From Weber to Kafka: Political Instability and the Overproduction of Laws

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Abstract

When bureaucratic institutions are inefficient, the effects of laws are hard to assess and passing laws may help politicians to build a reputation as skillful reformers. In turn, too many, often contradictory laws curtail bureaucratic efficiency. Surges in political instability heighten the incentives to overproduce laws for incompetent politicians and may permanently shift the economy towards a nightmarish Kafkaesque state. Consistently with our model's narrative, we document a drop in legislative quality and bureaucratic efficiency in Italy after a large shock in political instability. Micro-evidence from Italian MPs also supports the key strategic mechanism of our model.

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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

Max Weber (1922) argued that well-functioning bureaucratic institutions guarantee order and maximize efficiency.[1] But this Weberian view is by no means pervasive. In fact, bureaucracy is often associated with Franz Kafka's description of the Habsburg administration at the beginning of the 20th century, characterized by a disorienting and often menacing complexity, ultimately leading to the Empire's stagnation.[2] 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). Bureaucracy, 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 Kafkaesque nightmare? And why is such a transition difficult to reverse?

We argue that the answers to these questions lie, at least in part, in the quantity and quality of legislation issued by politicians and in the interaction between politics and bureaucracy. When bureaucratic institutions are inefficient, laws are implemented slowly and their quality is hard to learn. Thus, politicians, especially the least competent ones, pass laws to acquire a reputation as skillful reformers. In turn, a plethora of often contradictory laws can itself lead to the collapse of a country's bureaucracy. In sum, an inefficient bureaucracy induces more legislation, which in turn makes bureaucracy inefficient, naturally leading to the existence of both Weberian and Kafkaesque steady states.

We model bureaucracy as a technology that implements the reforms or laws 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 out and implement the reforms. The accumulation of laws and regulations (often on the same matter) mechan-

[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, as well as in other short works published posthumously.

[3] Hereafter, the terms "laws" and "reforms" are used interchangeably. The judicial validation of laws or reforms is contained in the broad notion of bureaucracy.

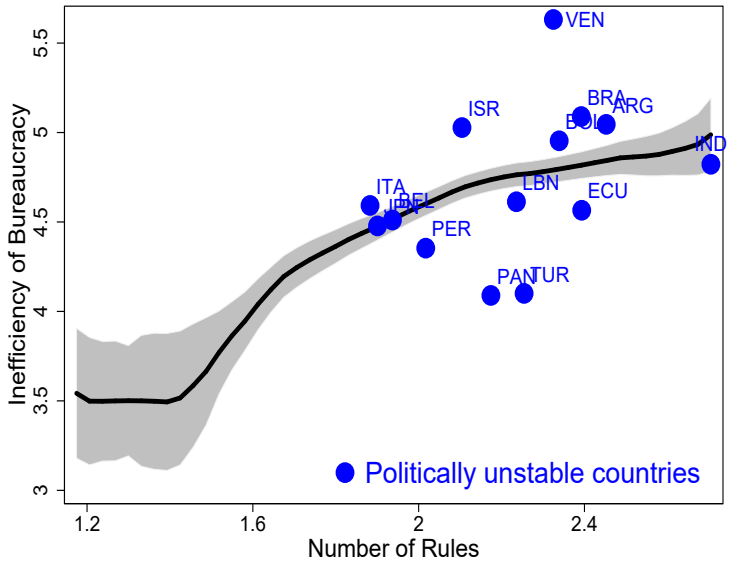
ically *demands* more and more difficult bureaucratic tasks in terms of validation, implementation, interpretation, or enforcement, slowing down the bureaucracy's delivery of services and creating space for biased decisions and abuses. The focus of the model is on a novel *supply-side* mechanism emphasized in our epigraph by Tacitus: where institutions are more inefficient, politicians supply more laws.[4] We assume that all politicians in office can initiate reforms, but only the more competent politicians 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 outstanding, 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.[5] In equilibrium, incompetent politicians face a trade-off: initiating a useless reform that remains outstanding by the end of the term 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 is less important when the expected length of the legislature is shorter or when bureaucracy is more inefficient. Either way incompetent politicians become more active in passing reforms, providing a micro-foundation for our supply-side mechanism.

We set out the conditions for the existence of a Weberian steady state—with efficient bureaucracy and little incentive to propose useless reforms—and a Kafkaesque steady state—with inefficient bureaucracy and frequent useless reforms. 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. These three characteristics of political instability (either in isolation or in combination) imply that even a short burst of substantial political instability can drive the economy to a Kafkaesque steady state. In all three cases, the number of reforms that the bureaucracy is called on to handle suddenly increases. This can dynamically reduce bureaucratic efficiency, which in turn raises the number of reforms through the supply-side mechanism described above, paving the way towards a Kafkaesque future.

[4]Tacitus' conviction was that when bureaucracy is inefficient and corrupt, legislators have stronger incentives to pass laws to fight political enemies, protect vested interests, or appropriate economic rents. As we will see below, our strategic mechanism is slightly different and more likely to be relevant in advanced modern democracies, as shown by our empirical evidence.

[5]The main text focuses on a model in which politicians are motivated by career concerns. Appendix B characterizes a model in which politicians can stay in power for up to two mandates and reelection gives them private benefits.

Figure 1: Number of Rules and Bureaucratic efficiency



Number of rules is the average number of procedures needed to start businesses, register property, get electricity, and 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, from the Cross-National Time-Series (CNTS) data set. Government crises are defined as any rapidly developing situation that threatens to bring the downfall of the present government, excluding revolts aimed explicitly at its overthrow. The dots identify 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 and political parties.

Too many laws reduce welfare because they increase the workload of the bureaucracy. Other mechanisms can reinforce this simple mechanical effect. When we endogenize the supply of bureaucrats and politicians, we uncover a sort of *Gresham's law*, whereby "bad bureaucracy drives out good politicians": by reducing their expected reputational gains from office, an inefficient bureaucracy lowers the supply of competent politicians, and therefore the amount of useful reforms. Moreover, it is low-competence politicians who benefit the most from an inefficient bureaucracy. So the politicians' incentives to reform an inefficient bureaucracy may vanish when the quality of politicians in office falls below some critical threshold. This can forever condemn the country to inefficiency.

The black solid line in Figure 1 suggests that countries with more laws and regulations also tend to have a more inefficient bureaucracy. The Figure also provides some support for the claim that political instability explains some of the international variation in bureaucratic efficiency. The bullet points in the figure identify countries in the top quartile of the distribution of political instability, as measured by the number of 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 "Kafkaesque" country as one in the top quartile of the global joint distribution of number of rules and bureaucratic inefficiency, politically unstable countries are fifteen times more likely than others to be Kafkaesque, 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 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: the 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: it brought Italy's so-called First Republic (1948-1992) to an end and started a period—the Second Republic—marked by an initial power vacuum due to political scandals and significant political instability.

We use text analysis to study all laws issued by the Italian Parliament over the period 1948-2016 (more than 75,000 laws containing around 100 million words). Upon the increase in political instability resulting from the end of the Cold War, we find a sharp discontinuity in the production of legislation: quantity per quarter increases by a factor of two, while average quality deteriorates according to several indicators of style based on law drafting manuals (Cassese, 1993, and Butt and Castle, 2006), such as the length and phrasing of sentences and the intensity of references to other laws. The structural break in legislative production is specific to Italy (it is not observed in Germany) and there are indications that the efficiency of Italian bureaucracy has deteriorated over time, gradually becoming an increasingly salient issue in the Italian political debate—the number of times it is mentioned on the Italian press has increased by a factor of three. Using a structural VAR model, we also find suggestive evidence that shocks to the amount of legislation cause a reduction in its quality and make the bureaucratic problem more salient.

We also provide direct evidence in favor of the model's key strategic mechanism using micro data for Italian MPs during the Second Republic. First, we use an event study methodology to show that the visibility of politicians in the press increases when their bills are discussed in parliament, supporting the claim that legislative activism has signaling value to politicians. To show that political instability amplifies the incentive of incompetent politicians to produce laws, we exploit variation in political instability and politicians' competence. The expected duration of a legislature depends on the size of the parliamentary majority supporting the government, which has a random component re-

alized at the time of the election. As a result, some legislatures are more stable than others: of the seven legislature covered by our sample, three ended within two years, while four reached the natural term of five years.[6] Following a large literature in labor, we control for several observable characteristics and measure politicians' competence by their labor market earnings, which over the sample period is information not easily available to the public. In accordance with our model, less competent politicians introduce bills and pass laws that are more poorly drafted. We then perform a Difference-in-Differences analysis and compare the relative performance (in terms of legislative activity, quality of laws, and reelection outcomes) of low-competence and high-competence politicians, in completed and uncompleted legislatures. In our model, shorter legislatures affect high- and low-competence politicians differently—low-competence politicians have greater incentives to pass useless laws. In line with this prediction, we find that in shorter legislatures, low-competence politicians introduce 18% more bills per capita, promote 30% more laws, and have a re-election probability 8 to 9 percentage points higher than average.

Section 2 describes the economy. Section 3 solves the problem of newly elected politicians. Section 4 studies the model's possibly multiple steady states. Section 5 analyzes transitional dynamics and the Gresham's law of bureaucracy. Section 6 studies Italy's post-World War II experience. Section 7 presents the micro evidence for individual MPs. Section 8 concludes and discusses the relation to the literature. The appendix contains proofs, the analysis of the re-election model, and further details on the data.

2 The model

Time is discrete, indexed by $t = 1, 2, \ldots$. A representative household with zero discount rate has per-period utility given by aggregate income $A\tilde{k}_t$, where $A > 0$ is a parameter and $\tilde{k}_t > 0$ is the stock of (public) *capital* at time t. Our analysis focuses on the joint production of public capital by politicians and the bureaucracy.

Time is divided into *legislatures*. Each legislature $\ell = 1, 2, \ldots$ runs for $\lambda \geq 1$ periods, so that legislature ℓ begins in period $t_\ell \equiv \lambda(\ell - 1) + 1$. A legislature is run by a unit mass of politicians, indexed by $i \in [0, 1]$.[7] We denote a politician i who is newly elected in legislature ℓ as politician $i\ell$. At the beginning of legislature ℓ, each politician is endowed with a project of reforms. Politicians differ in competence θ and in the quality ω of their projects of reforms, which are both the politician's private information. Politician $i\ell$ is

[6] In practice, because MPs pension entitlements only mature if the legislature lasts for at least two years, all uncompleted legislatures end, unsurprisingly, after exactly two years.

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

competent ($\theta_{i\ell} = 1$) with probability π, and *incompetent* ($\theta_{i\ell} = 0$) with probability $1 - \pi$. Competence is constant through the politician's life. Politician $i\ell$'s project is *good* ($\omega_{i\ell} = 1$) with probability $p\theta_{i\ell}$, and *bad* ($\omega_{i\ell} = 0$) with probability $1 - p\theta_{i\ell}$. Therefore, only a competent politician can have a good project of reforms, which happens with probability p. We interpret p as reflecting the economy's *reform opportunities*.

At the beginning of legislature ℓ, each politician $i\ell$ chooses whether to carry out her project of reforms, in which case we say that she is *active*. An active politician passes one reform per period, unless there is hard evidence that her project is bad.[8]

Let $\rho_{i\ell}$ denote the *reputation* of politician $i\ell$ (i.e., the public belief that she is competent) at the end of her first mandate (legislature ℓ). We consider two alternative reasons why newly elected politicians care about their $\rho_{i\ell}$. In the *career concern* model, $\rho_{i\ell}$ matters because competence is rewarded at a price $\phi > 0$ in the private market after one's political career is over (see Mattozzi and Merlo, 2008; and Gagliarducci and Nannicini, 2013). In the *reelection* model, $\rho_{i\ell}$ matters because, as in models with voters' uncertainty (e.g., Rogoff, 1990; Rogoff and Sibert, 1988; and Morelli and Van Weelden, 2014), politician $i\ell$ is reelected with probability $\rho_{i\ell}$, and reelection yields private benefits $\phi > 0$.[9] Either way, the expected continuation payoff of politician $i\ell$ in her first mandate is equal to

$$u_{i\ell}\left(\theta_{i\ell}, \omega_{i\ell}\right) = \phi\rho_{i\ell} \tag{1}$$

where for simplicity we assumed politician $i\ell$ cares about reputation only at the end of the mandate.[10]

To increase the stock of capital, a passed reform must be implemented by the bureaucracy. Before its implementation, a passed reform is *outstanding* and is implemented in period t of legislature ℓ with probability

$$\alpha_\ell \equiv \alpha\left(h_{\ell-1}\right),$$

where $h_{\ell-1}$ is the endogenously evolving stock of outstanding reforms inherited from the

[8] We assume that politicians start passing reforms at the beginning of the legislature and that politicians with a good project of reforms 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. In the appendix we also test the hypothesis that incompetent politicians strategically decide to postpone the initiation of their reforms, finding little evidence in favor of any strategic delaying.

[9] The value of reputation ϕ does not play any specific role in our analysis and we simply take it as an exogenous parameter.

[10] The career concern and the reelection model—and even the hybrid model which combines the two motives together—yield very similar predictions. Still it is useful to note the different interpretations for why $\rho_{i\ell}$ enters (1), since their actual relative importance might vary depending on the political context.

previous legislature, $\ell - 1$. The function $\alpha : \mathbb{R}_+ \to [0,1]$ is non-increasing, meaning that a larger stock of reforms from the past reduces the ability of the bureaucracy to timely complete an outstanding reform. We interpret α_ℓ as measuring the level of *bureaucratic efficiency* in legislature ℓ. There are several reasons why the efficiency of bureaucracy is decreasing in h. One is simply that more outstanding reforms increase the workload of the bureaucracy, which is asked to handle, understand and interpret a larger stock of perhaps contradictory reforms. Another is that a bureaucracy tasked with implementing a greater number of reforms becomes more powerful and difficult to monitor or incentivize.[11]

In period t', a reform of quality ω passed in period t and implemented before t' increases the capital stock by $\omega (1-\delta)^{t'-t}$. This simply means that a bad reform, $\omega = 0$, yields no capital, even when implemented; a good reform, $\omega = 1$, yields one additional unit of capital if implemented immediately, and then depreciates at rate $\delta \in (0,1)$.

At the end of legislature ℓ, the public observes (i) whether politician $i\ell$ was active during the legislature and, for each of her reforms, (ii) whether it has been implemented, and (iii), if implemented, the amount of capital it has produced. The reputation of politician $i\ell$ at the end of the legislature is then determined by one of the following four events:

- y: the politician was active, but no reform was implemented;
- n: the politician was inactive;
- b: at least one bad reform has been implemented;
- g: at least one good reform has been implemented.

We denote by $\rho^e_{i\ell}$ the value of $\rho_{i\ell}$ after event $e \in \{y, n, b, g\}$ has occurred.

In what follows, we first characterize the equilibrium behavior of a newly elected politician in legislature ℓ, taking α_ℓ as given. We then turn to the aggregate dynamics in which α_ℓ evolves endogenously due to the dynamics of the stock of outstanding reforms h_ℓ. 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 B.[12]

[11] We do not model the optimal degree of delegation implied by the moral hazard between politicians and bureaucrats (see Huber and Shipan, 2015 for a survey of this literature). Dumav and Khan (2018) show that an increase in uncertainty or ambiguity leads to more delegation and thereby greater power to the agent (in our case the bureaucracy). This theoretical prediction is supported by the empirical evidence in Volden (2002) and Gilardi (2002).

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

3 The strategy of a newly elected politician

A strategy for politician $i\ell$ is a function $\sigma_{i\ell} : \{0,1\}^2 \times \mathbb{R}_+ \to [0,1]$, where (θ, ω, α) is the probability that a politician of type θ with a project of reforms of quality ω chooses to be active when bureaucratic efficiency is equal to α. In every legislature ℓ, our model admits multiple perfect Bayesian equilibria. We focus on the unique symmetric equilibrium ($\sigma_{i\ell} = \sigma_\ell \ \forall i$) in which a competent politician chooses to be active if and only if her project of reforms is good (henceforth *equilibrium*).[13] Among all equilibria in which any reform is ever passed, our equilibrium features the maximum number of good reforms and the minimum number of passed reforms, which we think is the appropriate benchmark given that the focus of the paper is on the forces that lead to excessive political activism. All proofs are in Appendix A.

Proposition 1 characterizes the equilibrium. We denote by

$$\eta(\alpha_\ell, s) \equiv (1-\alpha_\ell)^{\sum_{k=1}^{s} k} = (1-\alpha_\ell)^{\frac{s(s+1)}{2}}$$

the probability that all reforms passed by an active politician in legislature ℓ are still outstanding by the end of the s-th period of the legislature. The equilibrium is stationary in the sense that the strategies of politicians can vary over time only because of changes in the efficiency of bureaucracy α_ℓ.[14]

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

1. *competent politicians are active if and only if their project of reforms is good;*

2. *incompetent politicians are active with probability*

$$\sigma(\alpha_\ell, p, \lambda, \pi) \equiv \begin{cases} 0 & \text{if } \eta(\alpha_\ell, \lambda) < \underline{\rho}; \\ p - \frac{p(1-p)[1-\eta(\alpha_\ell,\lambda)]}{(1-\pi)\{1-p[1-\eta(\alpha_\ell,\lambda)]\}} & \text{otherwise} \end{cases} \tag{2}$$

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

[13] Essentially this eliminates two types of equilibria: that in which no reform is ever passed because the public believes that only incompetent politicians would pass one; and that in which bad reforms are passed 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 the Appendix C) that passing bad reforms involves a cost that is arbitrarily smaller for incompetent than for competent politicians.

[14] The equilibrium strategies are unique, sustained by multiple beliefs $\rho^b_{i\ell}$ when passing a bad reform is off the equilibrium path.

3. *public beliefs are given by* $\rho_{i\ell}^b = 0$, $\rho_{i\ell}^g = 1$,

$$\rho_{i\ell}^y = \left[1 + \frac{1-\pi}{\pi} \cdot \frac{\sigma\left(\alpha_\ell, p, \lambda, \pi\right)}{p}\right]^{-1} \text{ and } \rho_{i\ell}^n = \left[1 + \frac{1-\pi}{\pi} \cdot \frac{1-\sigma\left(\alpha_\ell, p, \lambda, \pi\right)}{1-p}\right]^{-1}.$$

Intuitively, incompetent politicians face a trade-off: being active signals competence, but if one of their reforms gets implemented before the end of the legislature they are exposed as incompetent. When $\eta\left(\alpha_\ell, \lambda\right)$ is sufficiently low, being active carries a large risk of revealing one's incompetence, and incompetent politicians [15] strictly prefer to remain inactive. But if $\eta\left(\alpha_\ell, \lambda\right)$ is high enough, this risk is small and incompetent politicians choose to mimic the behavior of competent politicians with good projects. In equilibrium, incompetent politicians are exactly indifferent between being active and inactive. Solving the indifference condition for incompetent politicians yields the expression for the probability $\sigma\left(\alpha_\ell, p, \lambda, \pi\right)$ in (2). The public beliefs $\rho_{i\ell}^y$ and $\rho_{i\ell}^n$ are then determined by Bayes' rule.

