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

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With inefficient bureaucratic institutions, the effects of laws are hard to assess and incompetent politicians may pass laws to build a reputation as skillful reformers. Since too many laws curtail bureaucratic efficiency, this mechanism can generate a steady state with Kafkaesque bureaucracy. Temporary surges in political instability heighten the incentives to overproduce laws and can shift the economy towards the Kafkaesque state. Consistent with the theory, after a surge in political instability in the early 1990s, Italy experienced a significant increase in the amount of poor-quality legislation and a decrease in bureaucratic efficiency. (*JEL* D72, D73)

Modern market economies rely upon the state bureaucracy to provide essential services and to implement public policies. In practice, according to the World Bank Doing Business dataset, there is substantial variation in how well bureaucracies perform across countries. Some resemble the Weberian ideal of order and efficiency; others are known for their Kafkaesque disorganization.[1] The nature of a bureaucracy may also change over time. In the nineteenth century, the Habsburg monarchy was a model of Weberian efficiency (Becker et al. 2016). But by the beginning of the

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[1] Weber (1922) argued that a well-functioning bureaucracy guarantees order and maximizes efficiency. Franz Kafka's infamous description of the Habsburg administration at the beginning of the twentieth century, characterized by a disorienting complexity, 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.

twentieth century the Habsburg bureaucracy had collapsed to a Kafkaesque state: payment of a single tax in Vienna required the involvement of 27 public officials; the cost of collecting taxes in Dalmatia exceeded the tax revenue (MacMillan 2013).

In this paper we argue that permanent transitions from a Weberian to a Kafkaesque bureaucracy may be rooted in the overproduction of low-quality legislation brought about by (possibly brief) periods of political instability. The premise of our theory is that politics and bureaucracy are complements in the supply of public policies: politicians pass laws that determine what should be reformed; bureaucrats implement the laws. In this context, bureaucratic efficiency is hindered when politicians pass too many and too frequent laws, overloading the bureaucracy with too many acts to implement.

When a politician chooses whether to pass a new reform, she has a limited *political horizon*—e.g., the next election or the expected time until the next significant change in government coalition—and would like voters to believe that she is a competent, skillful reformer. But the speed at which voters learn about the quality of a politician's reform depends on the country's *bureaucratic efficiency*. When the bureaucracy is efficient, reforms are implemented swiftly and their effects are monitored transparently, so voters learn the quality of each reform fast and accurately. In contrast, when the bureaucracy is inefficient, reforms are implemented slowly, if at all, and the effects of multiple reforms are more likely to overlap, making it difficult to infer their individual quality. The political horizon and bureaucratic efficiency jointly determine a politician's incentive to propose low-quality reforms. When the political horizon is shorter or bureaucracy is more inefficient, less competent politicians have greater incentives to pass their low-quality reforms. In fact, passing reforms may signal competence with little risk that the voters will learn that the reform is of low quality within the political horizon. Thus, a more stable political environment and a more efficient bureaucracy reduce the production of low-quality laws, while periods of political instability may lead to overproduction of laws.

To formalize this idea and to capture its dynamic implications, we study a dynamic model of legislative production. We assume that, in each legislative term, the politicians in office can pass reforms, but only competent politicians design reforms that are useful. A politician's competence is her private information, but it is publicly revealed if the bureaucracy implements the reform she passed. Bureaucracy is characterized by decreasing returns: the larger the stock of past reforms that have yet to be implemented, the harder it is for the bureaucracy to carry out and implement the reforms. Politicians maximize their reputation for being competent at the end of the legislative term. Thus, in our model the political horizon is captured by the length of the legislative term and bureaucratic efficiency is determined by the inherited stock of outstanding reforms. In equilibrium, incompetent politicians face a trade-off: passing a useless reform that remains outstanding by the end of the term signals competence, but if the reform is implemented within the term, it reveals the incompetence of its proponent.

We set out the conditions for the existence of a Weberian steady state—with efficient bureaucracy and few useless reforms—and a Kafkaesque steady state—with inefficient bureaucracy and many useless reforms. We identify three channels through which political instability can cause a transition from a Weberian to a Kafkaesque state. A shock to political instability may (i) directly shorten the political horizon (in

the model, shorten the legislative term), (ii) increase the pressure for reforms, and (iii) sometimes cause the formation of short-lived technocratic governments. In our model, each of these three symptoms of political instability (either in isolation or in combination) can drive the economy from a Weberian to a Kafkaesque steady state. In all three cases, the number of reforms that the bureaucracy is called to handle suddenly increases. This dynamically reduces bureaucratic efficiency, so that future incompetent politicians pass even more reforms, further engulfing the bureaucracy and eventually pushing the economy towards a new, Kafkaesque steady state.

We use our theory to study the sudden surge in political instability during the passage between the so-called First and Second Italian republics. During the First Republic (1948–1992), the Italian political system was characterized by a stable balance of power and policy agenda: the large Christian Democratic Party led every government coalition, while the second largest party, the Italian Communist Party, was unable to compete or enter coalitions simply because communist parties could not govern in a Western-bloc country (a feature of the system known as the "*K*-factor"). The end of the Cold War represents an exogenous shock to this equilibrium, starting a period—dubbed the Second Republic—initially marked by frequent changes in governing coalitions, the appearance and disappearance of new political parties, technocratic governments, and more frequent elections, which have contributed to shortening the political horizon of Italian members of Parliament (MPs)—roughly by 50 percent according to some of our estimates.

Anecdotal evidence indicates that the history of the Second Republic is characterized by frequent changes of the policy agenda and multiple broad-brush reforms of the welfare system, the public administration, and the territorial organization of the state. Using text analysis we study all laws issued by the Italian parliament over the period 1948–2016 (more than 75,000 laws containing around 100 million words), taken from Normattiva (2016). Upon the increase in political instability resulting from the end of the Cold War, we find a sharp discontinuity in the production of legislation: the number of words of law per quarter increases by a factor of two, while the average quality of legislation deteriorates according to several indicators of style based on law drafting manuals (Cassese 1993, Butt and Castle 2006), such as the length and phrasing of sentences and the intensity of references to other laws. We also uncover indications that the efficiency of the Italian bureaucracy has deteriorated over time, gradually becoming an increasingly salient issue in the Italian public debate—the number of times the word bureaucracy is mentioned in the Italian press has increased by a factor of three. Both the structural break in legislative production and the trend in salience of bureaucracy are specific to Italy and not observed in Germany. Therefore, they are unlikely to have been the direct effect of either the Maastricht Treaty or the end of the Cold War. Using a structural vector autoregression (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 evidence that Italian politicians react to the type of incentives we describe in our model. In particular, we use microdata for Italian MPs during the Second Republic. We first use an event study methodology to show that the visibility of a politician in the press increases when their bills are discussed in parliament, supporting the claim that legislative activism has signaling value for politicians.

We then directly test the prediction that a shortening of the political horizon affects individual MPs' legislative incentives. In particular, we exploit variation in MPs' competence and in one observable measure of the political horizon of individual MPs: the initial expected duration of the legislative term. The expected duration of a legislative term depends on the size of the parliamentary majority supporting the government, which has a random component realized at the time of the election. As a result, some legislatures are more stable than others: of the seven legislatures covered by our sample, three ended within two years, while four reached the natural term of five years.[2] Following Besley et al. (2017) and Dal Bó et al. (2017), we measure MPs' competence by their labor market earnings, which over the sample period is information not easily available to the public. To efficiently identify MPs' types and deal with a possible classification bias, we also rely on the grouped fixed-effects (GFE) estimator by Bonhomme and Manresa (2015). In accordance with our theory, less competent politicians introduce bills and pass laws that are more poorly drafted. We then perform a difference-in-difference analysis and compare the relative performance in terms of both legislative activity and reelection outcomes of less and more competent politicians, in completed and uncompleted legislatures. In our model, a shorter political horizon increases the relative incentives of less competent politicians to pass useless laws and increases their relative reputation among voters. In line with these predictions, we find that in shorter legislatures less competent politicians introduce 18 percent more bills per capita, pass 30 percent more laws, and have a reelection probability 8 to 9 percentage points higher than average.

The premise of our theory is that politics and bureaucracy are complements in providing public capital, in contrast with the implicit substitutes view in Maskin and Tirole (2004) and Alesina and Tabellini (2007, 2008), which study the trade-off between delegating choices to bureaucrats or elected politicians. There is a large literature studying the *internal* functioning of the bureaucracy (e.g., Prendergast 2007, Gailmard and Patty 2012, Bertrand et al. 2020, Nath 2015); our focus instead is on legislative incentives as *external* determinants of bureaucratic performance. For the related literature on the distortions caused by politicians' career concerns, see, e.g., Diermeier, Keane, and Merlo (2005); Mattozzi and Merlo (2008); Persson and Tabellini (2000); Rogoff and Siebert (1988); Ash, Morelli, and Van Weelden (2017). For long term consequences see, e.g., Bonfiglioli and Gancia (2013) and Bonfiglioli, Crinò, and Gancia (2020).

Starting with Romer and Rosenthal's (1978) seminal work, a large literature has highlighted how institutional systems and political incentives can cause the overproduction of public goods. In our model this is due to the combination of the politicians' reputational concerns and the delayed (and noisy) public learning about the quality of their actions. Using the terminology in Prat (2005), voters have the "wrong kind" of information, which induces politicians to take a "conformist" action—in this case, passing reforms.

Finally our paper is related to Aghion et al. (2010) which shows how the lack of civicness and trust in institutions causes more legislation, which in turn discourages the investment in civicness. This mechanism can also generate a steady state equilibrium

[2] 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.

with excessive legislation. Here we identify temporary waves of political instability as a key determinant of why excessive legislation arises as an equilibrium outcome.

The remainder of the paper is organized as follows. Section I presents the model, which we study in Section II. Section III documents the sharp changes in Italian legislation during the Second Republic and their effects on bureaucracy. Section IV tests the strategic behavior of Italian MPs. Section V concludes. A supplementary online Appendix contains all extensions to our model and further robustness checks mentioned in the paper.

I. The Model

Time is divided into *legislatures*, indexed by $\ell = 1, 2, \ldots$, each run by a unit mass of politicians. Each politician $i\ell, i \in [0,1]$, in legislature ℓ is endowed with a reform and chooses whether to *pass* it.[3]

Passed reforms must be implemented by the bureaucracy. We refer to a reform as *outstanding* in legislature ℓ if the reform was passed in a legislature $\ell' \leq \ell$ and has yet to be implemented by the beginning of legislature ℓ. Any outstanding reform in legislature ℓ is implemented in that legislature with probability $\eta(\lambda_\ell, \alpha_\ell) \in [0,1]$ where λ_ℓ is the length of legislature ℓ and α_ℓ is the level of *bureaucratic efficiency* in legislature ℓ. The function η is increasing in both λ_ℓ and α_ℓ. We assume that the bureaucratic efficiency in legislature ℓ, α_ℓ, is decreasing in the endogenously evolving stock of outstanding reforms inherited from the previous legislature $h_{\ell-1}$. For simplicity, α_ℓ can take only two values: $\underline{\alpha}$ and $\overline{\alpha}$, with $\underline{\alpha} < \overline{\alpha}$, so that

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

where $\overline{h}^K$ is the *Kafkaesque threshold* of outstanding reforms beyond which bureaucratic efficiency collapses from $\overline{\alpha}$ to $\underline{\alpha}$. We say that a bureaucracy with $\alpha_\ell = \overline{\alpha}$ is *Weberian*; one with $\alpha_\ell = \underline{\alpha}$ is *Kafkaesque*.

Each politician $i\ell$ is privately informed of her own competence, $\theta_{i\ell} \in \{0,1\}$, and the quality of her reform, $\omega_{i\ell} \in \{0,1\}$. The publicly known prior probability that she is *competent* ($\theta_{i\ell} = 1$) is π_ℓ; otherwise she is incompetent ($\theta_{i\ell} = 0$). It is also publicly known that an incompetent politician can only have a bad reform ($\omega_{i\ell} = 0$) and that a competent politician has a *good* reform ($\omega_{i\ell} = 1$) with probability p_ℓ. The probability p_ℓ captures the economy's *reform opportunities*.

Once a reform is implemented, its quality becomes public information. Politician $i\ell$ maximizes the public belief $\rho_{i\ell}$ that she is competent at the end of legislature ℓ, which means that, for simplicity, we identify the political horizon of a politician with the length of the legislature.[4] For each politician $i\ell$ there are four possible events that may occur at the end of the legislature ℓ:

[3] The assumption of a fixed endowment of reforms per legislature mechanically implies that shorter legislatures increase the average-over-time supply of reforms. In the online Appendix we show that our results carry over to more general environments in which the endowment of reforms is assumed to be constant per unit of time.

