



# Reputation-concerned policy makers and institutional status quo bias<sup>☆</sup>



Qiang Fu<sup>a,\*</sup>, Ming Li<sup>b,c,1</sup>

<sup>a</sup> Department of Strategy and Policy, National University of Singapore, 15 Kent Ridge Drive 119245, Singapore

<sup>b</sup> Department of Economics, Concordia University, 1455 Boulevard de Maisonneuve Ouest, Montreal, QC H3G 1M8, Canada

<sup>c</sup> CIREQ, Canada

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## ABSTRACT

We study the policy choice of an office-holding politician who is concerned with the public's perception of his capabilities. The politician decides whether to maintain the status quo or to conduct a risky reform. The reform's success depends critically on the politician's capabilities, which are privately known to the politician. The public observes both his policy choice and the outcome of the reform, and assesses his competence. We show that the politician may engage in socially detrimental reform in order to be perceived as more capable. We investigate the institutional remedy that balances the gains and costs when the policy maker is subject to reputation concerns. Conservative institutions that thwart beneficial reform may potentially improve social welfare.

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## 1. Introduction

She (Emma) was not much deceived as to her own skill either as an artist or a musician, but she was not unwilling to have others deceived, or sorry to know her reputation for accomplishment often higher than it deserved.

[Jane Austen, *Emma*, vol. 1, ch. 6]

Love of fame brings about eccentricity, and being eccentric brings danger to oneself; therefore the sages exhorted against the love of fame.

[Li Bangxian, *Xing xin za yan*]

We are often concerned about the inferences that people draw about us based on our actions and their consequences. These inferences shape our reputations and often determine our prospects for success, professional or otherwise. Reputation concerns are an important part of the informal incentives that motivate many economic agents in the public sector, where formal contracts based on explicit performance-based incentives are usually rare.

In this paper, we identify one particular context in which reputation concerns affect policy makers' behaviour and explore institutional remedies for the resultant adverse consequences. We demonstrate that policy makers may embark on innovative but risky initiatives ("reforms") to convince the public of their competence. Such initiatives, however, can leave the public worse off. To mitigate the potential harm of risk-taking induced by reputation concerns, it may be necessary to establish "conservative" political and social institutions that restrict policy makers' discretion to initiate reform. Such institutional conservatism, however, may have to reject valuable reform proposals that, if implemented, could benefit the society.

Reputation concerns loom large especially in the public sector. Technocrats, such as officials of the Securities and Exchange Commission, often rely on their reputation for professional competence to climb the institutional hierarchy or attract job offers from the private sector.

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\* Corresponding author. Tel.: +65 65163775.

E-mail addresses: [bizfq@nus.edu.sg](mailto:bizfq@nus.edu.sg) (Q. Fu), [mingli@alcor.concordia.ca](mailto:mingli@alcor.concordia.ca) (M. Li).

<sup>1</sup> Tel.: +1 514 8482424x3922.

More salient examples are provided by career politicians, whose prospects for reelection are largely determined by public perception of their capabilities. For instance, in the aftermath of the economic turmoil, former British Prime Minister Gordon Brown was said to have lost his “reputation for economic competence” “through a combination of appallingly bad luck and even worse misjudgment,”<sup>2</sup> which eventually cost him the premiership. Similarly, a politician in office may have strong concerns about how the public evaluates his legacy when he steps down.

In this paper, we first examine how policy makers' reputation concerns are manifested in their decisions on whether to initiate risky policy that challenges the status quo. We then explore the optimal institutional arrangement that reconciles the benefits and costs of such initiatives. The policy maker is generically referred to as a “politician,”<sup>3</sup> whose capability can be either low or high. When the politician chooses to maintain the status quo, his policy outcome is independent of his capability. When he chooses reform, however, the performance depends not only on the intrinsic value of the available reform proposal, but also on how well he implements it—which, in turn, is determined by his inherent capability. For instance, a fiscal stimulus plan may help rescue the economy from recession, but its ultimate success depends largely on how funds are allocated to optimize its effectiveness. A new policy spawns uncertainty, and its success demands the politician's ability to take appropriate action under each contingency. A competent politician is thus better at implementing reform and more likely to succeed.<sup>4</sup> A politician's capabilities are known only to himself. The public assesses his competence based on observations of both his policy choice and the resultant performance. The politician makes his policy moves to maximize the public's perception of his competence.

We characterize the most plausible equilibrium of the game. In the equilibrium, driven by reputation concerns, the politician “postures” in the form of initiating too much reform: A low-type politician mimics his high-type counterpart and initiates reform in spite of his poor chance of success, because not doing so would lower the public's assessment of his capabilities. This hurts social welfare.