Proposition 2 characterizes the comparative statics of $\sigma\left(\alpha_\ell, p, \lambda, \pi\right)$.

Proposition 2 (Comparative statics)**.** *The probability* $\sigma\left(\alpha_\ell, p, \lambda, \pi\right)$ *that an incompetent politician is active in legislature* ℓ

1. *increases with the reform opportunities* p*;*
2. *decreases with the duration of the legislature* λ*, the probability that a politician is competent* π*, and the level of bureaucratic efficiency* α_ℓ*.*

Intuitively, a more efficient bureaucracy (higher α_ℓ) or a longer legislature (longer λ) heighten the risk of being exposed as incompetent and discourage incompetent politicians from initiating reforms. If the probability of a good project of reforms is higher (higher p), competent politicians are more likely to be active. As a consequence, incompetent politicians also become more likely to be active, because being active is now a better signal for competence. All these comparative statics matter for the dynamics of the economy and the possible coexistence of a Weberian and a Kafkaesque steady state equilibrium.

[15] As well as competent politicians with bad projects of reforms.

4 Steady state analysis

For simplicity, in the rest of the analysis we assume that the implementation rate of outstanding reforms α_ℓ can take only two values, $\underline{\alpha}$ and $\overline{\alpha}$, with $0 < \underline{\alpha} < \overline{\alpha}$, so that

$$\alpha\left(h_{\ell-1}\right) = \begin{cases} \overline{\alpha} & \text{if } h_{\ell-1} \leq \overline{h}^K, \\ \underline{\alpha} & \text{if } h_{\ell-1} > \overline{h}^K \end{cases} \tag{3}$$

where $\overline{h}^K$ is the *Kafkaesque threshold* of outstanding reforms beyond which bureaucratic efficiency collapses from $\overline{\alpha}$ to $\underline{\alpha}$. A bureaucracy with $\alpha_\ell = \overline{\alpha}$ is *Weberian*; one with $\alpha_\ell = \underline{\alpha}$ is *Kafkaesque*. Given α_ℓ, the stock of outstanding reforms at the end of legislature ℓ satisfies

$$h_\ell = \left(1-\alpha_\ell\right)^\lambda h_{\ell-1} + \frac{1-\left(1-\alpha_\ell\right)^\lambda}{\alpha_\ell}\pi p + (1-\pi)\sigma\left(\alpha_\ell, p, \lambda, \pi\right)\chi\left(\alpha_\ell, \lambda\right). \tag{4}$$

The first term in the right hand side is the contribution of the backlog of outstanding reforms inherited from legislature $\ell - 1$; the second (third) is the number of good (bad) reforms passed in legislature ℓ and still outstanding at its end.[16]

The following proposition characterizes the relation between the steady state number of outstanding reforms at the end of each legislature, $h_{\ell-1} = h_\ell = h^*$, and the steady state level of bureaucratic efficiency α^*.

Proposition 3 (The Tacitus Line)**.** *In a steady state, the stock of outstanding reforms at the end of each legislature satisfies*

$$h^* = \frac{\pi p}{\alpha^*} + (1-\pi)\sigma\left(\alpha^*, p, \lambda, \pi\right)\frac{\chi\left(\alpha^*, \lambda\right)}{1-\left(1-\alpha^*\right)^\lambda} \tag{6}$$

which is decreasing in the steady state level of bureaucratic efficiency α^* and in λ. The steady state

[16] The third term is obtained by noticing that there are $(1-\pi)\sigma\left(\alpha_\ell, p, \lambda, \pi\right)$ active incompetent politicians, each of them generating an expected number of outstanding bad reforms equal to

$$\chi\left(\alpha_\ell, \lambda\right) = \sum_{j=1}^{\lambda} \eta\left(\alpha_\ell, j\right)\left(1-\alpha_\ell\right)^{\lambda-j}, \tag{5}$$

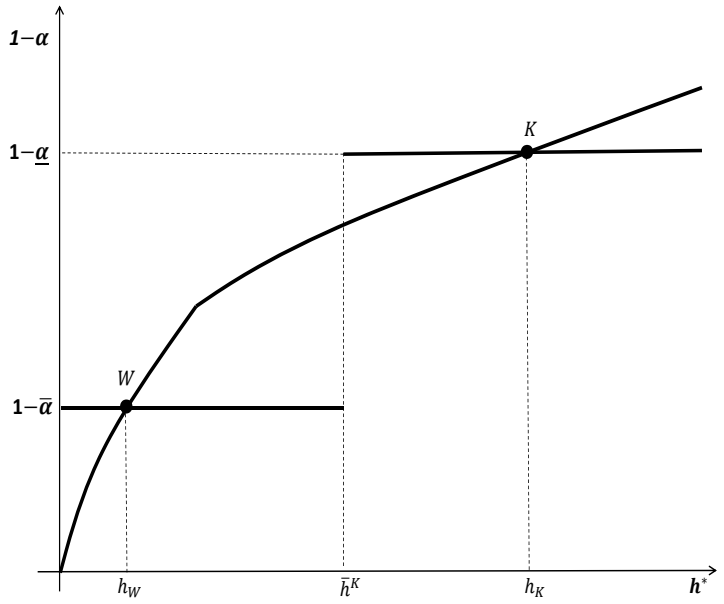
which uses the assumption that an incompetent politician stops passing reforms as soon as her project of reforms is discovered to be bad. To understand the expression for $\chi\left(\alpha_\ell, \lambda\right)$, notice that the incompetent politician introduces a reform in period $j = 1, 2, ...\lambda$ only if none of her previously passed reforms have been implemented (which happens with probability $\eta\left(\alpha_\ell, j\right)$) and this reform will still be outstanding at the end of legislature ℓ with probability $\left(1-\alpha_\ell\right)^{\lambda-j}$. Summing over all periods in the legislature yields (5).

stock of public capital is equal to

$$\tilde{k}^* = \frac{\alpha^* \pi p}{\delta \left[1 - (1 - \alpha^*)(1 - \delta)\right]}. \tag{7}$$

Equation (6) establishes a positive relation between the stock of outstanding reforms h^* and the degree of *inefficiency* of the bureaucracy, as measured by $1 - \alpha$. There are three reasons why a more inefficient bureaucracy increases the stock of outstanding reforms. First, it increases the stock of outstanding good reforms—the first term in the right hand side of (6). Second, it induces incompetent politicians to pass more bad reforms (a greater σ, see Proposition 2). Third, bad projects of reforms from active politicians are less likely to be stopped before the end of the legislature, which increases the average flow of bad reforms within the legislature—the last fraction in (6). In reference to our epigraph, we call the relation in (6) a *Tacitus line*. An example is plotted in Figure 2, where the stock of outstanding reforms h^* is on the x-axis and bureaucratic inefficiency $1 - \alpha$ is on the y-axis (as in Figure 1). Figure 2 also plots the function $\alpha\left(h_{\ell-1}\right)$ in (3), which establishes a

Figure 2: Steady state equilibrium



positive relation between h^* and $1 - \alpha$. A steady state equilibrium arises when this line intersects the Tacitus line. In Figure 2, there are two intersections. Point W corresponds to a Weberian steady state where the stock of outstanding reforms is h_W, incompetent politicians are inactive, and the bureaucracy is Weberian, $\alpha = \overline{\alpha}$. Point K corresponds to a Kafkaesque steady state where the stock of outstanding reforms is h_K, incompetent politicians are active with strictly positive probability, and the bureaucracy is Kafkaesque,

$\alpha = \underline{\alpha}$. Finally, notice that aggregate welfare is proportional to the steady state stock of public capital, which given (7) is strictly increasing in α. This means that equilibria are welfare ranked according to their level of bureaucratic efficiency α.

A Weberian steady state requires that (i) the bureaucracy remains Weberian if only competent politicians are active (an aggregate condition) and (ii) this is the equilibrium outcome under a Weberian bureaucracy (an incentive compatibility condition). Using Proposition 1, we obtain that the following condition guarantees the existence of a Weberian steady state.

Assumption 1. *The Weberian implementation rate $\overline{\alpha}$ satisfies $\frac{\pi p}{\overline{\alpha}} \leq \overline{h}^K$ and $\eta(\bar{\alpha}, \lambda) \leq \underline{\rho}$.*

As shown in Figure 2, a Kafkaesque steady state equilibrium may exist even if Assumption 1 holds. In particular:

Proposition 4 (Weberian and Kafkaesque steady states)**.** *If Assumption 1 holds, there exists a Weberian steady state with a stock of outstanding reforms equal to*

$$h_W \equiv \frac{\pi p}{\overline{\alpha}} \leq \overline{h}^K. \tag{8}$$

A Kafkaesque steady state exists if and only if

$$h_K \equiv \frac{\pi p}{\underline{\alpha}} + (1-\pi)\sigma(\underline{\alpha}, p, \lambda, \pi)\frac{\chi(\underline{\alpha}, \lambda)}{1-(1-\underline{\alpha})^{\lambda}} > \overline{h}^K \tag{9}$$

The Kafkaesque steady-state is more likely to exist when (i) there are greater reform opportunities (p high), (ii) legislatures are shorter (λ low), (iii) there are fewer competent politicians (π low), and (iv) a Kafkaesque bureaucracy is more inefficient ($\underline{\alpha}$ low).

Figure 2 characterizes a configuration of parameters such that Assumption 1 and condition (9) are both satisfied, so that a Weberian and a Kafkaesque steady state coexist. The comparative statics in Proposition 4 is intuitive. By Proposition 2, when there are greater reform opportunities, or when legislatures are shorter, incompetent politicians are more likely to be active. As a result, a Kafkaesque bureaucracy will find it harder to reduce the stock of outstanding reforms below the Kafkaesque threshold $\overline{h}^K$, making the Kafkaesque steady state more likely. Furthermore, when there are fewer competent politicians, incompetent politicians are more likely to be active, which is a prerequisite for a Kafkaesque steady state. Finally, a highly inefficient bureaucracy contributes to a Kafkaesque steady state in two ways: it induces politicians to pass more bad reforms and further delays their implementation.

5 Dynamic paths to a Kafkaesque steady state

We now show how transitory shocks can shift the economy from a Weberian to a Kafkaesque steady state. We identify political instability as a key culprit. We then endogenize the supply of politicians and bureaucrats. Finally, we discuss the difficulties in reversing a shift to a Kafkaesque steady state.

5.1 Transitory shocks and permanent shifts

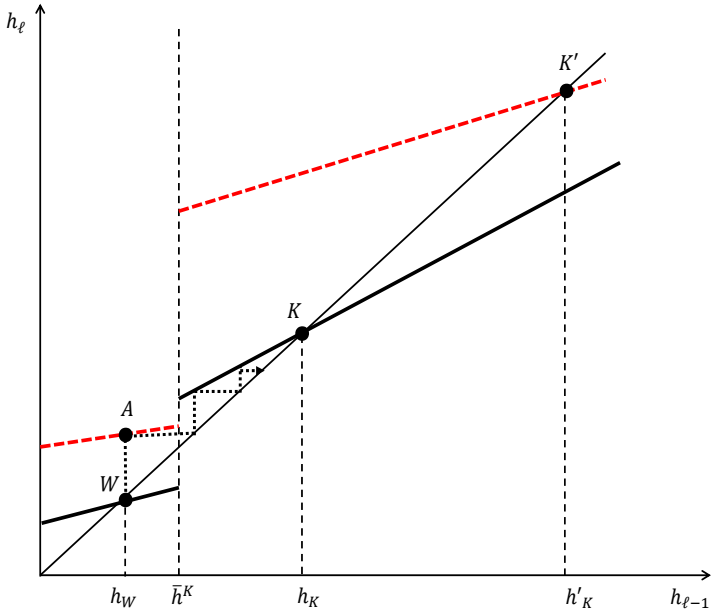
When Assumption 1 and condition (9) are both satisfied, transitory shocks can cause a transition from a Weberian to a Kafkaesque steady state. To characterize the transition, consider a legislature ℓ which is initially in Weberian steady state: the stock of outstanding reforms is $h_W = \frac{\pi p}{\bar{\alpha}}$ and bureaucratic efficiency is $\overline{\alpha}$. Given (4), the number of outstanding reforms at the end of the legislature ℓ is equal to

$$h\left(\lambda_\ell, p_\ell, \pi_\ell\right) \equiv \left(1-\overline{\alpha}\right)^{\lambda} h_W + \left[1-\left(1-\overline{\alpha}\right)^{\lambda}\right] \frac{\pi_\ell p_\ell}{\overline{\alpha}} + \left(1-\pi_\ell\right)\sigma\left(\overline{\alpha}, p_\ell, \lambda_\ell, \pi_\ell\right)\chi\left(\overline{\alpha}, \lambda_\ell\right) \tag{10}$$

where λ_ℓ, p_ℓ, and π_ℓ correspond to the values in legislature ℓ of λ, p and π, respectively. In general, a transitory shock in legislature ℓ can cause a transition to a Kafkaesque steady state because the number of reforms passed in the legislature can increase the stock of reforms still outstanding at the beginning of legislature $\ell+1$, equal to $h\left(\lambda_\ell, p_\ell, \pi_\ell\right)$. In turn, a greater stock of outstanding reforms hinders bureaucratic efficiency—$\alpha_{\ell+1}$ falls. But with a lower $\alpha_{\ell+1}$, incompetent politicians may become active (see Proposition 1), generating a "tidal wave" of reforms, gradually leading to a Kafkaesque steady state. The solid line in Figure 3 corresponds to the law of motion in (4) in normal times with $h_{\ell-1}$ on the x-axis and h_ℓ on the y-axis. The line crosses the forty-five degree line twice, so that a Weberian and a Kafkaesque steady state coexist. The dashed line corresponds to the analogous law of motion after a temporary shock in legislature ℓ. The shock causes a transition to a Kafkaesque steady state if the number of outstanding reforms at the end of the legislature $h\left(\lambda_\ell, p_\ell, \pi_\ell\right)$ passes the critical Kafkaesque threshold $\overline{h}^K$, as it is the case in point A.

We focus on three types of transitory shocks due to (or associated with) a surge in political instability. Political instability may cause the premature end of legislatures, lowering λ to λ_ℓ. It may also be associated with a temporary increase in the reform opportunities, raising p to p_ℓ, perhaps because corruption scandals or economic crises raise the public perception that structural reforms are needed. Finally, in times of political instability, countries tend to rely on technocratic governments, typically formed by highly com-

Figure 3: Transition to a Kafkaesque equilibrium due to a temporary fall in λ



petent politicians, therefore raising π to π_ℓ, who are asked to reform the country within a short period of time, before turning power back to elected politicians. The following proposition summarizes the effects of a temporary surge in political instability.

Proposition 5 (Temporary shocks and transition to Kafka)**.** *Suppose that Assumption 1 and (9) both hold and that the economy is initially in a Weberian steady state. Temporary shocks in legislature ℓ cause a transition to a Kafkaesque steady state if the number of outstanding reforms at the end of the legislature, $h(\lambda_\ell, p_\ell, \pi_\ell)$, is above the critical Kafkaesque threshold $\overline{h}^K$. In particular this might be due to:*

1. **Shorter legislatures,** *i.e. legislature ℓ has length $\lambda_\ell < \lambda$.*
2. **More reform opportunities,** *i.e. legislature ℓ has reform opportunities $p_\ell > p$.*
3. **Technocratic governments,** *i.e. legislature ℓ has a share of competent politicians $\pi_\ell > \pi$.*

In the short run, a shorter legislature heightens the incentives for incompetent politicians to be active because it reduces the chances that their reforms will backfire (see Proposition 2). This causes a surge in the production of bad reforms, which can push the stock of outstanding reforms at the end of the legislature above the critical Kafkaesque threshold. In turn, this makes bureaucracy inefficient in the next legislature, giving incentives to incompetent politicians to be active even after the transitory shock has vanished, and eventually leading to a Kafkaesque steady state. A similar mechanism is at play when p

increases temporarily to p_ℓ. In the short run, the number of *both* good and bad reforms increases: good reforms increase because competent politicians have greater opportunities; bad reforms increase (if p_ℓ is sufficiently large) because inactivity signals incompetence (see Proposition 2). This surge in the number of reforms can again push the stock of outstanding reforms at the end of the legislature beyond the critical Kafkaesque threshold, depressing bureaucratic efficiency in future legislatures, and giving rise to the same perverse dynamics as in Figure 3. Finally, a temporary increase in π to π_ℓ mechanically increases the number of new good reforms. If the stock of outstanding good reforms increases above the Kafkaesque threshold, $(1-\overline{\alpha})^{\lambda} h_W + \left[1-(1-\overline{\alpha})^{\lambda}\right] \frac{\pi_\ell p}{\overline{\alpha}} > \overline{h}^K$, then subsequent non-technocratic governments will face a slow bureaucracy, giving incentives to incompetent politicians to be active even after the transitory shock has vanished. Thus, after a brief period of many good reforms, the economy may undergo a surge of bad reforms, eventually leading to a Kafkaesque steady state.

5.2 Gresham's law of bureaucracy

The amount of competent politicians π could be endogenous. We now show that when the bureaucracy becomes inefficient the supply of incompetent relative to competent politicians rises and π falls, leading to what we may call the Gresham's law of bureaucracy: "bad bureaucracy drives out good politicians." The key idea 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 (U_0) denote the equilibrium expected utility of a competent (incompetent) politician in office. We can suppose that the supply of each type depends on the utility the politician expects to obtain once in office. We accordingly postulate that the relative supply of competent politicians is given by

$$\pi = L\left(\frac{U_1}{U_0}\right), \tag{11}$$

where $L : \mathbb{R}_+ \to [0,1]$ is strictly increasing—consistent with occupational choice models (Caselli and Morelli, 2004). The following proposition says that π falls when α_ℓ falls.

Proposition 6 (Gresham's law of bureaucracy)**.** *Given (11), the relative supply of competent politicians π is increasing in the efficiency of the bureaucracy α.*

When the quality supply of bureaucrats is endogenous, the Gresham's law of bureaucracy applies to politicians as well as to bureaucrats: "bad bureaucracy drives out both good politicians and good bureaucrats." To understand the logic, assume that bureaucrats

differing in skill s implement reforms with probability $\widetilde{\alpha}(h_{\ell-1})\, s$. The equilibrium implementation rate of reforms is then equal to $\alpha_\ell = \widetilde{\alpha}(h_{\ell-1})\, \overline{s}_\ell$, where $\overline{s}_\ell$ denotes the average quality of bureaucrats. Now suppose that bureaucrats are promoted on the basis of merit, as measured by their implementation rate of reforms $\widetilde{\alpha}(h_{\ell-1})\, s$. When $\widetilde{\alpha}(h_{\ell-1})$ falls, the return to bureaucratic skill decreases, less skilled bureaucrats are willing to work in the public sector. As a result, both the average quality of bureaucrats $\overline{s}_\ell$ and the completion rate α_ℓ fall, leading to an increase in the stock of outstanding reforms. In time, the effects may compound each other in a spiral in which bad bureaucracy attracts bad bureaucrats, further reducing the quality of the bureaucracy. Given (7), this spiralling effect generally worsens the welfare properties of the Kafkaesque steady state.

