \tag{9}$$

This says that the stock of uncompleted 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 legislature $t-1$ that have not come to completion. Their number at the start of legislature $t-1$ in turn is equal to the sum of uncompleted reforms inherited from all the legislatures prior to $t-1$, h_{t-1}, plus those initiated in legislature $t-1$, r_{t-1}. The flow of new reforms is given by the sum of the good reforms started by competent politicians πp plus the bad reforms started by incompetent politicians, equal to $(1-\pi)\sigma(\alpha_{t-1})$:

$$r_{t-1} = \pi p + (1-\pi)\sigma(\alpha_{t-1}). \tag{10}$$

Substituting for the expression of $\sigma(\cdot)$ in Proposition 1, r_{t-1} can finally be expressed as

$$r_{t-1} = \begin{cases} \pi p, & \text{if } \alpha_{t-1}\ell > -\ln\left(\underline{\rho}\right) \\ \frac{p}{p+(1-p)e^{\alpha_{t-1}\ell}}, & \text{otherwise.} \end{cases} \tag{11}$$

The law of motion in (9) implies that the steady state number of uncompleted reforms at the start of each legislature is constant over time, $h_t = h_{t-1} = h^*$, characterized by the following proposition:

Proposition 3 (The Tacitus Line)**.** *The steady state stock of uncompleted reforms at the start of each legislature is given by*

$$h^* = \frac{r^*}{e^{\alpha^* \underline{\ell}} - 1} \tag{12}$$

where

$$r^* = \begin{cases} \pi p, & \text{if } \alpha^* \underline{\ell} > -\ln\left(\underline{\rho}\right) \\ \frac{p}{p+(1-p)e^{\alpha^* \underline{\ell}}}, & \text{otherwise.} \end{cases} \tag{13}$$

denotes the steady state flow of new reforms initiated at the start of each legislature and α^* is the steady state level of bureaucratic efficiency.

Equation (12) establishes a positive relation between the stock of uncompleted reforms h and the degree of *inefficiency* of the bureaucracy as measured by $\exp(-\alpha)$. When the bureaucracy is more inefficient, the completion rate is lower, which lowers the denominator of (12) and increases the numerator. Both effects tend to increase the number of uncompleted reforms h. In reference to our epigraph, we call this relation a *Tacitus* line. An example is plotted in Figure 2. Figure 2 also plots our *power of bureaucracy* function, which, using (8), establishes a positively sloped relation between the stock of pending reforms h_t (on the x-axis) and inefficiency $\exp(-\alpha)$ (on the y-axis). A steady state equilibrium is characterized by an intersection between the power of bureaucracy line and the Tacitus line determined by (12). We denote by h_W and h_K the steady state stock of pending reforms in a Weberian and a Kafkian steady state, respectively.

4.1 Weberian and Kafkian steady states

The Tacitus line in (12) immediately implies that the following assumption guarantees the existence of a Weberian equilibrium steady state.

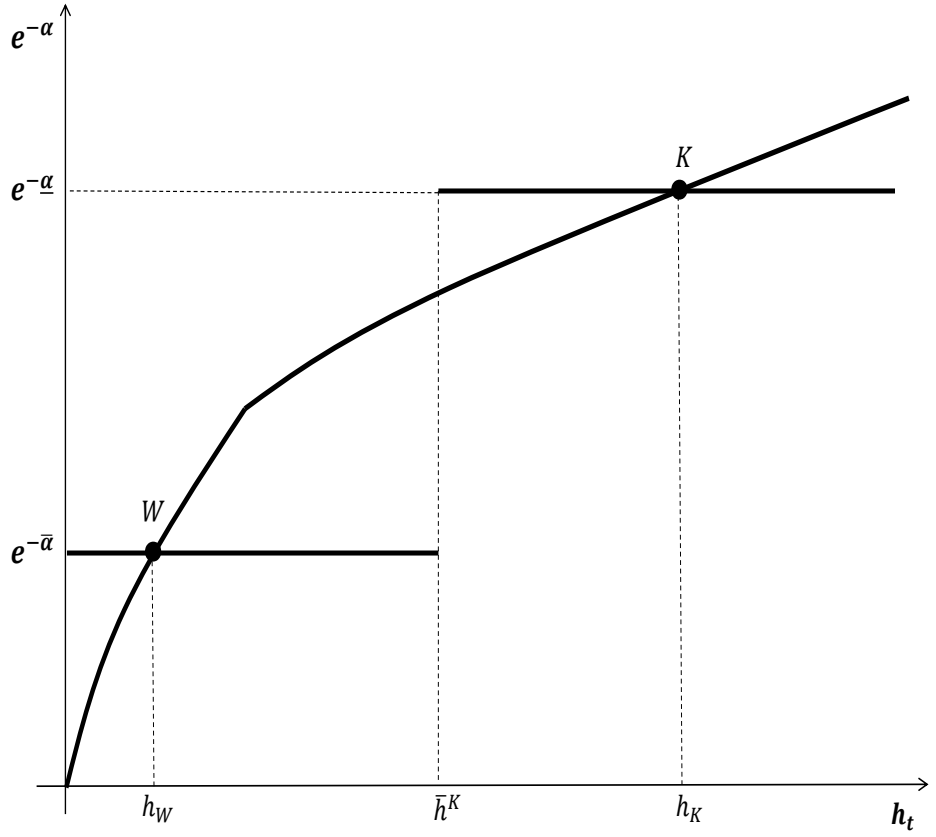
Assumption 1. *The Weberian completion rate of reforms $\overline{\alpha}$ is such that*

$$\frac{\pi p}{e^{\overline{\alpha}\underline{\ell}} - 1} \leq \overline{h}^K \tag{14}$$

and

$$\overline{\alpha}\underline{\ell} \geq -\ln\left(\underline{\rho}\right). \tag{15}$$

Figure 2: Steady state equilibrium



Condition (14) guarantees that, $\forall \ell \geq \underline{\ell}$, a Weberian steady state equilibrium will persist if good reforms are the only ones being initiated. Condition (15) guarantees that this is the equilibrium case when the bureaucracy is Weberian. As our focus is mostly on the processes that lead the economy to lapse from a Weberian to a Kafkian steady state, we keep analyzing our economy under Assumption 1.

Given Assumption 1, a Kafkian equilibrium can exist if two conditions are satisfied. First, it should be that incompetent politicians initiate reforms when bureaucracy is Kafkian, $\sigma(\underline{\alpha}) > 0$: by Proposition 1, this requires that $\underline{\alpha}\ell < -\ln\left(\underline{\rho}\right)$. Second, it should be that the resulting steady state stock of uncompleted reforms is larger than the critical Kafkian threshold $\bar{h}^K$ that leads to a collapse in bureaucratic efficiency. Now notice that

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

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 launch a reform when p is high or π is low. Using Proposition 3, we can then conclude:

Proposition 4 (Weberian and Kafkian steady state equilibrium)**.** *Let Assumption 1 always hold. Then there always exists a Weberian steady state with*

$$h_W \equiv \frac{\pi p}{e^{\overline{\alpha}\ell} - 1} \leq \overline{h}^K. \tag{16}$$

A Kafkian steady state exists if and only if both

$$\underline{\alpha}\ell < -\ln\left(\frac{1-\pi p}{\pi\left(1-p\right)}\right) \equiv -\ln\underline{\rho} \tag{17}$$

and

$$h_K \equiv \frac{p}{\left[p + \left(1-p\right)e^{\underline{\alpha}\ell}\right]\left(e^{\underline{\alpha}\ell} - 1\right)} > \overline{h}^K \tag{18}$$

The Kafkian steady-state is more likely to exist when (i) the need for reforms is great (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).

Figure 2 characterizes a configuration of parameters such that both a Weberian and a Kafkian steady state equilibrium exist. This means that Assumption 1 holds—which guarantees the existence of a Weberian steady state equilibrium—but conditions (17) and (18) too are satisfied—which guarantees the existence of a Kafkian steady state equilibrium.

The comparative statics in Proposition 4 have an intuitive explanation. Suppose that the public's prior belief that competent politicians have good reforms (parameter p) is stronger, say, because of a prolonged period of economic stagnation or a transition from planned to market economy, or because economic crises have finally convinced the electorate of the need for deep structural reforms. In this case, incompetent politicians have greater incentives to launch bad reforms, because inactivity would signal incompetence. As a result, a Kafkian bureaucracy will find it harder to bring the stock of uncompleted reforms down below the Kafkian threshold, resulting in a Kafkian steady state. When legislatures are shorter (low ℓ), the stock of uncompleted reforms increases for two reasons. First, more good reforms are proposed due to the more frequent arrival of newly elected competent politicians. Second, incompetent politicians have more incentive to

initiate bad reforms, given their smaller chance of being implemented (and so exposed as bad) by the end of the legislature. When there are fewer competent politicians (low π), instead, there are *mechanically* fewer good reforms, but more bad ones, as the incompetent have a stronger strategic incentive to enhance their reputation by proposing a reform. By Proposition 4, this strategic effect dominates the mechanical one when bureaucracy is Kafkian, and a lower π increases the probability of sustaining a Kafkian steady state. Finally, a highly inefficient bureaucracy (low $\underline{\alpha}$) increases the frequency of bad reforms initiatives, and slows bureaucracy's reduction of the stock of uncompleted reforms: both these effects make a Kafkian steady state equilibrium more likely.

These comparative statics effects turn out to be crucial for the analysis of the dynamic effects of temporary shocks to the economy. Before turning to this, let us examine the welfare properties of the two steady states.

4.2 Welfare and the optimal duration of legislatures

As the economy is assumed to have a representative household with zero discount rate, aggregate welfare is simply average (over time) long-run aggregate income. In the steady state equilibrium, all quantities at the beginning of each legislature (the capital stock and the stock of uncompleted reforms) are constant, but within each legislature the aggregate capital stock evolves deterministically. Manipulating the key differential equations of this economy, we show (see Appendix B) that the level of welfare in the economy is fully characterized by the following proposition.

Proposition 5. *Aggregate welfare is proportional to the steady state average-over-time capital stock, which is equal to*

$$\overline{k}^* = \frac{\int_0^\ell \tilde{k}_{\tau_t+s} ds}{\ell} = \frac{q\pi p}{\nu \ell}\left(1 - \frac{\nu e^{-\alpha^* \ell}}{\alpha^* + \nu}\right), \tag{19}$$

and is monotonically increasing in the steady state completion rate of reforms α^*.

Proposition 5 implies that the different steady states can be ranked by bureaucratic efficiency. Even if agents have a zero discount rate, a higher α^* increases welfare by reducing the risk that good reforms will fail to produce capital (and therefore income) because they become obsolete before they are completed. Thus the level of efficiency α^* matters for welfare, provided only that the depreciation rate of reforms ν is strictly positive.

We can also determine the welfare maximizing duration of a legislature. We begin by establishing a first-best benchmark. With no asymmetric information between politicians and the public, there are no reputational concerns because each politician's type is perfectly observable. So (i) incompetent politicians do not propose any reforms and (ii) competent politicians initiate one only if it is good. If Assumption 1 holds, then the long-run completion rate of reforms α^* is equal to $\overline{\alpha}$. Since $\frac{\partial \overline{k}^*}{\partial \ell} < 0$, the first-best duration of a legislature is the shortest possible, $\ell_{FB} = \underline{\ell}$. This is because a shorter legislature maximizes the flow of good reforms into the system with no costs in terms of bureaucratic efficiency.

When the politicians' types are not observable, however, the duration of a legislature ℓ also affects the incentives of incompetent politicians to launch bad reforms, which could lead to a collapse of the bureaucratic apparatus. In this sense the steady state completion rate of reforms α^* becomes a function of ℓ. Proposition 4 establishes sufficient conditions for the existence of an equilibrium in which the completion rate of reforms is maximum, equal to $\overline{\alpha}$. Under these conditions, setting ℓ equal to $\underline{\ell}$ would be optimal, as in the first best economy without asymmetrical information. However, in choosing the optimal duration of legislatures, we might want not only to maximize steady state welfare but also to eliminate the risk of the Kafkian trap of low welfare due to the excessive number of reforms progressively introduced by incompetent politicians. To rule out a Kafkian equilibrium, the duration of the legislature ℓ must be either greater than

$$\ell^* = \frac{-\ln\left(\underline{\rho}\right)}{\underline{\alpha}} \tag{20}$$

or greater than ℓ^{**} given by

$$\frac{p}{\left[p + (1-p)\, e^{\underline{\alpha}\ell^{**}}\right]\left(e^{\underline{\alpha}\ell^{**}} - 1\right)} = \overline{h}^K. \tag{21}$$

If $\ell \geq \ell^*$ in (20), the incompetent politicians never propose a reform. If $\ell \geq \ell^{**}$ in (21), the steady state number of uncompleted reforms stays below the critical Kafkian threshold $\overline{h}^K$ of bureaucratic collapse, even if incompetent politicians do launch their reforms. In this case, a planner might want to maximize the aggregate average-over-time capital stock $\overline{k}^*$ in (19) subject to the constraint that no Kafkian equilibrium can ever be sustained. Proposition (6) characterizes the optimal length of legislatures under this welfare criterion.

Proposition 6 (The optimal duration of legislatures)**.** *Under Assumption 1, the length of the legislature that maximizes steady state welfare in the economy without asymmetrical information is $\ell_{FB} = \underline{\ell}$, where $\underline{\ell}$ is the minimal feasible duration of a legislature. The optimal length of*

legislatures with asymmetrical information is generally longer than under full information and is equal to

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

where ℓ^* and ℓ^{**} are the unique lengths of legislatures that solve (20) *and* (21)*, respectively.*

5 Dynamic paths to a Kafkian equilibrium

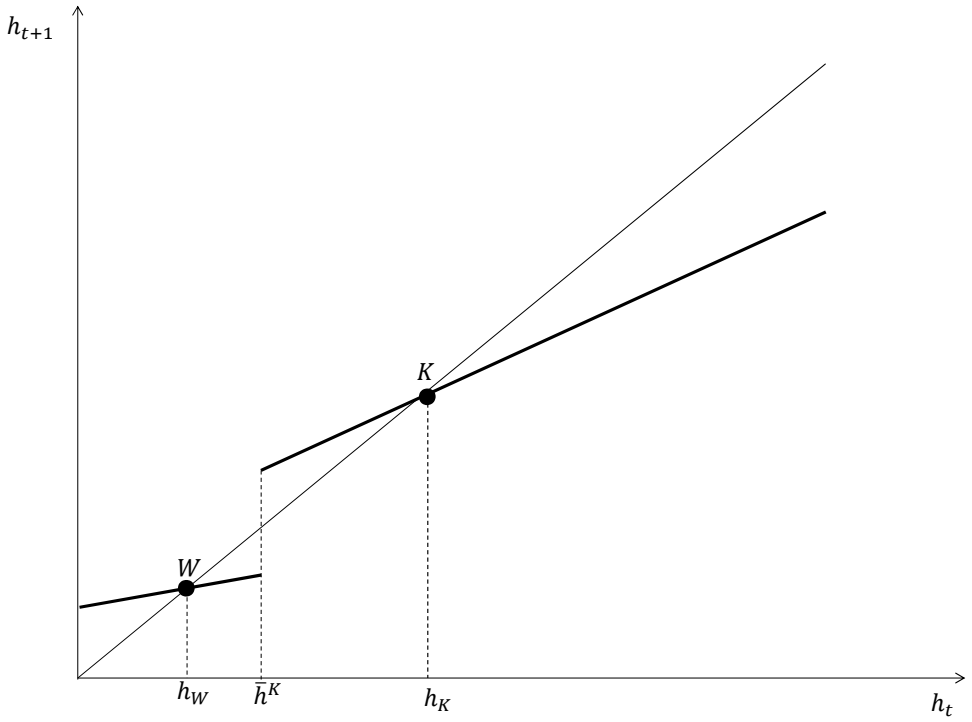
In what follows, we show that sufficiently large transitory shocks can shift the economy from a Weberian to a Kafkian steady-state equilibrium. In particular, we identify three types of shock, all possibly caused by political instability, which may lead to a Kafkian steady state in differing ways. We then discuss the further complication that would result if the supply of politicians and bureaucrats were endogenous. Finally, we discuss the difficulties in reversing the shift from a Weberian to a Kafkian equilibrium.