As frequently expressed as the *concern* that politicians act to enhance their reputations, however, is the *regret* that their well-meaning and ambitious reforms are being thwarted by entrenched institutions. As pointed out by Fernandez and Rodrik (1991), “one of the fundamental questions in political economy” has been why governments often fail to carry out efficiency-enhancing reforms. In the United States, for instance, the filibuster rule in the Senate has frequently been used to derail reform efforts with broad-based support.<sup>5</sup> Such institutional rules impose checks and balances, and clearly favour the status quo over reform initiatives. Our equilibrium analysis allows us to consider the design of the welfare-maximizing institutions (e.g., constitutions) or bureaucratic protocols that restrict the politician's executive discretion, so as to remedy his inefficient risk-taking. We explore the proper amount of discretion that should be afforded to a reputation-concerned politician in office, in the form of establishing a standard for “qualified” reform. An “institutional status quo bias” emerges endogenously in the optimum, in the sense that socially beneficial reform may have to be rejected.

<sup>2</sup> Source: Fraser Neslon, “Brown's Reputation for Economic Competence Has Gone. The Tories Should Seize the Chance.” <http://www.spectator.co.uk>, January 23, 2008.

<sup>3</sup> Our analysis applies to a variety of environments, including a judge who has to decide whether to exercise his power to strike down a law, a prosecutor who has to decide whether to file charges against a crime suspect, a CEO who has to decide whether to implement an expansion plan, and a doctoral candidate who must decide whether to pursue an innovative research project.

<sup>4</sup> This assumption can be related to the concept of “state capacity” proposed by Skocpol (1985). She argues that ambitious reform attempts often fail because bureaucrats frequently lack the required competence to administer their reform.

<sup>5</sup> A recent example is the defeat of the immigration reform bill championed by President Barack Obama. See *USA Today*, December 18, 2010, “Senate blocks DREAM Act,” available at <http://content.usatoday.com/communities/onpolitics/post/2010/12/senate-dream-act-1>.

Assume that a generally defined “legislature”—e.g., parliament, supreme court, advisory committee, or board of directors—regulates and monitors the policy choice of the politician. The legislature abides by a “constitution” that is embodied by a threshold rule: It prohibits reform unless the intrinsic value of the reform proposal exceeds a threshold. A higher, or more conservative, threshold rule exercises two effects: (1) a direct *prohibition effect*, which limits the set of qualified reforms and prevents both types of politicians from moving forward with their initiatives, and (2) an indirect *pressure-relieving effect*, which further leads the low type to refrain from undertaking reform even if such reform is not expressly forbidden. We show that the social optimum requires a proper level of institutional status quo bias such that the optimal threshold rule must thwart otherwise beneficial reform. Our analysis lends support to the institutions or bureaucratic rules present in various organizations that restrict the ability of politicians or bureaucrats to carry out risky activities at their discretion. It also provides an alternative rationale for the often observed organizational resistance to policy reform and the widely discussed bias toward the status quo, in addition to those provided in the literature—for instance, that by Fernandez and Rodrik (1991).

Our framework, with moderate variations, allows us to explore the ramifications of information transparency as an institutional element. We consider two types of transparency: “decision transparency” and “consequence transparency.” The former allows the public to learn more about the politician's choice set in making policy choices, i.e., the values of foregone reform opportunities that the politician decides not to implement. The latter allows the public to more precisely evaluate the politician's performance in his reform. The two types of transparency give rise to contrasting welfare implications. A higher level of decision transparency exacerbates the adverse incentive problem caused by reputation concerns, which compels the low-type politician to take more risk to avoid even more unfavourable inference. As a result, it harms social welfare. A higher level of consequence transparency, in contrast, disciplines the low-type politician, and therefore is always beneficial.

The paper is organized as follows. In Section 2, we discuss the related literature. In Section 3, we set up the model. In Section 4, we characterize the model's equilibrium and present comparative statics of relevant environmental factors. In Section 5, we discuss the welfare implications of our equilibrium results and consider institutional design. In Section 6, we conclude. For brevity, all proofs are collected in an Online Supplement.

## 2. Relationship to the literature

The notion of career or reputation concerns is featured prominently in the pathbreaking work of Holmström (1982, 1999). Since then, an enormous amount of scholarly effort has been devoted to the incentive effects of reputation or career concerns in a wide array of environments, including corporate decision making (e.g., Holmström and Ricart i Costa, 1986; Zwiebel, 1995, and Brandenburger and Polak, 1996), economic agents' effort supply (e.g., Holmström, 1999 and Alesina et al., 2007), and experts' strategic provision of advice (e.g., Morris, 2001 and Ottaviani et al., 2006). The literature reveals in various contexts that concerns regarding public or market perceptions distort economic agents' decision making. Such incentives lead economic agents to ignore their own useful information, and instead strategically manipulate the beliefs of the public or the market.<sup>6</sup>

Our paper belongs to the strand of career concerns literature that focuses on agents' incentives to undertake risky projects. Our paper's setup is a variation of the example introduced in Section 3.2 of Holmström's (1982, 1999) seminal paper. The common feature is that the politician's (decision maker's) talent is only relevant when the

<sup>6</sup> For instance, Brandenburger and Polak (1996), Scharfstein and Stein (1990), Ottaviani et al. (2006), and Benoît and Dubra (2010) all share this feature.

reform (risky project) is undertaken. Hence, more information can be revealed when the risky activity is carried out.<sup>7</sup> Two features distinguish our setup from Holmström's (1982, 1999). First, we assume the politician's talent is his private information, while he assumes symmetric information, in which case the decision maker's type is unknown to all players, and he therefore considers symmetric information updating. Second, in our model, the probability of success for each type is common knowledge, while in Holmström's, it is the private information of the agent. As a consequence, in our model, the choice to undertake reform can signal the type of the politician, which is not possible in Holmström's setup.