5.3 Some discussion on the ways out

When an economy is stuck in a Kafkaesque steady state with a highly inefficient bureaucracy, the system requires a sufficiently large countervailing shock (say a large jump down in p or up in λ) 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 temporarily *ban reforms*. With the economy in a Kafkaesque steady state, this would decongest the bureaucracy and improve efficiency: for a while "no reform is better than good reforms." Encouraging politicians to stop enacting laws is 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 costs, which requires that the various stakeholders (voters, lobbies, etc.) coordinate. A second natural idea would be to *drop old reforms*. As in our model incompetent politicians cannot devise good reforms, they should likewise be unable to tell whether an outstanding 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 and limit the number of reforms proposed by their politicians. Leaders might also decide to *reform the bureaucracy* by investing resources to increase $\overline{h}^K$ and $\underline{\alpha}$. A successful reform might give substantial political rewards if the public recognizes its success. In practice, a successful reform of bureaucracy takes time, so that the leader who launches it may fail to reap its political benefits. More importantly, in a logic akin to that in our model, incompetent leaders would be tempted to introduce useless reforms of the bu-

reaucracy, only exacerbating the problem. Furthermore, our version of Gresham's law implies that an inefficient bureaucracy increases the number of incompetent politicians. Since incompetent politicians benefit the most from an inefficient bureaucracy, they may fail to support any grand plan of bureaucratic reform or could intervene to guarantee that no competent politician willing to reform the bureaucracy emerges as a leader.

6 Aggregate evidence

We discuss the history of Italy after World War II, focusing on the fall of the Berlin wall (1989), which brought Italy's so-called First Republic (1948-1992) to an end and started a period of political instability dubbed Second Republic. We document the increase in political instability and characterize the structural break in the quantity and quality of laws. We also provide evidence that bureaucracy has become an increasingly salient issue in the Italian public debate, and that this may be caused by shocks to legislation. We conclude by showing that the structural break in legislative production is indeed the reflection of the political instability specifically induced in Italy by the fall of the Berlin Wall. Table 1 contains some descriptive statistics for the First and Second Republic. Figures present time series evidence. In all of them, blue lines correspond to the period spanning the First Republic, red lines to the Second Republic.

6.1 The surge in political instability

Since the end of World War II and until the 10th legislature (1987–1992), the Italian Republic was characterized by stable power and policy agenda controlled by the Christian Democratic Party. In 1948, in the first election under the new Constitution, the Christian Democratic Party obtained 49% of the vote; the Communist-Socialist coalition, then called Popular Democratic Front, obtained 31%. The Christian Democratic and the Communist party remained the two key players until the 10th legislature, but Italy's membership in NATO implied that the Communist Party could never actually govern. This "*K-factor*"—a communist party could not govern a Western-block country—gave the Christian Democrats unique political rents: governments were sometimes formed with slightly different coalitions, but the Christian Democrats were always pivotal and had veto power, guaranteeing political stability.

The collapse of the Soviet Union and the entire Communist bloc in 1989 brought to an end what is now known as the First Republic. The *K*-factor was over, but the Communist Party was obsolete and the corruption of the Christian Democrats and their allies

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 technocratic governments	0	3
No. of pages per law	3.67	12.84
Bills per day (MPs)	1.84	3.73
Bills per day (Total)	2.66	4.25
Words of legislation per quarter (thousands)	281	523
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 measures:		
ICRG index of bureaucratic efficiency	3.1	2.7
Citations of "bureaucracy" in the press	2.5	4.9
Law quality indicators:		
Length of sentences	198	240
No. of gerunds	0.48	1.90
Share of laws with preamble	0.35	0.67
No. of links to other laws	6	12

The First Republic refers to the period 1948-1992, but the tenth legislature (1987-1992) is actually a "transition" legislature, since it is during that legislature that the political instability shock arrives. Hence the tenth legislature for our analysis has to be included as part of the second republic. "% of MPs betraying party" is the share of MPs who changed party on an individual basis; "% of MPs switching party" is the share of MPs who changed party, either as an individually or after a party split (source: Lama, 2014). "Fragmentation of government coalition" is the Rae and Taylor (1970) index, 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 within-coalition share of parliamentary votes of party i (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 technocratic governments" is from http://www.camera.it. "No. of pages per law" and "Words of legislation per quarter" are obtained from scraping data from www.normattiva.it. "Bills per day (MPs)" are the number of bills per day introduced by MPs; "Bills per day (Total)" is the total number of bills including those introduced by 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). "ICRG index of bureaucratic efficiency", score between 1 and 4 of bureaucratic quality; higher score, higher quality. "Citations of word bureaucracy" is the number of times the word "bureaucracy" appears in a month on the front page of "Corriere della Sera", the leading Italian daily newspaper. Law quality indicators are computed using all laws enacted since the beginning of the Republic, scraping data from www.normattiva.it.

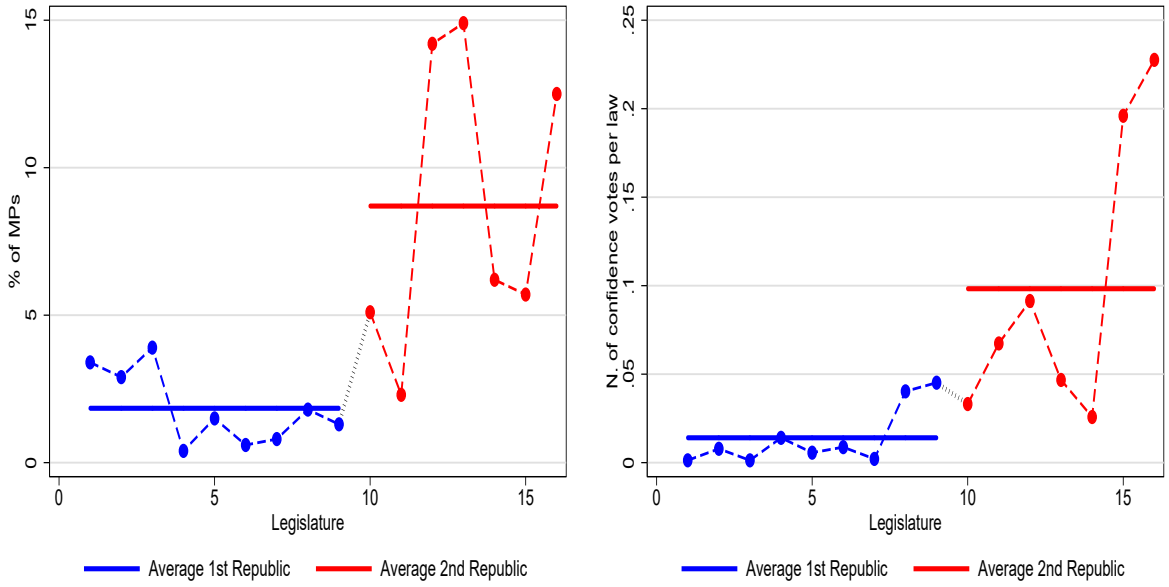
was revealed, leading to a contestable power vacuum.[17] In characterizing legislatures,

[17]The Christian Democratic Party was overwhelmed by a nation-wide investigation into political corrup-

we consider the 10th legislature (1987–1992) as part of the Second Republic because the collapse of the Communist block that triggered the increase in instability happened in 1989. Figures 4-7 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.[18]

During the First Republic only one legislature (the 7th) ended before its standard five-year term. During the Second Republic, three of the first six legislatures lasted exactly two years (see Table A1 in Appendix D). Government instability was exacerbated by individual MPs betraying their party, (see Panel (a) in Figure 4) and by the parties themselves splitting as new ones formed (see Table 1). During the First Republic, only 2.2% of MPs

Figure 4: Political instability in Italy's Second Republic



(a) Percentage of MPs switching party **(b) Number of confidence votes per law**

Panel (a): fraction of members of the Chamber of Deputies who switched party during the legislature. Panel (b): average number of confidence votes per approved law in the legislature. Solid horizontal lines denote averages during the First and Second Republic.

changed party at least once 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 in-

tion 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 followed by a transition (not yet ended) towards a new political order. Bull and Rhodes (2013) also stress the importance of the end of the Cold War as a key destabilizing factor for the political order of Italy's First Republic.

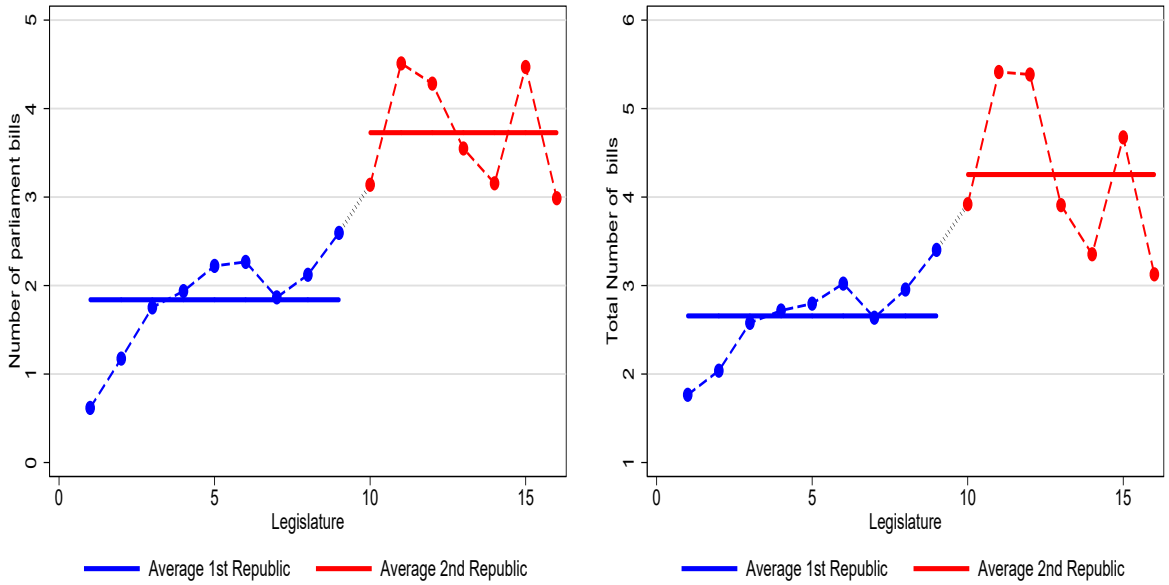
[18]When documenting the effects of political instability on bureaucratic efficiency we use the commonly recognized 1992 starting date for the Second Republic. Political instability has effects on bureaucratic efficiency only with some lags—as it is also the case in our model—, hence this choice has minor consequences on average statistics.

crease is even sharper (Table 1), as some MPs switched more than once.[19] During the Second Republic, government coalitions were also more fragmented, as shown by the Rae-Taylor index, which almost doubled compared to the First Republic (Table 1). This instability has forced governments to rely more often on a confidence vote to have bills approved by the Parliament: during the Second Republic, one out of ten laws was approved after a confidence vote, ten times more than in the First Republic (Panel (b), Figure 4). Political instability has also led to the formation of three short-lived technocratic governments during the Second Republic, a complete novelty for Italy (Table 1), which could also matter for the legislative activism of politicians (Proposition 5).

6.2 Changes in legislation

Time series evidence suggests that the greater political instability resulting from the fall of the Berlin wall has set our mechanism in motion, leading to a sharp increase in legislative activism and a worsening in the quality of laws. Figure 5 plots the average number of bills presented per day by MPs in each legislature. The number almost doubles: from

Figure 5: Legislative activism



(a) Number of bills per day by MPs **(b) Total number of bills per day**

Average number of bills presented by MPs in the Chamber of Deputies (Panel (a)) and by MPs and government (Panel (b)) in each legislature. Solid horizontal lines denote averages during the First and the Second Republic.

1.87 in the First Republic to 3.52 in the Second (Panel (a)). Including the bills introduced

[19] Between 1996 and 2016 the number of MPs who changed political party at least once is 868 while the total number of switches is 1,268.

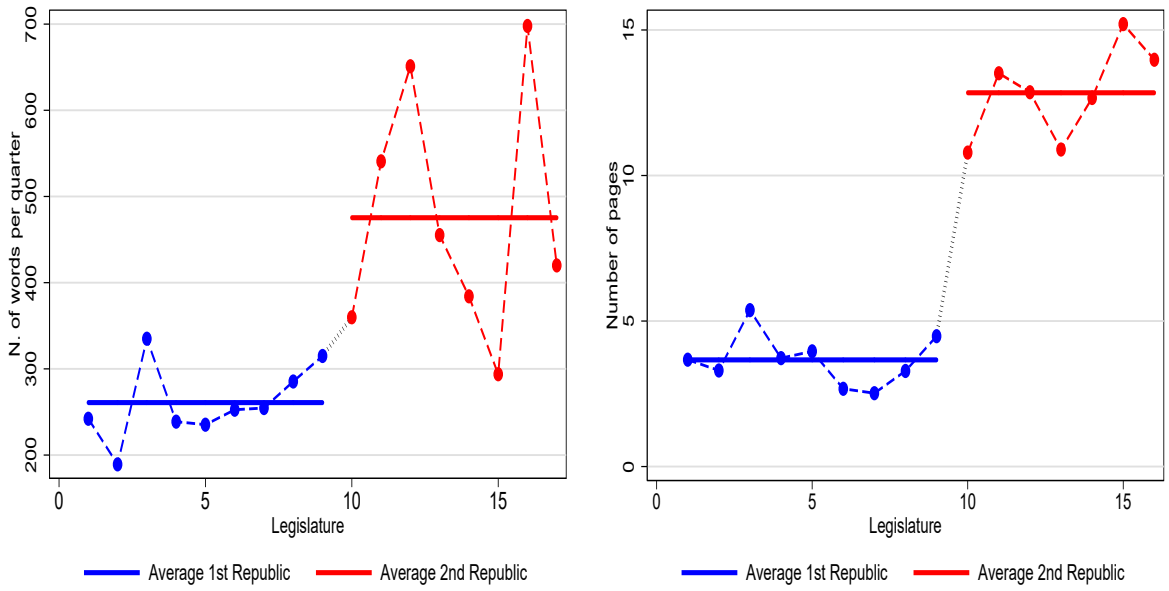
by the government, the number of bills per MP increases from 2.7 per day in the First Republic to 4.3 per day in the Second (Panel (b)).[20]

To characterize the evolution of the amount of legislation produced, we process all laws issued by the Italian Parliament over the period 1948-2016, which amounts to considering 75,865 laws containing around 100 millions of words overall. Panel (a) of Figure 6 plots the time series evolution of the number of words of legislation issued by the Italian Parliament in an average quarter of each legislature. During the First Republic, the Parliament passed on average 281,000 new words of legislation per quarter, which increases by 86% to 523,000 words per quarter during the Second Republic. There is also evidence that the greater difficulty of securing a stable parliamentary majority has distorted the legislative process more subtly. To bypass the Parliament, governments have increasingly resorted to executive orders and delegated legislation, whose share over new 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, to minimize the risk of going under in parliamentary votes, governments have started to lump together heterogeneous matters into the same law, which has made laws substantially longer: laws were on average 3.7 pages long during the First Republic; they are 12.4 pages long during the Second Republic (see Panel (b), Figure 6 and Table 1).

Overall there is evidence that, during the Second Republic, new laws are discussed more briefly in the Parliament, are longer and more heterogeneous and, as we will show in Section 7, are initiated in greater proportion by less competent politicians. As a result, we expect the quality of the new legislation to have fallen, making the institutional and legal environment more complex and ambiguous. Zaccaria (2011) provides plenty anecdotal evidence indicating that more recent laws are sometimes plagued by syntax and spelling errors and even by incomplete or inconsistent sentences corrected only by subsequent legislative amendments. To provide a systematic quantitative analysis of the

[20]The Italian parliament is a perfect bicameral legislature. The Chamber of Deputies (630 members) and the Senate of the Republic (315 elected members, plus a small number of appointed or *ex officio* members) share the exercise of legislative power. The electoral system of the Italian parliament has changed in several occasions. From the I to the XI legislature, members of both the Chamber and the Senate were elected under an open-list proportional system. From the XII legislature (1994-1996) and until the XIV (2001-2006)—those covered by our sample—MPs were elected under a mixed system. 75% of Chamber members were elected in 475 single-member districts with plurality voting; 25% were elected from closed party lists in 26 districts under proportional representation. A little less than 75% of Senate members were elected in 232 single-member districts with plurality voting; the remaining 83 seats were assigned to the best losers in the 232 majoritarian districts under proportional rule in 20 (regional) districts. Gagliarducci et al (2011) show that majoritarian MPs are not different from MPs elected in a proportional system in terms of legislative activism (number of bills sponsored). But they find that majoritarian representatives put forward more bills targeted at their constituency.

Figure 6: Legislative production



(a) N. of words of law **(b) Average page-length of laws**

Panel (a): average number of words (in thousands) contained in all laws issued in a quarter of the legislature. Panel (b): average number of pages per law approved in the legislature. Solid horizontal lines denote averages during the First and Second Republic.

quality of new laws over time, we build on existing style manuals for the optimal drafting of laws (Cassese, 1993, and Butt and Castle, 2006). We focus on four indicators calculated by performing a throughout text analysis of all laws issued by the Italian Parliament since 1948. The four indicators measure the quality of the single law as well as the complexity that the law injects into the legal system. They are plotted in Figure 7 and correspond to: (i) the average length of sentences in number of characters (panel a); (ii) the number of gerunds in the law per one thousand words in the law (panel b); (iii) the presence of a preamble in the law (panel c); and (iv) the number of references to other laws in the main body of the law per one thousand words in the law (panel d) (see Appendix D for further details on the indicators construction). Measures (i) and (ii) capture the clarity of the law. The first recommendation in style manuals is to write "short and clear sentences": laws with long sentences are less understandable and more prone to an ambiguous interpretation. As emphasized by linguists (Cortelazzo, 2014), in Italian the use of the gerund typically leads to pompous and unaccessible sentences prone to misunderstanding: (i) it makes the subject of the sentence less visible; (ii) it creates sentences which are too dense, complex, and with excessive information; and (iii) it hides the key message of the sentence. The remaining two indicators measure legal complexity and accessability of the

law to non-professionals. Laws with a preamble contain a long list of references to preexisting laws that are a prerequisite for understanding the new law. In other words, a law with a preamble is not self-contained, making its interpretation less immediate. The last indicator builds on the same logic: laws with a greater number of references to other laws fail to be self-contained, which makes the laws more difficult to read and understand.