5.1 Transitory shocks and permanent shifts

The law of motion of h_t is given by (9), where r_t is as in (11). Since $\alpha_{t-1} = \alpha(h_{t-1})$, (9) implies a simple first order difference equation for h_t. In Figure 3 we plot the law of motion of h_{t+1} as a function of h_t, when both a Weberian and a Kafkian steady state (points K and W) can arise. Notice that (9) implies that h_{t+1} is always flatter than the 45-degree line. A key feature of the model is that when (17) and (18) hold transitory shocks can lead the economy to a transition from a Weberian to a Kafkian equilibrium, which will then persist. Generally this happens because a temporary increase in the number of new reforms in legislature t drives down bureaucratic efficiency at time $t+1$, α_{t+1}. But with a lower α_{t+1} incompetent politicians start to introduce bad reforms (see Proposition 1). This change in incentives determines a "tidal wave" of reforms, that makes the Kafkian equilibrium permanent.

We now focus on three main types of transitory shocks due to (or associated with) a surge in political instability: (i) a reduction in the duration of legislature ℓ; (ii) an increase in the need for reforms, measurable with p in the model; (iii) finally, the temporary seating of a technocratic government, which our model associates with a temporary increase in the average competence of politicians, π. The three types of shock affect the economy in differing ways, acting on the stock of good reforms, bad reforms, or both. We analyze these three cases in detail, assuming that the economy is initially in a Weberian steady state with a stock of pending reforms h_W as defined in (16).

Figure 3: Phase diagram



The direct effects of a temporary surge in political instability When (17) and (18) hold, a Kafkian steady state exists. Suppose that during legislature t, a shock to political stability results in the premature end of legislatures, lowering ℓ to $\ell_t < \ell$. The shock leads to a Kafkian steady state if it is sufficiently large, i.e.,

$$h_{t+1} = e^{-\bar{\alpha}\ell_t}\left(h_W + \pi p\right) > \bar{h}^K.$$

These considerations immediately lead to the following proposition:

Proposition 7 (Short legislatures)**.** *Suppose that conditions* (17) *and* (18) *hold and the economy is initially in a Weberian steady state with a mass of pending reforms h_W. Then a temporary shortening of the duration of legislature t to a value ℓ_t such that*

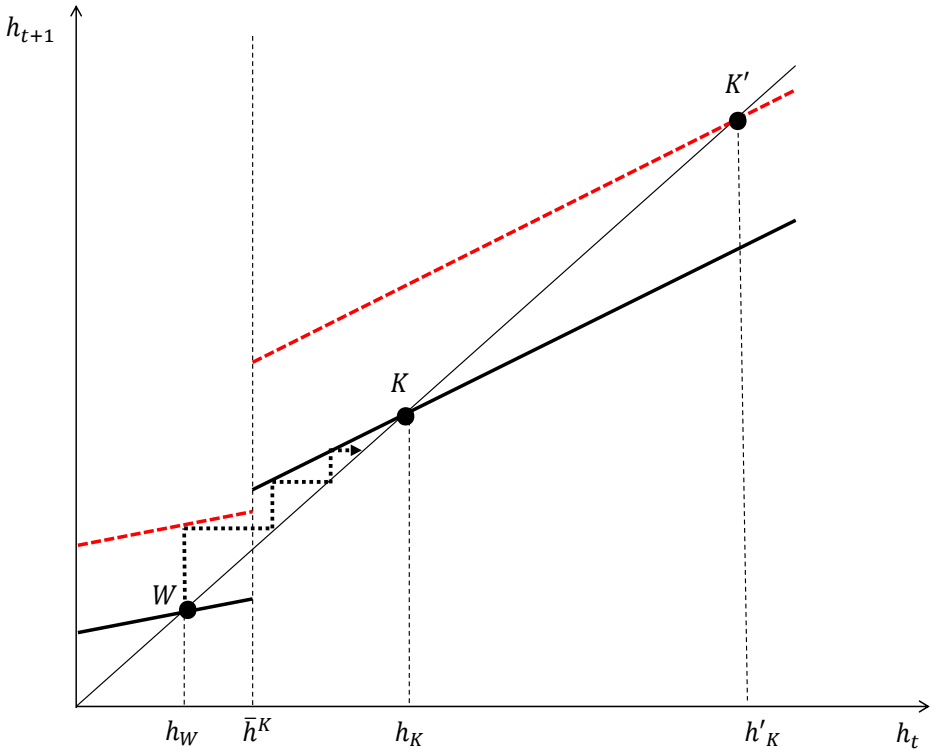
$$\ell_t < \ell^K = \frac{1}{\bar{\alpha}} \ln\left(\frac{h_W + \pi p}{\bar{h}^K}\right) \tag{22}$$

moves the economy to a Kafkian steady state.

Figure 4 characterizes the dynamic response of the system to the temporary decrease

in ℓ during legislature t. Intuitively, in the short run the decrease in ℓ heightens the incentives of the incompetent politicians to launch bad reforms, because it is now harder for the reform to backfire. This causes a surge in the production of bad reforms. But if the shock is great enough, then the stock of uncompleted reforms h_{t+1} goes above the critical Kafkian threshold $\overline{h}^K$. Therefore politicians in legislature $t+1$ find it optimal to introduce bad reforms, which keeps accentuating the inefficiency of the bureaucratic apparatus even after the transitory shock has vanished, making the Kafkian equilibrium persist.

Figure 4: Transition to a Kafkian equilibrium due to a temporary reduction in ℓ



Notice that Proposition 8 only sets out a sufficient condition for the transition. We know from Proposition 1 that a fall in ℓ makes it more likely that incompetent politicians will start introducing bad reforms. That $\sigma(\alpha_t)$ becomes positive implies that in the next period, the stock of pending reforms h_{t+1} is more likely to go above the critical Kafkian threshold $\overline{h}^K$ and cause the collapse of bureaucratic efficiency. For brevity we need not state the necessary and sufficient conditions for a temporary fall in ℓ to trigger a transition from a Weberian to a Kafkian steady state.

A temporary shock in the need for reforms A similar mechanism is at play in one important indirect effect of a surge in political instability, namely an increase in the need for reforms.

Proposition 8 (The reform opportunity fallacy)**.** *Suppose that conditions* (17) *and* (18) *hold and the economy is initially in a Weberian steady state with a number of pending reforms h_W. In this case a temporary increase in p in legislature t to a value p_t such that*

$$p_t > p^K \equiv \frac{e^{\bar{\alpha}\ell}\overline{h}^K - h_W}{\pi} \tag{23}$$

pushes the economy into a Kafkian steady state.

Intuitively, suppose that p increases temporarily to p_t, say because recent corruption scandals or an economic crisis convince public opinion that the effort to devise a good structural reform must be stepped up. In the short run, this can increase the number of *both* good and bad new reforms: good reforms increase because competent politicians have greater opportunities and bad reforms too increase (if p_t is sufficiently large) because inactivity signals incompetence. This surge in the number of reforms depresses bureaucratic efficiency. But with an inefficient bureaucracy, politicians in the subsequent legislature find it optimal to introduce bad reforms, which continues to aggravate bureaucratic inefficiency even when the transitory shock is past and the Kafkian equilibrium becomes permanent. Notice, once again, that Proposition 8 only sets out a sufficient condition.

Short-lived technocratic governments Periods of political instability provide numerous examples of countries that relied temporarily on technocratic governments, typically formed by highly competent politicians (high π in the model) who are asked to reform the country within a short period of time, before turning power back to elected politicians. According to Proposition (9), this kind of temporary shock could lead, in the long-run, to a Kafkian economy.

Proposition 9 (The malady of short-lived technocratic governments)**.** *Suppose that conditions* (17) *and* (18) *hold and the economy is in a Weberian steady state with a number of pending reforms h_W. Then a temporary increase in the competence of government in legislature t to a value π_t such that*

$$\pi_t > \pi^K \equiv \frac{e^{\bar{\alpha}\ell}\overline{h}^K - h_W}{p} \tag{24}$$

shifts the economy to a Kafkian steady state.

Intuitively, a transitory technocratic government can have beneficial effects, only, in the short run. In fact, such a government will mechanically increase the number of new

good reforms and strategically decrease that of bad reforms.[14] But in a Weberian steady-state, the bureaucracy is efficient and the mechanical effect dominates the strategic, so the stock of uncompleted reforms increases. If the stock of pending reforms increases above the Kafkian threshold, then the subsequent non-technocratic governments will face a slow bureaucracy. In practice, the problem is typically exacerbated by the short-lived nature of technocratic governments—which in terms of the model corresponds to low ℓ. Thus, after a brief period of many good reforms, the economy will undergo a surge of bad reforms, as incompetent politicians react to a slow bureaucracy by launching more bad reforms. In the long run, this leads to a Kafkian steady state.

Notice that, unlike Propositions 7 and 8, Proposition 9 sets both a necessary and sufficient conditions for the transition from a Weberian to a Kafkian steady state. By Proposition 1 and the fact that $\partial \underline{\rho} / \partial \pi > 0$, an increase in π makes it less likely that incompetent politicians will start introducing bad reforms, which implies that $\sigma(\alpha_t)$ remains equal to zero during the technocratic legislature, i.e., the one in which π temporarily rises to π_t.

5.2 Gresham's law of bureaucracy

To this point the fraction of competent politicians π has been taken as exogenous. In actual practice, however, it will depend on endogenous selection into the political system. We now show that when the bureaucracy becomes inefficient the supply of incompetent relative to competent politicians rises and π falls, what we may call the Gresham's law of bureaucracy, namely "bad bureaucracy drives out good politicians." The key idea here is that an efficient bureaucracy enables the public to gauge the talent of politicians accurately. So an inefficient bureaucracy discourages talented people from going into politics.

Let U_1 denote the expected utility of a competent politician in office. In equilibrium, this is equal to

$$U_1 = \phi p \left[1 - \left(1 - \rho_t^y\right) e^{-\alpha_t \ell}\right] + \phi (1 - p) \rho_t^n. \tag{25}$$

Similarly let U_0 denote the expected utility of an incompetent politician. In equilibrium, this is equal to

$$U_0 = \phi \sigma(\alpha_t) e^{-\alpha_t \ell} \rho_t^y + \phi (1 - \sigma(\alpha_t)) \rho_t^n \tag{26}$$

In general, the probability of a politician's being competent depends on the supply of competent relative to incompetent politicians. We can suppose that the supply of each type depends on the utility the politician expects to obtain once in office. We accordingly

[14] Recall that when π is higher, incompetent politicians have less incentives to launch bad reforms.

postulate that the relative supply of competent politicians is given by $L(U_1/U_0)$ so that

$$\pi = L\left(\frac{U_1}{U_0}\right) \tag{27}$$

where $L : \mathbb{R}_+ \to [0,1]$ is strictly increasing.[15] The following proposition proved in Appendix B says that π falls when α_t falls:

Proposition 10 (Gresham's law of bureaucracy)**.** *The relative supply of competent politicians π is increasing in the efficiency of the bureaucracy α_t.*

Notice that a smaller relative supply of competent politicians relaxes the conditions for the existence of a Kafkian equilibrium (see Proposition 4). Further, (11) implies that when $\sigma(\alpha_t) > 0$ the flow of new reforms is independent of π. This means that a decline in π does not alter the volume of pending reforms, but only reduces the inflow of good reforms. Therefore the welfare effect of a permanent shift to a Kafkian steady-state (or of a reduction in $\underline{\alpha}$) is more severe than predicted when π is exogenous.

Along the same lines, we could also endogenize the quality of bureaucrats. For example we could assume that there exhists bureaucrats of differing skills 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 (8). 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 overall quality of bureaucrats. Now suppose that bureaucrats are promoted on the basis of merit, as measured by the implementation of reforms. When $\alpha_t(h_t)$ falls, the return to bureaucratic skill decreases and as a result the average quality of bureaucrats $\bar{s}_t$ declines (for given outside options), leading to a fall in the equilibrium completion rate $\widetilde{\alpha}_t$. In a spiraling effect, this in turn increases the number of pending reforms, further reducing the quality of bureaucrats and therefore worsening the welfare properties of the Kafkian equilibrium. So the Gresham's law of bureaucracy applies to good bureaucrats as well as to good politicians, so eventually "bad bureaucracy drives out both good politicians and good bureaucrats." This further exacerbates the adverse impact of a Kafkian equilibrium on welfare.

[15] This formulation is consistent with multiple occupational choice models. See e.g. Caselli and Morelli (2004).

Broadly speaking, the Gresham's law of bureaucracy implies that excessive political activism by incompetent politicians can push the economy into a Kafkian trap also by self-selection into political and bureaucratic careers.

5.3 Discussion: the ways out

When an economy is stuck in a Kafkian steady state with a highly inefficient bureaucracy, the system requires a sufficiently large countervailing large shock (say a large jump down in p or up in ℓ) in order to make the shift back to a Weberian steady state.

Here we discuss some "natural" policy interventions and the difficulties they are likely to encounter. The first idea that may come to mind is to *ban reforms*. With the economy in a Kafkian steady state, this would decongest the bureaucratic apparatus and improve efficiency. In fact, depending on parameters, it could be that "no reform is better than a good reform." How can politicians be encouraged to stop enacting laws and reduce the pace of reforms? Which incentives can the public provide? In our model, such an intervention would be equivalent to 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, new reforms would be discouraged by reputational cost. But such an intervention would depend on coordination among the various stakeholders (voters, lobbies, etc.) that implicitly determine politicians' career concerns.

A second natural idea would be to *drop old reforms*. How can the public reward politicians in power for scrapping obsolete reforms rather than introducing new ones? As in our model incompetent politicians cannot devise good reforms, they should likewise be unable to tell whether a pending reform is good or bad. Thus, inducing politicians to drop old reforms would have about the same effect as a ban on reforms: politicians would drop both good and bad reforms.

A potentially important role could be played by *political leaders*. In our economy, inefficient outcomes arise because politicians act competitively and do not internalize the impact of their reforms on the bureaucracy. But political leaders might internalize this externality, at least partly, and decide to limit the number of reforms their politicians can propose.

Leaders might also decide to *reform the bureaucracy* by investing resources to increase $\bar{h}^K$ and $\underline{\alpha}$. A successful reform might win substantial political rewards if the public recognizes its success. In practice, however, successful reform of bureaucracy takes time, so leaders who launch it are unlikely to reap the political benefits. More importantly, in a logic akin to that of the model, incompetent leaders would be tempted to mimic

the competent and introduce useless reforms of the bureaucracy, only exacerbating the problem. Furthermore, our version of Gresham's law implies that a drop in bureaucratic efficiency lowers the relative supply of competent politicians. And when the quality of politicians falls below a critical threshold level, the incentive to reform an inefficient bureaucracy vanishes, because bad politicians are the ones who benefit the most from the status quo. So even well intentioned leaders might find it hard to convince a large enough constituency of political peers to support a grand plan of bureaucratic reform.

An additional difficulty in getting back to a Weberian equilibrium is that more and increasingly complex rules increase the power of the bureaucracy as such. In a Kafkian equilibrium, therefore, the bureaucracy is both more essential for the implementation of reforms and more capable of blocking any attempt to limit its power. As a consequence, any political attempt to reform the bureaucracy could result in a complete block of government activities, at a possibly insurmountable reputational cost to political leaders—especially for those in office for just a short term (i.e., before the fruits of the reform could be correctly evaluated by the voters).

6 Empirical evidence: case studies

After a brief rehearsal of some historical cases of societies that collapsed owing to political instability followed by a deterioration in bureaucratic efficiency, we examine the Italian transition from the First to the Second Republic, which fits well with the thesis that an exogenously generated jump in political instability distorts legislative activity and hampers bureaucratic efficiency. Finally, in Section 7 we use micro data on Italian MPs to provide evidence for the strategic mechanism hypothesized by the model.