A number of studies, adopting symmetric-information settings similar to Holmström's (1999) setup, also explore career-concerned decision makers' incentives to implement new and risky projects. These studies, including those of Holmström and Ricart i Costa (1986), Hermalin (1993), Biglaiser and Mezzetti (1997), and Dewan and Hortala-Vallve (2012), predict that the decision maker's project choice can be either too radical or too conservative, depending on the specific environment. Zwiebel (1995) allows a manager to privately learn his own type, but his innovative action is unobservable. Hence, the innovative action cannot be used to signal the manager's type. As a result, the manager may resist beneficial innovation; we arrive at the opposite conclusion.

Our study includes flavours from both the literature of signalling and that of career concerns, which places it in the company of a handful of other studies. This includes the notable examples of Prendergast and Stole (1996), Levy (2004, 2007), and Li (2007). Recent papers by Chung and Esö (2008) and Chen (2010) are relatively closely related to ours. Chung and Esö build a model in which a worker chooses a task to both signal his capabilities to potential employers and to learn more about his capabilities. As opposed to our assumption, they assume that the more innovative task is a worse (less informative) device for assessing the capability of a worker. Chen, in simultaneous and independent work, analyzes an agent's choice between a risky project and a safe project. She focuses on the impact of information structure—i.e., whether the agent knows his own type—on his project choice given his career concerns. In contrast, we adopt a setting in which the politician knows his type and focus mainly on the effect of environmental factors in determining the politician's behaviour and the design of optimal institution.

Suurmond et al. (2004) and Majumdar and Mukand (2004) both consider the incentives of agents in the public sector to undertake risky projects, which signals their types. Suurmond et al. contend that career concerns can be socially beneficial by encouraging a smart agent to expend more effort in gathering information. Majumdar and Mukand study the dynamic incentives of a government to choose among policy alternatives when policy choice is reversible. They show that the government can be either too radical or too conservative in different phases of an election cycle. Liu and Sanyal (2012) also allow policy choice to be reversed, but by a separate principal, while a career-concerned expert only provides advice to the principal. Our paper focuses on irreversible policy choice in a static setting.

Our analysis of optimal institutional design in the presence of reputation concerns is conceptually related to that of a small number of other papers, which study the ramifications of various institutional elements in career-concerns models. Fox and Stephenson (2011) examine the impact of judicial review on an elected politician's incentive to take an extraordinary action. Fox and Van Weelden (2010) demonstrate that a partisan overseer, who can veto the initiative of an executive, may exercise more effective checks and balances. In both studies, an active overseer strategically decides ex post whether to uphold or strike

down an executive's proposal. In contrast, we explore the optimal amount of discretion afforded to the politician, while the overseer abides by an ex ante committed rule. A few studies explore the implications of transparency. Prat (2005) argues that transparency in an organization may be detrimental as a career-concerned agent may take revealed action to deliberately influence the principal's posterior instead of seeking the best interests of the organization. Fox and Van Weelden (2012) extend Prat's analysis and show that the optimal transparency scheme depends on the cost structure of making incorrect decisions. Levy (2007) shows a similar conformity effect in the context of group decision making: Radical actions are more likely to be adopted when each member's vote is observable. Ottaviani et al. (2001) analyze the order in which experts with different levels of expertise should speak in a debate when they have career concerns. Bierbrauer and Mechtenberg (2008) analyze the welfare effect of early elections when the political leader has career concerns. Felgenhauer and Schulte (2010) investigate the effect of a decision maker's "preselection" (e.g., an editor's screening on submissions) on experts' incentives to provide advice (e.g. referees' recommendations).

Inasmuch as we study the optimal level of discretion to be given to the policy maker, our paper is also related to the literature on optimal delegation, including the works of Holmström (1977, 1984) and, more recently, Alonso and Matouschek (2008), Mylovannov (2008), and Frankel (2011). The focus of that literature is the situation in which an uninformed decision maker delegates decision rights to an informed expert who has a systematic bias about the decision to be made. They characterize, in a variety of scenarios, the optimal set of decisions that the decision maker makes available to the expert. In contrast, our focus is on scenarios in which the informed party is concerned only about his reputation but not the decision per se. The discretion afforded to the policy maker takes the form of setting a standard for qualified reform proposals.