All four indicators indicate that the laws of the Second Republic are drafted more poorly and characterized by greater legal complexity than those of the First Republic. Sentences are 25% longer in the Second Republic than in the First. The incidence of the use of the gerunds has increased by a factor of four. The share of laws with a preamble jumps from less than 40% during the First Republic to almost 70% during the Second. The average number of citations to other laws doubles: from around 6 citations per one thousand words in the First Republic to around 12 citations per one thousand words in the Second.

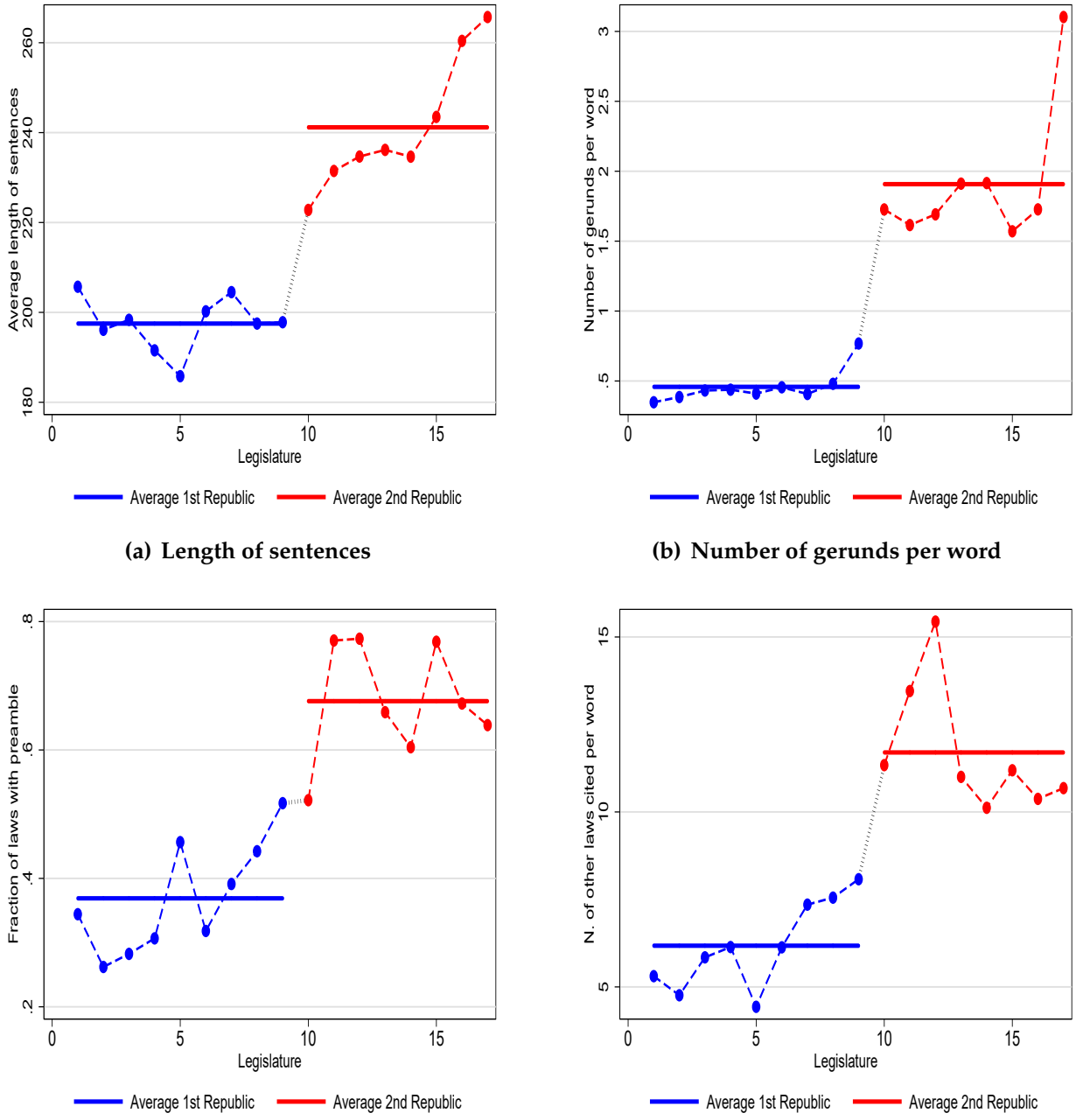
6.3 The problem of bureaucracy

There is abundant anecdotal evidence in the national press that over time excessive legislation has hampered bureaucracy.[21] Figure 8 shows the time evolution of two measures of the Italian bureaucracy: one focuses on its functioning and efficiency, the other on the public perception and salience of the bureaucratic problem. Both measures indicate a deterioration of the Italian bureaucracy. Panel (a) considers the evolution of the ICRG index of quality of bureaucracy (available only since 1984). 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 ICRG index falls sharply during the Second Republic.[22] Panel (b) shows the evolution of the number of times the word "bureaucracy" appears in a month in the front page of the Italian leading daily newspaper (Corriere della Sera). In Italian, as in most languages, the word bureaucracy has, in common parlance, a (very) negative connotation: for example, according to the Cambridge Dictionary it refers to "complicated rules, processes,

[21] An illustrative example from *Corriere della Sera*, Italy's leading daily newspaper, reports how the madness of Italian legislation 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, 73 Decrees of the Prime Minister, 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, 152 Decrees of the Delegated Commissioner and 720 municipal regulations" (Gian Antonio Stella, Corriere della Sera, March 8 2016).

[22] 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.

Figure 7: Quality and complexity of laws



(a) Length of sentences

(b) Number of gerunds per word

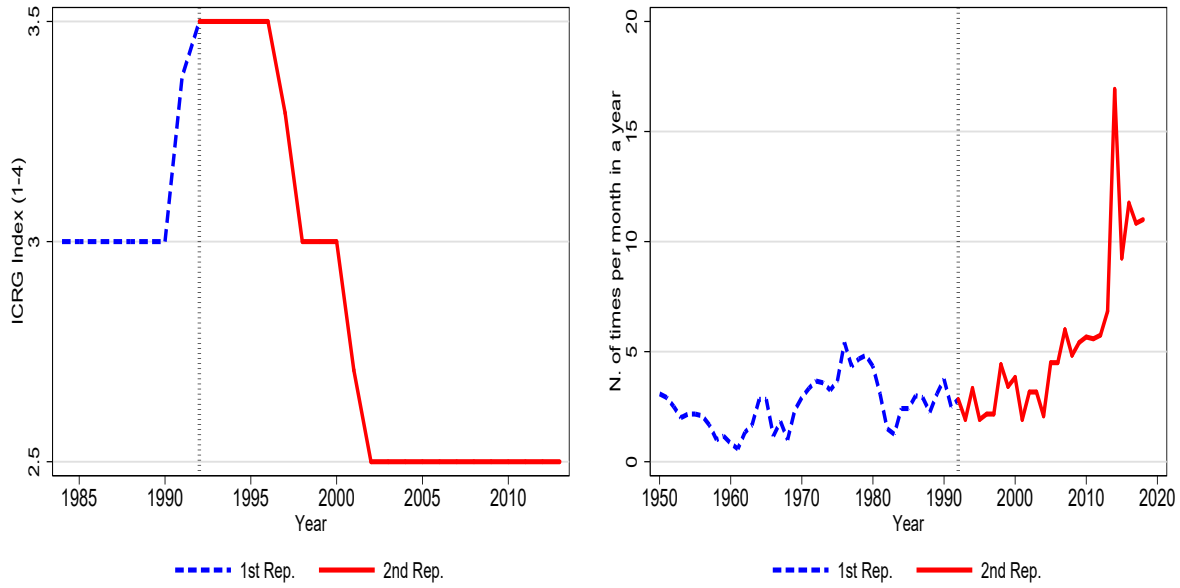
(c) Laws with a preamble, %

(d) Links to other laws per word

Panel (a): average length (number of characters) of sentences in all laws issued. Panel (b): average number of gerunds per one thousand words in the law. Panel (c): average share of laws containing a preamble. Panel (d): average number of references to other laws in the main body of the law per one thousand words. Solid horizontal lines denote averages during the First and Second Republic.

and written work that make it hard to get something done". The index can be interpreted as a measure of how salient the problem of bureaucracy is perceived by Italians. The index can be calculated since the start of the First Republic. It was completely flat during

Figure 8: The emergence of the bureaucratic problem in Italy's Second Repubblic



(a) ICRG index of quality of bureaucracy **(b) Word bureaucracy in the press**

Panel (a): 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. Panel (b): number of times per month the word "bureaucracy" appears in the front page of Italy's main daily newspaper (Corriere della Sera). The vertical line corresponds to the start of the Second Republic in 1992.

the entire First Republic, while it progressively increased starting from the beginning of the second millennium. Roughly, today Italians talk about bureaucracy three times more than during the First Republic. The initially slow increase in the public perception of the bureaucratic problem and its subsequent acceleration is consistent with a lag between the excessive production of laws and its effects on bureaucracy, which collapses once the legislation crosses a critical level of complexity.

There is direct survey evidence suggesting that the problem of Italian bureaucracy originates from excessive, sometimes confused legislation. In 2016, Forum-PA (2017) sampled 1,688 government officials asking them for the principal factors reducing their performance and slowing down their actions. The survey allow respondents to offer multiple responses. The three factors mentioned most frequently by respondents are the following: 67% blame excessive legislation; 62.6% confused legislation and overlaps of norms; 57% excessive legislative changes on the same matter. For comparison, the excessive fragmentation of responsibilities, lack of resources, and a too stringent control system are mentioned by less than one third of the respondents.

To provide formal time series evidence for the claim that an intensive production of laws leads to a deterioration in the quality of legislation and in bureaucratic efficiency, we

estimate a Vector Autoregression Model (VAR) containing 4 lags and seasonal dummies using quarterly data over the period 1946:I-2016:IV. The VAR characterizes the stochastic time-series evolution of the following triple:

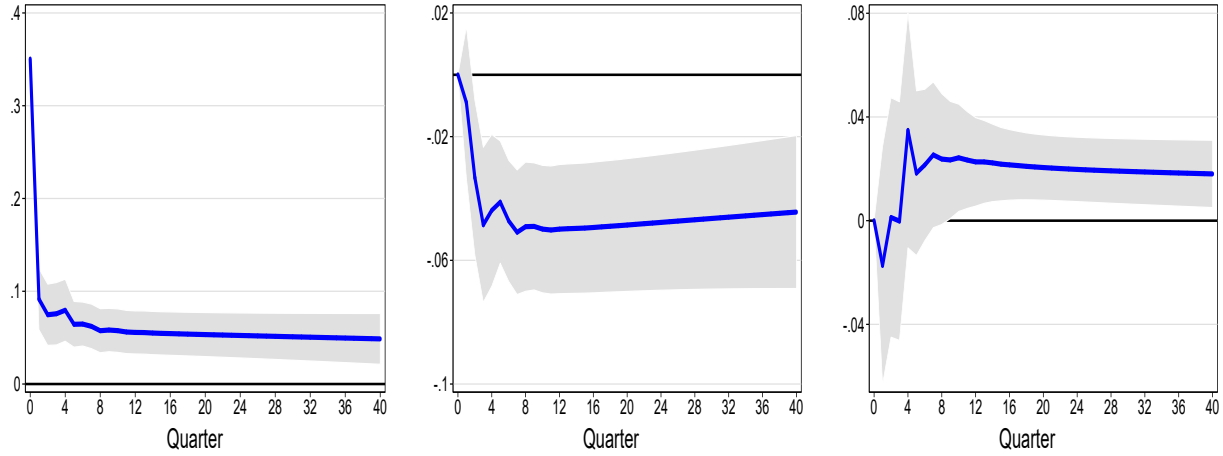
$$X_t = [\textit{Number of words of laws}_t, \textit{ Quality of laws}_t, \textit{ Bureaucratic inefficiency}_t] .$$

All variables are in logs. *Number of words of laws* corresponds to the sum of all words of laws passed by the Parliament in the quarter. *Quality of laws* is equal to minus the principal component of the previously discussed indicators for the quality of legislation (length of sentences, number of gerunds, presence of a preamble and its length and number of references to other laws). *Bureaucratic inefficiency* is our measure for the public salience of the bureaucratic problem as inferred by the number of citations in the front page of Corriere della Sera. Given the estimated VAR, we invert the process to obtain the Wold representation of $X_t = D(L)\eta_t$ where $D(L)$ has all its roots inside the unit circle and $E(\eta_t\eta_t') = \Sigma_\eta$ is the variance covariance matrix of the Wold innovations η_t, serially uncorrelated over time. The Wold innovations are a combination of a vector ϵ of orthogonal structural shocks, $E(\epsilon'\epsilon) = I$, which implies that $\eta = S\epsilon$ with S having full rank. We identify a shock to the amount of legislation by imposing the restriction that, in the quarter of impact, the shock affects only the variable *Number of words of laws*, which follows from the assumption (also made in the model) that bureaucratic efficiency is slow-moving. Figure 9 plots the impulse response to a one standard deviation shock to the number of words of laws issued by the Parliament in a quarter. The shock causes a reduction in the quality of legislation and makes the bureaucratic problem more salient. On impact the *Number of words of laws* increases by around 35 percent. In the 8 years after the initial shock, the amount of legislation remains above normal level by around 5 percent. After the shock, the quality of laws worsens by around 5 percent per quarter. With some lags, bureaucratic inefficiency slowly builds up. Four years after the initial shock the frequency of the word bureaucracy in the press is permanently above its pre-shock level by 3 percent.

6.4 A reference comparison

Other shocks might have hit the Italian economy around the time of the fall of the Berlin Wall and caused the break in the quantity and quality of legislation that we have documented. The creation of the European Single Market in 1992 is probably one of the most relevant alternative culprit. It intensified the production of European legislation that all countries in the Union were asked to incorporate into their national legislation. Germany

Figure 9: Response to a one SD increase in the amount of legislation



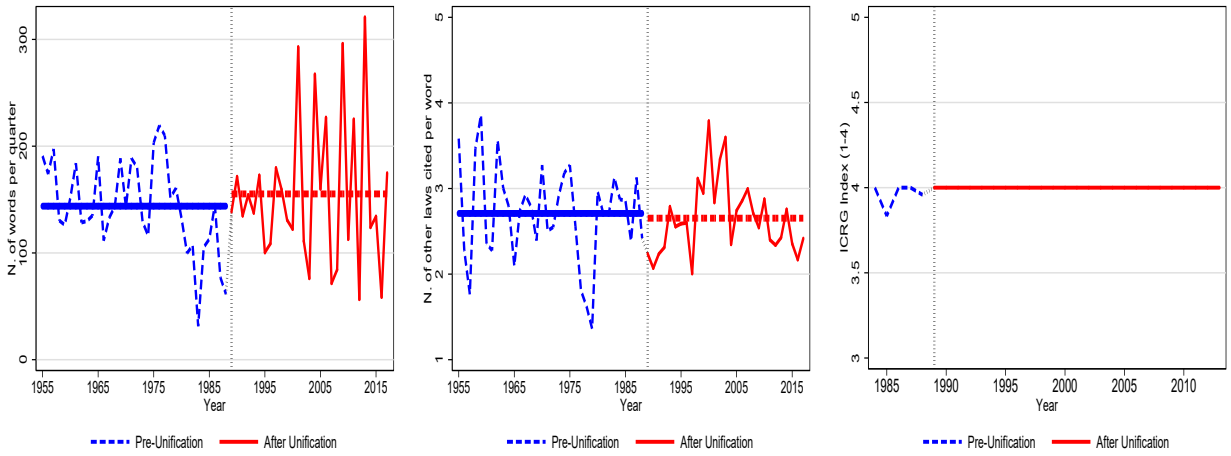
(a) Number of words of laws **(b) Quality of laws** **(c) Bureaucratic Inefficiency**

Impulse response to a one Standard Deviation increase in the *Number of Words of laws* issued in a quarter (panel (a) on the *Quality of laws* (panel (b) and *Bureaucratic Inefficiency* panel (c)). *Number of Words of laws* is the number of words in the laws issued by the Italian parliament in a given quarter. *Quality of laws* is the principal component of the variables used to characterize the quality of legislation: number of gerunds per word, length of sentences, presence and length of preamble, and number of references to other laws. *Bureaucratic Inefficiency* is measured by the number of times the word bureaucracy appears on average in the first page of Corriere della Sera, Italy's main newspaper. All variables are in logs. The VAR contains 4 lags and is estimated over the period 1946:1-2016:IV.

is a natural reference comparison because it was directly affected by the fall of the Berlin Wall, it was exposed to the Single Market "shock" exactly as Italy did, but, differently from Italy, its political system has remained remarkably stable over time—at least until the very most recent years. We now show that, as a result, Germany did not experience a break in the quantity and quality of legislation following the end of the Cold War.

We downloaded all the Official Gazettes of the German Federal Republic ("Bundesgesetzblatt") from 1955 to 2017. The Gazettes contain the text of all Federal laws, regulations and decrees passed by the Federal Parliament ("Bundestag"). We processed through text analysis all laws ("Gesetze") and decrees ("Verordnung"). For each year we have calculated the number of words of legislation published in an average quarter of the year by the German Federal Parliament. Since the series exhibits a clear pre-German unification trend, in Panel (a) of Figure 10 we plot the linearly detrended series centered around its sample mean. Overall there is no indication of a structural break in the amount of legislation issued in Germany before and after the 90's. Panel (b) also shows the time series profile of the number of references to other laws per one thousand words in the law. Again there is no indication that German legislation has become more complex over time: German laws cite other laws at a fairly constant rate of 2.7 citations per one thousand words. Finally, Panel (c) shows the ICRG indicator for the quality of German bureaucracy, which

Figure 10: German legislation: quantity, quality and efficiency of bureaucracy



(a) Number of word of laws **(b) Number of other laws cited** **(c) Efficiency of Bureaucracy**

Blue dotted line: pre-unification; red solid line: post unification. Horizontal lines denote averages within the corresponding period. Panel (a): average number of words contained in all laws ("Gesetze" or "Verordnung") issued in a quarter of a year, linearly detrended and centered around its sample mean. Panel (b): average number of references to other laws per one thousand words in the law. Panel (c): ICRG indicator of quality of bureaucracy.

has remained remarkably stable over time at its maximal possible value. Our interpretation is that Germany shares with Italy the fall of the Berlin wall and the exposure to the single market, yet it was not exposed to the surge in political instability that has characterized Italy over its Second Republic and that has distorted the incentive of Italian politicians towards greater (excessive) legislative activism.