6.1 Examples from history

History offers several episodes where political instability caused a proliferation of laws and the degeneration of bureaucratic efficiency, followed by economic decline or even outright collapse (see Tainter, 1988; Cipolla, 1980). Jászi (1929) and Tapié (1971) have observed that the collapse of the Habsburg administration described in the Introduction occurred at a time of great political instability. In the decades before Kafka wrote his novels, nationalistic pressures from the ethnic groups of the Empire, as well as ideological conflicts (liberalism versus "old regime") produced a surge in political instability. The number of political parties soared—no fewer than 50 participated in the elections of 1922—and the size of the lower house chamber increased enormously—from 203 MPs in

1867 to 516 in 1918. In that period, Austria had 29 prime ministers (one every year-and-a-half). In a similar vein, Ho (1970) attributes the collapse of the Ming dynasty in China to socio-political ossification and bureaucratic inefficiency.

The mechanics of the collapse of the Roman Empire also bears some resemblance to our narrative. The crisis of the empire began with the death of Commodus in 192, marking the end of the Antonine dynasty. The ensuing struggle for succession ushered in an era of political instability known as "military anarchy." In half a century, there were at least 27 recognized emperors, the average reign lasting only months; by way of comparison, the previous 200 years saw just 18 emperors (MacMullen 1976, Southern, 2001). At any time during the period of "anarchy", many commoners did not even know who the Emperor actually was—just that there was one (MacMullen 1976; Boak 1955). Emperors' rule was tenuous, strictly dependent on the favor of the military. Rulers were forced to undertake extraordinary actions and signal activism to convince the populace of their legitimacy and maintain military support. The quality of the large and complex bureaucracy, in particular the tax collection administration, slowly deteriorated. This lowered tax revenues (Tainter, 1988, p. 88) and required tax reforms and tax increases, putting still more pressure on the administration and further jamming its efficiency. Under Diocletian (284-305) the bureaucracy doubled in size (Tainter, 1988). In *Rerum Gestarum Libri XXXI*, Ammianus Marcellinus describes the situation of the Empire in the fourth century and attributes Roman decadence to the unsustainable pervasiveness of bureaucracy (Mazzarino, 1966).[16]

While these examples are broadly consistent with our narrative, it is hard to pinpoint political instability as the actual trigger of the process posited in the model, namely an incentive to abuse legislative output that jams the bureaucratic apparatus, possibly heightening politicians incentives for legislative activism. To highlight this causal chain and identify the mechanism at work, we rely on the unique experience of Italy since World-War-II. It seems clear that political instability increased suddenly due to an exogenous shock, i.e., the collapse of the Soviet Union and the Communist bloc. In Section 7 we use micro data to formally test the claim that politicians' legislative activism increases when their horizon shortens. We start with the broad picture and then turn to the formal test.

[16]In the later Empire, as tax and state capacity continued to crash, Valentinian III imposed a sales tax that required that all sales be conducted in the presence of a tax collector. Clearly, either bureaucracy expands enormously to make this possible, or, more realistically, it gets jammed and transactions collapse.

6.2 Italy since World War II

In the postwar period, through the 10th legislature (1987–1992), the Italian Republic was characterized by a stable balance of power. In the first election under the new Constitution in 1948, the Christian Democratic party obtained 49% of the vote, while the Communist-Socialist coalition, then called Popular Democratic Front, got 31%. The Christian Democratic and the Communist parties remained the two key players throughout the postwar period. But Italy's membership in NATO implied that the Communist Party could never actually govern. This "*K-factor*"—a Communist party could never aspire to political power in a Western-block country—gave the Christian Democrats unique political rents. As a result, governments were sometimes formed with slightly different coalitions, but the Christian Democrats were always pivotal and necessary veto players, so policies were stable.

The end of the Cold War The collapse of the Soviet Union and the entire Communist bloc in 1989 broke this equilibrium and brought what came to be known as the "First Republic" (1948-1992) to an end. The K-factor was over, but the Communist Party was obsolete; the corruption of the Christian Democrats and their allies was revealed but no viable alternative was available. In 1992 the Christian Democratic Party, which had guaranteed political stability in the First Republic, was overwhelmed by a nation-wide investigation into political corruption dubbed "mani pulite" (clean hands). The scandal brought the demise of the First Republic and the disappearance of almost all its leading parties. It was succeeded by a transition towards a new, stable political order (not yet achieved); this system, marked by significant political instability, is known as Second Republic. During the First Republic only one legislature (the 7th) ended before its five-year term. During the Second Republic, three of the first six legislatures lasted barely two years (see Table A1 in the Appendix). [17]

Government instability and the difficulty of finding stable parliamentary majorities stemmed from changeable government coalitions—either because individual MPs betrayed their party (see panel (a) in Figure 5) or because parties themselves split and new ones were formed (see Table 1). During the First Republic, only 2.2% of MPs changed

[17] In characterizing the increase in political instability, we include the legislature from 1987 to 1992 (the 10th) into the set of legislatures of the Second Republic because the collapse of the Communist block that triggered the increase in instability happened during the first years of the legislature. The Figures 5-7 below show that our proxies for political instability and distortions in the legislative process both start to increase in the 10th legislature, which is consistent with this interpretation. When documenting the effects of political instability on aggregate performance (bureaucratic efficiency and TFP) during the Second Republic, we have used the commonly recognized starting date of the Second Republic which coincides with the elections of 1992. Since aggregate effects happen only with some lags—as it is also the case in our model,— this choice has no consequences on average statistics.

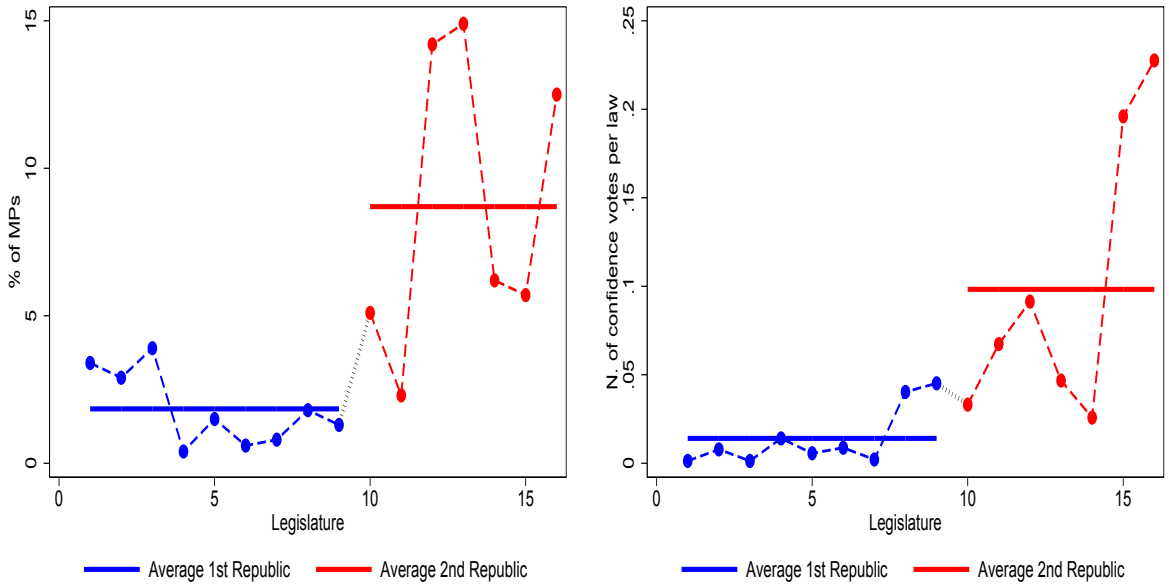
Table 1: Comparing Italy's First and Second Republics

Variable	*First Republic*	*Second Republic*
% of MPs betraying party	1.93	9.1
% of MPs switching party	6.77	13.67
Fragmentation of government coalition	0.35	0.61
No. of confidence votes per approved law	0.014	0.098
No. of pages per law	3.67	12.84
No. of technocratic governments	0	3
TFP growth (%)	2.2	0.4
Bills per day (MPs)	1.84	3.73
Bills per day (Total)	2.66	4.25
Share of standard laws	0.86	0.46
Share of executive orders	0.14	0.32
Share of delegated laws	0	0.22
Bureaucratic inefficiency growth (%):		
-Registry office		78
-Postal office		136
-Public health		48

The First Republic refers to all legislatures before 1986 (legislatures I-IX); the Second Republic starts in 1987 (legislatures X-XVI). "% of MPs betraying party" is the fraction of Members of Parliament who changed party on an individual basis; "% of MPs switching party" is the fraction of MPs who changed party either as an individual decision or after a party split (source: Lama, 2014). "Fragmentation of government coalition" is the index by Rae and Taylor (1970), equal to $\sum_i^{N_g} s_i^2$, where N_g is the number of parties in the coalition and s_i is the share of parliamentary votes of party i scaled by the share of the coalition (source: De Micheli, 2015). "No. of confidence votes per approved law" is the ratio between confidence votes and number of approved laws (source: De Micheli and Verzichelli, 2004, and http://www.camera.it). "No. of pages per law" is from Bianco and Napolitano (2011). "No. of technocratic governments" is from http://www.camera.it. "TFP growth" for the First Republic is computed between 1970 and 1991; for the Second Republic, between 1992 and 2007 (source: EU-Klems). "Bills per day (MPs)" are the number of bills per day presented by individual MPs; "Bills per day (Total)" is the total number of bills presented by either an MP or the government (source: http://www.camera.it). "Share of standard laws", of "executive orders" and of "delegated laws" is the share of approved laws by type (source: http://www.camera.it). "Bureaucratic inefficiency growth" is the percentage increase in the fraction of people who have to queue longer than 20 minutes at the registry, the postal office and the public health office (source: Istat, "Indagine Multiscopo sulle famiglie"available since 1992, see http://dati.statistiche-pa.it).

party as an individual decision in a given legislature; in the Second Republic the number more than quadrupled to an average of 9.7%. For the total number of switches the

Figure 5: Political instability in Italy's Second Republic



(a) % of MPs switching party (b) *N*. of confidence votes per approved law

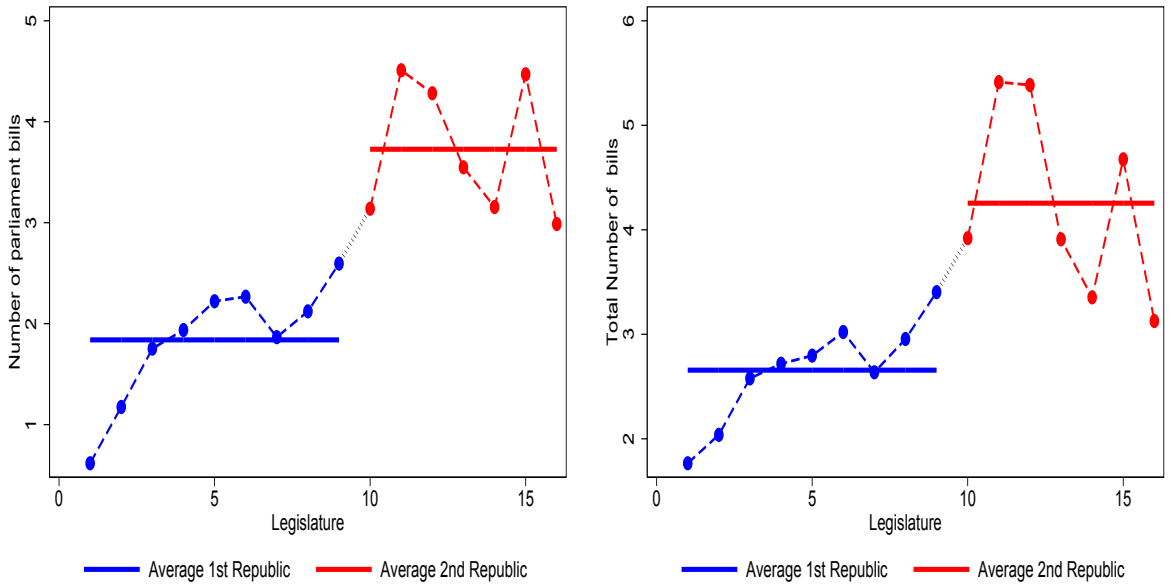
Panel (a) shows the fraction of members of the lower chamber who switched party during the legislation. Panel (b) shows the number of confidence votes per approved law in the legislature. The solid horizontal lines denote the averages during the First and Second Republic.

increase is even sharper (Table 1), as some MPs switched more than once.[18] During the Second Republic government coalitions were much more fragmented, as documented by the Rae-Taylor index, which almost doubled compared to the First Republic (Table 1). Because of this instability, governments have resorted much more often to votes of confidence to guarantee the passage of their bills: during the Second Republic, one out of ten laws was approved after a confidence vote, ten times more than in the First Republic (see panel (b) of Figure 5). Political instability during the Second Republic has also led to the formation of three short-lived technocratic governments, a complete novelty for Italy (see Table 1). So the mechanics described in Proposition 9 might also have played a role in stimulating legislative activism.

Distortions in the legislative process There is evidence that the greater political instability did set our mechanism in motion, with a sharp increase in legislative activism, a worsening in the quality of laws and a deterioration of the bureaucracy. Figure 6 shows the number of bills presented per day in each legislature: there is a remarkable jump in

[18]Between 1996 and 2016 the number of MPs who changed political party at least once came to 868, the total number of switches to 1,268 (Openpolis, 2016).

Figure 6: Legislative activism



(a) Number of bills per day by MPs

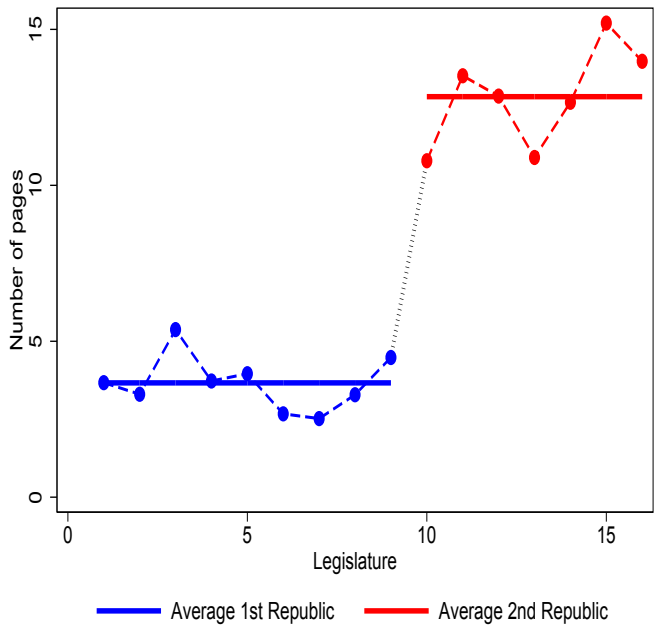
(b) Total number of bills per day

The figure shows the average number of bills presented by Members of Parliament in the lower chamber (panel a) and by MPs and the government (panel b) in each legislature. The solid horizontal lines denote the averages during the First and Second Republic.

the Second Republic, the average number initiated by MPs doubling from 1.87 in the First to 3.52 in the Second Republic, and the total including bills presented by the government rising from 2.6 to 4.3 (Figure 6). Besides boosting legislative activism, the greater difficulty of governments in securing a stable parliamentary majority has distorted the legislative process. To bypass unstable parliaments, governments have resorted more extensively to executive orders and delegated legislation, whose share in total approved laws has increased from 13% during the First Republic to as much as 51% during the Second Republic, essentially replacing standard laws, whose share has fallen symmetrically from 87% to 49% (Table 1). Furthermore, given the high frequency of switches in MPs' political loyalties, to minimize the risk of going under, Second Republic governments have heavily relied on votes of confidence on their own bills (Figure 5) and have also commonly lumped together heterogeneous matters in single laws. As a consequence, the laws approved have grown much longer, from an average of 3.7 pages during the First Republic to 12.4 during the Second (Figure 7 and Table 1).