To our knowledge, our paper may be one of the first to explicitly investigate an institutional remedy for inefficient risk taking when the decision maker has reputation concerns. Our finding that restrictions on changes to the status quo can be welfare-improving complements other rationales for institutional conservatism—for example, those offered by Li (2001) and Kwon (2005). Our analysis espouses the merit of institutional barriers (bureaucracy) that limit policy makers' discretionary power. In this respect, the paper echoes the conclusion of Tirole (1986).

### 3. Setup

A politician makes a policy choice between two alternatives: maintaining the status quo or initiating a reform. If the politician retains the status quo, the outcome of this policy,  $y$ , is deterministic, which we normalize to 0. In contrast, if the politician chooses to undertake the reform, uncertainty will arise and the politician must take action to address it. The outcome of a reform is given by the widely adopted quadratic loss function

$$y = \theta - (a - \omega)^2,$$

where  $\theta$  measures the intrinsic value of the available reform proposal,  $\omega$  is the true state of the world, and  $a$  is the action taken by the politician in response to his assessment of  $\omega$ . This setup reflects the observation that the performance of a reform depends on both the value of the reform proposal and the quality of its implementation.

#### 3.1. Information structure and payoff

The intrinsic value of the available reform proposal,  $\theta$ , is continuously distributed on  $[-\theta_1, \theta_2]$  with a distribution function  $F(\cdot)$  and density function  $f(\cdot)$  where  $-\theta_1 < 0 < \theta_2$ , and  $\theta_1, \theta_2 \in (0, 2)$ . The distribution of  $\theta$  is common knowledge. The realization of  $\theta$  is observed by the

<sup>7</sup> Sanyal and Sengupta (2006) also include in their model a "status quo" option that, if taken, does not reveal the right action to take for the risky option. They study a game of strategic communication in which the expert is career-concerned in the sense of Ottaviani et al. (2006).

politician before he decides whether or not to adopt the reform proposal, while it remains unobservable or unverifiable to the public.

The reform's ultimate consequences depend not only on the reform proposal's intrinsic value, but also on the quality of the politician's implementation—i.e., how well he addresses the uncertainty that arises with reform. This uncertainty is embodied by the state of the world,  $\omega$ , which may take either of two values from  $\Omega = \{-1, 1\}$ , each with a probability 1/2. The state  $\omega$  is realized only after a reform has been initiated. The politician has to choose his action  $a$  from  $\Theta = \{-1, 1\}$ , to implement the reform.

We say that the reform is a *success* if the politician's action matches the state of the world, while it is a *failure* if it does not. Neither the politician nor the public observes the true state. However, the politician receives a signal  $\sigma \in \{-1, 1\}$  about  $\omega$ . Upon receiving  $\sigma$ , the politician takes an action. The distinction between policies (status quo or reform) and actions is important in our model. A policy is a macro-level or “strategic” decision, such as whether to reform financial regulations. In contrast, actions are micro-level or “tactical” decisions, such as how to orchestrate regulatory instruments in overhauling the financial system. The true nature of the problem ( $\omega$ ) determines which action is ex post suitable for implementing the reform.

The precision of the signal depends on the talent of the politician,  $t$ , which is drawn from  $\{L, H\}$ . We assume that a low-talent politician's signal is uninformative. In contrast, a high-talent politician receives an informative signal that matches the true state with a probability  $q \in (1/2, 1)$ .<sup>8</sup> The politician's type is his private information. Let  $\alpha$  be the prior probability of  $t = H$ , which is commonly known. It is the public's prior about the politician's talent, which can also be viewed as the proportion of high-capability politicians in the population.<sup>9</sup>

Given the quadratic loss function  $y = \theta - (a - w)^2$ , a reform would be socially beneficial regardless, if its intrinsic value  $\theta$  exceeds 2. One of our main purposes is to investigate the optimal discretion to be given to the politician for reform, i.e., what kind of reform proposals would be “qualified” or “acceptable.” The assumed support of the distribution  $F(\cdot)$  allows us to focus on the relevant contexts in which the trade-offs are the most significant.

The public observes the politician's policy choice (status quo or reform) and the final outcome  $y$  and forms a posterior on the type of the politician, which is written as

$$\mu^i(y) \equiv \Pr(t = H|y, i)$$

by Bayes' rule, where  $i = 0$  indicates the status quo and  $i = 1$  indicates reform. Borrowing from much of the career-concern literature, we assume that the politician's payoff depends purely on his reputation  $\mu^i(y)$ , and he makes his policy choice so as to maximize it. It should be noted that in our setup, whether or not the public observes the action is inconsequential: Once the politician chooses reform, the belief of the public is determined only by the outcome  $y$ .

Information updating is simple in our setting. With a quadratic loss function, the public, when observing  $y$ , learns whether the reform succeeded or failed and infers the value of  $\theta$  once a reform is carried out, because  $[-\theta_1, \theta_2] \subset (-2, 2)$ . The public, however, is unable to observe the value of unimplemented reform proposals. Our model thus speaks more to an environment in which the public knows little about the need for a new policy before the policy is put in place. For example, the president has to decide whether to take military action to resolve an international conflict, or whether to restructure the country's national security system to better prevent and respond to terrorist attacks.