[4] Reputation for competence matters either because competence is rewarded in the private market after one's political career is over (see Mattozzi and Merlo 2008, and Gagliarducci and Nannicini 2013) or because, as in models with voters' uncertainty (e.g., Rogoff 1990, Rogoff and Sibert 1988, Bonfiglioli and Gancia 2013, and Morelli and

y: the politician has passed a reform that is still outstanding;
n: the politician has not passed a reform;
b: a bad reform has been implemented;
g: a good reform has been implemented.

We denote by $\rho_{i\ell}^{e}$ the value of $\rho_{i\ell}$ when event $e \in \{y, n, b, g\}$ is the one characterizing politician i at the end of her term l.

II. Analysis

Notice that each legislature ℓ is characterized by the state $\Omega_\ell \equiv (\alpha_\ell, \lambda_\ell, p_\ell, \pi_\ell)$. In particular, bureaucratic efficiency, α_ℓ, evolves endogenously due to the dynamics of the stock of outstanding reforms $h_{\ell-1}$, according to (1). In Section IIA we characterize the equilibrium behavior of a politician in legislature ℓ, taking Ω_ℓ as given. In Section IIB we turn to the aggregate dynamics in which α_ℓ evolves endogenously, keeping the other elements in Ω_ℓ fixed. Finally, in Section IIC we discuss the effects of temporary shocks to the exogenous elements of Ω_ℓ. All proofs are in Appendix A.

A. *Equilibrium in Legislature ℓ*

A strategy for politician $i\ell$ is a function $\sigma_{i\ell} : \{0,1\}^2 \rightarrow [0,1]$ mapping the politician's type and the quality of her reform into the probability of passing the reform. 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 reform is good (henceforth *equilibrium*).[5] 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 too many low-quality reforms.

The following proposition characterizes the equilibrium.[6]

PROPOSITION 1 (Equilibrium in legislature ℓ): *In the unique equilibrium:*

(i) *a competent politicians passes her reform if and only if her reform is good;*

(ii) *an incompetent politician passes her reform with probability*

$$\sigma(\Omega_\ell) = \begin{cases} 0, & \text{if } 1 - \eta(\lambda_\ell, \alpha_\ell) < \underline{\rho}_\ell; \\ p_\ell - \dfrac{p_\ell(1-p_\ell)\eta(\lambda_\ell, \alpha_\ell)}{(1-\pi_\ell)(1-p_\ell\eta(\lambda_\ell, \alpha_\ell))}, & \text{otherwise}, \end{cases} \tag{2}$$

Van Weelden 2013), politician $i\ell$ is reelected with probability $\rho_{i\ell}$, and reelection yields private benefits. In the latter case, reputational concerns induce selection but our main results still carry over; see the online Appendix.

[5] Essentially this eliminates two types of equilibria: those in which no reform is ever passed because the public believes that only incompetent politicians would pass one, and those 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 online Appendix O1) that passing bad reforms involves a cost that is arbitrarily smaller for incompetent than for competent politicians.

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

where $\underline{\rho}_\ell \equiv \frac{\pi_\ell(1-p_\ell)}{1-\pi_\ell p_\ell} \in [0,1]$;

(*iii*) *public beliefs are given by* $\rho^b_{i\ell} = 0$, $\rho^g_{i\ell} = 1$,

$$\rho^y_{i\ell} = \left[1 + \frac{1-\pi_\ell}{\pi_\ell} \cdot \frac{\sigma(\Omega_\ell)}{p_\ell}\right]^{-1}, \quad \textit{and} \quad \rho^n_{i\ell} = \left[1 + \frac{1-\pi_\ell}{\pi_\ell} \cdot \frac{1-\sigma(\Omega_\ell)}{1-p_\ell}\right]^{-1}.$$

Intuitively, an incompetent politician faces a trade-off: passing a reform signals competence, but if the reform is implemented before the end of the legislature, the politician's incompetence is revealed. When $\eta(\lambda_\ell, \alpha_\ell)$ is sufficiently large, passing reforms carries a large risk of revealing one's incompetence, and incompetent politicians strictly prefer not to pass their reforms. But if $\eta(\lambda_\ell, \alpha_\ell)$ is small enough, this risk is small and incompetent politicians prefer to mimic the behavior of competent politicians with good reforms. In equilibrium, incompetent politicians are exactly indifferent between passing and not passing their reforms. Solving the indifference condition for incompetent politicians yields the expression for the probability $\sigma(\Omega_\ell)$ in (2). The public beliefs $\rho^y_{i\ell}$ and $\rho^n_{i\ell}$ are then determined by Bayes' rule.

Proposition 2 characterizes the comparative statics of $\sigma(\Omega_\ell)$.

PROPOSITION 2 (Comparative statics): *The probability* $\sigma(\Omega_\ell)$ *that an incompetent politician passes her reform in legislature* ℓ

(*i*) *increases with the reform opportunities* p_ℓ;

(*ii*) *decreases with the duration of the legislature* λ_ℓ, *the probability that a politician is competent* π_ℓ, *and the level of bureaucratic efficiency* α_ℓ.

Intuitively, a more efficient bureaucracy or a longer legislature heightens the risk of being exposed as incompetent and discourages incompetent politicians from initiating reforms. If there are more reform opportunities, competent politicians are more likely to pass reforms. As a consequence, incompetent politicians also become more likely to pass reforms, because doing so 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.

B. *Steady State Analysis*

We now study the steady states of our model keeping fixed across legislatures the parameters λ_ℓ, p_ℓ, and π_ℓ. Given α_ℓ, the stock h_ℓ of outstanding reforms at the end of legislature ℓ evolves according to

$$h_\ell = \left[1 - \eta(\lambda_\ell, \alpha_\ell)\right]\left[h_{\ell-1} + \pi_\ell p_\ell + (1-\pi_\ell)\sigma(\Omega_\ell)\right]. \tag{3}$$

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: *In a steady state* $\Omega^* = (\alpha^*, \lambda_\ell, p_\ell, \pi_\ell)$, *the stock of outstanding reforms at the end of each legislature satisfies*

$$h^* = \frac{1-\eta(\lambda_\ell, \alpha^*)}{\eta(\lambda_\ell, \alpha^*)}\left[\pi_\ell p_\ell + (1-\pi_\ell)\sigma(\Omega^*)\right] \tag{4}$$

and is decreasing in the steady state level of bureaucratic efficiency α^* *and in* λ_ℓ.

Equation (4) 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 two 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 (4)). Second, it induces incompetent politicians to pass more bad reforms, a greater σ (see Proposition 2). An example is plotted in Figure 1, where the stock of outstanding reforms h^* is on the x-axis and bureaucratic inefficiency $1-\alpha$ is on the y-axis.

Figure 1 also plots the function $1-\alpha(h_{\ell-1})$, which, given (1), is a step function increasing in the steady state stock of outstanding reforms h^*. A steady state equilibrium arises when this line intersects the relation in (4). In Figure 1, there are two intersections: W is a Weberian state in which the stock of outstanding reforms is h_W, incompetent politicians do not pass reforms, and the bureaucracy is Weberian ($\alpha = \overline{\alpha}$); K is a Kafkaesque state in which the stock of outstanding reforms is h_K, incompetent politicians pass reforms with strictly positive probability, and the bureaucracy is Kafkaesque ($\alpha = \underline{\alpha}$).[7]

A Weberian steady state requires that (i) the bureaucracy remains Weberian if only competent politicians pass reforms and (ii) only competent politicians pass reforms if the bureaucracy is Weberian. 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* $\left((1-\eta(\lambda_\ell, \overline{\alpha}))/\eta(\lambda_\ell, \overline{\alpha})\right)\pi_\ell p_\ell \leq \overline{h}^K$ *and* $1-\eta(\lambda_\ell, \overline{\alpha}) \leq \underline{\rho}_\ell \equiv \pi_\ell(1-p_\ell)/(1-\pi_\ell p_\ell)$.

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

[7] We did not model the welfare effects of reforms, but it would be easy to extend the model so that equilibria are welfare ranked by their level of bureaucratic efficiency. For example, assume that only good reforms increase public capital and that the contribution of a good reform to public capital falls over time, so that a good reform passed in legislature ℓ and implemented in legislature ℓ' increases the capital stock by $(1-\delta)^{\ell'-\ell}$. Under these assumptions, the steady state stock of public capital is equal to

$$\tilde{k}^* = \frac{\alpha^* \pi_\ell p_\ell}{\delta\left[1-(1-\alpha^*)(1-\delta)\right]}. \tag{5}$$

If agents are risk neutral and have zero discount rates, $\tilde{k}^*$ in (5) is a measure of welfare strictly increasing in bureaucratic efficiency.

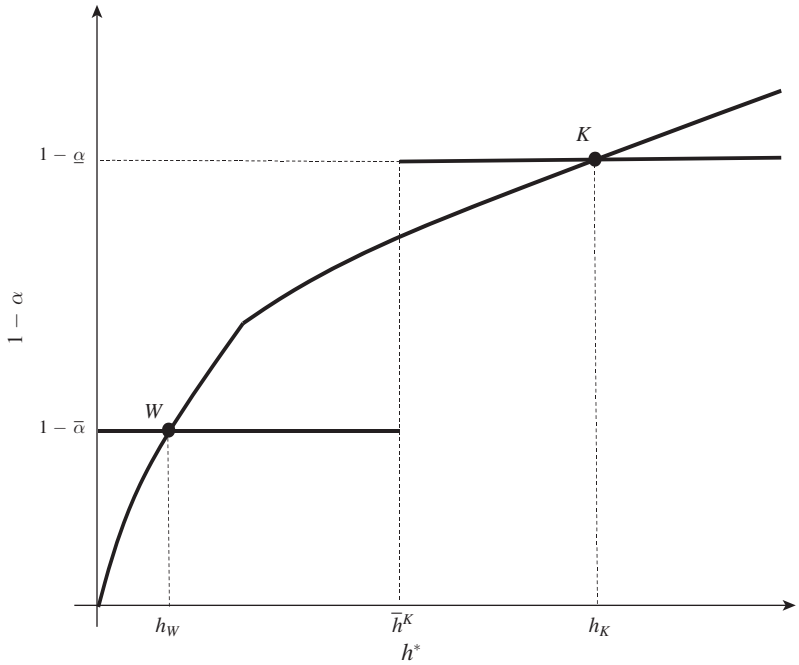

FIGURE 1. STEADY STATE EQUILIBRIUM

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*

$$h_W \equiv \frac{1-\eta(\lambda_\ell,\overline{\alpha})}{\eta(\lambda_\ell,\overline{\alpha})}\pi_\ell p_\ell \leq \overline{h}^K. \tag{6}$$

A Kafkaesque steady state $\underline{\Omega} = (\underline{\alpha},\lambda_\ell,p_\ell,\pi_\ell)$ *exists if and only if*

$$h_K \equiv \frac{1-\eta(\lambda_\ell,\underline{\alpha})}{\eta(\lambda_\ell,\underline{\alpha})}\left[\pi_\ell p_\ell + (1-\pi_\ell)\sigma(\underline{\Omega})\right] > \overline{h}^K, \tag{7}$$

which under Assumption 1 requires that $1-\eta(\lambda_\ell,\underline{\alpha}) > \underline{\rho}$. *The Kafkaesque steady state is more likely to exist when* (*i*) *there are greater reform opportunities* (p_ℓ *high*), (*ii*) *legislatures are shorter* (λ_ℓ *low*), (*iii*) *there are fewer competent politicians* (π_ℓ *low*), *and* (*iv*) *a Kafkaesque bureaucracy is more inefficient* ($\underline{\alpha}$ *low*).

Figure 1 characterizes a configuration of parameters such that Assumption 1 and condition (7) are both satisfied, so that a Weberian and a Kafkaesque steady state coexist. The comparative statics in Proposition 4 are intuitive. By Proposition 2, when there are greater reform opportunities, or when legislatures are shorter, incompetent politicians are more likely to pass reforms. As a result, a Kafkaesque bureaucracy will find it harder to reduce the stock of outstanding reforms below

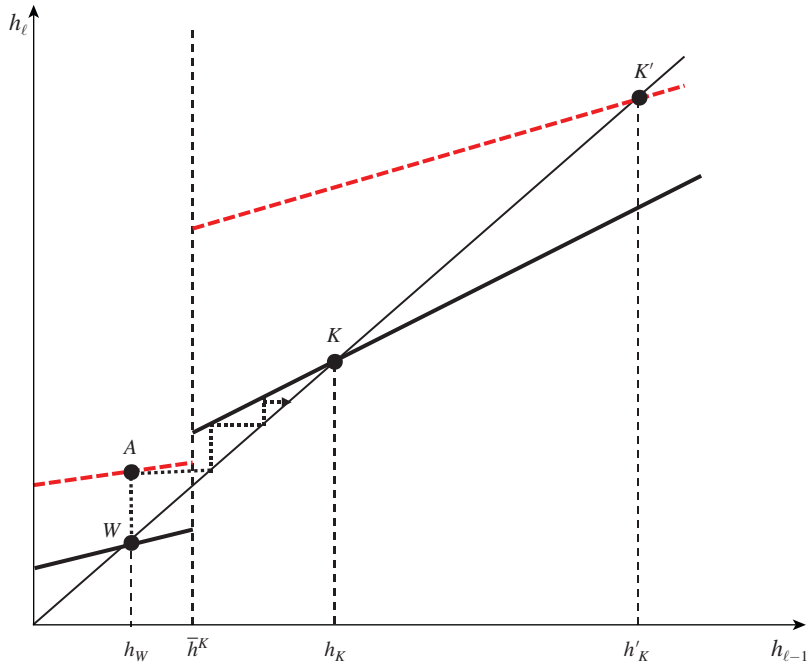

FIGURE 2. TRANSITION TO A KAFKAESQUE EQUILIBRIUM DUE TO A TEMPORARY FALL IN λ

the Kafkaesque threshold $\bar{h}^K$, making the Kafkaesque steady state more likely. Furthermore, when there are fewer competent politicians, incompetent politicians are more likely to pass reforms, 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.