Numerous and insufficiently discussed laws, collected in lengthy, heterogeneous texts, have resulted in a poorer quality of new legislation, in greater complexity and more ambi-

Figure 7: Average page-length of laws



The figure shows the average number of pages per (approved) law in each legislature. The solid horizontal lines denote the average during the First and Second Republic.

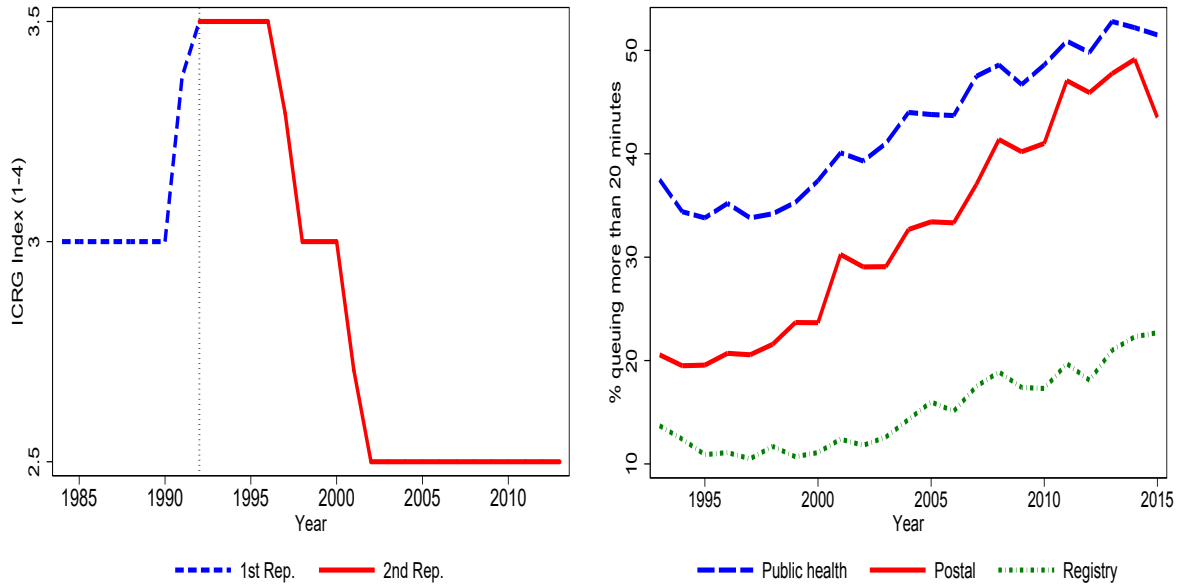
guity. New legislation is sometimes plagued by graphical errors and even incomplete or inconsistent sentences corrected only by subsequent legislative amendments—a fact well documented by Zaccaria (2011) and confirmable by browsing recent Italian legislation at `http://www.normattiva.it/`.

Italian decline There is an abundance of anecdotal evidence in the national press that over time these features have made bureaucracy less efficient, more obscure, and more pervasive.[19] Figure 8 shows the time evolution of some measures of efficiency of Italian bureaucracy, which generally reflect the functioning of bureaucracy as well as the amount of public capital whose level contracts in a Kafkian regime. The left panel of Figure 8 documents a sharp fall in the ICRG index of quality of bureaucracy in the Second Republic, to

[19] An illustrative example from *Corriere della Sera*, Italy's leading daily newspaper, reports how the madness of Italian bureaucracy blocked the reconstruction works following the April 2009 earthquake in the city of l'Aquila: "In the first four years after the earthquake, l'Aquila was the subject of 5 Special Laws, 21 Directives of the Deputy Commissioner, 25 Acts of the Emergency Management Agency, 51 Acts of the Mission Technical Structure, 62 deliberations of the Civil Protection, 73 Decrees of the Prime Minister, 152 Decrees of the Delegated Commissioner and 720 municipal regulations (Gian Antonio Stella, Corriere della Sera, March 8 2016).

well below its level during the First Republic.[20] The right panel shows a marked increase in a measure of inefficiency of three state agencies: the postal service, the registry office, and the national health service. One measure of inefficiency is the fraction of people

Figure 8: The collapse of bureaucratic efficiency in Italy's Second Repubblic



(a) ICRG index of quality of bureaucracy

(b) Queueing time

Panel (a) shows the indicator of quality of bureaucracy in the International Country Risk Guide by the PRS group. The index ranges from 1 to 4; high scores indicate that the bureaucracy is strong and has the expertise and competence to govern without drastic changes in policy or interruptions in services. The vertical line corresponds to the start of the Second Republic in 1992. Panel (b) shows the fraction of people who report that they have to queue more than 20 minutes at the counter of the administration specified (the registry office, the public health care office and the postal office). The indicator at the post office is the average of queuing more than 20 minutes to: send a registered letter, send a money order, deposit cash in a postal account, obtain the payment of the pension, or collect a parcel.

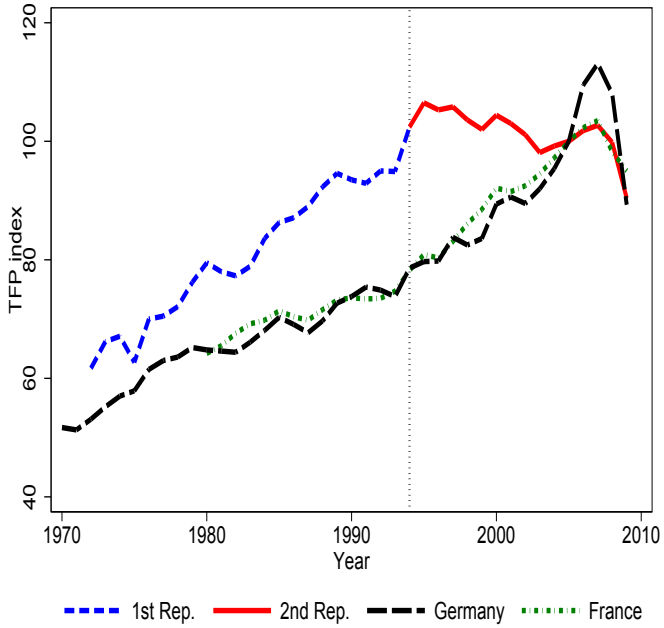
that have to queue longer than 20 minutes before being served. Bureaucratic efficiency has deteriorated in all three administrations. In all cases, inefficiency begins increasing around 1995 when the ICRG index started to crash.[21] Comparing the first year and the last three years of the sample (which covers the entire Second Republic), queuing rates

[20] The ICRG index shows an improvement in efficiency in the last few years of the First Republic, and then a collapse in the Second Republic. The improvement most likely reflects the creation of several independent authorities (such as Antitrust, the Digital Agency and the Data Privacy Agency) in the early 1990s.

[21] The deterioration cannot be driven by a sluggish response of the administration to an increasing number of users, since the number of users has actually declined.

rose by 136% at the post office, by 78% at the registry office, and by 48% at the public health service. All efficiency measures in Figure 8 begin to deteriorate after some time after the end of the First Republic. This is consistent with the view that legislative activism leads to bureaucratic degeneration only with a lag and only if the legislative bulimia of politicians persists over time. In turn, an inefficient bureaucracy may be one of the causes of what has been labeled the "Italian decline": the dismal performance of total factor productivity since the mid-1990s, particularly compared with France and Germany. As Figure 9 shows, during the First Republic, Italy had recorded average annual TFP growth of 2.2%. During the Second Republic, even excluding the great recession, the growth has averaged just 0.4%. This evidence conforms well with our model.[22]

Figure 9: Italy's TFP



The figure shows Italian, French and German TFP in manufacturing from 1979 to 2007 (2005=100). Data during the Great Recessions are excluded. The vertical line corresponds to the start of the Second Republic in 1992.

[22]Galasso et al. (2010) document a deterioration in the quality of politicians in the First Republic and in the Second. Using individual data for all Italian postwar legislatures to 2007, they show that in the First Republic MPs were significantly better educated and earned higher market income before their election. This is consistent with the Gresham's law of bureaucracy discussed in Section 5.2.

7 Testing the mechanism

The political instability of the Second Republic, triggered in part by changes in international relations connected with the end of the Cold War, offers a kind of natural experiment to identify the effects of political instability on the incentives to legislate, in terms of both quality and quantity. The Second Republic has shown generally great political instability; however, some legislatures have been more stable than others, as is shown by the considerable volatility of the number of MPs switching parties and the resort to votes of confidence (Figure 5). In fact, the duration of the legislatures in the Second Republic (legislatures X-XVI) varies considerably: three of the seven ended prematurely, in all cases after exactly two years, whereas the others completed their five-year statutory term. This gives us variation in MPs' incentives to use legislative activism to boost their reputation. We exploit this variation to substantiate the strategic mechanism we posit. In our theory, bills are proposed in order to demonstrate activism and this incentive is amplified by political instability, resulting in a surfeit of laws designed by incompetent politicians. We use micro data on legislative activity by Italian MPs over 26 years from legislature X to XVI. We have access to individual data on MPs' earnings capacity both in office and, most importantly, before their election, with separate data on compensation as MP and earnings from any market activity. We use this information to produce a measure of MPs' ability, based on their ability to earn market income, as in Gagliarducci and Nannicini (2013). We first discuss the empirical model, then the data, and finally the evidence.

7.1 The empirical model

We test whether incompetent politicians have stronger incentives for legislative activism when they anticipate a shorter legislature—our proxy for political instability —by estimating variants of the following empirical model

$$A_{itl} = \alpha + \beta Z_{itl} + \gamma B_{itl} + \delta L_l \times B_{itl} + f_l + \epsilon_{itl} \tag{28}$$

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 MP, but not quality, which is measured instead by B_{itl}, an index of incompetence of the politician, while L_l is the length of the lth legislature, f_l a set of legislature dummies and ϵ_{itl} an error term. A crucial implication of the model is that the coefficient δ of the interaction term between the length of the legislature and the index of incompetence of the politician should be negative, indicating that incompetent politicians are less activist when they anticipate a longer legislature. This is

the specific prediction that we test.

7.2 The data

We have data on all Italian MPs for both houses, the Chamber of Deputies and the Senate. These data are provided in separate files. The first reports, for each bill proposed in the legislatures, the date it was presented, if and when it was discussed in committee, presented to the chamber, and approved as law. For each bill we observe the identifier of the primary sponsor. The second dataset reports for each MP, demographic characteristics (age, gender, marital status, number of children, education, and region of birth) and indicators of parliamentary career and appointments (previous parliamentary experience, status of life senator, party position at national or local level, chair or secretary of committee, committee member, deputy-premier or minister, political affiliation). We use these as controls in the empirical model.

Measuring legislative activity The first dataset yields a measure of legislative activity A_{itl} as the number of bills presented by MP i in year t in legislature l; an additional measure is the number of laws approved instead of the number of bills proposed.

Measuring politicians quality One unique feature of this dataset is that, thanks to the law n. 441 of 1982 requiring MPs to disclose their tax statements, we have data on their various sources of income. Not only do we observe their compensation as parliamentarians but also all their earnings from any market activity during their term and also their earnings in the year before election, both gross and net of tax. We use these data to gauge the ability of individuals. Following a substantial literature in labor (see Card, 1999), we infer politicians' ability from their market earnings capacity.[23] Given this panel of observations for all MPs, with their changes in income over time and covering both earnings while in office and (for the newly elected) earnings in the year before the term, we run mincerian regressions on total earnings. Because we control for total compensation as MP, the residual variation reflects market earnings alone. We add time fixed effects, to capture common time variation, and individual fixed effects. We take the latter as a gauge of ability. From this continuous measure we construct the indicator of low quality politician B_{itl} as equal to 1 if the estimated fixed effect is below the cross sectional median; a stricter

[23]Our model assumes that voters do not directly observe politicians' quality, but infer it solely from the success of the bills they promote. This requires that they do not fully observe the measure of politicians' quality that we use. And this is in fact the case. Despite the fact that since 1982 MPs have had to disclose their income tax statements, this information was only available on paper from the archives of the Senate and Lower Chamber and thus essentially inaccesible. Only since 2013 it has been available on line at http://www.camera.it/leg17/1003.

definition takes the 25th percentile as the threshold for low quality. Alternatively, we run the same regressions without fixed effects but with a vector of individual controls in addition to the time dummies. Taking the residuals from these regressions, averaging them at the MP level, we then obtain an alternative indicator of ability of B_{itl}. We call the first the *Fixed-Effect measure* for MP (bad) quality, and the second the *Residual measure*. Empirically, the two measures are correlated (correlation 0.3). Table 2 shows some summary statistics for our data. More statistics are available in the Appendix (Table A2).

Table 2: 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
Re-election probability	0.46	0	0.5

"Number of bills" is the number of bills presented on average by an MP, "Number of laws" is the number approved and presented on average by an MP; "Success rate", is the share of bills presented on average by an MP that turn into approved laws. "Re-election probability" is the share of MPs in a given legislature that are present in the following legislature. All data refer to the Second Republic legislatures.

The predictability of legislature duration For our empirical strategy to work MPs must be able to predict the duration of the legislature from its outset, so as to adapt their behavior to this expectation. And in fact, in our data the predictability of the duration of the legislature is readily inferred from the strength of the parliamentary majority for the coalition that has won the elections. In particular, because the Italian parliamentary system is a perfect bicameral one, with 315 senators and 630 deputies, a government needs the confidence of each chamber. But because of the smaller number of seats in the Senate, the strength of the winning coalition and the stability of the legislature depend critically on the coalition's margin in the upper house. As shown in the Appendix (Table A1), the three legislatures that ended before term all share a distinctive feature: the government coalition had a very slim majority in the Senate by comparison with the legislatures that ran full term. In one of these legislatures (XV) the government had only a 1-seat margin, and in another (XII) it was actually 3 seats short (a vote of confidence was obtained thanks to the support of a few life senators) and in a third (XI) it had a 12-seat margin, still less than the average in complete legislatures (20 seats). Because the number of Senators supporting the governing coalition can be taken as the random outcome of the election,

we can treat the variation in the length of legislatures as exogenous. And because the strength of the coalition is observed from the outset, MPs can form a reliable prediction of durability. Furthermore, because pension entitlements only mature if the legislature lasts for at least two years, even when the legislature is likely to end before its term, MPs can easily anticipate that it will not end before that. This is confirmed in the data: the incomplete legislatures all end after exactly two years (Appendix, Table A1).

7.3 The results

Table 3 shows the results from estimating the regression in (28). The first column uses the fixed-effect measure of politicians' quality, the second the residuals measure. Being a low quality politician per se has no effect on legislative activism. Low quality politicians are

Table 3: Legislative activism, legislature duration and politicians quality

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

OLS estimates of the number of bills presented by an MP on politician quality, measured using the Fixed Effect in Mincerian wage regressions. All regressions control for demographic characteristics (age, gender, marital status, number of children, level of education, dummies for region of birth), dummies for chamber of parliament, life senator, previous parliamentary experience, appointment in national or local party position, dummies for member of European Parliament, committee chair or secretary, committee member, deputy-prime minister or minister, dummies for political affiliation (left or right), and a full set of legislature dummies. Regressions compute robust standard errors; p-values are shown in parenthesis; *** significant$\leq$ 1%; ** significant$\leq$ 5% ; * significant$\leq$10%.

systematically andsignificantly less active when they operate in a complete legislature. Compared to high quality politicians, they present 1.2 more bills in a shorter legislature. Because MPs present an average of 6.7 bills, this effect amounts to 18% of the sample

mean. The effect is of similar magnitude when quality is measured by mean residuals (column 2). We also find similar results if instead of running a regression for activism with the interaction between politician quality and the complete legislature dummy, we run separate regressions for complete and incomplete legislatures (columns 3 and 4). Only in the latter are low quality politicians more active than high quality, and the effect is larger than in columns 1 and 2. These results support the model's hypothesis that when the legislature is shorter, low quality MPs are more active in initiating bills because laws, like durable goods, reveal their quality only with time. Hence, bad laws are more likely to be revealed to be such only after the end of the legislature.