<sup>8</sup> For expositional efficiency, we focus on the case of  $q < 1$  in our baseline setting. In one extended setting, we allow for the case of  $q = 1$ , i.e., the high-talent politician receives a perfect signal.

<sup>9</sup> In a literature complementary to our research, authors such as Caselli and Morelli (2004), Messner and Polborn (2004), and Mattozzi and Merlo (2007, 2008) have offered various explanations for why political processes tend to select some low-ability individuals to be politicians.

Once the new policy is in place, the public will learn about the necessity for the policy and its potential benefits.<sup>10</sup> In Section 1, we explore an alternative scenario in which the public is able to (partially) observe foregone reform opportunities. We interpret the level of observability as an institutional parameter measuring the degree of “decision transparency.”

### 3.2. Institutional environment and action space

We assume that the politician has only limited discretion. He is subject to an institutional constraint and is authorized to undertake a reform only if the intrinsic value of the available reform proposal exceeds a threshold  $\hat{\theta}$ . We implicitly assume that his policy choice is subject to the oversight of a legislature, as defined above. The legislature cannot verify the politician's type, but it can verify the value of the reform proposal and abides by certain institutional rules that constrain the politician's executive discretion. Such institutional restrictions are prevalent in political and public life. For instance, the United States President must obtain congressional support to execute various policy initiatives. Perhaps more aptly, one may interpret the overseeing mechanism as judiciary review, in which the judiciary approves or disapproves the government's policy initiatives by interpreting existing laws, e.g., the Constitution.

Analogous to Tirole (1986), we implicitly assume that the politician must provide a verifiable report on the value ( $\theta$ ) of his reform proposal to the legislature when advocating a reform, although such information is neither verifiable nor accessible to the general public unless the reform is approved. To abide by its “constitution,” the legislature would not approve any reform proposal with a value below  $\hat{\theta}$ . For the moment, the threshold  $\hat{\theta}$  is assumed to be fixed. Section 5.1 provides an in-depth analysis of the welfare-maximizing rule  $\hat{\theta}^*$ , which endogenizes the threshold.

### 3.3. Timeline

In summary, the model's timeline is as follows:

1. Nature chooses the quality of the available reform proposal, i.e., the value of  $\theta$ .
2. The politician observes  $\theta$  and if  $\theta > \hat{\theta}$ , decides whether to adopt the reform. The public observes his decision.
3. Once a reform is adopted, the politician receives his signal  $\sigma$  about the true state of the world  $\omega$ . He further chooses his action  $\alpha$  to implement the reform, which determines the outcome of the reform  $y = \theta - (a - \omega)^2$ .
4. The public updates its belief after observing both the politician's policy choice  $i \in \{0, 1\}$  and performance  $y$ . The politician then receives his reputational payoff  $\mu^i(y) \equiv \Pr(t = H|y, i)$ .

### 3.4. Equilibrium concepts

Incomplete-information games typically yield multiple perfect Bayesian equilibria. We take two measures to rule out less plausible equilibria.

First, analogous to many career concerns models, e.g., those of Prat (2005) and Levy (2007), our game may yield two types of unnatural equilibria: “babbling” or “perverse.” In the former, a high-type politician does not make use of his superior information about the state of the world, so the public cannot update its belief based on the politician's policy choices and performance. In the latter, a high-type politician may signal his competence by underperforming, i.e., deliberately choosing the “wrong action” conditional on his signal. To focus on more sensible predictions, we introduce a sincerity condition that restricts the politician's action choice. Let  $\psi_t(a|\sigma)$  be the probability that a type- $t$  politician chooses an action  $a$  after observing a signal  $\sigma$ , and

<sup>10</sup> We are grateful to an anonymous referee for suggesting this interpretation.



$p_t(\omega|\sigma)$  be the probability a type- $t$  politician assigns to state  $\omega$  in his posterior after receiving signal  $\sigma$ , where  $a, \omega, \sigma \in \{1, -1\}$  and  $t \in \{H, L\}$ .

**Definition 1.** An equilibrium satisfies sincerity if  $\psi_t(\omega|\sigma) = 1$  whenever  $p_t(\omega|\sigma) > 1/2$ , for all  $\sigma, \omega \in \{-1, 1\}$  and  $\theta \in [-\theta_1, \theta_2]$ .

Clearly, the restriction is vacuous on the type- $L$  politician's behaviour, as his posterior about the state of the world being either 1 or  $-1$  is always equal to the prior,  $1/2$ , given his uninformative signal. Sincerity, however, does require that the type- $H$  politician choose  $a = \sigma$  with probability one, because  $p_H(\sigma|\sigma) > 1/2$ . This condition is similar in spirit to the monotonicity condition imposed by Fox and Van Weelden (2012), but is simpler because of the different model structures and information-updating procedures.