7 Testing the mechanism

We now use micro data for Italian MPs during the Second Republic to test the model's key strategic mechanism. The model hinges on two premises. The first is that legislative activism has signalling value to politicians. The second is that political instability amplifies the incentive of incompetent politicians to produce new laws. We begin by describing the empirical tests. We then discuss the data and, finally, present the results.

7.1 Signaling and the instability multiplier

We now describe how we identify the signalling value of legislative activism and the amplification effects of political instability on law production.

Signalling. To identify the signalling value of legislative activism to politicians we use an event study methodology. We show that the visibility of politicians in the press increases upon introducing bills into parliament. Let CIT_{it} denote the number of citations of MP i in the press at time t. We consider a window of 60 days around the day when MP i's bill is first discussed by parliament and then run the following regression:

$$CIT_{it} = \sum_{\tau=-30}^{30} \beta_\tau d_{it}^\tau + \varphi_i + \psi_t + \beta' X_{it} + \epsilon_{it}, \tag{12}$$

where d_{it}^τ are event dummies, equal to one if the bill by MP i was first presented at date $t - \tau$ and zero otherwise, φ_i is an individual fixed effect for MP i, ψ_t are time dummies, and X_{it} are other time varying controls. The main coefficient of interest is β_0 which identifies the *signalling value* of legislative activism: by how much the visibility of MP i is enhanced by actively proposing a new bill in the Parliament. The time dummies ψ_t's control for common shocks to the likelihood that politicians appear in the press, the individual dummies φ_i's for the prominence of politician i.

Instability multiplier. To test for whether political instability amplifies the incentive of incompetent politicians to produce laws, we use a Difference-in-Differences methodology exploiting variation in politicians' competence and political instability across legislatures. We estimate variants of the following regression model:

$$A_{itl} = \alpha + \gamma I_{itl} + \delta I_{itl} \times \Lambda_l + \psi_l + \beta Z_{itl} + \epsilon_{itl}, \tag{13}$$

where A_{itl} is a measure of legislative activism by MP i at time t in legislature l, I_{itl} is an index equal to one for a relatively *incompetent politician*, Λ_l is the length of the legislature l, equal to one for complete legislature and zero otherwise, ψ_l's are a full set of legislature dummies, Z_{itl} are additional controls for MP i, and ϵ_{itl} is an error term. The coefficient of interest is δ, which compares the relative legislative activism A_{itl} of incompetent and competent politicians, in completed and uncompleted legislatures. The coefficient δ is predicted to be *negative* by the model and measures the (political) *instability multiplier*: whether in short legislatures the incentives to produce laws are relatively stronger for incompetent than for competent politicians, which is how political instability stimulates the production of laws in the model (see Propositions 2 and 5). Notice that the presence of I_{itl} in (13) controls for the average activism of incompetent politicians in uncompleted legislatures while the legislature dummies ψ_l control for common shocks to the legislative activism of politicians in the legislature, which makes the identification of the instability multiplier robust to the reasons for why some legislatures end prematurely while others

complete their term. The test based on (13) requires that MPs expect uncompleted legislature to end prematurely, so as to adjust their strategic behavior accordingly. In the Italian context this appears to be a good assumption. Historically the stability of Italian legislatures depends critically on the government coalition's margin in the higher chamber, the Senate of the Republic. Italian governments need the support of a majority of both chambers of parliament—the Senate and the Chamber of Deputies—but because of its smaller number of seats (315 in the Senate against 630 in the Chamber), the coalition's margin in the Senate crucially matters for the expected duration of the legislature. As a matter of fact, Table A1 in Appendix D shows that government coalitions in uncompleted legislatures were supported by very slim Senate majorities[23] in comparison with those in legislatures that ran full term. In turn, the coalition's margin in the Senate is the results of the election, and thus exogenous with respect to the actions taken in the current legislature. But because it is observed from the outset of the legislature, MPs can form a reliable prediction about the legislature's duration and adjust their strategic behavior accordingly. Importantly, even the actual length of an uncompleted legislature is itself exogenous to MPs legislation activity. As MPs pension entitlements mature only if the legislature lasts for at least two years, MPs can easily anticipate that any legislature, even those with a tiny margin in the Senate, will never end before that term, as confirmed by the data: all uncompleted legislatures end after exactly two years (see Table A1 in Appendix D). Hence, our indicator for uncompleted legislatures can be taken as exogenous in our estimates.

7.2 The data

We use information on all Italian MPs, in both the Chamber and the Senate, for six legislatures in the Second Republic, starting from the tenth. The data[24] contain information on each bill introduced into Parliament, the name of its primary sponsor ("Primo Firmatario"), the date when it was first discussed, and if and (eventually) when it was approved as a law, together with the law identifier. The data include several information that we always use as controls in the regressions, including demographic characteristics of MPs (age, gender, marital status, number of children, education, and region of birth) and indicators of parliamentary career and appointments (dummies for life senator, previous parliamentary experience, appointment in a national or local party position, member of the European Parliament, committee chair or secretary, committee member,

[23] In one of these legislatures (XV), the government had only a 1-seat margin; in another (XII), it was actually 3 seats short (a few life senators supported a successful vote of confidence); in a third legislature (XI), it had a 12-seats margin—still less than the average in completed legislatures (20 seats).

[24] We thank Stefano Gagliarducci for making these data available to us. The original data are used and well documented in Gagliarducci, Naticchioni and Nannicini (2011).

deputy-prime minister or minister). We also know whether each MP was elected under a majoritarian or a proportional system, which we exploit in some specifications. The number of citations of MP i in the press at time t, CIT_{it}, are obtained by counting the number of times the full name of MP i appears in the front page of Corriere della Sera. Results are similar when searching on the whole newspaper. We searched for the number of citations of MP i on the date when the MP i's bill was first discussed in parliament and in the thirty days before and after that date. We measure the legislative activity of MP i in year t, A_{itl}, by either considering the number of bills introduced by MP i or the number of those that became law. Table 2 shows some summary statistics for the legislative activism of Italian MPs. Summary statistics of the controls are in Table A2 in Appendix D.

Table 2: Summary statistics

Variable	*Mean*	*Median*	*sd*
Number of MP citations	0.03	0	0.4
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 MP citations: average daily number of citations received by an active MP on Corriere della Sera during the 60 days window around the presentation of a bill; *Number of bills*: number of bills introduced by an average MP; *Number of laws*: number of bills converted into law, introduced by an average MP; *Success rate*: proportion of bills converted into law. *Re-election probability*: share of MPs in a legislature who are re-elected in the next.

To identify the competence of MP i we exploit the fact that Law 441 of 1982 required all MPs to disclose their tax statements, which provide information on the earnings of MPs during their term(s) as well as in the year before election. Following the labor economics literature (see Card, 1999), we infer politicians' competence from their market earnings capacity.[25] We run Mincerian panel regressions on total earnings adding time and individual-MP fixed effects and we take the latter as a measure of competence of the MP. From this continuous measure we construct the indicator for an incompetent politician, I_{itl}, as equal to 1 if the estimated fixed effect is below the cross sectional median; a stricter definition takes the 25th percentile as the relevant threshold. Alternatively, we run the same Mincerian wage regression without adding MP fixed effects, but adding the pre-

[25]In the model voters do not observe politicians' competence, but infer it solely from their legislative activity. Our empirical strategy requires that voters do not fully observe the measure of politicians' competence that we use, which is a realistic assumption: even if MPs had to disclose their income tax statements, this information was only available on paper from the archives of the Chamber and the Senate, making it essentially unaccessible. Only starting from 2013 this information has been made easily available on line at http://www.camera.it/leg17/1003.

viously discussed list of individual controls. Taking the residuals from these regressions, averaging them at the MP level, we then construct an alternative analogous indicator for an incompetent politician I_{itl}. We call the first the *Fixed-Effect measure* for MP incompetence, and the second the *Residual measure*. Empirically, the two measures are positively correlated (correlation 0.3).

Some validation of the incompetence measure. To validate our measure of competence, we observe that only eight percent of bills are converted into a law (see Table 2). Bills are subject to a number of filters that screen, among other things, for legislative quality. If our measure captures some notion of competence of MPs, we would expect that the bills introduced by incompetent politicians are less likely to become law. This prediction is confirmed by Table 3, which reports Tobit estimates for the probability that a bill introduced by an MP is converted into law: bills introduced by incompetent politicians are converted into law with a probability which is between 2 and 6 percentage points lower than the bills proposed by other politicians. An even more compelling way to validate

Table 3: Successful bills and politicians' quality

	Politician's incompetence measure			
	FE $<$ median	FE $< 25^{th}$ pct	Resid $<$ median	Resid $< 25^{th}$ pct
Incompetent 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 for the share of bills introduced by an MP that are converted into law using four alternative measures of MP's competence. All regressions control for demographic characteristics (age, gender, marital status, number of children, level of education: number of years and a full set of field of study dummies, dummies for region of birth), dummies for chamber of parliament, life senator, previous parliamentary experience, appointment in a national or local party position, member of the 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 clustered at MP level; p-values are shown in parenthesis : *** significant$\leq$ 1%; ** significant$\leq$ 5% ; * significant$\leq$10%.

the measure of competence of an MP is to directly correlate it with the quality of the laws originated by their bills—in our model, in fact, incompetent politicians propose laws of lower quality. Table 4 reports the results of regressing our previously discussed measures of quality of laws against the indicator for being an incompetent politician, I_{itl}. For all measures of quality of laws, we find that incompetent MPs produce worse laws: compared with the others, laws introduced by incompetent politicians have longer sentences (by 13% of the sample standard deviation), use more gerunds (25% more than average),

are 33% more likely to contain a preamble, and cite other laws 8% more often than average. The last column of Table 4 also shows the results from considering the principal component of all measures of law quality, multiplied by minus one (so that the indicator is increasing in quality). According to this metric, incompetent politicians produce laws whose overall quality is 18% lower compared to the sample standard deviation.

Table 4: Politicians incompetence and laws quality

	Average length of sentences	Number of gerunds	Law has a preamble	N. of references to other laws	First Principal component
Incompetent politician	12.295**	0.00062***	0.3298**	0.0127	-0.2086**
	(0.036)	(0.0001)	(0.069)	(0.227)	(0.004)
Observations	1,675	1,675	1,675	1,675	1,675

OLS and probit (in third column) estimates of the relation between law quality and the incompetence of its primary sponsor. In the first column the dependent variable is the average length of sentences in the law; in the second the number of gerunds scaled by the number of words in the law; in the third an indicator equal to one if the law has a preamble; in the fourth the number of references to other laws in the body of the law; in the fifth is the principal component of all measures of law quality multiplied by minus one. Regressions are run on the sample of MPs whose bills were converted into a law. 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%.

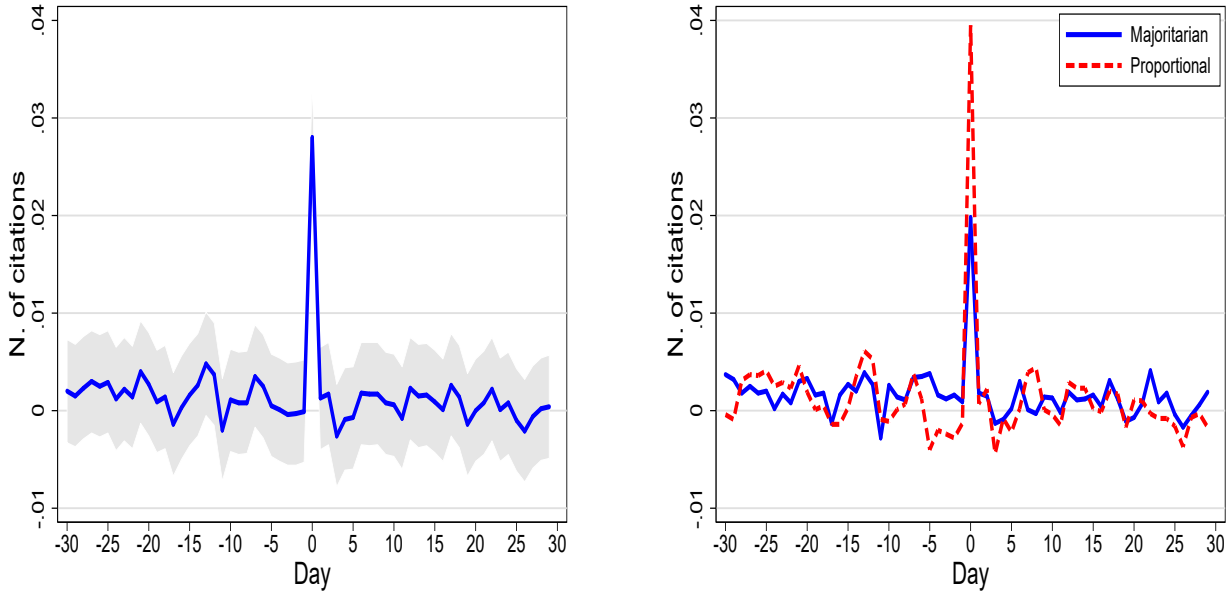
7.3 Results

We now present the empirical results.

Signaling. We run the regression (12) on the whole sample of Italian MPs. Panel (a) of Figure 11 plots the estimated event dummies coefficients d_{it}^{τ}'s. It shows that on the day of first presentation of a bill, its main sponsor obtains a large and highly significant increase in the number of times her name appears in the press, which increases by almost 0.03 citations a day, which is twice the sample mean of citations. In all the other days of the window periods the coefficients d_{it}^{τ}'s are not statistically different from their mean value. We also exploit the fact that from the XII legislature (1994-1996) until the XIV legislature (2001-2006), MPs could be elected under a mixed system. Around 75% of MPs were elected in single member districts while the remaining 25% were elected under a proportional representation system. We expect the signalling value of legislative activism to be larger for MPs elected under a majoritarian system, say because voters, once they have directly elected a politician, pay more attention to how she performs in the Parliament and the press anticipates voters' attention. To test for this prediction, we run the regression in (12) separately for the sample of MPs elected under a majoritarian system

and for those elected under a proportional system. Panel (b) in Figure 11 plots the event dummies coefficients d_{it}^{τ}'s estimated separately for the two sub-samples. The signalling value of legislative activism is around twice as large for MP's elected under a majoritarian system than for those elected under a proportional system.

Figure 11: Legislative activism and visibility of MPs in the press



(a) Press citations of MP upon 1st reading of bill **(b) Press citations of MP, different systems**

Coefficients d_{it}^{τ}'s from estimating (12) using the citations of MPs in the front page of the main Italian daily newspaper (Corriere della Sera) over a 60 day window around the date of presentation of a bill. Panel (a) is for the full sample, Panel (b) considers separately MPs elected under a majoritarian system and those elected under a proportional system.

Instability multiplier: bills & laws. Table 5 shows the results from estimating the regression in (13) when the legislative activism of MPs, A_{itl}, is measured using the number of bills they introduce into parliament. The first column uses the Fixed-Effect measure of politicians' competence; the second the Residuals measure. Incompetent politicians in uncompleted legislatures almost perfectly mimic the legislative activism of competent politicians—γ in (13) is not statistically different from zero. There is statistically significant evidence supporting the presence of an instability multiplier—i.e., δ in (13) is negative and statistically different from zero. Compared to competent politicians, incompetent politicians propose 1.2 more bills in an uncompleted legislature, which is equivalent to 18% of the sample mean of bills presented by MPs. The magnitude of the effect changes little when competence is measured using mean residuals (Column 2). We also find similar results when running separate regressions for completed and uncompleted

legislatures (Columns 3 and 4): the point estimate of the instability multiplier implied by this alternative specification is just twenty percent larger than the one in Columns 1 and 2. Table 6 reports some robustness exercises. The first three columns use the Fixed-

Table 5: Estimates of the instability multiplier: bills

	Whole sample		*Sample split:*	
	Quality measure:		Completed	Uncompleted
	Fixed Effect	Mean residual	Legislature	Legislature
Incompetent politician	-0.63	0.00	-2.10**	-0.36
	(0.266)	(0.995)	(0.027)	(0.507)
Completed legislature	-1.21**	-1.10**		
× Incompetent 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 introduced by an MP on politician quality, measured using the Fixed Effect (or mean residuals) in Mincerian wage regressions. All regressions include the controls specified in Table 3. Regressions compute robust standard errors, clustered at the MP level; p-values are shown in parenthesis; *** significant$\leq$ 1%; ** significant$\leq$ 5% ; * significant$\leq$10%.

Effect measure of politicians' competence, the last three use the Residual measure. As a first robustness check, we define as incompetent 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 active MPs; third, we restrict the sample to MPs who introduced at least one bill in the legislature, which implies dropping 1239 observations. The results are basically unchanged: the instability multiplier δ is only marginally smaller than in Table 5 but of the same order of magnitude. Not surprisingly, precision is lost when omitting MPs who introduced no bills, but even in this case the point estimate of δ changes little in terms of magnitude.

Table 7 reports the results from estimating (13) when the legislative activism of MPs, A_{itl}, is measured using the number of laws sponsored by MPs rather than the number of bills. There is evidence in favor of the existence of an instability multiplier also using this alternative measure of activism. Compared to completed legislatures, in uncompleted legislatures incompetent politicians sponsor on average 0.3 more laws than competent politicians do. Since the mean number of laws per MP is 0.91 (Table 2), uncompleted legislatures lead to an increase in the number of laws by incompetent politicians equivalent

Table 6: Robustness

	Quality measured with:					
	Fixed Effect			*Mean residual*		
	Incompetent FE$< 25^{th}$	No outliers	At least one bill	Incompetent Resid $< 25^{th}$	No outliers	At least one bill
Incompetent 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)
Completed legislature	-0.99*	-0.97**	-0.88	-0.99	-0.81**	-1.12*
$\times$ Incompetent 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 introduced by an MP. In the first three columns competence is determined by the Fixed-Effect measure, in the last three by mean residuals. Columns 1 and 4 identify incompetent 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 distribution of number of bills proposed by MPs); 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, clustered at the MP level; p-values are shown in parenthesis: *** significant$\leq$ 1%; ** significant$\leq$ 5% ; * significant$\leq$10%.

to one third of the sample mean.

To evaluate whether the estimated instability multiplier can account for a sizable portion of the increased legislative activism observed in the data, we consider a simple back of the envelope calculation. The number of bills per day in a completed legislature in our sample is 4.6, which increases by 1.5 bills per day in uncompleted legislatures. The estimates in Column 1 of Table 5 imply that the instability multiplier δ accounts for roughly 51% of the observed increase in legislative activism in bills in uncompleted legislatures relative to completed legislatures.