Table 4 reports some robustness exercises. The first three columns use the fixed-effect measure of politicians quality, the last three mean residuals. As a first robustness check, we define as low quality those MPs with a fixed-effect (or average residual) below the 25th percentile of the cross sectional distribution. Second, we drop 51 outliers of exceptionally activist MPs; third, we restrict the sample to MPs who presented at least one bill, thus eliminating 1239 cases of MPs/legislature who presented no bills. The results are

Table 4: Robustness

	Quality measured with:					
	Fixed Effect			*Mean residual*		
	Low quality FE$< 25^{th}$	No outliers	At least one bill	Low quality Resid $< 25^{th}$	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 legislature	-0.99*	-0.97**	-0.88	-0.99	-0.81**	-1.12*
$\times$ Low quality politician	(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

OLS estimates of the number of bills presented by an MP on quality. In the first three columns quality is determined by the Fixed-Effect measure, in the last three by mean residuals. Columns 1 and 4 identify low quality politicians as those in the bottom quartile of the distribution. Columns 2 and 5 drop observations with more than 54 bills (the 99th percentile of the number of bills distribution); columns 3 and 6 only consider MPs who presented at least 1 bill. All regressions include the controls specified in Table 3. Regressions compute robust standard errors; p-values are shown in parenthesis: *** significant$\leq$ 1%; ** significant$\leq$ 5% ; * significant$\leq$10%.

basically unchanged: the effect is somewhat smaller than in Table 2 but of the same order of magnitude. Not surprisingly, precision is lost when MPs who presented no bills are omitted, but even in this case the point estimate of the effect is of the same size. Results

for the residuals measure are similar.

Table 5 measures activism as the number of laws passed, instead of bills sponsored. The results hold also using this alternative measure: in short legislatures, low quality politicians were more active in sponsoring bills that were enacted into law. On average, in aborted legislatures they sponsored 0.3 more laws than high quality politicians. Since the mean number of laws per MP is 0.91, this difference is quite sizeable, a third of the sample mean.

Table 5: The effect on the number of laws

	Politician's low quality measure			
	FE <median	FE 25th pct	Resid < median	Resid < 25th pct
Low quality politician	0.01	0.05	-0.02	0.01
	(0.921)	(0.441)	(0.753)	(0.853)
Complete legislature	-0.32**	-0.32**	-0.15	-0.44***
× Low quality politician	(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

OLS estimates of the number of laws sponsored by an MP on four alternative measures of quality. All regressions include the controls specified in Table 3. Regressions compute robust standard errors; p-values are shown in parenthesis: *** significant≤ 1%; ** significant≤ 5%; * significant≤10%.

Success rate Finally, in Table 6 we seek to validate our measure of MPs' quality. Only a fraction of the bills presented actually become law; they are subject to a number of filters that screen, among other things, for legislative quality. If our measure of politicians' quality actually does capture some notion of ability, we would expect that the bills of low quality politicians are less likely to become law. The table shows Tobit estimates of the success rate, i.e. the share of bills proposed by each MP that actually become laws. Bills proposed by low quality politicians are unambiguously less likely to be successful, by between 2 and 6 percentage points depending on the definition of politicians' quality. This effect ranges between 25% and 75% of the sample mean.

Re-election Finally, we test the model's implications for the chances of re-election. Our model implies that activism by different types of politician affects their reputation at the end of the legislature, which in our re-election model determines their probability of being re-elected. Longer legislatures give voters enough time to assess the quality of the

Table 6: Successful bills and politicians' quality

	Politician's low quality measure			
	FE $<$ median	FE $<$ 25th pct	Resid $<$ median	Resid $<$ 25th 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

Tobit estimates of the share of successful bills presented by an MP on four alternative measures of MP's quality. All regressions include the controls specified in Table 3. Regressions compute robust standard errors; p-values are shown in parenthesis : *** significant$\leq$ 1%; ** significant$\leq$ 5% ; * significant$\leq$10%.

laws sponsored by MPs, implying that low quality politicians are less likely to be re-elected when legislatures are long. To test this implication, we run probit regressions for the probability of being re-elected in the next legislature. Table 7 shows the resulting marginal effects. In our specification, we drop politicians who face little or no re-election concerns such as life Senators and MPs older than 65 years of age. The controls are the same as in the previous specifications. The key explanatory variable is the interaction term between the dummy for (low) politician quality and that for completed legislatures, for which our model predicts a negative coefficient. The first column shows the results for the fixed-effect measure of quality, the second for the mean residuals measure; the last two columns report separate regressions for complete and incomplete legislatures. This evidence indicates that low quality politicians are significantly less likely to be re-elected after longer legislatures. This is true in all estimates, including the split sample. Depending on the specification, the probability of reelection of a low quality politician is lower by between 7.7 percentage points (second column) and 11.6 points (split sample) in a complete legislation than in a short legislation. This is a non-trivial effect given that the sample mean re-election probability is 46% (Table 2).[24]

[24]Our estimates would suggest that, after incomplete legislatures, low quality politicians are more likely to be re-elected than high quality politicians, while this is never the case following complete legislatures. Taken literally, this result does not follow from our simple model, but it could arise in a realistic extension where re-election probabilities are determined both by one's reputation for competence and by some other characteristics (say campaigning ability and political contacts), which would imply that the competence advantage of good politicians arises only in long legislatures. This is why, as is standard in the difference-in-differences methodology, the focus of the test is on the interaction term.

Table 7: Re-election probability

	Whole sample		*Sample split:*	
	Quality measure:		Complete	Incomplete
	Fixed Effect	Mean Residual	Legislature	Legislature
Low quality politician	0.052*	0.036	-0.049*	0.067*
	(0.030)	(0.027)	(0.028)	(0.034)
Complete legislature	-0.087**	-0.077**		
× Low quality politician	(0.036)	(0.034)		
Observations	3,985	3,985	2,384	1,595

Marginal effects of Probit estimates of the probability of being re-elected. The dependent variable is equal to 1 if a current MP is re-elected in the next legislature. The Fixed-Effect measure of politicians' quality and the mean residuals measure are both based on the median. Regressions are run on the sample of MPs under 65 years of age and omitting life senators. All regressions include the controls specified in Table 3. Regressions compute robust standard errors; p-values are shown in parenthesis; *** significant$\leq$ 1%; ** significant$\leq$ 5% ; * significant$\leq$10%.

8 Concluding remarks and relation to the literature

We have proposed a simple dynamic theory of the substantial disparities in bureaucratic efficiency between countries and over time, due to excessive legislation introduced by bad politicians. The theory relies on a two-way relation between legislation and bureaucratic inefficiency: too many laws mechanically jam up the bureaucracy, whereas an inefficient bureaucracy gives incentives to politicians to sponsor laws in order to acquire the reputation of capable reformers, leading naturally to the possibility of multiple steady states. A surge in political instability that results in short legislatures, strong public pressure for reforms, or short-lived technocratic governments tend to cause an excessive production of new laws, which can determine a permanent shift to a Kafkian steady state. Italy's experience since the early 1990s fits well some features of the model: the sharp increase in political instability due to the end of Cold War produced a sharp increase in legislative activism, accompanied by a deterioration in bureaucratic efficiency and poor aggregate performance. By using micro level data for Italian MPs, we have also shown that the relative sponsorship of laws by incompetent politicians increases in period of high political instability, which provides support for the key building block of the theory.

There is plenty of evidence that politicians are motivated by career and re-election concerns (see, e.g., Diermeier et al , 2005; and Mattozzi and Merlo, 2008) and that these

cause distortions (see, e.g., Persson and Tabellini, 2000; Rogoff and Siebert, 1988; and Ash et al, 2017). This literature has focused mainly on policy making (see also Kawai et al, 2017; and Dewatripont and Seabright, 2006). We believe that the focus on the supply of laws and their effects on bureaucratic efficiency is novel. The premise of our theory is that politics and bureaucracy are complementary in the production of public capital, which is a difference relative to Maskin and Tirole (2004) and Alesina and Tabellini (2007; 2008) who study the trade-off between delegating choices to a bureaucracy and elected politicians.

There is a large literature on the determinants of the performance of bureaucracy – see Prendergast (2007) for a seminal theoretical contribution, Gailmard and Patty (2012) for an overview of the theoretical literature and Bertrand et al, (2015), Nath (2015) and the references therein for empirical evidence. This literature has focused mainly on the *internal* functioning of bureaucracy and analyzed how moral hazard and adverse selection problems affect bureaucratic efficiency. Here we have taken a very broad definition of bureaucracy—encompassing all institutions that contribute to an effective implementation of the laws designed by politicians— and we have treated the bureaucracy's internal functioning as a black box. We argued that excessive legislation is an important *external* determinant of bureaucratic performance and identified political instability as a key cause of it. Nath (2015) has also argued that electoral instability harms bureaucratic performance but she focuses on moral hazard problems in the internal functioning of bureaucracy, not legislators' incentives for over-production of laws. The difference in mechanism implies important differences in the policies required to improve efficiency.

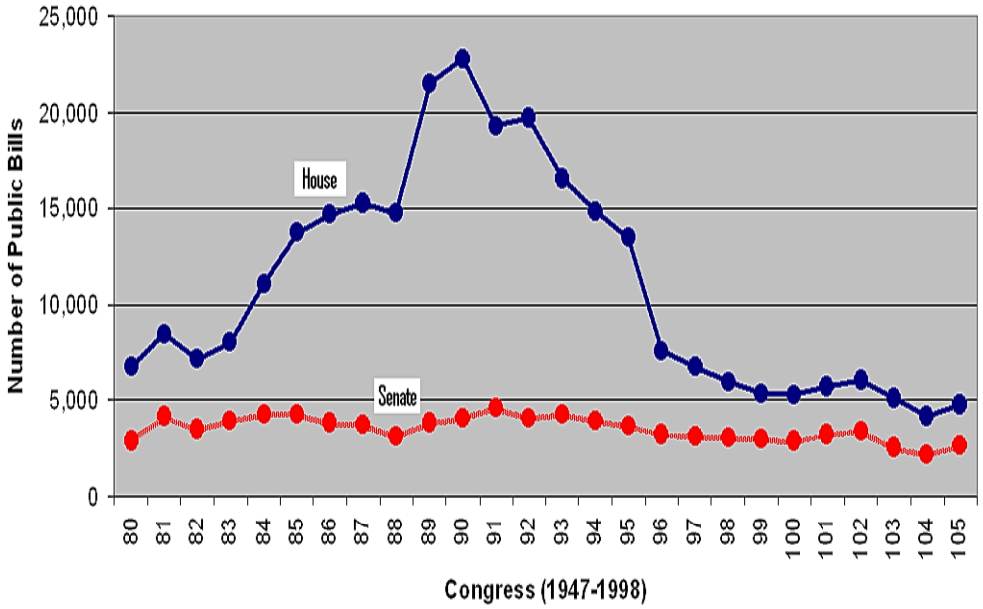
Our analysis is also related to the literature on regulation and particularly to Aghion et al (2010), who study the links between government regulation and people's trust, showing that multiple steady-state equilibria can arise: some with low trust and pervasive regulation, others with high trust and little regulation. We instead focus on the links between bureaucratic efficiency and legislation (which includes government regulation). Similarly to them we show that multiple equilibria with different amount of legislation can be sustained. Differently from them we identify in temporary waves of political instability as a key determinant of the equilibrium with excessive legislation. This is important from a policy perspective because a better diagnosis of the causes of excessive legislation is a prerequisite for addressing its consequences.

A superficial reading of our analysis could lead to the conclusion that political competition causes inefficiencies through excessive legislation. We think that political competition is typically an essential discipline device to guarantee politicians' good behaviour. Problems arise when political instability induces politicians to compete too frequently

and does not allow the public to evaluate accurately the performance of politicians in office.

The perverse effects of excessive legislation are more likely to be present in civil-law than in common-law countries because in the former countries each piece of legislation has very long-lasting effects on the legislative code, so legislative complexity can build up more easily. But the use of bill proposals as a signal of political activism is likely to be a general feature of modern democracies, independently of whether they belong to the civil law or common law tradition. Figure 10 shows the number of bills in the US, separately for the Senate and the House of Representatives, from the 80th to the 105th Congress. While the number of bills presented in the Senate is constant at around 5,000, in the House it is hump shaped: initially close to the activity rate in the Senate, it jumped to 22,000 bills per legislature in the early 1970s (91th Congress), more than four times the number in the Senate. After the 96th Congress the rate fell back to its initial level of

Figure 10: Bills introduced in US congress



around 5,000 bills per legislature. As is argued by Thomas and Grofman (1993), Cooper and Young (1989) and particularly Adler and Wilkerson (2012), much of this pattern can be attributed to changes in the House rules on co-sponsorship. From the 83rd until the 91st Congress co-sponsorship was not allowed; in the 91st Congress the rule was changed again, allowing cosponsors but with a cap of 25 signatories; finally, in the 96th Congress the cap was eliminated. The incentive for individual Representatives to sponsor bills for

position-taking purposes was stronger prior to this reform and, not surprisingly, the number of bills declined after it. This suggests that the pernicious dynamics that this paper highlights are a major concern in advanced democracies in general, whose resolution is essential to the preservation of well functioning bureaucratic institutions.

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A Reelection model

Here we characterize the steady state equilibrium and the transitional dynamics of the reelection model. We assume that reelected politicians have no incentives to posture and signal their type in their second (and last) mandate, and we focus on the equilibrium where reelected politicians start a new reform only if this is good.

Reelection probabilities In equilibrium, the ex ante probability that a competent politician is reelected is

$$\phi_t(\alpha_t) = p\left[\left(1 - e^{-\alpha_t \ell}\right) + e^{-\alpha_t \ell}\rho_t^y\right] + (1-p)\,\rho_t^n, \tag{29}$$

which, after using Proposition 1, can be written as

$$\phi_t(\alpha_t) = \begin{cases} \frac{p+\pi-2\pi p}{1-\pi p} & \text{if } \alpha_t \ell > -\ln\left(\underline{\rho}\right); \\ \pi + (1-\pi)\,p\left(1 - e^{-\alpha_t \ell}\right) & \text{otherwise;} \end{cases} \tag{30}$$

The total probability that a politician is reelected is

$$\pi\phi_t(\alpha_t) + (1-\pi)\left\{\sigma_t(\alpha_t)\,e^{-\alpha_t \ell}\rho_t^y + [1 - \sigma_t(\alpha_t)]\,\rho_t^n\right\} = \pi \tag{31}$$

where the term in curly brackets is the ex-ante probability that an incompetent politician is reelected at the end of her first mandate and we used (6) to replace $\sigma_t(\alpha_t)$. The equality in (31) means that the fraction of re-elected politicians is constant and equal to π.[25]

New reforms For any $t = 1, 2, \ldots$, the stock of uncompleted reforms at the beginning of each legislature, h_t still evolves according to (9), but where now the mass of newly started reforms in the $t-1$th legislature is given by

$$r_t = (1-\pi)\,n_t + \pi\phi_{t-1}(\alpha_{t-1})\,p. \tag{32}$$

where n_t denotes the flow of new reforms started by newly elected politicians, who are in proportion $1-\pi$ by (31), and we are using the fact that, once reelected, only competent politicians with a good reform start a new reform. The flow of new reforms started by

[25] This result follows from the assumption that a politician's probability of being reelected is equal to the posterior belief that she is competent: the ex-ante expected posterior that the politician is competent (equal to the reelection probability) is martingale and therefore equal to the prior that the politician is competent (equal to π).

newly elected politicians satisfies

$$n_t = \pi p + (1 - \pi)\, \sigma_t\left(\alpha_t\right), \tag{33}$$

which, after using Proposition 1, can be written as

$$n_t\left(\alpha_t\right) = \begin{cases} \pi p & \text{if } \alpha_t \ell > -\ln\left(\underline{\rho}\right); \\ \frac{p}{p+(1-p)e^{\alpha_t \ell}} & \text{otherwise;} \end{cases} \tag{34}$$

Finally, notice that the mass of good reforms started in legislature t is given by

$$g_t = \pi p \phi_{t-1}\left(\alpha_{t-1}\right) + (1 - \pi)\, \pi p, \tag{35}$$

which is the sum of the good reforms started by the mass of reelected politicians π and newly elected politicians whose mass is $1 - \pi$.