Second, we impose the Divinity Criterion, first introduced by Banks and Sobel (1987), to mildly discipline out-of-equilibrium beliefs. Fixing a perfect Bayesian equilibrium, a "divinity test" considers a given deviation (e.g., an unexpected reform) by the politician. If the deviation is more likely to benefit a certain type of politician, "divinity" requires that the public believe that this particular type of politician is more likely to have taken this deviation.<sup>11</sup>

Let  $p_t(\theta)$  be the probability with which a type- $t$  politician chooses reform when the value of the reform proposal is  $\theta$ . Suppose that in a hypothetical equilibrium, there exists  $\theta \in [\hat{\theta}, \theta_2]$ , such that  $p_t(\theta) = 0$  for all  $t \in \{L, H\}$ . When an unexpected reform with a value  $\theta \geq \hat{\theta}$  takes place, the public infers from its outcome the value of  $\theta$  and forms a set of beliefs  $\phi_\theta \equiv \{\bar{\rho}_H(\theta), \bar{\rho}_L(\theta)\}$ , where  $\bar{\rho}_t(\theta)$  specifies the probability with which a type- $t$  politician undertakes this reform. Let  $\mu_t^e$  denote the payoff of a type- $t$  politician in the equilibrium, and  $\mu_t(\theta; \phi_\theta)$  denote the payoff a type- $t$  politician receives by undertaking the unexpected reform. Further define  $\phi_\theta^t \equiv \{\phi_\theta | \mu_t(\theta; \phi_\theta) > \mu_t^e\}$ . We then have the following.

**Definition 2.** Under Divinity Criterion, the out-of-equilibrium belief  $\phi_\theta$  satisfies:

$$\bar{\rho}_t(\theta) \geq \bar{\rho}_{t'}(\theta) \text{ if } \phi_\theta^t \subset \phi_\theta^{t'}, \text{ with } t \in \{H, L\} \text{ and } t \neq t'.$$

In summary, we require that the equilibrium be both divine and sincere. It should be noted that the two conditions complement each other. The restriction of sincerity is imposed everywhere: The politician is required and believed to behave sincerely even when he hypothetically deviates from the equilibrium path, i.e., by undertaking unexpected reform. This nuance strengthens the divinity test in disciplining out-of-equilibrium beliefs.

#### 4. Equilibrium analysis

In this section, we first study the benchmark of the first best situation in which the public's expected payoff from the politician's policy choice is maximized. We then derive the equilibrium of the game and conduct comparative analysis. As mentioned above, the proofs of all our analytical results are collected in an Online Supplement.

##### 4.1. First best benchmark

Suppose that the politician chooses to adopt a reform proposal of value  $\theta$ . When he chooses the appropriate action upon receiving the signal  $\sigma$ , the expected policy outcome is given by

$$E(y|t) = \theta - E_{\omega \in \{-1, 1\}}(a - \omega)^2 = \theta - 4(1 - q_t),$$

where  $q_t = 1/2$  for  $t = L$  and  $q_t = q$  for  $t = H$ .

<sup>11</sup> Note that the divinity criterion is weaker than the popularly adopted D1 criterion of Banks and Sobel (1987): The latter requires that the "receiver" (i.e., the public in our context), when updating her belief, completely rules out the type that is less likely to benefit from the deviation. It turns out that in our model, D1 and divinity select the same set of equilibria.

In the first-best situation, a politician would undertake reform if and only if the expected outcome  $E(y)$  is non-negative. A low-type politician should never reform regardless of  $\theta$ , as the expected loss from wrong actions always exceeds the benefit of reform. Note that the upper bound of the support of  $\theta_2$ , is less than 2. By contrast, the high type should undertake reform if and only if the value of reform is sufficiently high, i.e.,  $\theta \geq 4(1 - q)$ .

#### 4.2. Equilibrium

First, we consider the politician's strategy. Recall that  $p_t(\theta)$  is the probability with which a type- $t$  politician chooses reform when the value of the reform proposal is  $\theta$ . As implied by the institutional rule,  $p_t(\theta) = 0$  for  $\theta \in [-\theta_1, \hat{\theta}]$ , for  $t \in \{L, H\}$ . When the politician maintains the status quo, his reputation among the public is

$$\mu^0 = \frac{\alpha F(\hat{\theta}) + \alpha \int_{\hat{\theta}}^{\theta_2} [1 - \rho_H(\theta)] f(\theta) d\theta}{\left[ F(\hat{\theta}) + \alpha \int_{\hat{\theta}}^{\theta_2} [1 - \rho_H(\theta)] f(\theta) d\theta + (1 - \alpha) \int_{\hat{\theta}}^{\theta_2} [1 - \rho_L(\theta)] f(\theta) d\theta \right]}. \quad (1)$$

Note that as long as reform is undertaken, the public can *ex post* perfectly infer the value of  $\theta$  from the outcome  $y$  because  $[-\theta_1, \theta_2] \subset (-2, 2)$ . When the politician implements a reform of value  $\theta$ , his reputation will become

$$\mu^s = \frac{\alpha q \rho_H(\theta) f(\theta)}{\alpha q \rho_H(\theta) f(\theta) + (1 - \alpha) \frac{1}{2} \rho_L(\theta) f(\theta)}$$

if the reform succeeds, and

$$\mu^f = \frac{\alpha(1 - q) \rho_H(\theta) f(\theta)}{\alpha(1 - q) \rho_H(\theta) f(\theta) + (1 - \alpha) \frac{1}{2} \rho_L(\theta) f(\theta)}$$

if the reform fails. If a type- $t$  politician implements a reform with value  $\theta$ , he receives an expected payoff

$$\mu_t = q_t \mu^s + (1 - q_t) \mu^f.$$

The following proposition characterizes the equilibrium.