Re-election. The model implies that the activism of politicians affects their reputation at the end of the legislature, which in the re-election interpretation of the model determines their probability of being re-elected. Longer legislatures give voters more time to assess the quality of the laws sponsored by MPs, implying that incompetent politicians are generally less likely to be re-elected when legislatures are long. To test this implication of the model, we run probit regressions for the probability of being re-elected in the next legislature, after dropping from the sample 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 all the previous specifications. Table 8 shows the resulting marginal effects. In the first two columns, the key coefficient of interest is the one for the interaction term between the dummy for incompetent politician and the length of a legislatures—i.e., the

Table 7: Estimates of the instability multiplier: laws

	Politician's incompetence measure			
	FE <median	FE 25^{th} pct	Resid < median	Resid < 25^{th} pct
Incompetent politician	0.01	0.05	-0.02	0.01
	(0.921)	(0.441)	(0.753)	(0.853)
Completed legislature	-0.32**	-0.32**	-0.15	-0.44***
× Incompetent 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, clustered at the MP level; p-values are shown in parenthesis: *** significant≤ 1%; ** significant≤ 5% ; * significant≤10%.

Table 8: Re-election probability

	Whole sample		*Sample split:*	
	Quality measure:		Complete	Uncompleted
	Fixed Effect	Mean Residual	Legislature	Legislature
Incompetent politician	0.052*	0.036	-0.053*	0.059*
	(0.030)	(0.027)	(0.029)	(0.035)
Completed legislature	-0.087**	-0.077**		
× Incompetent politician	(0.036)	(0.034)		
Incompetent politician			0.049	0.207*
× Law enacted			(0.049)	(0.109)
Observations	3,985	3,985	2,384	1,595

Probit estimates of the marginal effect on reelection probabilities. The dependent variable is equal to one if the MP is re-elected in the next legislature. The Fixed-Effect and the mean residuals measure of MP' competence are both based on the median. Regressions are run on the sample of MPs under 65 years of age omitting life senators. All regressions include the controls specified in Table 3. Regressions compute robust standard errors, clustered at the MP level; p-values are shown in parenthesis; *** significant≤ 1%; ** significant≤ 5% ; * significant≤10%.

analogous of δ in (13)—which the model predicts to be negative. The first column shows the results for the Fixed-Effect measure of competence, the second for the Residual measure. The last two columns report separate regressions for completed and uncompleted legislatures. Overall there is evidence that incompetent politicians are significantly less

likely to be re-elected after completed legislatures, which remains true also when splitting the sample: in a completed legislature, the re-election probability of an incompetent politician falls by between 7.7 and 11.2 percentage points, which is a non-trivial effect given that the sample mean re-election probability is 46% (Table 2).[26]

The model also implies that a law by an incompetent politician increases her re-election probability more in an uncompleted than in a completed legislature. We test for this implication of the model by adding to the probit model an interaction between the competence of the MP and whether her bill was enacted as a law—corresponding to the variable *Incompetent politician* $\times$ *Law enacted*. The resulting estimates are reported in the last two columns of Table 8. The coefficient on this interaction carries a positive significant effect only in uncompleted legislatures, supporting the claim that the legislative activism of incompetent politicians yields a positive payoff (in terms of re-election probabilities) only when voters have little time to assess the quality of the law they passed.

Laws quality and politicians quality. We conclude this section by noticing that because our model predicts that shorter terms induce incompetent politicians to be more active, this results in both excessive law production *and* average laws of lower quality. As we discussed in Section 7.2, incompetent politicians in our sample produce worse laws according to all our quality measures (see Table 4). These results imply that political instability, by increasing the incentives of incompetent politicians to pass laws, not only increases the quantity of legislation, but also leads to a progressive deterioration in its quality.

8 Concluding remarks and relation to the literature

We have proposed a simple theory of the substantial disparities in bureaucratic efficiency between countries and over time, due to excessive legislation introduced by incompetent 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 a reputation for being capable reformers, leading to the emergence of multiple steady states. Surge in political instability characterized by short legislatures, strong public pressure

[26]Our estimates would suggest that, after uncompleted legislatures, incompetent politicians are more likely to be re-elected than competent politicians, while this is never the case following completed 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 it is standard in the difference-in-differences methodology, the focus of the test is on the interaction term.

for reforms, or short-lived technocratic governments induce the overproduction of laws, which can cause a permanent shift to a Kafkaesque steady state. Italy's experience since the early 1990's fits well some features of the model: the sharp increase in political instability caused by the end of Cold War produced a marked increase in the production of laws, a deterioration in their quality, and a progressive fall in the efficiency of the Italian bureaucracy. Using micro data for Italian MPs, we have also provided empirical support for the key strategic mechanism underlying the behavior of politicians in the model.

There is plenty of evidence that politicians are motivated by career and re-election concerns (see, e.g., Diermeier et al., 2005; 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). Closer to us, Bonfiglioli and Gancia (2013) show that periods of economic uncertainty can reduce the incentives of politicians to focus on policies which give results faster, thus increasing the number of long-term structural reforms. Ash, Morelli and van Weelden (2017) focus on the incentives to "posture", shifting from instrumental to expressive issues. Our focus on the total production of laws, their quality, and their effects on bureaucratic efficiency is novel, and we emphasize that periods of political instability prompt a surge in legislative activism that has pernicious effects far in the future, even after the emergency has passed.

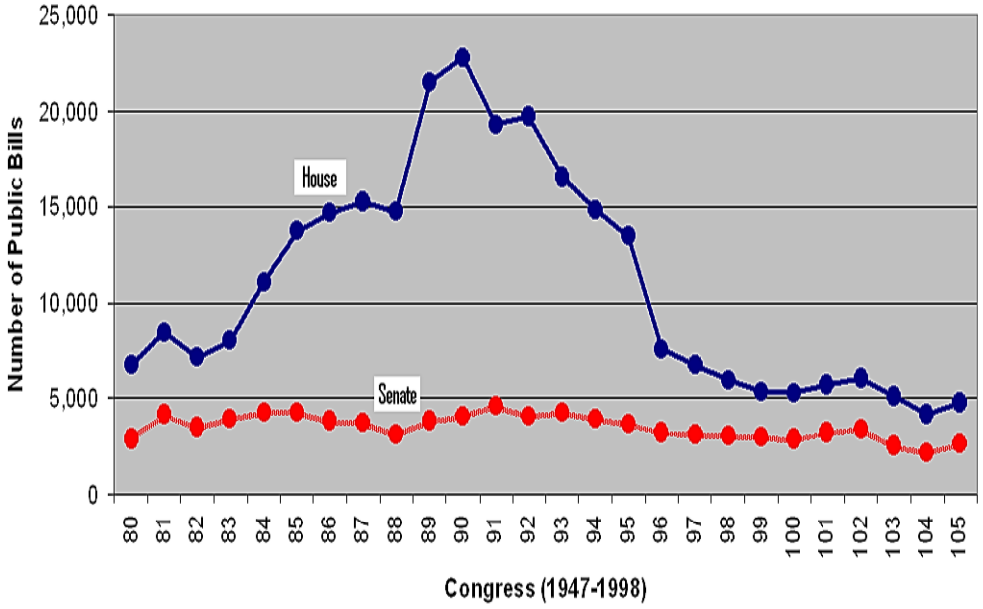
The premise of our theory is that politics and bureaucracy are complementary in providing public capital, which is a difference relative to Maskin and Tirole (2004) and Alesina and Tabellini (2007; 2008), who study the trade-off between delegating choices to bureaucrats or elected politicians. There is a large literature on the determinants of bureaucratic performance—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 focuses mainly on the *internal* functioning of bureaucracy and analyzes 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 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 rather than the legislators' incentives for the overproduction of laws.

Our analysis is also related to the literature on government regulation, particularly to Aghion et al. (2010) who study the links between regulation and people's trust, showing that multiple steady-states 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. Similarly to them we show the possibility of multiple equilibria with different amount of legislation. Differently from them we identify temporary waves of political instability as a key determinant of the equilibrium with excessive legislation. This distinction is important from a policy perspective because understanding 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 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 accurately evaluate the performance of politicians in office.

The perverse effects of excessive legislation can be more relevant in civil law than in common law countries because in the former legislative complexity can build up more easily—as single laws have long-lasting effects on the legislative code. But the use of bills as a signal of political activism is likely to be a general feature of modern democracies, independently of whether they belong to the civil or common law tradition. Moreover, in common law systems, judicial power is typically strong and more independent, and actively contributes to the production and validation of laws. This determines a potentially greater distance between the acts of politicians and the voters' evaluation, and hence a potentially even larger incentive for politicians to use legislative politics for signaling and posturing. Figure 12 shows the number of bills introduced in the US Congress, separately for the Senate and the House of Representatives, from the 80th to the 105th Congress. While the number of bills introduced is constant at around 5,000 for the Senate, in the House it is hump shaped: initially close to the activity rate in the Senate, it jumped to 22,000 bills per congress 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 around 5,000 bills per congress. 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 and until the 91st Congress, co-sponsorship was not allowed; in the 91st Congress the rule was changed again, allowing co-sponsorship, 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 sur-

Figure 12: Bills introduced in US congress



prisingly, the number of bills declined after it. This suggests that the pernicious dynamics we highlighted are a major concern in advanced democracies in general, and their resolution is essential to the preservation of well-functioning bureaucratic institutions.

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A Omitted Proofs

A.1 Proof of Proposition 1

Proof. Preliminaries. Let $E\left[u_{i\ell}\left(\theta_{i\ell},\omega_{i\ell}\right)\mid\sigma_{i\ell}\right]$ denote the expected utility of a politician $i\ell$ with competence $\theta_{i\ell}$ and a project of reforms of quality $\omega_{i\ell}$ who decides to be active with probability $\sigma_{i\ell}\equiv\sigma_{i\ell}\left(\theta_{i\ell},\omega_{i\ell}\right)$. Given (1), the expected payoff from not initiating is equal to

$$E\left[u_{i\ell}\left(\theta_{i\ell},\omega_{i\ell}\right)\mid 0\right]=\phi\rho_{i\ell}^{n}. \tag{A1}$$

The expected payoff from being active is

$$E\left[u_{i\ell}\left(\theta_{i\ell},\omega_{i\ell}\right)\mid 1\right]=\phi\left\{\eta\left(\alpha_{\ell},\lambda\right)\rho_{i\ell}^{y}+\left(1-\eta\left(\alpha_{\ell},\lambda\right)\right)\left[\omega_{i\ell}\rho_{i\ell}^{g}+\left(1-\omega_{i\ell}\right)\rho_{i\ell}^{b}\right]\right\}. \tag{A2}$$

Existence. Let $\eta\left(\alpha_{\ell},\lambda\right)<\underline{\rho}$ and let politicians with bad projects of reforms be inactive. Notice that event b is off the equilibrium path and therefore $\rho_{i\ell}^{b}=0$ is a consistent belief. Furthermore, by Bayes' rule, $\rho_{i\ell}^{g}=\rho_{i\ell}^{y}=1$, $\rho_{i\ell}^{n}=\underline{\rho}$, and therefore

$$E\left[u_{i\ell}\left(1,1\right)\mid 1\right]=\phi>E\left[u_{i\ell}\left(\theta_{i\ell},\omega_{i\ell}\right)\mid 0\right]=\phi\underline{\rho}>\phi\eta\left(\alpha_{\ell},\lambda\right)=E\left[u_{i\ell}\left(\theta_{i\ell},0\right)\mid 1\right]$$

where the last inequality holds because $\eta\left(\alpha_{\ell},\lambda\right)<\underline{\rho}$. This proves existence in this case.

Let $\eta\left(\alpha_{\ell},\lambda\right)\geq\underline{\rho}$ and let incompetent politicians be active with probability

$$p-\frac{p\left(1-p\right)\left[1-\eta\left(\alpha_{\ell},\lambda\right)\right]}{\left(1-\pi\right)\left[1-p\left(1-\eta\left(\alpha_{\ell},\lambda\right)\right)\right]}.$$

Using Bayes rule to calculate $\rho_{i\ell}$, it is easy to notice that (i) incompetent politicians and competent politicians with bad projects of reforms are indifferent between being active and inactive, and (ii) $\rho_{i\ell}^{b}<1$. Also

$$E\left[u_{i\ell}\left(1,1\right)\mid 1\right]>E\left[u_{i\ell}\left(0,0\right)\mid 1\right]=E\left[u_{i\ell}\left(1,0\right)\mid 1\right]$$

whenever $\rho_{i\ell}^{b}<1$. Therefore, competent politicians strictly prefer to be active. This proves existence for this case.

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

$$E\left[u_{i\ell}\left(0,0\right)\mid 1\right]=\phi\eta\left(\alpha_{\ell},\lambda\right)\rho_{i\ell}^{y}<\phi=E\left[u_{i\ell}\left(0,0\right)\mid 0\right]$$

contradicting the hypothesis that incompetent politicians prefer to be active. Therefore, in all equilibria, incompetent politicians are active with probability strictly less than 1.

We now show that an equilibrium in which incompetent politicians are inactive with probability 1 exists only if $\eta(\alpha_\ell, \lambda) \leq \underline{\rho}$. To see this, suppose that incompetent politicians are inactive. Then, by Bayes' rule, $\rho^n_{i\ell} = \underline{\rho}$ and $\rho^y_{i\ell} = 1$. Therefore, a politician with a bad project of reforms would prefer to be inactive only if

$$E[u_{i\ell}(0,0) \mid 1] = \phi\left[\eta(\alpha_\ell, \lambda) + (1 - \eta(\alpha_\ell, \lambda))\rho^b_{i\ell}\right] \leq \phi\underline{\rho} = E[u_{i\ell}(0,0) \mid 0]$$

with $\rho^b_{i\ell} \in [0,1]$. Thus, such an equilibrium exists only if $\eta(\alpha_\ell, \lambda) < \underline{\rho}$. Otherwise incompetent politicians are active with probability strictly between 0 and 1.

Finally, we show that if in an equilibrium incompetent politicians are active with probability strictly between 0 and 1, then

1. they are active with probability

$$\sigma(\alpha_\ell, p, \lambda, \pi) \equiv p - \frac{p(1-p)[1 - \eta(\alpha_\ell, \lambda)]}{(1-\pi)[1 - p(1 - \eta(\alpha_\ell, \lambda))]};$$

2. $\eta(\alpha_\ell, \lambda) \geq \underline{\rho}$.

To see this, notice that if incompetent politicians are active with probability strictly between 0 and 1, then $\rho^b_t = 0$ and the following indifference condition must hold:

$$\begin{aligned}
\eta(\alpha_\ell, \lambda)\rho^y_t &= \rho^n_t \\
\eta(\alpha_\ell, \lambda)\frac{\pi p}{\pi p + (1-\pi)\sigma_{i\ell}} &= \frac{\pi(1-p)}{\pi(1-p) + (1-\pi)(1-\sigma_{i\ell})} \\
\sigma_{i\ell} &= p - \frac{p(1-p)(1 - \eta(\alpha_\ell, \lambda))}{(1-\pi)[1 - p(1 - \eta(\alpha_\ell, \lambda))]}
\end{aligned}$$

where the first passage follows from Bayes' rule. Notice that evaluating $\sigma_{i\ell}$ at $\eta(\alpha_\ell, \lambda) = \underline{\rho}$ gives $\sigma_{i\ell} = 0$, which shows that the equilibrium is unique. ■

A.2 Proof of Proposition 2

Proof. By Proposition 1, the probability than an incompetent politician is active is given by $\sigma(\alpha_\ell, p\lambda, \pi)$ in (2). The first point in the proposition then follows because $\underline{\rho}$ decreases with p and

$$p - \frac{p(1-p)[1 - \eta(\alpha_\ell, \lambda)]}{(1-\pi)\{1 - p[1 - \eta(\alpha_\ell, \lambda)]\}}$$

increases with p. The second point follows because (i) $\eta(\alpha_\ell, \lambda)$ decreases with α_ℓ and λ; (ii) $\underline{\rho}$ increases with π; and (iii)

$$p - \frac{p(1-p)\left[1-\eta(\alpha_\ell,\lambda)\right]}{(1-\pi)\left\{1-p\left[1-\eta(\alpha_\ell,\lambda)\right]\right\}}$$

decreases with π and increases with $\eta(\alpha_\ell, \lambda)$. ■

A.3 Proof of Proposition 3

Proof. We start considering the function

$$g(\alpha,\lambda) = \frac{\chi(\alpha,\lambda)}{1-(1-\alpha)^\lambda} \equiv \frac{(1-\alpha)^\lambda \sum_{j=1}^{\lambda}(1-\alpha)^{\frac{j(j-1)}{2}}}{1-(1-\alpha)^\lambda}. \tag{A3}$$

From immediate inspection of (A3) it follows that, $\forall \alpha \in (0,1)$, $g(\alpha,\lambda)$ is decreasing in α. We now prove that, $\forall \lambda > 1$, the function g is also decreasing in λ. To prove this, notice that

$$g(\alpha,\lambda+1) - g(\alpha,\lambda) = \frac{(1-\alpha)^{\lambda+1}}{1-(1-\alpha)^{\lambda+1}}\left\{(1-\alpha)^{\frac{(\lambda+1)\lambda}{2}} - \left[\frac{(1-\alpha)^{-1}-1}{1-(1-\alpha)^\lambda}\right]\sum_{j=1}^{\lambda}(1-\alpha)^{\frac{j(j-1)}{2}}\right\}$$

which, given that $\alpha \in (0,1)$, has the same sign as

$$\chi(\lambda) \equiv (1-\alpha)^{\frac{\lambda(\lambda+1)}{2}} - \frac{(1-\alpha)^{-1}-1}{1-(1-\alpha)^\lambda}\sum_{j=1}^{\lambda}(1-\alpha)^{\frac{j(j-1)}{2}}$$

We want to show that $\chi(\lambda) < 0$ for all $\lambda \in \mathbb{N}^+$, i.e.,

$$(1-\alpha)^{\frac{\lambda(\lambda+1)}{2}} < \frac{(1-\alpha)^{-1}-1}{1-(1-\alpha)^\lambda}\sum_{j=1}^{\lambda}(1-\alpha)^{\frac{j(j-1)}{2}}$$

which is equivalent to proving that

$$1 < \frac{(1-\alpha)^{-1}-1}{(1-\alpha)^{\frac{\lambda(\lambda+1)}{2}}\left[1-(1\text{-}\alpha)^\lambda\right]}\sum_{j=1}^{\lambda}(1-\alpha)^{\frac{j(j-1)}{2}} = \frac{\sum_{j=1}^{\lambda}\left[(1-\alpha)^{\frac{j(j-1)}{2}-1} - (1-\alpha)^{\frac{j(j-1)}{2}}\right]}{\sum_{j=1}^{\lambda}\left[(1-\alpha)^{\frac{\lambda(\lambda+1)}{2}+j\text{-}1} - (1-\alpha)^{\frac{\lambda(\lambda+1)}{2}+j}\right]}. \tag{A4}$$

where the last equality follows from the fact that

$$(1-\alpha)^{\frac{\lambda(\lambda+1)}{2}} - (1-\alpha)^{\frac{\lambda(\lambda+1)}{2}+\lambda} = \sum_{j=1}^{\lambda}\left[(1-\alpha)^{\frac{\lambda(\lambda+1)}{2}+j-1} - (1-\alpha)^{\frac{\lambda(\lambda+1)}{2}+j}\right].$$

The exponential function with basis $x \in (0,1)$, x^a, is decreasing and convex in its argument a. Then, for any pair of functions $a(i)$ and $b(i)$ such that $a(i) < b(i)\ \forall i \in \mathbb{N}^+$ we have that, provided $x \in (0,1)$,

$$\sum_{i=1}^{n}\left(x^{a(i)-1} - x^{a(i)}\right) > \sum_{i=1}^{n}\left(x^{b(i)-1} - x^{b(i)}\right).$$

By using this result with $\alpha \in (0,1)$ and since

$$\frac{j(j-1)}{2} < \frac{\lambda(\lambda+1)}{2} + j,\ \forall j \in \{1,\ldots,\lambda\},$$

we can conclude that

$$\sum_{j=1}^{\lambda}\left[(1-\alpha)^{\frac{j(j-1)}{2}-1} - (1-\alpha)^{\frac{j(j-1)}{2}}\right] > \sum_{j=1}^{\lambda}\left[(1-\alpha)^{\frac{\lambda(\lambda+1)}{2}+j-1} - (1-\alpha)^{\frac{\lambda(\lambda+1)}{2}+j}\right],$$

which proves that (A4) holds, allowing us to conclude that $\chi(\lambda) < 0$ for all $\lambda \in \mathbb{N}^+$.