C. *Dynamic Paths to a Kafkaesque Steady State*

We now show how transitory shocks to the exogenous elements of Ω_ℓ can shift the economy from a Weberian to a Kafkaesque steady state. We identify political instability as a key culprit.

When Assumption 1 and condition (7) are both satisfied, transitory shocks can cause a transition from a Weberian to a Kafkaesque steady state. 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 outstanding in legislature $\ell + 1$, h_ℓ. In turn, a greater stock of outstanding reforms can hinder bureaucratic efficiency—lower $\alpha_{\ell+1}$. But with a lower $\alpha_{\ell+1}$, incompetent politicians may begin to pass reforms (see Proposition 1), generating a "tidal wave" of reforms, gradually leading to a Kafkaesque steady state.

The solid line in Figure 2 corresponds to the law of motion in (3) in normal times with $h_{\ell-1}$ on the x-axis and h_ℓ on the y-axis. The line crosses the 45 degree line twice, so that a Weberian steady state and a Kafkaesque steady state coexist. The

dashed line corresponds to the analogous law of motion during a temporary shock in legislature ℓ. The shock causes a transition to a Kafkaesque steady state if the number of outstanding reforms in legislature $\ell + 1$ 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_ℓ. It may also be associated with a temporary increase in the reform opportunities, raising 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 competent politicians, therefore raising 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 (7) 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_ℓ, is above the critical Kafkaesque threshold $\overline{h}^K$. In particular this might be due to*

(*i*) **Shorter legislatures**, *i.e.*, *a small λ_ℓ.*

(*ii*) **More reform opportunities**, *i.e.*, *a large p_ℓ.*

(*iii*) **Technocratic governments**, *i.e.*, *a large share of competent politicians π_ℓ.*

In the short run, a shorter legislature heightens the incentives for incompetent politicians to pass reforms 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 in legislature $\ell + 1$ above the critical Kafkaesque threshold. In turn, this makes bureaucracy more inefficient in the next legislature, giving incentives to incompetent politicians to pass reforms even after the shock has vanished, and eventually leading to a Kafkaesque steady state. A similar mechanism is at play when p_ℓ temporarily increases. 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 in legislature $\ell + 1$ beyond the critical Kafkaesque threshold, setting in motion the dynamics that lead to a Kafkaesque steady state. Finally, a temporary increase in π_ℓ mechanically increases the number of new good reforms. If the stock of outstanding good reforms increases above the Kafkaesque threshold, then subsequent nontechnocratic governments will face an inefficient bureaucracy, giving incentives to incompetent politicians to pass reforms even after the 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.

D. *Gresham's Law of Bureaucracy*

We now endogenize the share of competent politicians and show that this endogenous selection exacerbates the adverse effects of a Kafkaesque bureaucracy. Intuitively, when the bureaucracy is efficient, working in politics is an effective way to demonstrate competence. So an inefficient bureaucracy discourages talented people from choosing a political career, leading to what we may call Gresham's law of bureaucracy: "bad bureaucracy drives out good politicians." Formally, let U_1 (U_0) denote the equilibrium expected utility of a competent (incompetent) politician in office and suppose that the supply of each type depends on the utility a politician expects to obtain once in office, so that $\pi = L(U_1/U_0)$, where $L : \mathbb{R}_+ \rightarrow [0,1]$ is strictly increasing (see, e.g., Caselli and Morelli 2004).

PROPOSITION 6 (Gresham's Law of Bureaucracy): *The relative supply of competent politicians π is increasing in the efficiency of the bureaucracy α.*

When the supply of talented bureaucrats is also endogenous, Gresham's law of bureaucracy also applies to them: "bad bureaucracy drives out good bureaucrats." Suppose that each bureaucrat has skill $s \in \mathbb{R}_+$ and implements reforms with probability $\tilde{\alpha}(h_{\ell-1})s$. The equilibrium implementation rate of reforms is then equal to $\alpha_\ell = \tilde{\alpha}(h_{\ell-1})\,\bar{s}_\ell$, where $\bar{s}_\ell$ denotes the average skills of bureaucrats. If bureaucrats are promoted on the basis of merit, as measured by their implementation rate of reforms $\tilde{\alpha}(h_{\ell-1})s$, when $\tilde{\alpha}(h_{\ell-1})$ decreases, the return to bureaucratic skills decreases and less skilled bureaucrats are willing to work in the public sector. Therefore, a less efficient bureaucracy attracts less skilled bureaucrats, further reducing the quality of the bureaucracy.

E. *Some Discussion on the Ways Out*

When an economy is in a Kafkaesque steady state, some policy interventions could help restore the Weberian steady state, but there are intuitive reasons why they may encounter difficulties.[8] First, a country could temporarily *ban reforms*. In a Kafkaesque steady state, this would reduce the workload of the bureaucracy and improve efficiency, as for the time being "no reform is better than good reforms." Second, it could *drop old reforms* in a process aimed at reducing the number of laws and simplifying the legal system. Third, a reduction in the overproduction of laws could also be achieved by more political *checks and balances* that increase gridlock and political stalemate (see, e.g., Krehbiel 1996, Brady and Volden 1998, Callander 2011, Dziuda and Loeper 2016, Ortner 2017, Gratton and Morelli 2021). The problem is that politicians have little incentive to support any of these policies, because with no reforms or by dropping outstanding reforms, politicians cannot signal their competence. In our model, the public cannot tell the quality of a reform that is

[8] We relied on multiple equilibria to emphasize the consequences of the overproduction of laws. Yet, the problem is more general: if the technology characterizing the efficiency of bureaucracy (the function α) is smooth, reducing the incentives to pass reforms for incompetent politicians would be welfare improving also at the margin in a given equilibrium. The difficulties we discuss in this section also apply to this case.

dropped before being implemented. To induce politicians to embrace these reforms would require the coordinated effort of various stakeholders (voters, lobbies, etc.) to modify the politicians' reputational payoff. In practice, coordination is difficult to sustain and possible only if all stakeholders become fully aware of the problems caused by the overproduction of laws—the very problem we highlight in this paper.

Political leaders could play a potentially important role. In our model, inefficiencies arise because politicians do not internalize the impact of their reforms on the bureaucracy. Political leaders may recognize these externalities and limit the number of reforms passed by their politicians. They may also act to *reform the bureaucracy*, by investing resources to increase $\bar{h}^K$ and $\underline{\alpha}$. A successful reform might give substantial political rewards if the stakeholders recognize its benefits. In practice, leaders might fail in restoring the Weberian state for two reasons: first, because a successful reform of the bureaucracy may take longer than the leaders' political horizon, so that the leaders who launch it may fail to reap its political benefits. (Therefore, such a reform requires a long period of political stability.) Second, and more important, Gresham's law of bureaucracy implies that, in a Kafkaesque state, elected politicians and their leaders are likely to be incompetent. Incompetent leaders would be tempted to introduce many useless reforms of the bureaucracy, only exacerbating the problem, and even competent leaders would lack the support of other politicians, as successful reforms of the bureaucracy reduce the utility of incompetent politicians.

III. Aggregate Evidence

In this section we relate our model to the history of the Italian Republic before and after the fall of the Berlin Wall (1989) and the end of the Cold War. These events brought Italy's so-called First Republic (1948–1992) to an end and started a period of political instability known as the Second Republic. We document the consequent increase in political instability and a 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 document the general equilibrium feedbacks between the quantity and quality of legislation and the efficiency of bureaucracy that characterize our model. We conclude by comparing the experience of Italy after the fall of the Berlin Wall with that of Germany. In all figures with time-series evidence, blue lines correspond to the First Republic, red lines to the Second Republic.

A. *The Surge in Political Instability*

Since the end of World War II, and until the tenth legislature (1987–1992), the Italian Republic was characterized by a stable policy agenda controlled by the Christian Democratic Party. In 1948, in the first election under the new constitution, the Christian Democratic Party won 49 percent of the vote; the Communist-Socialist coalition, then called Popular Democratic Front, won 31 percent. The Christian Democratic and the Communist parties remained the two key players until the tenth legislature, but Italy's membership in the North Atlantic Treaty Organization (NATO) implied that the Communist Party could never actually govern—the so-called "*K-factor*." This feature of the system yielded unique political rents to the

Christian Democrats: governments were supported by slightly different coalitions, but the Christian Democrats were always pivotal and had veto power, guaranteeing political and policy 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, leading to a contestable power vacuum: with the end of the K-factor, the Communist Party appeared to be obsolete, while the Christian Democrats and their allies were overwhelmed by corruption scandals.[9] This started a transition known as the Second Republic.

As the 1989 collapse of the Communist Bloc was the trigger to the increased political instability in Italy, we consider the tenth legislature (1987–1992) as part of the Second Republic.[10] Table 1 contains some descriptive statistics for the First and the Second Republic. Both individual politicians and governments faced shorter political horizons in the Second Republic than in the First Republic. During the First Republic only one legislature (the VII) ended before its standard five-year term. During the Second Republic, three of the first six legislatures lasted exactly two years (see Table O2, online Appendix O3). The less stable political environment shortened the average political career of MPs: First Republic MPs on average remained in their roles for 11.5 years; Second Republic MPs only survived an average of 6.5 years.

Political instability was further exacerbated by individual MPs betraying their party and by the parties themselves splitting as new ones were formed. During the First Republic, only 1.8 percent of MPs changed party at least once in a given legislature; during the Second Republic that figure more than quadrupled to an average of 8.7 percent. The total number of switches increased even more sharply as some MPs switched more than once per legislature. Government coalitions during the Second Republic were also weaker (the Rae-Taylor index of fragmentation almost doubled compared to the First Republic) and relied more heavily on confidence votes to induce Parliament to approve bills: one out of ten laws was approved after a confidence vote, ten times more than in the First Republic. Finally, as in Proposition 5, political instability has also led to the formation of three short-lived technocratic governments—a novelty for Italy.

B. *Changes in Legislation*

The increase in political instability at the beginning of the Second Republic was accompanied by an increase in legislative activism and a deterioration in the quality of Italian laws. Figures 3–5 show the most salient time-series data. Upon the transition to the Second Republic, the average number of bills presented per day by MPs in a legislature almost doubled from 1.84 to 3.73 (Figure 3, panel A). If we include in the count the bills introduced by the government, the numbers are 2.7 and 4.3, respectively (panel B).

[9] The investigation into political corruption is dubbed "mani pulite" (clean hands). Bull and Rhodes (2013) also stresses the importance of the end of the Cold War as a key destabilizing factor for the political order of Italy's First Republic.

[10] Consistent with this interpretation, Figures 3–5 show that both our proxies for political instability and distortions in the legislative process increase starting in the tenth legislature. When documenting the effects of political instability on bureaucratic efficiency, we use the commonly recognized 1992 date for the beginning of the Second Republic. This choice has minor consequences on average statistics because, as in our model, political instability has delayed effects on bureaucratic efficiency.