#### Proposition 1

- For each given cutoff  $\hat{\theta} \in [-\theta_1, \theta_2]$ , there exists a unique divine and sincere equilibrium of the game. In equilibrium, the high-type politician undertakes reform with probability  $\rho_H^*(\theta) = 1$  whenever he receives a proposal of value  $\theta \in [\hat{\theta}, \theta_2]$  and  $\rho_H^*(\theta) = 0$  otherwise, while the low-type politician undertakes reform with a probability  $\rho_L^*(\theta) = \rho^* \in (0, 1)$  when  $\theta \in [\hat{\theta}, \theta_2]$  and  $\rho_L^*(\theta) = 0$  otherwise.
- The equilibrium probability  $\rho^*$  solves

$$\frac{1}{1 + \lambda(\alpha)A} = \frac{1}{2} \cdot \frac{1}{1 + \lambda(\alpha)B} + \frac{1}{2} \cdot \frac{1}{1 + \lambda(\alpha)C}, \quad (2)$$

where

$$\lambda(\alpha) = \frac{1 - \alpha}{\alpha}, A = 1 + (1 - \rho) \kappa(\hat{\theta}), \kappa(\hat{\theta}) = \frac{1 - F(\hat{\theta})}{F(\hat{\theta})}, B = \frac{\frac{1}{2} \rho}{q}, C = \frac{\frac{1}{2} \rho}{1 - q}.$$

Analogous to several related studies, e.g., that by Majumdar and Mukand (2004), a semi-separating equilibrium emerges. The high type is always eager to undertake reform, and does so whenever the

value of the reform proposal clears the threshold, i.e.,  $\theta \geq \hat{\theta}$ . The low type undertakes reform with a positive probability,  $\rho^*$ , again when the value of the reform proposal clears the threshold. Full separation ( $\rho^* = 0$ ) cannot occur in equilibrium: If this were the case, a politician who undertook reform would be believed to be of the high type with probability one regardless of his performance, which, in turn, would drive the low type to deviate and undertake reform. Neither can full pooling (i.e.,  $\rho^* = 1$ ) be part of an equilibrium either: The public would then maintain the prior in a hypothetical pooling equilibrium when it observed no reform. The low type is worse at implementing the reform, so he would suffer a reputation loss through reform, compared to the prior. In contrast, if the low type did not reform,  $\theta$  is not observed, and his reputation would remain the same as the prior; therefore, he would have preferred to not reform.

In the equilibrium, the low type cannot entirely refrain from undertaking inefficient reform. This exemplifies the widely observed “accountability pathologies” in the public sector: As pointed out by Gersen and Stephenson (2013), a government agent, who is subject to an accountability mechanism, can be compelled to take undesirable action “precisely because the agent is trying to convince the principals to retain or promote her.”

Two remarks are in order. First, full separation ( $\rho^* = 0$ ) is possible in the extreme case of  $q = 1$ . We do not include this case for expositional efficiency, but the results and analyses are largely consistent, except for some cases in which the probability of high type,  $\alpha$ , and the prevailing threshold  $\hat{\theta}$  are excessively high. More specifically, whenever the condition  $\alpha F(\hat{\theta}) / (1 - \alpha) \leq 1$  holds, the extreme case remains a continuous extension of our baseline model, and a semi-separating equilibrium emerges. Discontinuity, however, would result otherwise, which leads to full separation. Note that when  $q = 1$ , for the low type, a failed reform completely reveals his type, which amplifies the cost of undertaking reform. By contrast, both a more optimistic prior  $\alpha$  and a higher threshold  $\hat{\theta}$  inflate his payoff from no reform. The impact of the former is straightforward, while a higher threshold leads the public to infer that a no-reform outcome is more likely to be caused by a lack of opportunities ( $\theta < \hat{\theta}$ ) rather than fear of showing incompetence.

Second, we assume that the value of the reform proposal,  $\theta$ , cannot be observed by the public if it is not adopted. This assumption implies that the low type does not have to fully mimic his high-type counterpart: A decision not to adopt a reform proposal, even if its value exceeds the threshold  $\hat{\theta}$ , would not fully reveal his type. This feature signifies an environment in which the public does not have a good understanding of the need to change policy or does not observe a government's internal decision process. In Section 2, however, we relax this assumption and investigate its welfare implications by interpreting it as an institutional element.