Since (i) $g(\alpha,\lambda)$ is decreasing in α and λ, (ii) by Proposition 2, $\sigma(\alpha,p,\lambda,\pi)$ is decreasing in α and λ, and (iii) the first term in the right hand side of (6) is decreasing in α, it immediately follows that h^* in (6) is also decreasing in α and λ.

To obtain the expression for the steady state stock of public capital in (7), notice that over time t the stock of public capital evolves as follows

$$\tilde{k}_{t+1} = (1-\delta)\tilde{k}_t + \alpha^*\tilde{k}_{gt} \tag{A5}$$

where $\tilde{k}_{gt}$ is the stock of public capital in outstanding good reforms which evolves as follows

$$\tilde{k}_{gt+1} = (1-\alpha^*)(1-\delta)\tilde{k}_{gt} + \pi p. \tag{A6}$$

Let $\tilde{k}^*$ and $\tilde{k}_g^*$ denote the steady state stock of existing public capital and the steady stock of public capital in outstanding good reforms, respectively. By imposing the steady state condition in (A5) and (A6) we obtain

$$\begin{aligned}\tilde{k}^* &= \frac{\alpha^*\tilde{k}_g^*}{\delta}\\ \tilde{k}_g^* &= \frac{\pi p}{1-(1-\alpha^*)(1-\delta)}\end{aligned}$$

which correspond to (7). ■

A.4 Proof of Proposition 4

Proof. The proof follows directly from the properties of $\sigma(\alpha^*, p, \lambda, \pi)$ in (2) together with the result proved in the proof of Proposition 3 that $\frac{\chi(\alpha,\lambda)}{1-(1-\alpha)^\lambda}$ is decreasing in both α and λ. ■

A.5 Proof of Proposition 5

Proof. Since Assumption 1 holds, we have that $\sigma(\overline{\alpha}, \lambda, p, \pi) = 0$ and $\frac{\pi p}{\overline{\alpha}} < \overline{h}^K$. It follows from Proposition 2 that

$$h(\lambda_\ell, p, \pi) = \frac{\pi p}{\overline{\alpha}} + (1-\pi)\sigma(\overline{\alpha}, p, \lambda_\ell, \pi)\chi(\overline{\alpha}, \lambda_\ell) > \overline{h}^K \tag{A7}$$

can happen only if $\lambda_\ell < \lambda$ so as to make $\sigma(\overline{\alpha}, \lambda_\ell, p, \pi) > 0$. We now prove that a reduction in λ to $\lambda_\ell < \lambda$ can indeed lead to a transition to a Kafkaesque steady state. Set $\overline{h}^K$, $\bar{\alpha}$ and λ such that the two conditions characterizing Assumption 1 both hold as an equality: $\frac{\pi p}{\bar{\alpha}} = \overline{h}^K$, and $\eta(\bar{\alpha}, \lambda) = \underline{\rho}$. This configuration of parameters can always be found since $\overline{h}^K$ affects the first but not the second condition characterizing Assumption 1. Given this parameter configuration $\lambda_\ell < \lambda$ immediately makes the inequality in (A7) satisfied and necessarily leads to a transition to a Kafkaesque steady state.

As regards shocks to p, notice that Proposition 2 implies that

$$h(\lambda, p_\ell, \pi) = (1-\overline{\alpha})^\lambda h_W + \left[1-(1-\overline{\alpha})^\lambda\right]\frac{\pi p_\ell}{\overline{\alpha}} + (1-\pi)\sigma(\overline{\alpha}, p_\ell, \lambda, \pi)\chi(\overline{\alpha}, \lambda)$$

is globally increasing in p_ℓ, so $h(\lambda, p_\ell, \pi) > \overline{h}^K$ can happen only if $p_\ell > p$. To prove that it can exist $p_\ell > p$ that leads to a transition to a Kafkaesque steady state, one can follow the same reasoning used above to prove that it can exist $\lambda_\ell < \lambda$ causing a transition to a Kafkaesque steady state.

To analyze the effects of shocks to π notice that Proposition 2 together with Assumption 1 imply that $\sigma(\overline{\alpha}, \lambda, p, \pi_\ell) = 0 \; \forall \pi_\ell > \pi$. It follows that $\forall \pi_\ell > \pi$ we have that

$$h(\lambda, p, \pi_\ell) = (1-\overline{\alpha})^\lambda h_W + \left[1-(1-\overline{\alpha})^\lambda\right]\frac{\pi_\ell p}{\overline{\alpha}}$$

is increasing in π_ℓ. A sufficiently big π_ℓ can then lead to $h(\lambda, p, \pi_\ell) > \overline{h}^K$. To prove that $\pi_\ell > \pi$ can indeed lead to a transition to a Kafkaesque steady state, one can then follow the same reasoning as above.

■

A.6 Proof of Proposition 6

Proof. 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_ℓ shifts the curve $L\left(U_1/U_0\right)$ up for all π. This concludes the proof.

First, notice that in equilibrium

$$U_1 = \phi\left\{p\left[1-\eta\left(\alpha_\ell,\lambda\right)+\eta\left(\alpha_\ell,\lambda\right)\rho_{i\ell}^{y}\right]+\left(1-p\right)\rho_{i\ell}^{n}\right\}. \tag{A8}$$

$$U_0 = \phi\left\{\sigma\left(\alpha_\ell,p,\lambda,\pi,\right)\eta\left(\alpha_\ell,\lambda\right)\rho_{i\ell}^{y}+\left(1-\sigma\left(\alpha_\ell,p,\lambda,\pi,\right)\right)\rho_{i\ell}^{n}\right\} \tag{A9}$$

where $\rho_{i\ell}^{y}$ and $\rho_{i\ell}^{n}$ are given by Point 3, Proposition 1. Then U_1 and U_0 are continuous in π because $\rho_{i\ell}^{y}$, $\rho_{i\ell}^{n}$, and $\sigma\left(\alpha_\ell,p,\lambda,\pi\right)$ are continuous in π. Then, by Proposition 1,

$$\begin{aligned}\frac{U_1}{U_0} &= \begin{cases}\frac{p}{\underline{\rho}}+\left(1-p\right) & \text{if } \eta\left(\alpha_\ell,\lambda\right)<\underline{\rho};\\ \frac{p\left[1-\left(1-\rho_{i\ell}^{y}\right)\eta\left(\alpha_\ell,\lambda\right)\right]+\left(1-p\right)\rho_{i\ell}^{n}}{\sigma\left(\alpha_\ell,p,\lambda,\pi,\right)\rho_{i\ell}^{y}\eta\left(\alpha_\ell,\lambda\right)+\left(1-\sigma\left(\alpha_\ell,p,\lambda,\pi,\right)\right)\rho_{i\ell}^{n}} & \text{otherwise.}\end{cases}\\ &= \begin{cases}\frac{p}{\underline{\rho}}+\left(1-p\right) & \text{if } \eta\left(\alpha_\ell,\lambda\right)<\underline{\rho};\\ 1+\frac{p\left(1-\eta\left(\alpha_\ell,\lambda\right)\right)}{\rho_{i\ell}^{n}} & \text{otherwise.}\end{cases}\end{aligned}$$

where the last passage follows from incompetent politicians being indifferent between being active and inactive: $\eta\left(\alpha_\ell,\lambda\right)\rho_{i\ell}^{y}=\rho_{i\ell}^{n}$. As $\underline{\rho}$ is increasing in π, it is easy to see that in the case when $\eta\left(\alpha_\ell,\lambda\right)<\underline{\rho}$, U_1/U_0 is decreasing in π. For the second case, U_1/U_0 is decreasing in π if and only if $\rho_{i\ell}^{n}$ is increasing in π. Recall that

$$\rho_{i\ell}^{n}=\eta\left(\alpha_\ell,\lambda\right)\rho_{i\ell}^{y}=\left[1+\frac{1-\pi}{\pi}\frac{\sigma\left(\alpha_\ell,p,\lambda,\pi\right)}{p}\right]^{-1}\eta\left(\alpha_\ell,\lambda\right).$$

Since $\sigma\left(\alpha_\ell,p,\lambda,\pi,\right)$ is decreasing in π (and so is $\frac{1-\pi}{\pi}$), then $\rho_{i\ell}^{n}$ is increasing in π. Using the assumption that L is monotonically increasing, then we have proven that $L\left(U_1/U_0\right)$ is decreasing in π.

We now turn to the question of whether an increase in α_ℓ shifts the curve $L\left(U_1/U_0\right)$ up for any $\pi\in[0,1]$. Notice that U_1 and U_0 are continuous in α_ℓ because ρ_{ℓ}^{y}, ρ_{ℓ}^{n}, $\eta\left(\alpha_\ell,\lambda\right)$, and $\sigma\left(\alpha_\ell,p,\lambda,\pi,\right)$ are continuous in α_ℓ. It is therefore sufficient to show that, for any $\pi\in[0,1]$, U_1/U_0 is increasing in α_ℓ.

Case 1: $\eta(\alpha_\ell, \lambda) < \underline{\rho}$**.** By Proposition 1,$\sigma(\alpha_\ell, p, \lambda, \pi)$ and $\rho^y_{i\ell} = 1$. It follows that $dU_1/d\alpha_\ell = dU_0/d\alpha_\ell = 0$. Therefore $d(U_1/U_0)/d\alpha_\ell = 0$.

Case 2: $\eta(\alpha_\ell, \lambda) \geq \underline{\rho}$**.** Notice that

$$\begin{aligned}
\frac{d}{d\alpha_\ell}\left(\frac{U_1}{U_0}\right) &= \frac{d}{d\alpha_\ell}\left(1 + \frac{p(1-\eta(\alpha_\ell,\lambda))}{\rho^n_{i\ell}}\right) \\
&= p\frac{d}{d\alpha_\ell}\left(\frac{1-\eta(\alpha_\ell,\lambda)}{\rho^n_{i\ell}}\right) \\
&= p\frac{d}{d\alpha_\ell}\left[(1-\eta(\alpha_\ell,\lambda))\left(1 + \frac{1-\pi}{\pi}\frac{1-\sigma(\alpha_\ell,p,\lambda,\pi,)}{1-p}\right)\right].
\end{aligned}$$

Therefore $d(U_1/U_0)/d\alpha_\ell > 0$ if an only if

$$-\frac{d\eta(\alpha_\ell,\lambda)}{d\alpha_\ell}\left[(1-\eta(\alpha_\ell,\lambda))\frac{1-\pi}{\pi}\frac{1}{1-p}\frac{d\sigma(\alpha_\ell,p,\lambda,\pi,)}{d\eta(\alpha_\ell,\lambda)} + \rho^n_{i\ell}\right] > 0.$$

The last inequality holds because $\eta(\alpha_\ell, \lambda)$ is decreasing in α_ℓ and $\sigma(\alpha_\ell, p, \lambda, \pi,)$ is increasing in $\eta(\alpha_\ell, \lambda)$. Therefore $d(U_1/U_0)/d\alpha_\ell > 0$.

■

B Reelection model

Here we briefly 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.

Reelection probabilities. In equilibrium, the ex ante probability that a competent politician is reelected in legislature ℓ is equal to

$$r_\ell(\alpha_\ell) \equiv r(\alpha_\ell, p_\ell, \lambda_\ell, \pi_\ell) = p\left[1 - \eta(\alpha_\ell, \lambda) + \eta(\alpha_\ell, \lambda)\rho_\ell^y\right] + (1-p)\rho_\ell^n, \tag{A10}$$

which, after using Proposition 1, can be written as follows:

$$r_\ell(\alpha_\ell) = \begin{cases} \frac{p+\pi-2\pi p}{1-\pi p} & \text{if } \eta(\alpha_\ell, \lambda) < \underline{\rho}; \\ \pi + (1-\pi)\, p\left[1 - \eta(\alpha_\ell, \lambda)\right] & \text{otherwise;} \end{cases} \tag{A11}$$

The re-election probability of a (random) politician is equal to

$$\pi r_\ell(\alpha_\ell) + (1-\pi)\left\{\sigma_\ell(\alpha_\ell)\,\eta(\alpha_\ell, \lambda)\,\rho_\ell^y + \left[1 - \sigma_\ell(\alpha_\ell)\right]\rho_\ell^n\right\} = \pi \tag{A12}$$

where $\sigma_\ell(\alpha_\ell) \equiv \sigma(\alpha_\ell, p, \lambda, \pi)$, which is as in (2). The term in curly brackets is the ex-ante probability that an incompetent politician is reelected at the end of her first mandate. The equality in (A12) means that the fraction of re-elected politicians is constant and equal to π.[27] Finally notice that (A12) also implies that in legislature $\ell+1$ the fraction of competent politicians in the pool of re-elected politicians is equal to $r_\ell(\alpha_\ell)$.

For any legislature $\ell = 1, 2, \ldots$, the stock of outstanding reforms at the end of the legislature, h_ℓ, evolves according to

$$h_\ell = (1-\alpha_\ell)^\lambda h_{\ell-1} + \frac{1-(1-\alpha_\ell)^\lambda}{\alpha_\ell}\left[(1-\pi) + r_{\ell-1}(\alpha_{\ell-1})\right]\pi p + (1-\pi)^2\sigma_\ell(\alpha_\ell)\,\chi(\alpha_\ell, \lambda) \tag{A13}$$

where the first term in the right hand side is the contribution of the backlog of outstanding reforms inherited from legislature $\ell-1$, the second is the number of good reforms passed in the legislature still outstanding at the end of the legislature, while the third term is the number of outstanding bad reforms passed by the mass of active incompetent politicians, equal to $(1-\pi)^2\sigma_\ell(\alpha_\ell)$, each of them generating an expected number of outstanding

[27] 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 a martingale and therefore equal to the prior that the politician is competent (equal to π).

reforms equal to $\chi(\alpha_\ell, \lambda)$.

Weberian and Kafkaesque steady states. Let α^* be the steady state implementation rate of reforms. Given (A13), the steady state stock of outstanding reforms at the end of each legislature is equal to

$$h^* \equiv \frac{[(1-\pi) + r(\alpha^*, p, \lambda, \pi)]\,\pi p}{\alpha^*} + (1-\pi)^2 \sigma(\alpha^*, p, \lambda, \pi)\,\frac{\chi(\alpha^*, \lambda)}{1-(1-\alpha^*)^\lambda} \tag{A14}$$

which is increasing in bureaucratic inefficiency $1-\alpha^*$ (follows from Proposition 2, and the result proved in the proof of Proposition 3 that $\frac{\chi(\alpha,\lambda)}{1-(1-\alpha)^\lambda}$ and $r(\alpha, p, \lambda, \pi)/\alpha$ are decreasing in α). Exactly as in Figure 2, a steady state equilibrium is characterized by an intersection between the line in (3) and the Tacitus line, which is now determined by (A14) rather than by (6). For the same reasons as in the career concern model discussed in the main text multiple steady states are possible, as in Figure 2. In particular it is easy to prove that:

Proposition 7 (Weberian and Kafkaesque steady state equilibrium in reelection model)**.** *A Weberian steady state with $\alpha^* = \overline{\alpha}$ is more likely when $\overline{\alpha}$, λ and $\overline{h}^K$ are high. A Kafkaesque steady state with $\alpha^* = \underline{\alpha}$ requires that $\underline{\alpha}$, λ and $\overline{h}^K$ are small. Generally the Weberian and the Kafkaesque equilibrium both exist when there are large differences in the efficiency of bureaucracy in the two regimes, so that $\overline{\alpha} - \underline{\alpha}$ is large enough.*

Dynamics. We now characterize how transitory shocks can cause a shift from a Weberian to a Kafkaesque steady-state. For simplicity, we study the effects of a temporary reduction in the duration of legislature ℓ_0 to $\lambda' < \lambda$. All the other legislatures last λ periods. Given (A13), we define the function

$$\begin{aligned} h(h_{\ell-1}, \lambda_{\ell-1}, \lambda_\ell, \alpha_{\ell-1}, \alpha_\ell) \;\equiv\; & (1-\alpha_\ell)^{\lambda_\ell} h_{\ell-1} + \frac{1-(1\text{-}\alpha_\ell)^{\lambda_\ell}}{\alpha_\ell}\,[(1\text{-}\pi) + r(\alpha_{\ell-1}, p, \lambda_{\ell-1}, \pi)]\,\pi p \\ & + (1-\pi)^2 \sigma(\alpha_\ell, p, \lambda_\ell, \pi)\,\chi(\alpha_\ell, \lambda_\ell), \end{aligned} \tag{A15}$$