Tacitus line We now turn to the dynamic analysis of the reelection model. Let α^* be the steady state completion rate of reforms and let $e^{-\alpha^*} \in [0, 1]$ denote our measure of bureaucratic inefficiency. Given (9), the steady state stock of uncompleted reforms at the start of each legislature is equal to

$$h^* \equiv \frac{r\left(\alpha^*\right)}{e^{\alpha^* \ell} - 1} = \frac{e^{-\alpha^* \ell} r\left(\alpha^*\right)}{1 - e^{-\alpha^* \ell}} \tag{36}$$

where r^* is the steady state flow of new reforms, which can be obtained using (32) after replacing the expression for ϕ and n in (30) and (34), respectively. After imposing that the system is in steady state we obtain

$$r(\alpha^*) = \begin{cases} \pi p \left[1 + \frac{p(1-\pi)^2}{1-\pi p}\right] & \text{if } \alpha^* \ell > -\ln\left(\underline{\rho}\right); \\ \frac{(1-\pi)p}{p+(1-p)e^{\alpha^* \ell}} + \pi p \left[\pi + (1 - \pi)\, p \left(1 - e^{-\alpha^* \ell}\right)\right] & \text{otherwise;} \end{cases} \tag{37}$$

which can be substituted into (36) to finally obtain

$$h(\alpha^*) = \begin{cases} \frac{\pi p \left[1 + \frac{p(1-\pi)^2}{1-\pi p}\right]}{e^{\alpha^* \ell} - 1} & \text{if } \alpha^* \ell > -\ln\left(\underline{\rho}\right); \\ \frac{1}{e^{\alpha^* \ell} - 1} \cdot \frac{(1-\pi)p}{p+(1-p)e^{\alpha^* \ell}} + \pi p e^{-\alpha^* \ell} \left[\frac{\pi}{1 - e^{-\alpha^* \ell}} + (1 - \pi)\, p\right] & \text{otherwise;} \end{cases} \tag{38}$$

The function h in (38) is continuous and strictly increasing in bureaucratic inefficiency $e^{-\alpha^*}$ with a kink at $e^{-\alpha^* \ell} = \underline{\rho}$. Also notice that a sufficient condition to guarantee that r is

strictly increasing in $e^{-\alpha^*}$ is that p is sufficiently small so that

$$p < \frac{\pi}{1+\pi}. \tag{39}$$

To see that (39) is a sufficient condition to guarantee that r is non decreasing in bureaucratic inefficiency $e^{-\alpha^*}$, notice that

$$\frac{\partial r}{\partial e^{-\alpha^*}} \simeq \frac{\partial r}{\partial e^{-\alpha^* \ell}} = \begin{cases} 0 & \text{if } e^{-\alpha^* \ell} < \underline{\rho}; \\ \frac{(1-\pi)p}{\left[p+(1-p)e^{\alpha^* \ell}\right]^2} \cdot e^{2\alpha^* \ell}(1-p) - (1-\pi)\pi p^2 > & \\ (1-\pi)\pi p\left[\pi(1-p) - p\right] & \text{otherwise;} \end{cases}$$

where $\simeq$ denotes same sign and the second inequality uses the fact that in the second interval we have that $e^{-\alpha^* \ell} \in [\frac{\pi(1-p)}{1-\pi p}, 1]$. Condition (38) establishes a positively sloped relation between the stock of uncompleted reforms h and the degree of inefficiency of bureaucracy $e^{-\alpha^*}$. When bureaucracy is more inefficient, the completion rate of reform is lower, which pushes down the denominator of (38), and pushes up the numerator of (38). Both effects tend to increase the number of uncompleted reforms in the system h. This corresponds to the *Tacitus* line of the re-election model. Exactly as in Figure 2, a steady state equilibrium is characterized by an intersection between the power of bureaucracy line in (8) and the Tacitus line, which is now determined by (38) rather than by (12).

Weberian and Kafkian steady states A Weberian steady state requires that

$$e^{-\overline{\alpha}\ell} < \underline{\rho} \equiv \frac{\pi(1-p)}{1-\pi p} \tag{40}$$

$$h^{WR} = \frac{\pi p\left[1 + \frac{p(1-\pi)^2}{1-\pi p}\right]}{e^{\overline{\alpha} l} - 1} \leq \overline{h}^K \tag{41}$$

Condition (40) implies that incompetent politicians in their first mandate do not want to start a reform, which uses (6) and it is identical to (15). Condition (41) is obtained by using (38) and states that in a situation where only competent politicians start good reforms, the steady state stock of uncompleted reforms is lower than the critical Kafkian threshold that leads to a collapse in bureaucratic efficiency. Condition (41) is different from (16) because of the different behaviour of reelected politicians, who have no incentives to posture and so decide to start a reform only if it is good. Conditions (40) and (41) hold when $\overline{\alpha}$, ℓ, and $\overline{h}^K$ are sufficiently high.

A Kafkian steady state requires that

$$e^{-\underline{\alpha}\ell} > \underline{\rho} \equiv \frac{\pi(1-p)}{1-\pi p} \tag{42}$$

$$h^{KR} = \frac{1}{e^{\underline{\alpha}\ell}-1} \cdot \frac{(1-\pi)\,p}{p+(1-p)e^{\underline{\alpha}\ell}} + \pi p e^{-\underline{\alpha}\ell}\left[\frac{\pi}{1-e^{-\underline{\alpha}\ell}} + (1-\pi)\,p\right] > \overline{h}^{K} \tag{43}$$

Condition (42) implies that incompetent politicians in their first mandate find optimal to start a reform, which again uses (6) and is identical to (17). Condition (43) uses (38) to state that in a situation where both competent and incompetent politicians start a reform in their first mandate, the steady state stock of uncompleted reforms is greater than the critical Kafkian threshold that leads to a collapse in bureaucratic efficiency. This condition gain differs from (18) just because of the different strategic incentives of reelected politicians, who have no incentives to posture. Conditions (42) and (43) are more likely to hold when $\underline{\alpha}$, ℓ and $\overline{h}^{K}$ are small. We can summarize this discussion as follows:

Proposition 11 (Weberian and Kafkian steady state equilibrium in reelection model)**.** *In the reelection model, a Weberian steady-state with h^{WR} exists if and only if (40) and (41) both hold. A Kafkian steady state exists if and only if both (42) and (43) hold. A Weberian steady state is more likely when $\overline{\alpha}$, ℓ and $\overline{h}^{K}$ are high. A Kafkian steady state requires that $\underline{\alpha}$, ℓ and $\overline{h}^{K}$ are small. Generally the Weberian and the Kafkian equilibrium both exist when there are large differences in the efficiency of bureaucracy in the two regimes, so that $\overline{\alpha}-\underline{\alpha}$ is big enough.*

Figure 2 displays a case where conditions (40)-(41) and (42-43) are satisfied in the version of the model with re-election.

Transitional dynamics We now show how transitory shocks can suffice to make an economy move from a Weberian to a Kafkian steady-state equilibrium. For simplicity, we study under which conditions a temporary reduction in ℓ can lead to a permanent transition to a Kafkian steady state. So we assume that both the condition for a Weberian steady state (40)-(41) and those for a Kafkian steady state (42)-(43) are satisfied. We focus on temporary shocks to the duration of a legislature ℓ, which we think falls in just the t_0 legislature so that the duration of legislature t, ℓ_t evolves as follows:

$$\ell_t = \begin{cases} \ell & \forall t \neq t_0; \\ \ell' < \frac{-\ln(\underline{\rho})}{\overline{\alpha}} < \ell & \text{if } t = t_0 \end{cases}$$

where ℓ is the steady state duration of legislature and $\ell - \ell'$ is the magnitude of the political instability shock in legislature t_0. The logic of the analysis would be similar in response to shocks to either π or p, so to save space we do not study their effects here. Given the

law of motion of r_t in (32), with $\phi_t(\alpha_t)$ given in (30) and $\sigma_t(\alpha_t)$ given in (6), we can express the flow of new reforms at the start of legislature t as a function of: i) the duration of the previous legislature ℓ_{t-1}; ii) the duration of the current legislature ℓ_t; iii) the completion rate of reforms in the previous legislature $\alpha_{t-1} \equiv \alpha(h_{t-1})$; and iv) the completion rate of reforms in the current legislature $\alpha_t \equiv \alpha(h_t)$. The function $r_t = r(\ell_{t-1}, \ell_t, \alpha_{t-1}, \alpha_t)$ can be compactly written as follows:

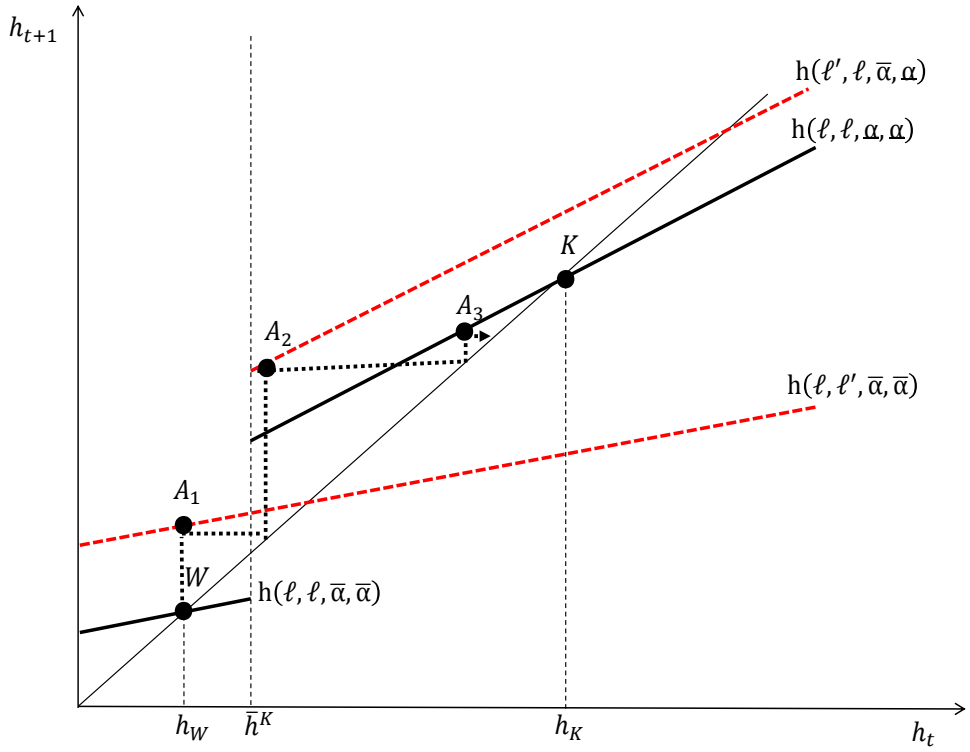
$$r(\ell_{t-1}, \ell_t, \alpha_{t-1}, \alpha_t) = \begin{cases} \pi p \left[1 + \frac{p(1-\pi)^2}{1-\pi p}\right] & \text{if } \alpha_{t-1} = \overline{\alpha} \;\&\; \alpha_t = \overline{\alpha} \\ \frac{(1-\pi)p}{p+(1-p)e^{\underline{\alpha}\ell_t}} + \pi p \frac{(p+\pi-2\pi p)}{1-\pi p} & \text{if } \alpha_{t-1} = \overline{\alpha} \;\&\; \alpha_t = \underline{\alpha} \\ \pi p \left[1 + (1-\pi)\, p \left(1 - e^{-\underline{\alpha}\ell_{t-1}}\right)\right] & \text{if } \alpha_{t-1} = \underline{\alpha} \;\&\; \alpha_t = \overline{\alpha} \\ \frac{(1-\pi)p}{p+(1-p)e^{\underline{\alpha}\ell_t}} + \pi p \left[\pi + (1\text{-}\pi)\, p \left(1 - e^{-\underline{\alpha}\ell_{t-1}}\right)\right] & \text{if } \alpha_{t-1} = \underline{\alpha} \;\&\; \alpha_t = \underline{\alpha} \end{cases} \tag{44}$$

Since the stock of uncompleted reform still evolves as in (9), we can define the function

$$h(h_t, \ell_{t-1}, \ell_t, \alpha_{t-1}, \alpha_t) \equiv e^{-\alpha_t \ell} \left[h_t + r(\ell_{t-1}, \ell_t, \alpha_{t-1}, \alpha_t)\right], \tag{45}$$

which is obtained by replacing r_t in (9) with the function $r(\ell_{t-1}, \ell_t, \alpha_{t-1}, \alpha_t)$ in (44). Figure A1 plots $h(h_t, \ell_{t-1}, \ell_t, \alpha_{t-1}, \alpha_t)$ as a function of h_t only, for four different combinations of ℓ_{t-1}, ℓ_t, α_{t-1}, and α_t. Notice that the derivative of $h(h_t, \ell_{t-1}, \ell_t, \alpha_{t-1}, \alpha_t)$ with respect to h_t is less than one, so that, for given $\ell_{t-1}, \ell_t, \alpha_{t-1}$, and α_t, the function h is flatter than the forty five degree line. We now describe the four cases of Figure A1 starting from the bottom to the top. The first case corresponds to the function $h(h_t, \ell, \ell, \overline{\alpha}, \overline{\alpha})$, which crosses the forty five degree line in point W, by the assumption that (40) and (41) both hold. This characterizes the Weberian steady state before the occurrence of the shock. The second line corresponds to the function $h(h_t, \ell, \ell', \overline{\alpha}, \overline{\alpha})$, which characterizes the behaviour of politicians during the t_0 legislature after the shock: it allows to recover the stock of uncompleted reforms at the start of the $t_0 + 1$ legislature, which corresponds to point A_1 in the figure. The third line corresponds to the function $h(h_t, \ell, \ell, \underline{\alpha}, \underline{\alpha})$, which characterizes a Kafkian steady state. The function $h(h_t, \ell, \ell, \underline{\alpha}, \underline{\alpha})$ crosses the forty five degree line at point K, by the assumption that conditions (42) and (43) both hold. This schedule characterizes the behaviour of politicians starting from the $t_0 + 2$ legislature, so that the stock of uncompleted reforms at the start of the $t_0 + 3$ legislature corresponds to point A_3 in the figure. The fourth line corresponds to the function $h(h_t, \ell', \ell, \overline{\alpha}, \underline{\alpha})$, which characterizes the behaviour of politicians during the $t_0 + 1$ legislature, so it allows to recover the stock of uncompleted reforms at the start of the $t_0 + 2$ legislature, which corresponds to point A_2 in the figure. By using the definition of the function h in (45) and after using the definition of the function r in (44) one can check that $\forall h_t$ we have that $h(h_t, \ell', \ell, \overline{\alpha}, \underline{\alpha}) > h(h_t, \ell, \ell, \underline{\alpha}, \underline{\alpha})$,