Table 1—Comparing Italy's First and Second Republics

Variable	First Republic	Second Republic
Political instability		
Expected duration of MP's career, years	11.5	6.5
Percent of MPs betraying party	1.84	8.70
Percent of MPs switching party	6.40	13.90
Fragmentation of government coalition	0.35	0.61
Number of confidence votes per approved law	0.01	0.10
Number of technocratic governments	0	3
Laws production		
Number 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)	261.00	475.33
Share of standard laws	0.86	0.46
Share of executive orders	0.14	0.32
Share of delegated laws	0	0.22
Laws quality		
Length of sentences	198	241
Number of gerunds	0.46	1.91
Share of laws with preamble	0.37	0.68
Number of links to other laws	6.18	11.70
Bureaucracy		
ICRG index of bureaucratic efficiency	3.1	2.8
Citations of "bureaucracy" in the press	2.6	5.5

Notes: The sample period is 1948–2017. The Second Republic starts with the tenth legislature (1987–1992) except for the two measures of bureaucratic efficiency. *Percent of MPs betraying party* is the share of MPs who changed party at least once; *Percent of MPs switching party* is the share of MPs who changed party affiliation manually collected from Lama (2014). *Fragmentation of government coalition* is the Rae and Taylor (1970) index, $\sum_i^{ng} s_i^2$, where ng is the number of parties in the coalition and s_i is the within-coalition share of parliamentary votes of party i from De Micheli (2014). *Number of confidence votes per approved law* is the ratio between confidence votes and number of approved laws manually collected from De Micheli and Verzichelli (2004) and http://www.camera.it. *Number of technocratic governments* is from http://www.camera.it. *Expected duration of MP career, years* is the expected number of years in the Parliament for MPs first elected in the V legislature (First Republic) and in the XII legislature (Second Republic) calculated using data from Senato (2021). *Number of pages per law* and *Words of legislation per quarter* are obtained from scraping data from Normattiva (2016). *Bills per day* (*MPs*) are the number of bills per day introduced by MPs. *Bills per day* (*total*) include bills introduced by the government, manually collected from http://www.camera.it. *Share of standard laws*, *of executive orders* and *of delegated laws* are from http://www.camera.it. The quality indicators (*Length of sentences*, *Number of gerunds*, *Share of laws with a preamble*, and *Number of links to other laws*) are calculated using data from Normattiva (2016). The *International Country Risk Guide* (*ICRG*) *index of bureaucratic efficiency* is scored between 1 and 4 of bureaucratic quality (higher score = higher quality) (ICRG 2018). *Citations of word bureaucracy* is the number of times the word "bureaucracy" appears in a month on the front page of "Corriere della Sera," as obtained from Corsera (2018a).

To characterize the evolution of the amount of legislation produced, we process all laws issued by the Italian Parliament over the period 1948–2016 from Normattiva (2016). This amounts to considering 75,865 laws containing around 100 million words overall. Panel A of Figure 4 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 261,000 new words of legislation per quarter; during the Second Republic, the same figure increases by 86 percent to 475,000.

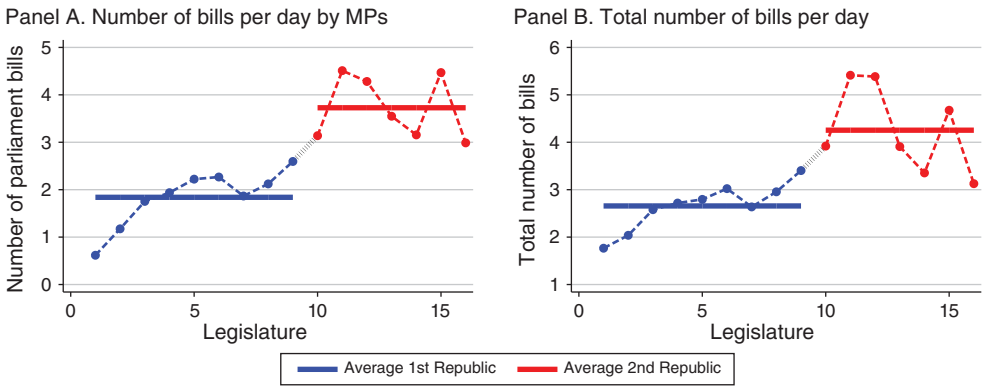

FIGURE 3. LEGISLATIVE ACTIVISM

Notes: Average number of bills per day 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.

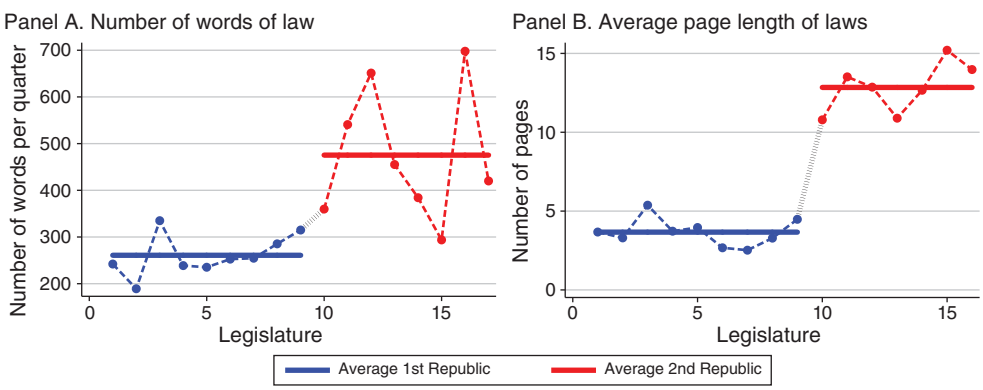

FIGURE 4. LEGISLATIVE PRODUCTION

Notes: 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.

There is also evidence that the greater difficulty of securing a stable parliamentary majority has distorted the legislative process in an additional subtle way. To bypass the Parliament, governments have increasingly resorted to executive orders and delegated legislation, whose share over new laws has increased from 14 percent during the First Republic to as much as 32 percent during the Second Republic, essentially replacing standard laws, whose share has fallen symmetrically from 86 percent to 46 percent (Table 1). Furthermore, to minimize the risk of going under in parliamentary votes, governments have started to bundle together heterogeneous matters into the same law, which has made laws substantially longer: from 3.7 pages on average during the First Republic to 12.8 pages during the Second Republic (Figure 4, panel B).

Second Republic laws are discussed more briefly in the Parliament, are longer, more heterogeneous, and—as discussed in Section IV—are initiated in greater proportion by less competent politicians. As a result, we expect the quality of laws to have deteriorated during the Second Republic. Zaccaria (2011) provides plenty of anecdotal evidence indicating that more recent laws are sometimes plagued by syntax and spelling errors and contain incomplete or inconsistent sentences, corrected only by subsequent legislative amendments.

To provide a systematic quantitative analysis of the 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 thorough text analysis of all laws issued by the Italian Parliament since 1948 obtained from Normattiva (2016). The four indicators measure the quality of the individual law as well as the complexity that the law injects into the legal system. They are plotted in Figure 5 and correspond to (panel A) the average length of sentences in number of characters, (panel B) the number of gerunds per one thousand words in the law, (panel C) the presence of a preamble in the law, and (panel D) the number of references to other laws in the main body of the law per one thousand words in the law (see online Appendix O3 for further details on the construction of these indicators).

The first two measures capture the clarity of the law. The first recommendation in style manuals is to write "short and clear sentences" as laws with long sentences are less understandable and more prone to ambiguous interpretations. As emphasized by linguists (Cortelazzo 2002), the use of gerunds in Italian often leads to pompous and inaccessible sentences, prone to misunderstandings: gerunds make the subject of the sentence less visible; generate sentences that are too dense, complex, and with excessive information; and generally hide the key message of the sentence. The remaining two indicators measure legal complexity and accessibility of the law to nonprofessionals. Preambles contain a long list of references to preexisting laws that are a prerequisite for understanding the new law, making its content less accessible and more ambiguous. The last indicator builds on the same logic: laws with a greater number of references to other laws fail to be self-contained, making them more difficult to read and understand. The four indicators are proxies for whether the meaning, scope, and interpretation of the content of a law are ambiguous. They capture different yet related features of a bad law.

All four indicators indicate that the laws of the Second Republic are drafted more poorly and characterized by greater legal ambiguity than those of the First Republic. Sentences are 21 percent 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 jumped from less than 40 percent during the First Republic to almost 70 percent during the Second. The average number of citations to other laws doubles, from around 6 citations per 1000 words to around 12. In online Appendix O3, we show that these structural breaks in the quantity and quality of legislation are a pervasive phenomenon and are not driven by a change in the distribution of topics covered by Italian laws.[11]

[11] To classify laws by topic, we use a unique feature of the Italian legislative process inherited by the Statuto Albertino of 1848. Articles 87 and 90 of the Italian Constitution establish that laws are enacted by the president of

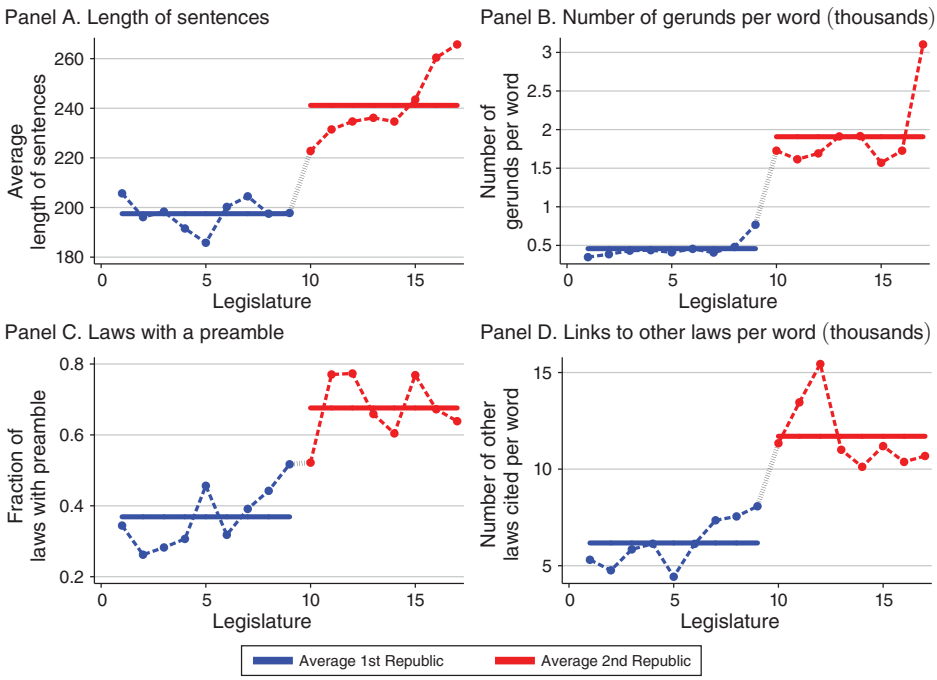

FIGURE 5. QUALITY AND COMPLEXITY OF LAWS

Notes: 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.

C. *The Bureaucracy Problem*

There is abundant anecdotal evidence in the Italian press that excessive legislation has hampered bureaucracy.[12] Figure 6 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. Panel A considers the evolution of the ICRG index of quality of bureaucracy available only since 1984 from ICRG (2018). The index ranges from

the Republic but should be countersigned by all competent ministers relevant for the matter of the law, which allows us to identify the topic of the law.

[12] In 2016, Forum PA (2017) sampled 1,688 government officials asking them to list the main factors that reduce their performance and slow down their actions. The three factors mentioned most frequently are: "excessive legislation" (listed by 67 percent of the sample); "confused legislation and overlaps of norms" (62.6 percent); "excessive legislative changes on the same matter" (57 percent). For comparison, "lack of resources," "excessive fragmentation of responsibilities," "too stringent control system" are mentioned by less than one-third of the respondents. Here is an illustrative example of 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).

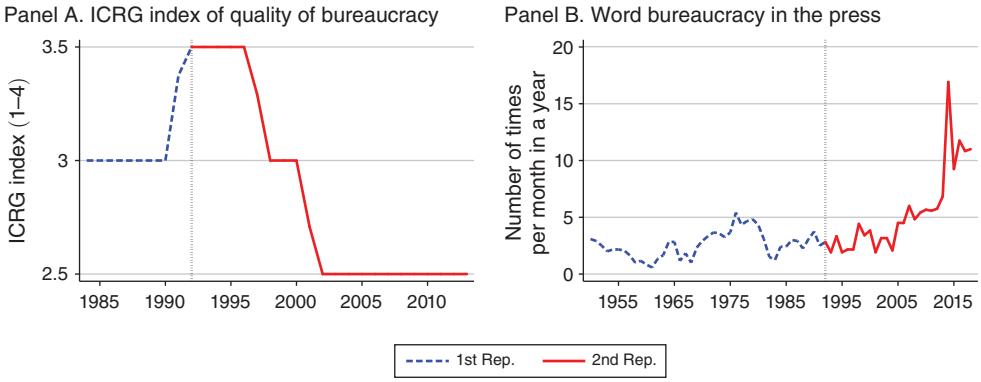

Figure 6. The Emergence of the Bureaucratic Problem in Italy's Second Republic

Notes: Panel A: indicator of quality of bureaucracy in the ICRG 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* (Corsera 2018b). The vertical line corresponds to the start of the Second Republic in 1992.

1 to 4, high scores indicate that the bureaucracy is strong and has the competence to govern without drastic changes in policy or interruptions in services. The ICRG index falls sharply during the Second Republic.[13]

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* (Corsera 2018b), whose front page size has not changed over the sample period. As the word bureaucracy has, in common parlance, a (very) negative connotation, the index can be interpreted as a measure of how salient the problem of bureaucracy is perceived by Italians. The index was flat during the First Republic, while it progressively increased starting from the beginning of the second millennium. Roughly, today Italian newspapers 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, once the legislation crosses a critical level of complexity (as in our model).