Figure A1 plots $h(h_{\ell-1}, \lambda_{\ell-1}, \lambda_\ell, \alpha_{\ell-1}, \alpha_\ell)$ as a function of $h_{\ell-1}$, for four different combinations of $\lambda_{\ell-1}$, λ_ℓ, $\alpha_{\ell-1}$, and α_ℓ. Notice that the derivative of $h(h_{\ell-1}, \lambda_{\ell-1}, \lambda_\ell, \alpha_{\ell-1}, \alpha_\ell)$ with respect to $h_{\ell-1}$ is less than one, so that, for given $\lambda_{\ell-1}$, λ_ℓ, $\alpha_{\ell-1}$, and α_ℓ, 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 $h(h_{\ell-1}, \lambda, \lambda, \overline{\alpha}, \overline{\alpha})$, which crosses the forty five degree line in point W. This characterizes the Weberian steady state before the occurrence of the shock. The second line corresponds to the function $h(h_{\ell-1}, \lambda, \lambda', \overline{\alpha}, \overline{\alpha})$, which characterizes the behavior of politicians during

legislature ℓ_0 after the shock: it allows to recover the stock of uncompleted reforms at the end of the legislature ℓ_0, which corresponds to point A_1 in the figure. The third line corresponds to the function $h(h_{\ell-1}, \lambda, \lambda, \underline{\alpha}, \underline{\alpha})$, which characterizes a Kafkaesque steady state. The function $h(h_{\ell-1}, \lambda, \lambda, \underline{\alpha}, \underline{\alpha})$ crosses the forty five degree line at point K, by the assumption that the Weberian and the Kafkaesque steady state equilibrium coexist. This schedule characterizes the behavior of politicians starting from the legislature $\ell_0 + 2$, so that the stock of outstanding reforms at the end of the legislature $\ell_0 + 2$ corresponds to point A_3 in the figure. The fourth line corresponds to the function $h(h_{\ell-1}, \lambda', \lambda, \overline{\alpha}, \underline{\alpha})$, which characterizes the behavior of politicians during the legislature $\ell_0 + 1$: the stock of outstanding reforms at the end of legislature $\ell_0 + 1$ corresponds to point A_2 in the figure. By using the definition of the function h in (A15) one can check that $\forall h_{\ell-1}$ we have that $h(h_{\ell-1}, \lambda', \lambda, \overline{\alpha}, \underline{\alpha}) > h(h_{\ell-1}, \lambda, \lambda, \underline{\alpha}, \underline{\alpha})$, which justifies the Figure. Then Figure A1 fully characterizes the transition of an economy, which is initially in a Weberian steady state and then moves to a Kafkaesque steady state just due to a shortening in the duration of legislature ℓ_0: h_{ℓ_0-1} is characterized by point W, h_{ℓ_0} by point A_1, h_{ℓ_0+1} by point A_2, h_{ℓ_0+2} by point A_3 and then h_ℓ converges asymptotically to point K along the $h(h_{\ell-1}, \lambda, \lambda, \underline{\alpha}, \underline{\alpha})$ line. This transition occurs if, at the end of legislature $\ell_0 + 1$, bureaucratic efficiency has collapsed to $\underline{\alpha}$. So to converge to a Kafkaesque steady state it has to be the case that the two following conditions both hold:

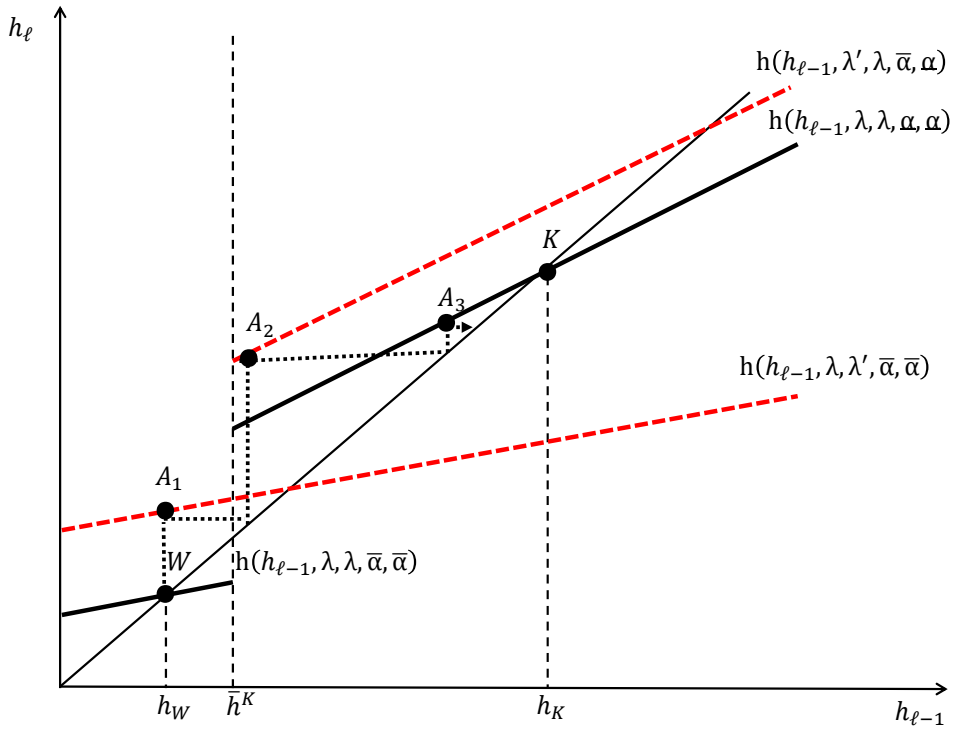
$$h_{\ell_0} = h(h_W, \lambda, \lambda', \overline{\alpha}, \overline{\alpha}) > \overline{h}^K \tag{A16}$$

$$h_{\ell_0+1} = h(h_{\ell_0}, \lambda', \lambda, \overline{\alpha}, \underline{\alpha}) > \overline{h}^K \tag{A17}$$

In practice the fact that $h(h_{\ell-1}, \lambda', \lambda, \overline{\alpha}, \underline{\alpha}) > h(h_{\ell-1}, \lambda, \lambda, \underline{\alpha}, \underline{\alpha})$ and that system will always converge to a Kafkaesque steady state whenever (A16) holds. We can summarize this discussion through the following proposition:

Proposition 8 (From Weber to Kafka in the reelection model)**.** *Assume that, in the reelection model, both a Weberian and a Kafkaesque steady state exist. Then a transitory reduction in the duration of a legislature from λ to $\lambda' < \lambda$ leads the economy to a Kafkaesque steady-state equilibrium if condition (A16) hold, which is more likely to happen when $\overline{h}^K$, and π are small.*

Figure A1: Transition to a Kafkaesque steady state due to a temporary reduction of λ to λ' in legislature ℓ_0



C Uniqueness and cost of introducing bad reforms

Assume that there is a cost $\gamma_\theta > 0$ of introducing a bad project of reforms and that the cost varies with the politician's type θ with $\gamma_0 < \gamma_1$. This assumption reflects the idea that incompetent politicians raise to national power only if they have a relative advantage in the production of seemingly useful, but in reality useless, projects of reform.

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 9. *When the cost of initiating a bad project of reforms 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 $\rho^g_{i\ell} = 1$ as the information set for event g is a singleton. Thus, the expected payoff of politician $i\ell$ when active is given by:

$$E\left[u_{i\ell}\left(\theta_{i\ell}, \omega_{i\ell}\right) \mid 1\right] = \phi\left\{\eta\left(\alpha_\ell, \lambda\right)\rho^y_{i\ell} + \left(1 - \eta\left(\alpha_\ell, \lambda\right)\right)\left[\omega_{i\ell} + \left(1 - \omega_{i\ell}\right)\rho^b_{i\ell}\right]\right\} - \left(1 - \omega_{i\ell}\right)\gamma_{\theta_{i\ell}}.$$

Fact 1. *For any* $\left(\rho_{i\ell}^{y}, \rho_{i\ell}^{b}\right)$,

$$E\left[u_{i\ell}\left(1,1\right) \mid 1\right] > E\left[u_{i\ell}\left(0,0\right) \mid 1\right] > E\left[u_{i\ell}\left(1,0\right) \mid 1\right].$$

The expected payoff of being inactive is instead given by

$$E\left[u_{i\ell}\left(\theta_{i\ell}, \omega_{i\ell}\right) \mid 0\right] = \phi\rho_{i\ell}^{n}.$$

Fact 2. *The expected payoff when inactive does not depend on either the politician's competence or the quality of her project of reforms.*

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* $\rho_{i\ell}^{n} = 1$;
2. *if y is off-equilibrium, then* $\rho_{i\ell}^{y} = 1$;
3. *if b is off-equilibrium, then* $\rho_{i\ell}^{b} = 0$.

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 $\Sigma^e\left(\theta, \omega\right)$ be the set of strategies, for a politician with competence θ and quality of project of reforms ω, which lead to e occurring with strictly positive probability. Also, let Ξ^e be the set of beliefs $\rho = \left(\rho_{i\ell}^{n}, \rho_{i\ell}^{y}, \rho_{i\ell}^{g}, \rho_{i\ell}^{b}\right)$ consistent with σ^*. For any pair (θ, ω), we can define

$$\begin{aligned}
\bar{\Xi}_{\theta\omega}^{e} &\equiv \left\{\rho \in \Xi^e : E\left[u_{i\ell}\left(\theta,\omega\right) \mid \sigma\right] \geq E\left[u_{i\ell}\left(\theta,\omega\right) \mid \sigma^*\right] \text{ for some } \sigma \in \Sigma^e\left(\theta,\omega\right)\right\} \\
\Xi_{\theta\omega}^{e} &\equiv \left\{\rho \in \Xi^e : E\left[u_{i\ell}\left(\theta,\omega\right) \mid \sigma\right] > E\left[u_{i\ell}\left(\theta,\omega\right) \mid \sigma^*\right] \text{ for some } \sigma \in \Sigma^e\left(\theta,\omega\right)\right\}.
\end{aligned}$$

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

$$\rho \in \bar{\Xi}_{\theta\omega}^{e} \Rightarrow \rho \in \Xi_{\tilde{\theta}\tilde{\omega}}^{e},$$

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 project of reforms. Then it must be that all politicians with a bad project of reforms—whether competent or incompetent—are inactive (with probability 1). We want to show that $\rho_{i\ell}^{b} = 0$ in all divine equilibria. From Facts 1 and 2, for any belief $\rho_{i\ell}$ for which competent politicians with a bad project of reforms would (weakly) prefer

to deviate to being active, 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 are active (with probability 1). We want to show that $\rho^n_{i\ell} = 1$ in all divine equilibria. From Facts 1 and 2, for any belief $\rho_{i\ell}$ for which incompetent politicians would (weakly) prefer to deviate to being inactive, 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 are inactive (with probability 1). Notice that event b is also off-equilibrium and therefore, as proven above, $\rho^b_{i\ell} = 0$ in any divine equilibrium. We want to show that $\rho^y_{i\ell} = 1$ in all divine equilibria. From Facts 1 and 2, for any belief $\rho_{i\ell}$ for which incompetent politicians would (weakly) prefer to deviate to being active, 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 imply the following two Lemmas:

Lemma 2. *In any divine equilibrium, whenever competent politicians with bad projects of reforms (weakly) prefer to be active,*

1. *competent politicians with bad projects of reforms stictly prefer to be active;*

2. *incompetent politicians strictly prefer to be active.*

Lemma 3. *In any divine equilibrium, whenever incompetent politicians prefer to be active, competent politicians with good projects of reforms strictly prefer to be active.*

We can now prove that:

Lemma 4. *In any divine equilibrium, competent politicians with bad projects of reforms are inactive.*

Proof of Lemma 4. From Lemma 2, in any divine equilibrium, either (i) competent politicians with good projects of reforms and incompetent politicians are active ($\sigma_{i\ell}(1,1) = \sigma_{i\ell}(0,0) = 1$) or (ii) competent politicians with bad projects of reforms are inactive ($\sigma_{i\ell}(1,0) = 0$). 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 being active for an

incompetent politician is a (strictly) convex combination of $\phi\rho^y_{i\ell} - \gamma_0$ and $\phi\rho^b_{i\ell} - \gamma_0$. By Bayes' rule

$$\begin{aligned}
\rho^y_{i\ell} &= \frac{\pi\left[p + (1-p)\,\sigma_{i\ell}\,(1,0)\right]}{\pi\left[p + (1-p)\,\sigma_{i\ell}\,(1,0)\right] + (1-\pi)} \leq \pi; \\
\rho^b_{i\ell} &= \frac{\pi\,(1-p)\,\sigma_{i\ell}\,(1,0)}{\pi\,(1-p)\,\sigma_{i\ell}\,(1,0) + (1-\pi)} < \rho^y_{i\ell}; \\
\rho^n_{i\ell} &= 1 > \pi;
\end{aligned}$$

which implies that incompetent politicians would strictly prefer to be inactive:

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

■

Therefore, all equilibria feature competent politicians bad projects of reforms being inactive and either incompetent politicians are inactive or they are active with probability strictly between zero and one. We now consider the two cases separately

No bad project of reforms is ever started. Suppose that all (competent and incompetent) politicians with bad projects of reform are inactive. Then, by Bayes' rule and Lemma 1, $\rho^n_{i\ell} \leq \pi$, $\rho^b_{i\ell} = 0$, and $\rho^y_{i\ell} = 1$. Which implies that competent politicians strictly prefer to be active: $\sigma^*_{i\ell}\,(1,1) = 1$. Furthermore, a politician with a bad project of reforms would prefer to be inactive only if $\phi\eta\left(\alpha_\ell,\lambda\right) - \gamma_0 \leq \phi\rho^n_{i\ell}$.[28] It is straightforward to see that when γ_0 goes to zero and with $\sigma^*_{i\ell}\,(1,1) = 1$, this condition converges to $\eta\left(\alpha_\ell,\lambda\right) < \underline{\rho}$.

Some bad projects of reforms are started. Now consider the case where incompetent politicians are active with strictly positive probability. In any such equilibrium, $\rho^b_{i\ell} = 0$ as—by Lemma 4—only incompetent politicians produce bad reforms in equilibrium. Also, by Lemma 3, competent politicians are active with probability 1. Since we ruled out equilibria in which both competent politicians with good projects of reforms and incompetent politicians are active with probability 1 (property (i) above), it must be that incompetent politicians are active with probability strictly between 0 and 1. The following indifference

[28] Recall from Lemma 1 that if the public anticipates bad reforms never to be passed, then $\rho^b_{i\ell} = 0$. Thus

$$E\left[u_{i\ell}\left(\theta_{i\ell},\omega_{i\ell}\right) \mid 1\right] = \eta\left(\alpha_\ell,\lambda\right)\phi\rho^y_{i\ell} + \left(1 - \eta\left(\alpha_\ell,\lambda\right)\right)\phi\rho^b_{i\ell} - \gamma_0 = \phi\eta\left(\alpha_\ell,\lambda\right) - \gamma_0.$$

condition must then hold:

$$\eta\left(\alpha_{\ell},\lambda\right)\rho_{i\ell}^{y}-\gamma_{0}=\rho_{i\ell}^{n}$$
$$\eta\left(\alpha_{\ell},\lambda\right)\frac{\pi p}{\pi p+\left(1-\pi\right)\sigma_{i\ell}^{*}\left(0,0\right)}-\gamma_{0}=\frac{\pi\left(1-p\right)}{\pi\left(1-p\right)+\left(1-\pi\right)\left(1-\sigma_{i\ell}^{*}\left(0,0\right)\right)}$$

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

$$\lim_{\gamma_{0}\to0}\sigma_{i\ell}^{*}\left(0,0\right)=\sigma\left(\alpha_{\ell},p,\lambda,\pi\right).$$

■

D Further description of the data

First we describe the source of data for our text analysis of the quantity and quality of laws. Secondly we discuss how we constructed the index of the salience of the bureaucratic problem in Italy and the number of citations of Italian MPs in the press. We conclude by discussing our data on Italian MPs.

D.1 Quantity and Quality of Laws

We downloaded all Italian laws issued by the Italian Parliament from www.normattiva.it using Python. Normattiva is an official website created by Law n. 388 of 23 December 2000, which collects all laws published on the Official Gazette of the Italian Republic. For each law issued over the period 1948-2016 we have calculated the following variables: (i) the id of the law; (ii) the date when the law was passed; (iii) the main sponsor of the law (”Primo Firmatario”); (iv) the number of words in the law after excluding stopwords; (v) the number of pages covered by the law in the Official Gazette taken; (vi) the number of other laws cited; (vii) the existence of a preamble; (viii) average length of sentences (in number of characters); (ix) the number of verbs in the gerund form used. We use i-iii to match each single law to the data for individual MPs discussed below. For constructing aggregate time series for the total number of words of laws issued, we added up the number of words of all laws issued in the quarter. The resulting sum is divided by 1000. To calculate the times series for the number of pages per law, number of gerunds per word of law and the number of other laws cited per word of law, we added-up the corersponding information for all laws issued in the quarter and then divided it by the total number of words issued in the quarter.

For Germany, we downloaded all the Official Gazettes of the German Federal Government (”Bundesgesetzblatt”) since 1955 until 2017, available at "https://www.bgbl.de/xaver/bgbl". The Bundesgesetzblatt contains all Federal laws, regulations and decrees passed by the Federal Parliament, "Bundestag". We focused the analysis on all laws, "Gesetze", and decrees, "Verordnung" published in the Bundesgesetzblatt. For each year we calculated the number of words of laws published in an average quarter of the year. Words are measured in thousands. Since the series exhibit a clear trend we linearly detrend it. We also calculated the number of references to other laws cited by a law per one thousand words in the law.

D.2 Salience of the bureaucratic problem and citations of MPs

We used information from the historical archive of "Il Corriere delal Sera" (Corsera), the main Italian daily newspaper, available at http://archivio.corriere.it/Archivio/interface/pro.html. For each day we counted the number of times the word bureaucracy ('burocrazia') appears on the first page of Corsera. This is our index for the salience of the bureaucratic problem in Italy. To construct the number of citations of MPs we used information on the name the main cosponsor of the bill and counted the number of times his or her name appear on all pages of Corsera in a window covering thirty days before and thirty days after the day when the bill was first discussed in one of the two chambers of the Italian Parliament.

D.3 MPs and legislatures

The Italian Parliament is elected for a five year term and is organized in two chambers—the Chamber of Deputies (630 seats) and the Senate of the Republic (315 seats). 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 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. For instance, the XII and XV

Table A1: Features of Italian legislatures

Legislature				*Senate*			*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 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.

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.

Table A2: Additional descriptive statistics

Variable	Mean	Median	SD
Incompetent politician : fixed effects	.515	1	.500
Completed legislature	.497	0	.445
Completed legislature $\times$ Incompetent politician	.272	0	.500
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
Chamber indicator	.659	1	.474
Years of education	14.8	17	4.82
Elected in majoritarian system	.37	0	.48

Strategic timing. Gratton et al. (2018) 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 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 competence MPs in presenting bills. In practice, the scope for strategic timing is limited because too much delay itself could reveal the incompetence of the politician. Table A3 below shows the results from estimating

Table A3: Timing the legislature when presenting a bill

	Politician's incompetence measure			
	FE $<$ median	FE $<$ 25^{th} pct	Resid $<$ median	Resid $<$ 25^{th} pct
Incompetent politician	-0.03	-0.02	0.06***	0.06***
	(0.425)	(0.599)	(0.007)	(0.007)
Completed legislature	0.04	0.07	-0.10**	-0.10**
$\times$ Incompetent 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 **??**. Robust standard errors are clustered at the MP level. p-values in parenthesis: *** significant$\leq$ 1%; ** significant$\leq$ 5% ; * significant$\leq$10%.

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 incompetent politicians time their bills strategically. When it is measured using mean residuals, there is some evidence that incompetent politicians strategically delay their bills in complete legislatures.