Figure A1: Transition to a Kafkian equilibrium due to a temporary reduction of ℓ to ℓ' in legislature t_0



which justifies the Figure. This follows from noticing that

$$r(\ell', \ell, \overline{\alpha}, \underline{\alpha}) - r(\ell, \ell, \underline{\alpha}, \underline{\alpha}) = \pi (1 - \pi) p^2 e^{\underline{\alpha}\ell} \left[1 - \frac{\pi (1 - p)}{1 - \pi p} e^{\underline{\alpha}\ell}\right]$$

which is greater than zero when (42) holds as we are assuming. Figure A1 fully characterizes the transition of an economy, which is initially in a Weberian steady state and then moves to a Kafkian steady state just due to a reduction in the duration of legislature t_0: h_{t_0} is characterized by point W, h_{t_0+1} by point A_1, h_{t_0+2} by point A_2, h_{t_0+3} by point A_3 and then h_t converges asymptotically to point K along the $h(h_t, \ell, \ell, \underline{\alpha}, \underline{\alpha})$ line. This transition occurs if, at the start of legislature $t_0 + 2$, bureaucratic efficiency has collapsed. So to converge to a Kafkian steady state it has to be the case that the two following conditions both hold:

$$h_{t_0+1} > \overline{h}^K \tag{46}$$

$$h_{t_0+2} > \overline{h}^K \tag{47}$$

In practice the fact that $h(h_t, \ell', \ell, \overline{\alpha}, \underline{\alpha}) > h(h_t, \ell, \ell, \underline{\alpha}, \underline{\alpha})$ and that the system converges to a Kafkian equilibrium when moving along the schedule $h(h_t, \ell, \ell, \underline{\alpha}, \underline{\alpha})$ implies that condition (47) is redundant (see Figure A1). This implies that the system will always converge to a Kafkian equilibrium whenever (46) holds. In practice we know that h_{t_0+1} is equal to

$$h_{t_0+1} = h(h_W, \ell, \ell', \overline{\alpha}, \overline{\alpha}) = e^{-\overline{\alpha}\ell'}\left[h_W + \pi p + (1-\pi)\frac{p}{p+(1-p)e^{\overline{\alpha}\ell'}}\right] \tag{48}$$

where we used (34) and the assumption that $\overline{\alpha}\ell' < -\ln\left(\underline{\rho}\right)$. We can summarize this discussion by concluding that a reduction in the duration of legislature t_0 from ℓ to ℓ' leads to a Kafkian steady-state equilibrium whenever we have that

$$\overline{\alpha}\ell' < -\ln\left(\underline{\rho}\right) \tag{49}$$

and

$$e^{-\overline{\alpha}\ell'}\left[h_W + \pi p + (1-\pi)\frac{p}{p+(1-p)e^{\overline{\alpha}\ell'}}\right] > \overline{h}^K \tag{50}$$

both hold. Generally (49) and (50) are more likely to both hold when ℓ', $\overline{h}^K$, and π are small, which leads to the following proposition:

Proposition 12 (From Weber to Kafka in the reelection model)**.** *Assume that, in the reelection model, both the condition for a Weberian steady state (40)-(41) and those for a Kafkian steady state (42)-(43) are satisfied. Then a transitory reduction in the duration of a legislature from ℓ to $\ell' < \ell$ leads the economy to a Kafkian steady-state equilibrium if conditions (49) and (50) both hold, which is more likely to happen when ℓ', $\overline{h}^K$, and π are small.*

For completeness we can also calculate h_{t_0+2} which is equal to

$$h_{t_0+2} = e^{-\underline{\alpha}\ell}\left[h_{t_0+1} + \frac{(1-\pi)\,p}{p+(1-p)e^{\underline{\alpha}\ell}} + \pi p\frac{(p+\pi-2\pi p)}{1-\pi p}\right]$$

which, after using (48), can be written as

$$h_{t_0+2} = e^{-\underline{\alpha}\ell}\left[e^{-\overline{\alpha}\ell'}\left(h_W + \pi p\right) + \frac{(1\text{-}\pi)\,p}{pe^{\overline{\alpha}\ell'} + (1\text{-}p)e^{2\overline{\alpha}\ell'}} + \frac{(1\text{-}\pi)\,p}{p+(1\text{-}p)e^{\underline{\alpha}\ell}} + \pi p\frac{(p+\pi\text{-}2\pi p)}{1\text{-}\pi p}\right] \tag{51}$$

For $\forall t \geq t_0 + 3$ we have that h_t evolves as follows:

$$h_t = e^{-\underline{\alpha}\ell}\left\{h_{t-1} + \frac{(1-\pi)\,p}{p+(1-p)e^{\underline{\alpha}\ell}} + \pi p\left[\pi + (1-\pi)\,p\left(1-e^{-\underline{\alpha}\ell}\right)\right]\right\}. \tag{52}$$

B Omitted Proofs

In this section we report all omitted proofs of claims or Propositions discussed in the main text.

B.1 Equilibrium uniqueness and cost of starting bad reforms

Assume that there is a cost $\gamma_\theta > 0$ of starting a bad reform and that the cost varies with the politician's type θ with $\gamma_0 < \gamma_1$. In this version of the career-concern model we can prove that the equilibrium discussed in the main text corresponds to the unique divine equilibrium of the model when γ_θ is arbitrarily small:

Proposition 13. *When the cost of starting a bad reform γ_θ converges to zero ($\gamma_\theta \to 0$) for all $\theta \in \{0,1\}$, the unique Divine equilibrium converges to the equilibrium characterized in Proposition 1.*

Proof. We begin by establishing two properties of our model that will be useful in proving uniqueness. Notice that $\rho^g_{it} = 1$ as the information set for event g is a singleton. Thus, the expected payoff of politician it when starting a reform is given by:

$$E_t\left[u_{it}\left(\theta_{it},\omega_{it}\right) \mid 1\right] = \phi\left\{e^{-\alpha_t \ell}\rho^y_{it} + \left(1-e^{-\alpha_t\ell}\right)\left[\omega_{it} + \left(1-\omega_{it}\right)\rho^b_{it}\right]\right\} - \left(1-\omega_{it}\right)\gamma_{\theta_{it}}.$$

Fact 1. *For any $\left(\rho^y_{it}, \rho^b_{it}\right)$,*

$$E_t\left[u_{it}\left(1,1\right) \mid 1\right] > E_t\left[u_{it}\left(0,0\right) \mid 1\right] > E_t\left[u_{it}\left(1,0\right) \mid 1\right].$$

The expected payoff of not starting a reform is instead given by

$$E_t\left[u_{it}\left(\theta_{it},\omega_{it}\right) \mid 0\right] = \phi\rho^n_{it}.$$

Fact 2. *The expected payoff of not starting a reform does not depend on either the politician's competence or the quality of her reform.*

The following lemma greatly simplifies the analysis of our model by characterizing off-equilibrium beliefs in any divine equilibrium.

Lemma 1. *In any divine equilibrium,*

1. *if n is off-equilibrium, then $\rho^n_{it} = 1$;*
2. *if y is off-equilibrium, then $\rho^y_{it} = 1$;*
3. *if b is off-equilibrium, then $\rho^b_{it} = 0$.*

Proof of Lemma 1. Let (σ^*, ρ^*) be a sequential equilibrium and suppose that there exist an event $e \in \{n, y, g, b\}$ occurring with probability 0 if politicians follow σ^*. Let $\Sigma^e(\theta, \omega)$ be the set of strategies, for a politician with competence θ and quality of reform ω, which lead to e occurring with strictly positive probability. Also, let Ξ^e be the set of beliefs $\rho = (\rho^n_{it}, \rho^y_{it}, \rho^g_{it}, \rho^b_{it})$ consistent with σ^*. For any pair (θ, ω), we can define

$$\bar{\Xi}^e_{\theta\omega} \equiv \{\rho \in \Xi^e : E_t[u_{it}(\theta, \omega) \mid \sigma] \geq E_t[u_{it}(\theta, \omega) \mid \sigma^*] \text{ for some } \sigma \in \Sigma^e(\theta, \omega)\}$$
$$\Xi^e_{\theta\omega} \equiv \{\rho \in \Xi^e : E_t[u_{it}(\theta, \omega) \mid \sigma] > E_t[u_{it}(\theta, \omega) \mid \sigma^*] \text{ for some } \sigma \in \Sigma^e(\theta, \omega)\}.$$

In our context divinity requires that, if for some $\theta \in \{0, 1\}$ and all $\omega \in \{0, 1\}$ there exists $(\tilde{\theta}, \tilde{\omega}) \in \{0, 1\}^2$ such that

$$\rho \in \bar{\Xi}^e_{\theta\omega} \Rightarrow \rho \in \Xi^e_{\tilde{\theta}\tilde{\omega}},$$

then the public beliefs ρ^* upon observing event e give probability 0 to type θ.

For event b Suppose event b occurs with probability 0. Notice that event b requires the politician to have a bad reform. Then it must be that all politicians with a bad reform—whether competent or incompetent—never start their reforms. We want to show that $\rho^b_{it} = 0$ in all divine equilibria. From Facts 1 and 2, for any belief ρ_{it} for which competent politicians with a bad reform would (weakly) prefer to deviate to starting a reform, incompetent politicians would strictly prefer to do so. Thus, public beliefs upon observing b should give probability 0 to competent politicians.

For event n Suppose event n occurs with probability 0. Then it must be that all politicians always start their reforms. We want to show that $\rho^n_{it} = 1$ in all divine equilibria. From Facts 1 and 2, for any belief ρ_{it} for which incompetent politicians would (weakly) prefer to deviate to not starting a reform, competent politicians with a bad reform would strictly prefer to do so. Thus, public beliefs upon observing n should give probability 0 to incompetent politicians.

For event y Suppose event y occurs with probability 0. Then it must be that all politicians never start their reforms (notice that event b is off-equilibrium and therefore, as proven above, $\rho^b_{it} = 0$). We want to show that $\rho^y_{it} = 1$ in all divine equilibria. From Facts 1 and 2, for any belief ρ_{it} for which incompetent politicians would (weakly) prefer to deviate to starting a reform, competent politicians with a good reform would strictly prefer to do so. Thus, public beliefs upon observing y should give probability 0 to incompetent politicians. □

Facts 1 and 2 together with Lemma 1 immediately implies the following two Lemmas:

Lemma 2. *In any divine equilibrium, whenever competent politicians (weakly) prefer to start bad reforms,*

1. *competent politicians strictly prefer to start good reforms;*

2. *incompetent politicians strictly prefer to start bad reforms.*

Lemma 3. *In any divine equilibrium, whenever incompetent politicians prefer to start bad reforms, competent politicians strictly prefer to start good reforms.*

We can now prove that:

Lemma 4. *In any divine equilibrium, competent politicians do not start bad reforms.*

Proof of Lemma 4. From Lemma 2, in any divine equilibrium, either (i) competent politicians start all good reforms and incompetent politicians start all bad reforms ($\sigma_{it}(1,1) = \sigma_{it}(0,0) = 1$) or (ii) competent politicians do not start bad reforms ($\sigma_{it}(1,0) = 0$). We now show that there is no equilibrium featuring property (i). To see this, suppose that such an equilibrium exists. Notice that the expected payoff of starting a reform for an incompetent politician is a (strictly) convex combination of $\phi\rho_t^y - \gamma_0$ and $\phi\rho_t^b - \gamma_0$. By Bayes' rule

$$\begin{aligned}
\rho_{it}^y &= \frac{\pi\left[p + (1-p)\,\sigma_{it}(1,0)\right]}{\pi\left[p + (1-p)\,\sigma_{it}(1,0)\right] + (1-\pi)} \leq \pi; \\
\rho_{it}^b &= \frac{\pi(1-p)\,\sigma_{it}(1,0)}{\pi(1-p)\,\sigma_{it}(1,0) + (1-\pi)} < \rho_t^y; \\
\rho_{it}^n &= 1 > \pi;
\end{aligned}$$

which implies that incompetent politicians would strictly prefer not to start any reform:

$$E_t\left[u_{it}(0,\omega_{it}) \mid 1\right] < \phi\pi - \gamma_0 < \phi = E_t\left[u_{it}(0,\omega_{it}) \mid 0\right].$$

□

Therefore, all equilibria feature competent politicians not starting bad reforms and either incompetent politicians do not start bad reforms or they start them with probability strictly between zero and one. We now consider the two cases separately

No bad reform is ever started Suppose that no bad reform is ever started. Then, by Bayes' rule and Lemma 1, $\rho_{it}^n \leq \pi$, $\rho_{it}^b = 0$, and $\rho_{it}^y = 1$. Which implies that competent politicians strictly prefer to start their reforms: $\sigma_{it}^*(1,1) = 1$. Furthermore, a politician with a bad

reform would prefer not to start it only if $\phi e^{-\alpha_t \ell} - \gamma_0 \leq \phi \rho_{it}^n$.[26] It is straightforward to see that when γ_0 goes to zero and with $\sigma_{it}^* (1,1) = 1$, this condition converges to $\alpha_t \ell > -\ln\left(\underline{\rho}\right)$.

Some bad reforms are started Now consider the case where incompetent politicians start (bad) reforms with strictly positive probability. In any such equilibrium, $\rho_t^b = 0$ as—by Lemma 4—only bad politicians start bad reforms. Also, by Lemma 3, competent politicians start good reforms with probability 1. Since we ruled out equilibria in which both competent politicians start all good reforms and incompetent politicians start all bad reforms (property (i) above), it must be that bad reforms are started with probability strictly between 0 and 1. The following indifference condition must then hold:

$$e^{-\alpha_t \ell} \rho_t^y - \gamma_0 = \rho_t^n$$
$$e^{-\alpha_t \ell} \frac{\pi p}{\pi p + (1-\pi)\, \sigma_{it}^* (0,0)} - \gamma_0 = \frac{\pi (1-p)}{\pi (1-p) + (1-\pi)\left(1 - \sigma_{it}^* (0,0)\right)}$$

where the last passage follows from Bayes' rule. It is straighforward to see that the equation above implies that

$$\lim_{\gamma_0 \to 0} \sigma_{it}^* (0,0) = \sigma (\alpha_t).$$

□

B.2 Proof of Proposition 1

Proof. Existence. Let $\alpha_t \ell > -\ln\left(\underline{\rho}\right)$ and let politicians not start their bad reforms. Notice that event b is off the equilibrium path and therefore $\rho_{it}^b = 0$ is a consistent belief. Furthermore, by Bayes' rule, $\rho_{it}^y = 1$, $\rho_{it}^n = \underline{\rho}$, and therefore

$$E_t [u_{it} (1,1) \mid 1] = \phi > E_t [u_{it} (\theta_{it}, \omega_{it}) \mid 0] = \phi \underline{\rho} > \phi e^{-\alpha_t \ell} = E_t [u_{it} (\theta_{it}, 0) \mid 1]$$

where the last inequality holds because $\alpha_t \ell > -\ln\left(\underline{\rho}\right)$. This proves existence in this case.

Let $\alpha_t \ell \leq -\ln\left(\underline{\rho}\right)$ and let incompetent politicians start their reforms with probability

$$p - \frac{p (1-p)\left(1 - e^{-\alpha_t \ell}\right)}{(1-\pi)\left[1 - p\left(1 - e^{-\alpha_t \ell}\right)\right]}.$$

[26] Recall from Lemma 1 that if the public anticipates bad reforms never to be started, then $\rho_t^b = 0$. Thus

$$E_t [u_{it} (\theta_{it}, \omega_{it}) \mid 1] = e^{-\alpha_t \ell} \phi \rho_t^y + \left(1 - e^{-\alpha_t \ell}\right) \phi \rho_t^b - \gamma_0 = \phi e^{-\alpha_t \ell} - \gamma_0.$$

Using Bayes rule to calculate ρ_{it}, it is easy to notice that (i) incompetent politicians and competent politicians with bad reforms are indifferent between starting and not starting their reforms, and (ii) $\rho_{it}^b < 1$. Since we noted that

$$E_t\left[u_{it}\left(1,1\right) \mid 1\right] > E_t\left[u_{it}\left(0,0\right) \mid 1\right] = E_t\left[u_{it}\left(1,0\right) \mid 1\right]$$

whenever $\rho_{it}^b < 1$, then competent politicians strictly prefer to start good reforms. This proves existence for this case.

Uniqueness. We begin by showing that there is no equilibrium in which incompetent politicians start their reforms with probability 1. We proceed by contradiction. Suppose that in equilibrium incompetent politicians start their reforms with probability 1. By Bayes' rule, $\rho_{it}^y < 1$, $\rho_{it}^b = 0$, and $\rho_{it}^n = 1$. Therefore,

$$E_t\left[u_{it}\left(0,0\right) \mid 1\right] = \phi e^{-\alpha_t \ell} \rho_{it}^y < \phi = E_t\left[u_{it}\left(0,0\right) \mid 0\right]$$

contradicting the hypothesis that incompetent politicians prefer to start their reform. Therefore, in all equilibria, incompetent politicians start them with probability strictly less than 1.