D. *Equilibrium Feedbacks*

In our model the efficiency of bureaucracy, the quantity of new legislation, and its quality are jointly determined in dynamic general equilibrium: an initial increase in the amount of new legislation leads over time to a reduction in bureaucratic efficiency, in turn causing a prolonged deterioration in the quality of new legislation; an initial increase in bureaucratic inefficiency leads over time to an increase in the

[13] 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.

amount of new legislation and a worsening of its quality. We build on the structural VAR methodology initiated by Sims (1980) to identify these dynamic general equilibrium feedbacks in the data.

To provide formal time-series evidence for the claim that a shock to the production of laws leads to a deterioration in the quality of legislation and in bureaucratic efficiency, we estimate a VAR containing four 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:

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

All variables are in logs. *Number of words of law* is the sum of all words of laws passed by the Parliament in the quarter. *Quality of laws* is the principal component of our 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) multiplied by -1 so that the index increases in quality. *Bureaucratic inefficiency* is our measure for the public salience of the bureaucratic problem as inferred from the number of citations in the front page of *Corriere della Sera* (Corsera 2018b). Given the estimated VAR, we invert the process to obtain the Wold representation of $X_t = D(L)\zeta_t$, where $D(L)$ has all its roots inside the unit circle and $E(\zeta_t \zeta_t') = \Sigma_\zeta$ is the variance covariance matrix of the Wold innovations ζ_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 $\zeta = S\epsilon$ 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 *Number of words of law*, which follows from the assumption (also made in the model) that bureaucratic efficiency is slow-moving.

Figure 7 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 law* 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 preshock level by 3 percent. In online Appendix O3, we show that the results change little after excluding the last years of the sample characterized by a pronounced spike in the index of (perceived) bureaucratic inefficiency.

In online Appendix O3 we also study the effects of a shock to the efficiency of bureaucracy, identified by imposing the restriction that, in the quarter of impact, the shock affects only bureaucratic efficiency. This follows from the realistic assumption that politicians respond to a change in the institutional environment with a delay of at least one quarter. We find that in response to an initial fall in bureaucratic efficiency, the amount of new legislation increases over time while its quality deteriorates. This evidence, together with the evidence in Figure 7, supports the claim that the efficiency of the bureaucracy and the quantity and quality of laws are jointly determined with dynamic equilibrium feedbacks: bureaucratic inefficiency leads to

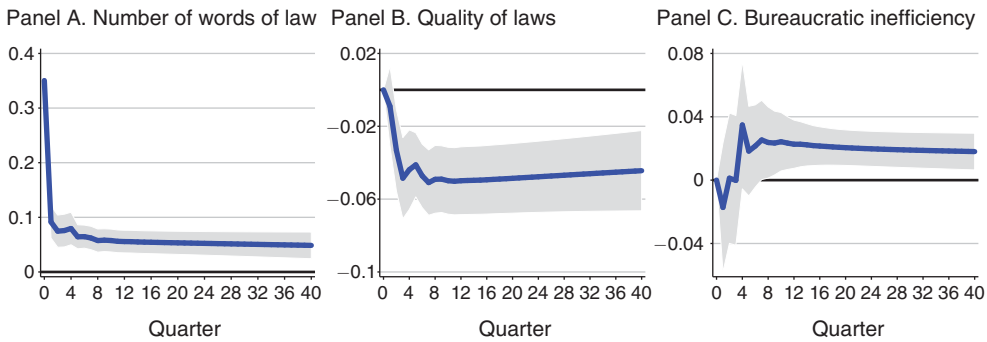

Figure 7. Response to a One Standard Deviation Increase in the Amount of Legislation

Notes: Impulse response to a one standard deviation increase in the *Number of words of law* issued in a quarter (panel A) on the *Quality of laws* (panel B) and *Bureaucratic inefficiency* (panel C). All variables are in logs. The VAR contains four lags and is estimated over the period 1946:I–2016:IV.

an increase in the quantity of new legislation and a worsening of the quality of laws which in turn affect the efficiency of the bureaucracy.

E. *A Benchmark Comparison*

Other shocks might have hit the Italian economy around the time of the fall of the Berlin Wall and caused the break in legislation that we have documented. The creation of the European Single Market in 1992 is probably one of the most relevant alternative culprits. It intensified the production of European legislation that all countries in the Union were asked to incorporate into their national legislation. Germany 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 was, 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 experienced no break in the quality of legislation or the efficiency of its bureaucracy after the end of the Cold War.

Using the totality of the Official Gazettes of the German Federal Republic ("Bundesgesetzblatt") from 1955 to 2017, we process through text analysis all federal laws ("Gesetze") and decrees ("Verordnung") using data from Bundesgesetzblatt (2018). For each year we calculate the number of words of legislation published in an average quarter of the year by the German Federal Parliament. The resulting series appears in panel A of Figure 8. There is a small increase in the number of words of law per quarter since the 1990s, but the null hypothesis of no structural break in the amount of legislation issued per quarter before and after the 1990s cannot be rejected (see online Appendix O3). Panel B also shows the time-series profile of the number of references to other laws per one thousand words in the law using the data from Bundesgesetzblatt (2018). There is no evidence 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. Panel C shows the ICRG indicator for the quality of German bureaucracy (ICRG 2018), which has remained remarkably stable over time at its maximal possible value. Panel D reports the number of times

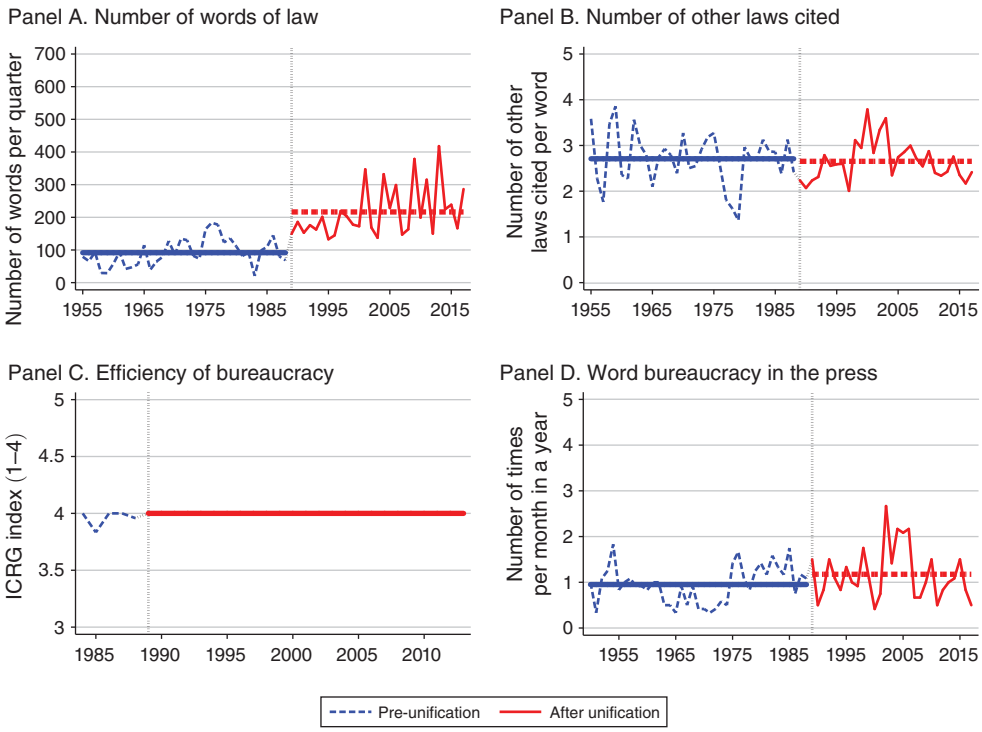

FIGURE 8. GERMAN LEGISLATION: QUANTITY, QUALITY, AND EFFICIENCY OF BUREAUCRACY

Notes: Dotted blue line: pre-unification; solid red line: postunification. 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, as published in Official Gazettes of the German Federal Republic from Bundesgesetzblatt (2018). Panel B: average number of references to other laws per one thousand words in the law from Bundesgesetzblatt (2018). Panel C: ICRG indicator of quality of bureaucracy from ICRG (2018). Panel D: number of times per month the word "bureaucracy" appears in the front page of one of the main daily newspapers in Germany, Frankfurter Allgemeine Zeitung (FAZ 2019).

per month the word "bureaucracy" appears in the front page of one of the main daily newspapers in Germany, Frankfurter Allgemeine Zeitung (FAZ 2019). Again the series remains flat throughout the period with the word bureaucracy being used in the press just once per month, around one-tenth of its frequency in the Italian press during the most recent years.

We also used the German data to estimate the same VAR model as the one discussed in Figure 7, finding that a shock to the production of legislation has qualitatively similar effects on the quality of laws and on bureaucracy as we found in Italy (see online Appendix O3). This is coherent with the claim that the transmission mechanism is similar in Italy and Germany, but shocks to the production of laws were less frequent and smaller in Germany than in Italy. Our interpretation of all this evidence is that although Germany shares with Italy the fall of the Berlin Wall and the exposure to the Single Market, it was nonetheless not exposed to the surge in political instability experienced by Italy over its Second Republic that has distorted the incentive of Italian politicians towards greater legislative activism. As a result, legislative quality and bureaucratic efficiency deteriorated in Italy, but not in Germany.

IV. Micro Evidence

We now use microdata on Italian MPs during the Second Republic to validate the model prediction that a shorter political horizon increases an incompetent politician's incentives to pass laws. We also provide evidence that legislative activism has signaling value for MPs and test other predictions from Propositions 1 and 2. We begin by describing the empirical tests. We then discuss the data and the construction of variables. Finally, we present the evidence.

A. *The Tests*

Signaling Assumption.—The model hinges on the assumption that legislative activism has signaling value to politicians. To verify the assumption, we use an event study methodology and show that the visibility of Italian politicians in the press increases upon introducing a new bill to the Parliament. We consider a window of 60 days around the day when MP i's bill is first discussed by the Parliament and run the following regression:

$$CIT_{it} = \sum_{\tau=-30}^{30} \beta_\tau d_{it}^\tau + \varphi_i + \psi_t + \epsilon_{it}, \tag{8}$$

where t is current time; d_{it}^τ are event dummies, equal to one if the bill by MP i was first introduced at date $t-\tau$ and zero otherwise; φ_i is an individual fixed effect for MP i; and ψ_t are time dummies. The time dummies ψ_t control for common shocks to the likelihood that politicians appear in the press, and the individual dummies φ_i for the prominence of politician i. The coefficient β_0 identifies the *signaling value* of legislative activism: by how much the visibility of MP i is enhanced by introducing a bill in the Parliament.

Testing the Mechanism.—We test the comparative static results in Propositions 1 and 2. With respect to the model in Section I, we introduce the variable $INC_{i\ell} \equiv 1-\theta_{i\ell}$, equal to one if MP i in legislature ℓ is incompetent and zero otherwise. Propositions 1 and 2 state that a shorter political horizon induces incompetent politicians to pass more laws. To test for whether the effects of a shorter political horizon differ for competent and incompetent politicians, we use a difference-in-difference methodology exploiting variation in politicians' competence and in the length of the political horizon of politicians across legislatures.[14] We run the following regression:

$$\sigma_{i\ell} = \gamma_0 + \gamma_1 INC_{i\ell} + \gamma_2 \lambda_\ell + \gamma_3 INC_{i\ell} \times \lambda_\ell + \psi_\ell + \gamma_X' X_{i\ell} + \epsilon_{i\ell}, \tag{9}$$

[14] See Dal Bó and Rossi (2011) for a clean identification of the effects of a shortening in politicians' term length without analyzing the differential effect for competent and incompetent politicians.

where $\sigma_{i\ell}$ is a measure of the legislative activism by MP i in legislature ℓ; $INC_{i\ell}$ is the dummy for whether MP i is incompetent; λ_ℓ is a measure of the political horizon of politicians in legislature ℓ, proxied by the expected duration of the legislature; ψ_ℓ terms are a full set of legislature dummies; $X_{i\ell}$ a vector of additional controls discussed in the next section; and $\epsilon_{i\ell}$ is an error term. The parameter of interest is γ_3: it measures how the relative legislative activism of incompetent politicians changes when the political horizon of politicians λ_ℓ increases. The model predicts $\gamma_3 < 0$: with a shorter political horizon, the incentives to produce laws are relatively stronger for incompetent than for competent politicians. Notice that $INC_{i\ell}$ in (9) controls for the average activism of incompetent politicians across legislatures, while the legislature dummies ψ_ℓ control for all common shocks to the legislative activism of politicians in the legislature, including the reasons for why the political horizon of politicians varies across legislatures.

We also test a prediction of the model about the reputation for competence of politician i at the end of legislature ℓ, $\rho_{i\ell}$. We measure $\rho_{i\ell}$ with whether MP $i\ell$ is reelected in legislature $\ell + 1$.[15] The model predicts that an incompetent politician's reputation is lower whenever the legislature is longer.[16] To test for this prediction, we again rely on a difference-in-difference identification strategy and estimate the following probit model:

$$\rho_{i\ell} = \zeta_0 + \zeta_1 INC_{i\ell} + \zeta_2 \lambda_\ell + \zeta_3 INC_{i\ell} \times \lambda_\ell + \psi_\ell + \zeta_X' X_{i\ell} + \xi_{i\ell}. \tag{10}$$

The prediction from the model is that $\zeta_3 < 0$.

B. *The Data*

The Italian Parliament was a perfect bicameral system consisting of the Chamber of Deputies (630 members) and the Senate of the Republic (315 elected senators). We use information on all the members of both houses during six legislatures in the Second Republic, covering the period from 1987 to 2008. Table 2 shows some summary statistics; others appear in Table O3 in online Appendix O3. We have information on each bill introduced, 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 from Gagliarducci, Nannicini, and Naticchioni (2011b).[17] The number of citations of MP i in the press at time t, CIT_{it}, is obtained by counting the number of times the full name of MP i appears in the front page of *Corriere della Sera* (Corsera 2018b). We count the number of citations of MP i on the date when MP i's bill was first discussed in parliament and in the thirty days before and after that date.

To estimate (9), we consider two measures for the legislative activism of MP i in legislature ℓ, $\sigma_{i\ell}$: one is the number of bills introduced by MP i, the other is the

[15] In online Appendix O2 we study a version of our model in which politician $i\ell$ is reelected with probability $\rho_{i\ell}$ and show that all comparative static results carry over from our benchmark model.

[16] To see this result, notice that the expected payoff of incompetent politicians always equals ρ^n, which is decreasing in $\eta(\alpha_\ell, \lambda_\ell)$ (by Proposition 2) and the unconditional expectation of the posterior belief $\rho_{i\ell}$ is π.

[17] This is the original, complete dataset made available to us by Stefano Gagliarducci used and well documented in Gagliarducci, Nannicini, and Naticchioni (2011b).

Table 2—Summary Statistics

Variable	Mean	Median	SD
Number of MP citations	0.03	0	0.41
Completed legislature	0.50	0	0.50
Number of bills per MP	6.68	3	11.70
Number of laws per MP	0.90	0	2.12
Incompetent MP: fixed effect	0.52	1	0.50
Incompetent MP: mean residuals	0.49	0	0.50
Incompetent MP: GFE (three groups)	0.92	1	0.28
Incompetent MP: GFE (five groups)	0.80	1	0.40
Success rate	0.08	0	0.18
Reelection probability	0.46	0	0.5

Notes: 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 from Corsera (2018b). *Number of bills:* number of bills introduced by an average MP. *Number of laws:* number of bills made into laws, introduced by an average MP. *Completed legislature:* dummy equal to one if the legislature is completed (Wikipedia 2015). *Incompetent MP:* dummy equal to one if the MP is classified as incompetent based on the fixed-effect measure, mean wage regression residuals, or the GFE estimator by Bonhomme and Manresa (2015) with three or five groups. *Success rate:* proportion of bills made into laws. *Reelection probability*: share of MPs in a legislature who are reelected in the next.

number of these bills that were approved as laws. To measure the variation in the political horizon of politicians, λ_ℓ, we exploit differences in our sample in the *actual* length of legislature ℓ and let $\lambda_\ell = 1$ if the legislature ℓ completed its statutory five-year term, and zero otherwise. The test based on (9) requires that MPs correctly anticipate whether a legislature will end prematurely, so as to adjust their strategic behavior accordingly. In the Italian context this appears to be a reasonable assumption. Historically, the completion of Italian legislatures is predicted by the government coalition's margin in the Senate.[18] Since the coalition's margin in the Senate is the result of the election, MPs can use it at the outset of the legislature to form a reliable prediction about the legislature's duration and adjust their strategic behavior accordingly. In our context, even the actual length of an uncompleted legislature can be easily anticipated. As MPs' pension entitlements mature only if the legislature lasts for at least two years, MPs can confidently anticipate that uncompleted legislatures will end after about two years (Table O2, online Appendix O3).

The set of controls $X_{i\ell}$ in (9) and (10) includes demographic characteristics (age, number of children, dummies for gender, marital status, education attainment, and region of birth). They also include a dummy for the House of Parliament, for whether MP i is a life senator, has previous parliamentary experience, has an appointment in a national or local party position, is a member of the European Parliament, is chair or secretary of any committee, is a committee member, is the deputy prime minister or a minister. We also include in $X_{i\ell}$ a dummy for the (possibly time varying) political party of MP i, the fraction of time in the legislature during which the party of

[18] Italian governments need the support of both houses of Parliament, but because of the smaller number of seats in the Senate (315 against 630), the vote margin in the Senate is a good predictor for uncompleted legislatures. In one of our uncompleted 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-seat margin—still less than the average in completed legislatures (20 seats). See Table O2 in online Appendix O3.

MP i is in the government coalition as well as the analogous fraction of time during which the party of MP i also expresses the prime minister. Summary statistics for the controls $X_{i\ell}$ are in Table O3 in online Appendix O3.

To identify the incompetence of MP i, $INC_{i\ell}$, 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 in each year during their term(s) as well as in the year before election. Building on Besley et al. (2017) and Dal Bó et al. (2017), and following the labor economics literature (see Card 1999), we infer politicians' competence from their market earnings capacity.[19] We run Mincerian wage regressions on total earnings, adding some controls Z_{it} and individual-MP fixed effects that we take as a measure of competence of the MP.[20] From this continuous measure we construct the indicator for an incompetent politician, $INC_{i\ell}$, as equal to one if the estimated fixed effect is below the cross-sectional median; a stricter definition, used in some robustness exercises, takes the twenty-fifth percentile as the relevant threshold. Alternatively, we run the same Mincerian wage regression without the MP fixed effects, but expand the list of individual controls Z_{it}, including gender and education attainment dummies. Taking the residuals from this regression, averaging them at the MP level, we then construct an alternative analogous indicator for an incompetent politician $INC_{i\ell}$. 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).

Our fixed-effect and residual measures are potentially inconsistent due to the incidental parameter problem in panel data models with a large number of cross-sectional units and a relatively short time-series dimension. In our application this concern is somewhat less compelling since we are interested in grouping MPs rather than in recovering their individual fixed effect. Nonetheless, we address this concern by using the GFE estimator recently proposed by Bonhomme and Manresa (2015) and further studied in Bonhomme, Lamadon, and Manresa (2017). GFE shrinks the number of fixed-effect parameters to be estimated by assuming that there is a fixed discrete number of groups of individuals, whose effect on income is allowed to vary over time.[21] We consider the same Mincerian wage regression as before and estimate two alternative sets of GFEs. In the first, we group MPs in three different groups and define an MP as incompetent if she belongs to the lowest income group.

[19] 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. This 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 online at http://www.camera.it/leg17/1003.

[20] The controls Z_{it} include a polynomial in age, a linear and square term in tenure as MP, time dummies, region of residence dummies, plus the other controls X_{it} included in (9) and (10) with the exception of the political party of MP i, since it is debatable whether the political party of MP i should be taken as a possible determinant of the skill of the MP as priced by the market. In any case, we checked that our results are robust to including the party dummies into the wage regressions used to calculate $INC_{i\ell}$.

[21] We thank Stephane Bonhomme and Elena Manresa for sharing their Matlab code and helping us in estimating our regression model. The GFE estimator minimizes a least-squares criterion with respect to all possible groupings of the cross-sectional units and is computed using recently introduced clustering methods. Bonhomme and Manresa (2015) shows that the GFE estimates are asymptotically consistent, while Bonhomme, Lamadon, and Manresa (2017) provides conditions for guaranteeing that the GFE estimates can be interpreted as a discretization of a large (possibly a continuum) number of individual fixed effects in the population. In implementing the GFE estimator we follow the suggestion by Bonhomme and Manresa (2015) and require that individuals stay in the sample for at least four years.

Table 3—Successful Bills and Politicians' Quality

	Politician's quality measure			
	Fixed effects < median (1)	Fixed effects < 25th pct (2)	Residual < median (3)	Residual < 25th pct (4)
Incompetent politician	−0.04	−0.07	−0.02	−0.04
	(0.00)	(0.00)	(0.00)	(0.00)
Observations	3,613	3,613	3,613	3,613
Pseudo R^2	0.26	0.26	0.26	0.26

Notes: Tobit estimates for the share of bills introduced by an MP that are made into law using four alternative measures of MP's competence. All regressions control for $X_{i\ell}$ containing demographic characteristics (age, years of education, dummies for gender, marital status, and region of birth); a full set of dummies for the MP political party, for chamber of parliament, for being a life senator, for having some previous parliamentary experience, for having an appointment in a national or local party position, for being a member of the European Parliament, for being a committee chair or secretary, for being a committee member, for being a deputy prime minister or minister; a full set of legislature dummies; the fraction of time in the legislature during which the party of MP i is in the government coalition from Governo Italiano (2019); and finally the analogous fraction of time in the legislature during which the party of MP i expresses the prime minister from Governo Italiano (2019). Regressions compute robust standard errors clustered at MP level; p-values are shown in parentheses.

In the second, we allow for five groups and incompetent politicians are identified as those in the bottom two income groups. The measure of incompetence with the two GFEs are positively correlated (correlation 0.6) and are also positively correlated with the fixed-effect measure (correlation around 0.3) and with the mean residuals measure (correlation around 0.4).

Some Validation of the Incompetence Measure.—To validate our measure of incompetence, $INC_{i\ell}$, we observe that only 8 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 $INC_{i\ell}$ measures some notion of incompetence, 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 share of bills presented by a MP that make into a law as a function of $INC_{i\ell}$: bills introduced by incompetent politicians are converted into a law at a rate that is between 2 and 7 percentage points lower than the bills proposed by other politicians.

A somewhat more compelling way to validate the measure of competence of an MP is to directly correlate it with the quality of the laws originated by their bills. Table 4 reports the results from regressing our previously discussed measures of quality of laws against $INC_{i\ell}$. For all measures of quality of laws, we find that incompetent MPs produce worse laws: laws introduced by incompetent politicians have longer sentences (by 13 percent of the sample standard deviation), use more gerunds (25 percent more than average), are 23 percent more likely to contain a preamble, and cite other laws 8 percent 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 −1 (so that the indicator is increasing in

Table 4—Incompetence of Politicians and Quality of Laws

	Average length of sentences (1)	Number of gerunds (2)	Law has a preamble (3)	Number of references to other laws (4)	First principal component (5)
Incompetent politician	10.99	0.001	0.19	0.02	−0.22
	(0.08)	(0.002)	(0.28)	(0.11)	(0.01)
Observations	1,675	1,675	1,387	1,675	1,675
R^2	0.12	0.09	0.21	0.06	0.12

Notes: Ordinary least squares (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 −1. Regressions are run on the sample of MPs whose bills were converted into a law. Data on the quality of laws are from Normattiva (2016). All regressions include the controls $X_{i\ell}$ specified in Table 3. In column 3 R^2 is a pseudo R^2. Regressions compute robust standard errors; p-values are shown in parentheses.

quality). According to this metric, incompetent politicians produce laws of overall quality 18 percent lower than the sample standard deviation.

C. *Results*

We now present the results from estimating (8), (9), and (10).

Signaling.—We run regression (8) on the whole sample of bills proposed by MPs. Panel A of Figure 9 plots the estimated event dummies coefficients d_{it}^{τ}. 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—twice the sample mean of citations. In the other days of the time window, the coefficients d_{it}^{τ} are not statistically different from their mean value. This corroborates the anecdotal evidence that many laws in Italy get popularly known after the name of their primary sponsor; see Table O6 in online Appendix O4 for a list with data from Wikipedia (2019).

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 percent of MPs were elected in single member districts while the remaining 25 percent were elected under a proportional representation system. We expect the signaling 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 accommodates this higher demand for attention by voters. To test for this prediction, we run the regression in (8) separately for the sample of MPs elected under a majoritarian system and for those elected under a proportional system. Panel B in Figure 9 plots the event dummies coefficients d_{it}^{τ} estimated separately for the two subsamples. The signaling value of legislative activism is around twice as large for MPs elected under a majoritarian system than for those elected under a proportional system.