We now show that an equilibrium in which incompetent politicians do not start reforms exists only if $\alpha_t \ell \geq -\ln\left(\underline{\rho}\right)$. To see this, suppose that incompetent politicians do not start their reforms. Then, by Bayes' rule, $\rho_{it}^n = \underline{\rho}$ and $\rho_{it}^y = 1$. Therefore, a politician with a bad reform would prefer not to start it only if

$$E_t\left[u_{it}\left(0,0\right) \mid 1\right] = \phi\left[e^{-\alpha_t \ell} + \left(1 - e^{-\alpha_t \ell}\right)\rho_{it}^b\right] < \phi\underline{\rho} = E_t\left[u_{it}\left(0,0\right) \mid 0\right]$$

with $\rho_{it}^b \in [0,1]$. Thus, such an equilibrium exists only if $\alpha_t \ell \geq -\ln\left(\underline{\rho}\right)$. Otherwise incompetent politicians start (bad) reforms probability strictly between 0 and 1.

Finally, we show that if in an equilibrium incompetent politicians start their reforms with probability strictly between 0 and 1,

1. they start it with probability

$$\sigma^*\left(\alpha_t\right) \equiv p - \frac{p\left(1-p\right)\left(1-e^{-\alpha_t \ell}\right)}{\left(1-\pi\right)\left[1-p\left(1-e^{-\alpha_t \ell}\right)\right]};$$

2. $\alpha_t \ell < -\ln\left(\underline{\rho}\right)$.

To see this, notice that if incompetent politicians start their reform with probability strictly

between 0 and 1, then $\rho_t^b = 0$ and the following indifference condition must hold:

$$\begin{aligned} e^{-\alpha_t \ell} \rho_t^y &= \rho_t^n \\ e^{-\alpha_t \ell} \frac{\pi p}{\pi p + (1-\pi)\,\sigma^*(\alpha_t)} &= \frac{\pi(1-p)}{\pi(1-p) + (1-\pi)\,(1-\sigma^*(\alpha_t))} \\ \sigma^*(\alpha_t) &= p - \frac{p(1-p)\left(1-e^{-\alpha_t \ell}\right)}{(1-\pi)\left[1-p\left(1-e^{-\alpha_t \ell}\right)\right]} \end{aligned}$$

where the first passage follows from Bayes' rule. Notice that $\sigma^*(\alpha_t)$ is increasing in p and decreasing in π and $\alpha_t \ell$. Furthermore, evaluating $\sigma^*(\alpha_t)$ at $e^{-\alpha_t \ell} = \underline{\rho}$ gives $\sigma^*(\alpha_t) = 0$, which shows that the equilibrium is unique. □

B.3 Proof of Proposition 5

To prove the proposition we proceed in three steps. In the steady state equilibrium of our model quantities at the beginning of each legislature are constant over time, but the aggregate capital stock exhibits some deterministic dynamics within each legislature. We first prove that, in steady state, $\forall \tau$ the aggregate capital stock is given by $\tilde{k}_\tau$ in (58) below. Then we characterize the value of the capital stock at the beginning of a legislature in steady state, which we prove is equal to k^* in (63) below. We finally prove that the average-over time capital stock is given by $\overline{k}^*$ in (19) of Proposition 5, concluding the proof.

At any point in time τ in steady state capital is given by $\tilde{k}_\tau$ in (58) For any $\tau \in [\tau_t, \tau_t + \ell)$ we denote by $\tilde{g}_\tau$ the stock of good uncompleted undepreciated reforms inherited from previous legislatures at time τ. We also denote 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 undepreciated 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 at Poisson arrival rate ν. This implies that for any $\tau \in [\tau_t, \tau_t + \ell)$ the stock of good uncompleted undepreciated old reforms is equal to

$$\tilde{g}_\tau = e^{-(\alpha_t + \nu)(\tau - \tau_t)} g_t \tag{53}$$

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

$$\tilde{n}_\tau = e^{-\alpha_t (\tau - \tau_t)} \pi p, \tag{54}$$

which are all undepreciated. Therefore,

$$g_t = e^{-(\alpha_{t-1}+\nu)\ell} g_{t-1} + e^{-\alpha_{t-1}\ell} \pi p. \tag{55}$$

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

$$\frac{d\tilde{k}_\tau}{d\tau} = q\alpha_t \left(\tilde{g}_\tau + \tilde{n}_\tau\right) - \nu \tilde{k}_\tau. \tag{56}$$

We can now substitute (54) and (53) into (56) to obtain that $\forall \tau \in [\tau_t, \tau_t + \ell)$

$$\frac{d\tilde{k}_\tau}{d\tau} = q\alpha_t e^{-\alpha_t(\tau-\tau_t)} \left[e^{-\nu(\tau-\tau_t)} g_t + \pi p\right] - \nu \tilde{k}_\tau \tag{57}$$

Notice that (55) and (57) represent a recursive system. Given g_t and α_t, we now use (57) to prove that

$$\tilde{k}_\tau = \tilde{k}_{\tau_t} e^{-\nu(\tau-\tau_t)} + \frac{q\alpha_t \pi p}{(\nu - \alpha_t)} \left[e^{-\alpha_t(\tau-\tau_t)} - e^{-\nu(\tau-\tau_t)}\right] + q g_t \left[e^{-\nu(\tau-\tau_t)} - e^{-(\alpha_t+\nu)(\tau-\tau_t)}\right] \tag{58}$$

where $\tilde{k}_{\tau_t}$ denotes the capital stock at the beginning of legislature t. To prove that (58) holds, we solve for $\tilde{k}_\tau$ in (57) by guessing and then verifying that for $\forall \tau \in [\tau_t, \tau_t + \ell)$

$$\tilde{k}_\tau = a e^{-\nu(\tau-\tau_t)} + b e^{-\alpha_t(\tau-\tau_t)} + c e^{-(\alpha_t+\nu)(\tau-\tau_t)} \tag{59}$$

Clearly we also have the initial condition that says that

$$a + b + c = \tilde{k}_{\tau_t} \tag{60}$$

Under the guess in (59) we have that (57) reads as follows

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

which is equivalent to

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

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 (60), 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 (59) 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 allows to conclude that (58) holds true.

In steady state, capital at the beginning of a legislature is given by k^* in (63) By evaluating (58) 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 :

$$k_{t+1} = e^{-\nu\ell} k_t + \frac{q\alpha_t \pi p}{(\nu - \alpha_t)} \left[e^{-\alpha_t \ell} - e^{-\nu\ell} \right] + qg_t \left[e^{-\nu\ell} - e^{-(\alpha_t + \nu)\ell} \right], \tag{61}$$

Now we can use (55) to conclude that in steady state g_t is equal to

$$g^* = \frac{e^{-\alpha^* \ell} \pi p}{1 - e^{-(\alpha^* + \nu)\ell}} \tag{62}$$

where α^* denotes the steady state completion rate of reforms. We can now use the expression for g^* in (62) to replace g_t in (61). By using (61) and after imposing that the steady state capital stock at the beginning of a legislature should satisfy $k_t = k_{t-1} = k^*$ we obtain that

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

which immediately implies that

$$k^* = \frac{q\pi p}{1 - e^{-\nu\ell}} \left[\frac{\alpha^* \left(e^{-\alpha^* \ell} - e^{-\nu\ell} \right)}{\nu - \alpha^*} + \frac{1 - e^{-\alpha^* \ell}}{e^{(\alpha^* + \nu)\ell} - 1} \right]. \tag{63}$$

The average-over time capital stock is given by $\overline{k}^*$ in (19) 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

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

where in the first row we used the expression for $\tilde{k}_\tau$ in (58) and in the second we used (63) to replace k^* and (62) to replace g^*. After manipulating the above expression we obtain

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

which can be written as follows:

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

After some manipulation we obtain

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

which can be further simplified to obtain

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

which can also be written as follows

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

After simplifying we obtain

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

which proves (19) and concludes the proof of Proposition 5.

B.4 Proof of Proposition 10

A market equilibrium is $\pi \in [0,1]$ such that

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

and U_1 and U_0 are calculated from Proposition 1.

We first show that $L\left(U_1/U_0\right)$ is decreasing in π. This guarantees a unique solution to $\pi = L\left(U_1/U_0\right)$. Then we show that an increase in α_t shifts the curve $L\left(U_1/U_0\right)$ up for all π. This cooncludes the proof.

First, notice that U_1 and U_0 are continuous in π because ρ_t^y, ρ_t^n, and $\sigma\left(\alpha_t\right)$ are continuous in π. Then, by Proposition 1,

$$\begin{aligned}\frac{U_1}{U_0} &= \begin{cases} \frac{p}{\underline{\rho}} + (1-p) & \text{if } \alpha_t\ell > -\ln\left(\underline{\rho}\right); \\ \frac{p\left[1-\left(1-\rho_t^y\right)e^{-\alpha_t\ell}\right]+(1-p)\rho_t^n}{\sigma(\alpha_t)\rho_t^y e^{-\alpha_t\ell}+(1-\sigma(\alpha_t))\rho_t^n} & \text{otherwise.}\end{cases} \\ &= \begin{cases} \frac{p}{\underline{\rho}} + (1-p) & \text{if } \alpha_t\ell > -\ln\left(\underline{\rho}\right); \\ 1+\frac{p\left(1-e^{-\alpha_t\ell}\right)}{\rho_t^n} & \text{otherwise.}\end{cases}\end{aligned}$$

where the last passage follows from incompetent politicians being indifferent between starting and not starting their reforms: $\rho_t^y e^{-\alpha_t\ell} = \rho_t^n$. As $\underline{\rho}$ is increasing in π, it is easy to see that in the case when $\alpha_t\ell > -\ln\left(\underline{\rho}\right)$, U_1/U_0 is decreasing in π. For the second case,

U_1/U_0 is decreasing in π if and only if ρ_t^n is increasing in π. Recall that

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

Since $\sigma(\alpha_t)$ is decreasing in π (and so is $\frac{1-\pi}{\pi}$), then ρ_t^n is increasing in π. Using the assumption that L is monotonically increasing, then we have proven that $L(U_1/U_0)$ is decreasing in π.

We now turn to the question of whether an increase in α_t shifts the curve $L(U_1/U_0)$ up for any $\pi \in [0,1]$. Notice that U_1 and U_0 are continuous in α_t because ρ_t^y, ρ_t^n, and $\sigma(\alpha_t)$ are continuous in α_t. It is therefore sufficient to show that, for any $\pi \in [0,1]$, U_1/U_0 is increasing in α_t.

Case 1: $\alpha_t \ell > -\ln\left(\underline{\rho}\right)$**.** It is easy to see that $dU_1/d\alpha_t > 0$ and $dU_0/d\alpha_t = 0$. Therefore $d(U_1/U_0)/d\alpha_t > 0$.

Case 2: $\alpha_t \ell < -\ln\left(\underline{\rho}\right)$**.** By Proposition 1

$$U_1 = \phi p\left(1 - e^{-\alpha_t \ell}\right) + \phi e^{-\alpha_t \ell}\rho_t^y = \phi p - \phi\left(p - \rho_t^y\right)e^{-\alpha_t \ell} \tag{64}$$

and

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

Recall from Proposition 1 that ρ_t^y is decreasing in $\sigma(\alpha_t)$, while $\sigma(\alpha_t)$ is decreasing in α_t. Therefore $dU_1/d\alpha_t > 0$. Furthermore, $U_0 = \phi\rho_t^n$ and

$$\frac{dU_0}{d\alpha_t} = \phi\frac{d\rho_t^n}{d\sigma(\alpha_t)} \cdot \frac{d\sigma(\alpha_t)}{d\alpha_t}$$

Recall from Proposition 1 that ρ_t^n is increasing in $\sigma(\alpha_t)$, while $\sigma(\alpha_t)$ is decreasing in α_t. Therefore $dU_0/d\alpha_t < 0$. We can conclude that $d(U_1/U_0)/d\alpha_t > 0$.

C Further description of the Italian data

The Italian Parliament is elected for a five year term and is organized in two chambers – a Senate and a Lower Chamber. The first has 315 seats the second 630. Because it is a perfect bicameral system, governments need to gain a vote of confidence in both Chambers. This entails at least 158 seats in the Senate and 315 in the Lower Chamber. Because the Senate has fewer seats, the number of senators in excess of the quorum for a majority defines the strength of the coalition supporting the government in a given legislature. As Table A1

shows, out of the seven legislatures covered in our sample, three ended before the term. Interestingly, these legislatures are precisely the ones where the number of seats in excess of the quorum in the Senate was the lowest.

Table A1: Features of Italian legislatures

Legislature				*Senate*			*Lower Chamber*		
Number	Days	Completed	Coalition	% of Seats Coalition	% of Seats Majoritarian party	Number of Senators slack	% of seats Coalition	% of seats Majoritarian party	Number of MPs slack
X	1.757	Y	Center	0.58	0.40	24	0.56	0.37	51
XI	722	N	Center	0.54	0.34	12	0.54	0.33	27
XII	755	N	Center right	0.49	0.19	-3	0.58	0.18	36
XIII	1.847	Y	Center left	0.54	0.32	11	0.51	0.27	7
XIV	1.794	Y	Center right	0.56	0.26	28	0.58	0.28	53
XV	732	N	Center left	0.50	0.32	1	0.55	0.35	34
XVI	1.781	Y	Center right	0.55	0.46	16	0.55	0.44	29

Features of the 7 legislatures covered in our sample, and data on the majority in the Senate and the Lower Chamber. Length is the number of days of legislature duration; completed is a dummy = 1 is the legislature is completed and 0 if it ends prematurely. Share of seats of the coalition is the share of seats.

For instance, the XII and XV legislatures both ended before the term: in the first the coalition supporting the government at the beginning of the legislature was short of three senators, in the second it could only count on 1 senator in excess of the quorum, injecting a clear element of fragility in the coalition. The XI legislature is the third that ended before the term. In this case the government could count on a margin of 12 senators - a number similar to that in XIII legislature which ended regularly; the difference is that the XI legislature started a few months after the discovery of the largest judicial investigation into political corruption in Italy known as "Mani Pulite" (Clean Hands). It started in February 1992, two months before the elections; one first consequence was lower consensus towards the previous majority, which appeared since the very beginning of the investigation to be heavily involved in the scandal. Few months after the elections it became clear, as the investigation expanded, that a large part of the political system was involved, delegitimizing the new parliament. This lead first to a technocratic government and then to the end of the legislature and new elections. The premature end of this legislature too was easily predicted.

Strategic timing Gratton et al (2017) show that if there is uncertainty about when a reform opportunity arises, incompetent politicians can strategically decide to postpone the initiation of their reforms. Anticipating that the early presentation of bills of dubious quality increases the probability of this being discovered, they could procrastinate

Table A2: Additional descriptive statistics

Variable	Mean	Median	SD
Low quality politician : fixed effects	.515	1	.500
Complete legislature	.497	0	.445
Complete legislature	.272	0	.500
$\times$ Low quality politician			
Age	51.59	51	9.97
Male	.885	1	.318
Married	.573	1	.495
Life senator	.009	0	.095
Number of previous terms	1.25	1	1.77
President or deputy in committee	.131	0	.338
Government member	.061	0	.239
President /mayor in local government	.140	0	.347
House indicator	.659	1	.474

such presentation, particularly during complete legislatures where there is greater scope for strategic timing. If so, we should observe that in complete legislatures incompetent politicians reveal a lower hazard rate than high quality MPs in presenting bills. In practice, the scope for strategic timing is limited because too much delay itself could reveal the low quality of the politician. Table A3 below shows the results from estimating a Cox proportional hazard model for the hazard rate of presenting a bill at day n since the start of the legislature on the quality of politicians and its interaction with whether the legislature is complete. When the quality of politicians is inferred using the fixed-effect measure, we find no evidence that low quality politicians time their bills strategically. When it is measured using mean residuals, there is some evidence that low quality politicians strategically delay their bills in complete legislatures.

Table A3: Timing the legislature when presenting a bill

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

Results of estimating a Cox proportional hazard model for the hazard rate of presenting a bill at day n since the start of the legislature. All regressions include the controls specified in Table 3. Robust standard errors are clustered at the MP level. p-values in parenthesis: *** significant$\leq$ 1%; ** significant$\leq$ 5% ; * significant$\leq$10%.