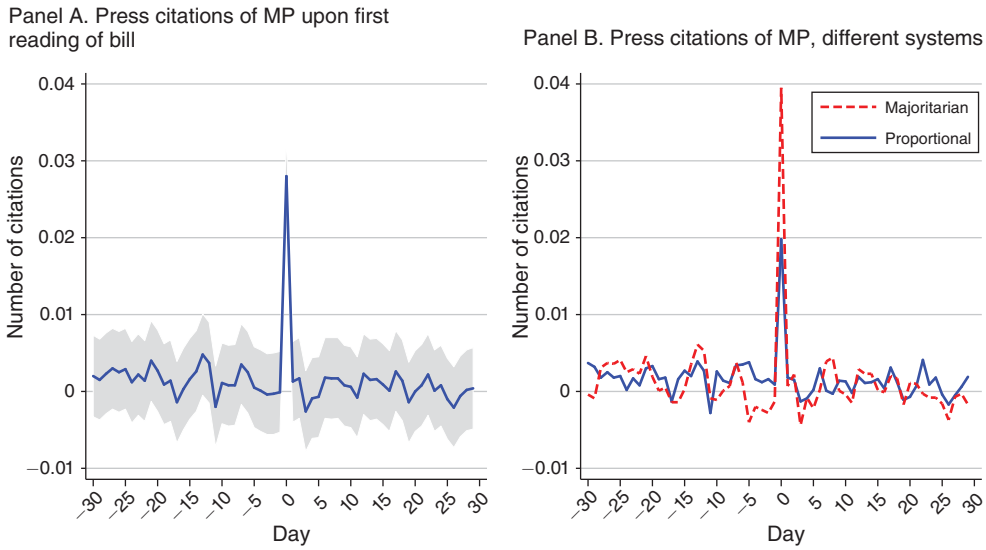

Figure 9: Legislative Activism and Visibility of MPs in the Press

Notes: Coefficients d_{it}^{τ} from estimating (8) 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 (Corsera 2018b). Panel A is for the full sample. Panel B considers separately MPs elected under a majoritarian system and those elected under a proportional system.

Table 5—The Effect of the Political Horizon: Bills

	Quality measure	
	Fixed effect	Mean residuals
	(1)	(2)
Incompetent politician	−0.45	0.07
	(0.44)	(0.86)
Incompetent politician × completed legislature	−1.33	−1.19
	(0.02)	(0.03)
Observations	4,904	4,904
R^2	0.133	0.131

Notes: OLS estimates of the number of bills introduced by an MP on politician competence, measured using the fixed effect (column 1) or mean residuals (column 2) in Mincerian wage regressions. All regressions include the controls $X_{i\ell}$ specified in Table 3. Regressions compute robust standard errors, clustered at the MP level; p-values are shown in parentheses.

The Effect of the Political Horizon: Bills and Laws.—Table 5 shows the results from estimating (9) when the legislative activism of MPs, $\sigma_{i\ell}$, is measured using the number of bills. The first column uses the fixed-effect measure of politicians' incompetence; the second, the residuals measure—both constructed using the cross-sectional median as a relevant threshold. There is statistically significant evidence supporting the theoretical prediction that γ_3 in (9) is negative. When competence is measured using the fixed-effect measure (column 1), compared to competent politicians, incompetent politicians propose 1.33 more bills in an uncompleted legislature, which is equivalent to 20 percent of the sample mean of bills presented by

Table 6—Robustness

	Quality measure								
	Fixed effect			Mean residuals			Group fixed effect		
	Incompetent fixed effects < 25th	No outliers	At least 1 bill	Incompetent residual < 25th	No outliers	At least 1 bill	GFE sample	3-groups	5-groups
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Incompetent politician	−0.23	−0.16	0.69	−0.45	−0.25	0.43	−0.56	1.47	0.31
	(0.66)	(0.68)	(0.38)	(0.34)	(0.41)	(0.45)	(0.44)	(0.09)	(0.64)
Incompetent politician × completed legislature	−1.13	−1.07	−1.18	−1.00	−0.88	−1.31	−1.30	−2.67	−2.06
	(0.05)	(0.01)	(0.11)	(0.12)	(0.02)	(0.06)	(0.04)	(0.06)	(0.02)
Observations	4,904	4,853	3,613	4,904	4,853	3,613	4,293	4,293	4,293
R^2	0.13	0.16	0.13	0.13	0.16	0.13	0.13	0.13	0.13

Notes: The dependent variable is the number of bills introduced by an MP. All regressions include the controls $X_{i\ell}$ specified in Table 3. In columns 1–3 and 7 competence is constructed using the fixed-effect measure; in columns 4–6 using mean residuals; in columns 8–9 using the GFE estimator by Bonhomme and Manresa (2015). Columns 1 and 4 identify incompetent politicians as those in the bottom quartile of the distribution. In column 8 incompetent politicians are those in the lowest income group (out of three groups); in column 9 are those in the bottom two income groups (out of five groups). In all other columns incompetent politicians are those with the competence measure (fixed effect or mean residual) below the median. Column 7 runs the same regression as in column 1 of Table 5 but on the sample used to estimate the GFE as in Bonhomme and Manresa (2015). Columns 2 and 5 drop observations with more than 54 bills (the ninety-ninth percentile of the distribution of number of bills proposed by MPs); columns 3 and 6 only consider MPs who presented at least one 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 parentheses.

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. For example, using the fixed-effect measure of incompetence, we find that the point estimate of the absolute value of γ_3 increases from 1.33 in column 1 to 2.26 in the sample-split-specification. Similar results are obtained when using mean residuals. Our difference-in-differences regressions include a full set of legislature dummies that we can group according to whether the legislature was completed or uncompleted. The average number of bills per MP per day increases by roughly 50 percent in uncompleted legislatures relative to completed ones (from 0.4 to 0.6 percent). This is consistent with the model implication that legislative activism should be more intense in shorter legislatures (see Sections I and II); however, since the legislature dummies also capture any other aggregate determinant of legislative activity, the correlation between legislative activism and length of legislatures provides a weak test of the model and we pay little attention to it.

Table 6 reports a set of robustness exercises. Columns 1–3 use the fixed-effect measure of politicians' competence; columns 4–6 use the residuals measure; columns 7–9 focus on the results based on the GFE estimator by Bonhomme and Manresa (2015). As a first robustness check, in columns 1 and 4, we define as incompetent ($INC_{i\ell} = 1$) those MPs with a fixed effect or average residual below the twenty-fifth percentile of the cross-sectional distribution. Second, in columns 2 and 5, we drop 51 outliers: exceptionally active MPs with more than 54 bills (corresponding to the ninety-ninth percentile of the distribution of number of bills proposed by MPs).

Third, in columns 3 and 6, we restrict the sample to MPs who introduced at least one bill in the legislature, which implies dropping around 1,250 observations. The results are basically unchanged: the effect of the political horizon on the legislative activism of incompetent politicians as measured by γ_3 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 magnitude of the estimate of γ_3 changes little. In columns 7–9 we estimate the main regression (9) using the GFE estimates to identify an incompetent MP. In column 8 incompetent MPs are those in the lowest income group (out of three groups), in column 9 are those in the bottom two income groups (out of five groups). Since the GFE estimates are based on a slightly different sample, in column 7 we re-estimate γ_3 in this subsample once $INC_{i\ell}$ is constructed using the fixed-effect measure, as in column 1 of Table 5. The point estimate of γ_3 is little affected by the change in sample. (It is 1.33 in Table 5 against 1.30 in Table 6.) There is some evidence that the estimate of γ_3 increases in absolute value (becoming slightly larger than two) when incompetence is measured using the GFE estimates.

Table 7 reports the results from estimating (9) when the legislative activism of MPs, $\sigma_{i\ell}$, is measured using the number of laws sponsored by MPs rather than the number of bills. There is evidence that a shortening in the political horizon of politicians increases the legislative activism of incompetent politicians also using this alternative measure of activism. Compared to completed legislatures, in uncompleted legislatures, incompetent politicians sponsor on average 0.35 more laws than competent politicians do. Since the mean number of laws per MP is 0.90 (Table 2), uncompleted legislatures lead to an increase in the number of laws by incompetent politicians equivalent to more than 33 percent of the sample mean.

To evaluate whether the estimated value of γ_3 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 would imply that γ_3 accounts for roughly 51 percent of the observed increase in legislative activism in bills in uncompleted legislatures relative to completed legislatures. Overall, Tables 5–7 show that shorter terms make incompetent politicians more active, but Table 4 also shows that incompetent politicians produce worse laws according to all our quality measures. As a result, short legislatures not only increase the quantity of legislation, but also lead to laws of lower average quality.

Reelection.—Table 8 shows the marginal effects from estimating the probit model in (10). In the 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 legislature—i.e., the coefficient ζ_3 in (10). The first column shows the results for the fixed-effect measure of competence, the second for the residual measure. Overall, there is evidence that incompetent politicians are significantly less likely to be reelected after completed legislatures: in a completed legislature, the reelection probability of an incompetent politician falls by 8 percentage points. This is a nontrivial effect given that the sample mean reelection probability is 46 percent (Table 2).

Table 7—The Effect of the Political Horizon: Laws

	Quality measure			
	Fixed effects < median (1)	Fixed effects <25th pct (2)	Residual < median (3)	Residual < 25th pct (4)
Incompetent politician	0.03	0.04	0.00	0.03
	(0.72)	(0.55)	(0.94)	(0.67)
Incompetent politician × completed legislature	−0.35	−0.35	−0.17	−0.47
	(0.01)	(0.01)	(0.20)	(0.00)
Observations	3,613	3,613	3,613	3,613
R^2	0.17	0.17	0.17	0.17

Notes: OLS estimates of the number of laws sponsored by an MP on four alternative measures of quality. All regressions include the controls $X_{i\ell}$ specified in Table 3. Regressions compute robust standard errors, clustered at the MP level; p-values are shown in parentheses.

Table 8—Reelection Probability

	Quality measure	
	Fixed effect	Mean residual
Incompetent politician	0.05	0.03
	(0.09)	(0.26)
Incompetent politician × completed legislature	−0.08	−0.08
	(0.03)	(0.03)
Observations	3,985	3,985
Pseudo R^2	0.07	0.07

Notes: Probit estimates of the marginal effect on reelection probabilities. Dependent variable is equal to one if the MP is reelected in the next legislature. Fixed-effect and mean residuals measures of MP competence are based on the median. Regressions are run on sample of MPs under 65 years of age, omitting life senators. All regressions include the controls $X_{i\ell}$ specified in Table 3. Regressions compute robust standard errors clustered at the MP level; p-values are shown in parentheses.

V. Concluding Remarks

We have shown that political instability can cause the introduction of excessive and low-quality legislation, thereby triggering a chain reaction eventually leading to a Kafkaesque economy. The key problem is that political instability shortens the horizon of less competent politicians, who react by proposing more laws because they expect the outcome of laws to arrive too late for anybody to blame them for it. The ensuing large amount of low-quality laws hinders bureaucratic efficiency, eventually implying that all laws produce outcomes with such noise and delay that the perverse incentive for incompetent politicians becomes a fixed feature of the system. Thus, periods of political instability are critical junctures with (possibly) long-lasting consequences for the functioning of institutions.

We applied this logic to explain why, in response to the increase in political instability initially caused by the end of the Cold War, Italy has experienced an increase in the production of new laws, a deterioration in their quality, and a progressive fall in the efficiency of its bureaucracy. We have shown that no comparable changes occurred in Germany, where the political system has remained stable even after the end of the Cold War. We have identified the dynamic general equilibrium feedbacks between the

efficiency of bureaucracy and the quantity and quality of laws using structural VAR models. Finally, we relied on microdata for Italian MPs to construct a simple, observable measure of the political horizon of politicians: the expected duration of a legislature. We used this measure to validate the model prediction that a shorter political horizon enhances the incentives for incompetent politicians to pass laws.

The perverse effects of excessive legislation can be more relevant in civil law than in common law systems: in the former, single laws have long-lasting effects on the legislative code so that legislative complexity can build up more easily. 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. In fact, signaling incentives are important also for members of the US Congress. As argued by Thomas and Grofman (1993), Cooper and Young (1989), and particularly Adler and Wilkerson (2012), changes in the House rules on cosponsorship had a substantial effect on legislative production incentives.[22] This suggests that the pernicious dynamics we highlighted are likely to be a major concern in advanced democracies in general, and their resolution is essential to the preservation of well-functioning bureaucratic institutions.

A superficial reading of the paper 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 behavior. Problems arise when political instability does not allow the public to accurately evaluate the performance of politicians in office. The problem is not political competition but the short political horizon of politicians. In stable contexts, political competition generally leads to the selection of good laws—political instability distorts this process.

Appendix A. Omitted Proofs

A. *Proof of Proposition 1*

Preliminaries.—Let $E\left[u_{i\ell}(\theta_{i\ell},\omega_{i\ell})\,|\,\sigma_{i\ell}\right]$ denote the expected payoff of a politician $i\ell$ with competence $\theta_{i\ell}$ who decides to pass her reform of quality $\omega_{i\ell}$ with probability $\sigma_{i\ell}$. Then,

$$E\left[u_{i\ell}(\theta_{i\ell},\omega_{i\ell})\,|\,0\right] = \rho^{n}_{i\ell}; \tag{11}$$

$$E\left[u_{i\ell}(\theta_{i\ell},\omega_{i\ell})\,|\,1\right] = \eta(\alpha_\ell,\lambda_\ell)\,\rho^{y}_{i\ell} + \left(1-\eta(\alpha_\ell,\lambda_\ell)\right)\left[\omega_{i\ell}\,\rho^{g}_{i\ell} + \left(1-\omega_{i\ell}\right)\rho^{b}_{i\ell}\right]. \tag{12}$$

[22] From the eighty-third and until the ninety-first Congress, cosponsorship was not allowed. In the ninety-first Congress the rule was changed again, allowing cosponsorship, but with a cap of 25 signatories. Finally, in the ninety-sixth Congress the cap was eliminated. Consistently with our model, members of congress gain visibility by sponsoring bills. Therefore, when cosponsorship is limited, the number of individual bills is likely to increase. 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 jumps to 22,000 bills per congress in the early 1970s (ninety-first Congress)—more than four times the number in the Senate. After the ninety-sixth Congress, the rate falls back to its initial level of around 5,000 bills per congress. See http://www.congressionalbills.org/.

Existence.—Let $1 - \eta(\alpha_\ell, \lambda_\ell) < \underline{\rho}$ and let politicians with bad reforms not pass their reforms. Notice that event b is off the equilibrium path and therefore $\rho^b_{i\ell} = 0$ is a consistent belief. Furthermore, by Bayes' rule, $\rho^g_{i\ell} = \rho^y_{i\ell} = 1$, $\rho^n_{i\ell} = \underline{\rho}$, and therefore,

$$E\big[u_{i\ell}(1,1) \,|\, 1\big] = 1 > E\big[u_{i\ell}(\theta_{i\ell}, \omega_{i\ell}) \,|\, 0\big] = \underline{\rho} > 1 - \eta(\alpha_\ell, \lambda_\ell) = E\big[u_{i\ell}(\theta_{i\ell}, 0) \,|\, 1\big]$$

where the last inequality holds because $1 - \eta(\alpha_\ell, \lambda) < \underline{\rho}$. This proves existence in this case.

Let $1 - \eta(\alpha_\ell, \lambda_\ell) \geq \underline{\rho}$ and let incompetent politicians pass reforms with probability

$$p_\ell - \frac{p_\ell(1 - p_\ell)\eta(\lambda_\ell, \alpha_\ell)}{(1 - \pi_\ell)\big(1 - p_\ell \eta(\lambda_\ell, \alpha_\ell)\big)}.$$

Using Bayes' rule to calculate $\rho_{i\ell}$, it is easy to notice that (i) incompetent politicians and competent politicians with bad reforms are indifferent between passing and not passing their reforms, and (ii) $\rho^b_{i\ell} < 1$. Also,

$$E\big[u_{i\ell}(1,1) \,|\, 1\big] > E\big[u_{i\ell}(0,0) \,|\, 1\big] = E\big[u_{i\ell}(1,0) \,|\, 1\big]$$

whenever $\rho^b_{i\ell} < 1$. Therefore, competent politicians strictly prefer to pass their reforms. This proves existence for this case.

Uniqueness.—We begin by showing that there is no equilibrium in which incompetent politicians pass reforms with probability one. We proceed by contradiction. Suppose that in equilibrium incompetent politicians pass reforms with probability one. By Bayes' rule, $\rho^y_{i\ell} < 1$, $\rho^b_{i\ell} = 0$, and $\rho^n_{i\ell} = 1$. Therefore,

$$E\big[u_{i\ell}(0,0) \,|\, 1\big] = 1 - \eta(\alpha_\ell, \lambda)\, \rho^y_{i\ell} < 1 = E\big[u_{i\ell}(0,0) \,|\, 0\big],$$

contradicting the hypothesis that incompetent politicians prefer to be pass reforms. Therefore, in all equilibria, incompetent politicians pass reforms with probability strictly less than one.

We now show that an equilibrium in which incompetent politicians pass reforms with probability exactly zero exists only if $1 - \eta(\alpha_\ell, \lambda) \leq \underline{\rho}$. To see this, suppose that incompetent politicians do not pass reforms. Then, by Bayes' rule, $\rho^n_{i\ell} = \underline{\rho}$ and $\rho^y_{i\ell} = 1$. Therefore, a politician with a bad reform would prefer to not pass the reform only if

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

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

Finally, we show that if in an equilibrium incompetent politicians pass reforms with probability strictly between zero and one, then

(i) they do so with probability

$$p_\ell - \frac{p_\ell(1-p_\ell)\eta(\lambda_\ell,\alpha_\ell)}{(1-\pi_\ell)\big(1-p_\ell\eta(\lambda_\ell,\alpha_\ell)\big)};$$

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

To see this, notice that if incompetent politicians start reforms with probability $\sigma \in (0,1)$, then $\rho_t^b = 0$ and the following indifference condition must hold:

$$\big(1-\eta(\alpha_\ell,\lambda_\ell)\big)\rho_t^y = \rho_t^n,$$

$$\big(1-\eta(\alpha_\ell,\lambda_\ell)\big)\frac{\pi p_\ell}{\pi_\ell p_\ell + (1-\pi_\ell)\sigma} = \frac{\pi_\ell(1-p_\ell)}{\pi_\ell(1-p_\ell)+(1-\pi_\ell)(1-\sigma)},$$

$$\sigma = p_\ell - \frac{p_\ell(1-p_\ell)\eta(\alpha_\ell,\lambda_\ell)}{(1-\pi)\big(1-p_\ell\eta(\alpha_\ell,\lambda_\ell)\big)},$$

where the first passage follows from Bayes' rule. Notice that evaluating σ at $1-\eta(\alpha_\ell,\lambda) = \underline{\rho}$ yields $\sigma = 0$, which shows that the equilibrium is unique. ∎

B. *Proof of Proposition 2*

By Proposition 1, the probability than an incompetent politician passes her reform is given by $\sigma(\Omega_{i\ell})$ in (2). The first point in the proposition then follows because $\underline{\rho}$ decreases with p_ℓ and

$$p_\ell - \frac{p_\ell(1-p_\ell)\eta(\alpha_\ell,\lambda_\ell)}{(1-\pi)\big(1-p_\ell\eta(\alpha_\ell,\lambda_\ell)\big)}$$

increases with p_ℓ. The second point follows because (i) $\eta(\alpha_\ell,\lambda_\ell)$ increases with α_ℓ and λ_ℓ; (ii) $\underline{\rho}$ increases with π_ℓ; and (iii)

$$p_\ell - \frac{p_\ell(1-p_\ell)\eta(\alpha_\ell,\lambda_\ell)}{(1-\pi)\big(1-p_\ell\eta(\alpha_\ell,\lambda_\ell)\big)}$$

decreases with π_ℓ and decreases with $\eta(\alpha_\ell,\lambda)$. ∎

C. *Proof of Proposition 3*

Follows directly from the fact that $\sigma(\alpha,p_\ell,\lambda_\ell,\pi_\ell)$ is decreasing in α and λ_ℓ (see Proposition 2) together with the fact that $\big(1-\eta(\lambda_\ell,\alpha)\big)/\eta(\lambda_\ell,\alpha)$ is decreasing in both α and λ_ℓ. ∎

D. *Proof of Proposition 4*

Follows directly from the properties of σ in (2) together with the fact that $\big(1 - \eta(\lambda_\ell, \alpha)\big)/\eta(\lambda_\ell, \alpha)$ is decreasing in both α and λ_ℓ. ∎

E. *Proof of Proposition 5*

Let $\Omega \equiv (\bar{\alpha}, \lambda, p, \pi)$ be the initial steady state. Since Assumption 1 holds, we have that $\sigma(\overline{\alpha}, \lambda, p, \pi) = 0$ and $h_W \equiv \big(\big(1 - \eta(\lambda, \overline{\alpha})\big)/\eta(\lambda, \overline{\alpha})\big)\pi p \leq \overline{h}^K$. It follows from Proposition 2 that

$$h(\lambda_\ell, p, \pi) \equiv \big[1 - \eta(\lambda_\ell, \overline{\alpha})\big]\big[h_W + \pi p + (1 - \pi)\sigma(\Omega_\ell)\big] > \overline{h}^K \tag{13}$$

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: $h_W \equiv \big(\big(1 - \eta(\lambda, \overline{\alpha})\big)/\eta(\lambda, \overline{\alpha})\big)\pi p = \overline{h}^K$, and $1 - \eta(\lambda, \bar{\alpha}) = \underline{\rho}$. 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 and Proposition 2, $\lambda_\ell < \lambda$ immediately makes the inequality in (13) satisfied and necessarily leads to a transition to a Kafkaesque steady state.

Regarding shocks to p, notice that Proposition 2 implies that

$$h(\lambda, p_\ell, \pi) \equiv \big[1 - \eta(\lambda, \overline{\alpha})\big]\big[h_W + \pi p_\ell + (1 - \pi)\sigma(\Omega_\ell)\big]$$

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 there 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 implies that $\sigma(\overline{\alpha}, \lambda, p, \pi_\ell) = 0$, $\forall \pi_\ell > \pi$. It follows that $\forall \pi_\ell > \pi$ we have that

$$h(\lambda, p, \pi_\ell) \equiv \big[1 - \eta(\lambda, \overline{\alpha})\big](h_W + \pi_\ell p)$$

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. ∎

F. *Proof of Proposition 6*

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

First, notice that in equilibrium

$$U_1 = p\left[\eta(\alpha_\ell, \lambda_\ell) + \left(1 - \eta(\alpha_\ell, \lambda_\ell)\right)\rho_{i\ell}^y\right] + (1-p)\,\rho_{i\ell}^n, \tag{14}$$

$$U_0 = \sigma(\Omega_\ell)\left(1 - \eta(\alpha_\ell, \lambda_\ell)\right)\rho_{i\ell}^y + \left(1 - \sigma(\Omega_\ell)\right)\rho_{i\ell}^n, \tag{15}$$

where $\rho_{i\ell}^y$ and $\rho_{i\ell}^n$ are given by point (iii), Proposition 1. Then U_1 and U_0 are continuous in π because $\rho_{i\ell}^y$, $\rho_{i\ell}^n$, and $\sigma(\Omega_\ell)$ are continuous in π. Then, by Proposition 1,

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

$$= \begin{cases} \frac{p}{\underline{\rho}} + (1-p), & \text{if } 1 - \eta(\alpha_\ell, \lambda) < \underline{\rho}; \\ 1 + \frac{p\eta(\alpha_\ell, \lambda_\ell)}{\rho_{i\ell}^n}, & \text{otherwise,} \end{cases}$$

where the last step follows from incompetent politicians being indifferent between being active and inactive: $\left(1 - \eta(\alpha_\ell, \lambda_\ell)\right)\rho_{i\ell}^y = \rho_{i\ell}^n$. As $\underline{\rho}$ is increasing in π, it is easy to see that in the case when $1 - \eta(\alpha_\ell, \lambda) < \underline{\rho}$, 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

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

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

We now turn to the question of whether an increase in α_ℓ shifts the curve $L(U_1/U_0)$ up for any $\pi \in [0,1]$. Notice that U_1 and U_0 are continuous in α_ℓ because ρ_ℓ^y, ρ_ℓ^n, $\eta(\alpha_\ell, \lambda)$, and $\sigma(\Omega_\ell)$ 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, $\sigma(\Omega_\ell)$ and $\rho_{i\ell}^y = 1$. 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

$$\frac{d}{d\alpha_\ell}\left(\frac{U_1}{U_0}\right) = \frac{d}{d\alpha_\ell}\left(1 + \frac{p\eta(\alpha_\ell, \lambda_\ell)}{\rho_{i\ell}^n}\right)$$

$$= p\frac{d}{d\alpha_\ell}\left(\frac{\eta(\alpha_\ell,\lambda_\ell)}{\rho_{i\ell}^n}\right)$$

$$= p\frac{d}{d\alpha_\ell}\left[\eta(\alpha_\ell,\lambda_\ell)\left(1+\frac{1-\pi}{\pi}\frac{1-\sigma(\Omega_\ell)}{1-p}\right)\right].$$

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

$$\frac{1}{\rho_{i\ell}^n}\frac{d\eta(\alpha_\ell,\lambda_\ell)}{d\alpha_\ell} - \eta(\alpha_\ell,\lambda_\ell)\frac{1-\pi}{\pi}\frac{1}{1-p}\frac{d\sigma(\Omega_\ell)}{d\eta(\alpha_\ell,\lambda)} > 0.$$

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

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