#### 4.2.1. Comparative statics

We now examine how the politician's equilibrium behaviour varies with environmental parameters. Recall that the public's prior is that the politician in office is of high type with a probability  $\alpha$ . Hence, in equilibrium, reform occurs with a probability

$$\bar{\rho} = [1 - F(\hat{\theta})] [\alpha + (1 - \alpha)\rho^*]. \quad (3)$$

The main results are summarized in the following proposition.

**Proposition 2.** Consider the equilibrium under a threshold rule  $\hat{\theta}$

1. The probability of reform by the low-type politician,  $\rho^*$ , is strictly decreasing with  $\alpha$ , the public's prior that the politician is high type. The overall probability of reform,  $\bar{\rho}$ , is non-monotonic in  $\alpha$ . There exists a unique cutoff  $\hat{\alpha} \in (\frac{1}{2}, 1)$ , such that  $\bar{\rho}$  strictly decreases in  $\alpha$  for  $\alpha \in (0, \hat{\alpha})$ , while it strictly increases for  $\alpha \in (\hat{\alpha}, 1)$ .
2. The probability of reform by the low type,  $\rho^*$ , and the overall probability of reform,  $\bar{\rho}$  are strictly decreasing in  $q$ , the precision of the signal received by the high-type politician.

3. Let  $p$  and  $\rho'$  denote, respectively, the equilibrium probabilities of the low type undertaking reform associated with distributions  $F(\cdot)$  and  $G(\cdot)$  of  $\theta$ , the quality of the available proposal. Let  $\bar{p}$  and  $\bar{\rho}'$  be their counterparts for the overall likelihood of reform. For a given  $\hat{\theta}$ , then,  $\rho \geq \rho'$  and  $\bar{\rho} \geq \bar{\rho}'$  if  $F(\cdot)$  first order stochastically dominates  $G(\cdot)$ .

We next discuss the intuition and implications of these results. Part 2 of Proposition 2 states that the low-type politician conducts more reforms when the public holds a less favourable prior assessment. A more favourable prior assessment increases a politician's loss from a failed reform, which consequently weakens his incentive to reform. By contrast, a less favourable prior assessment strengthens his incentive to take risks, because it implies a smaller loss from a failed reform but a larger gain from an accidental success. This is then interpreted as the *pressure to prove oneself* phenomenon. It is also similar in spirit to a result of Canes-Wrone et al. (2001), who show that an incumbent with low perceived quality may be forced to exercise “fake leadership.”

Part 1 of Proposition 2 further shows a non-monotonic relationship between the overall probability of reform in the game and the initial reputation of the politician. Note that

$$\frac{\partial \bar{\rho}}{\partial \alpha} = [1 - F(\hat{\theta})] \left[ 1 - \rho^* + (1 - \alpha) \frac{\partial \rho^*}{\partial \alpha} \right]. \quad (4)$$

There are two competing effects on the probability of reform from a rise in  $\alpha$ : a direct positive effect—since the high type reforms more frequently than the low type—embodied by the term  $(1 - \rho^*)$ , and an indirect negative effect—since the low-type politician further reduces his probability of reform—embodied by the term  $(1 - \alpha) \partial \rho^* / \partial \alpha$ . When the prior is “pessimistic” ( $\alpha < \hat{\alpha}$ ), the second effect dominates. This yields an empirically testable hypothesis: When the public's perception of a politician's capability becomes increasingly more pessimistic, more reform is expected. It offers a potential explanation of the widely observed phenomenon that young or less established policy makers are more progressive and prone to make changes, while senior or well-established ones are more conservative and likely to keep the status quo. However, when the prior becomes sufficiently optimistic ( $\alpha > \hat{\alpha}$ ), the first effect will dominate, and a higher percentage of high types will lead instead to more reform overall.

The logic of Part 2 of the proposition is straightforward. When the high-type politician has a more accurate signal, the public is more likely to attribute an unsuccessful reform to a low-type politician. This effect unambiguously increases the low-type politician's costs for carrying out reforms, thereby leading him to reform less often.

In Part 2 of the proposition, stochastic dominance implies that probability mass is shifted upward. Hence, reform proposals are more likely to be of a higher value. A no-reform outcome is more likely to be interpreted by the public as due to the politician's incompetence, which forces the low type to reform more often.

This result yields interesting welfare implications. We conduct numerical exercises to illustrate these. Assume that  $\theta$  follows a uniform distribution with a distribution function  $F(\theta) = (\theta_1 + \theta) / (\theta_1 + \theta_2)$ . For computational ease, we adopt the extreme case in which the high type receives a perfect signal, i.e.,  $q = 1$ . The setting, however, satisfies the condition  $\alpha F(\hat{\theta}) / (1 - \alpha) \leq 1$ , and remains a limiting case of our baseline model. Let us consider the effect of an increase in the upper bound of the support  $\theta_2$ . This implies that the probability mass of the distribution is shifted upward, which can be interpreted in two ways. First, it can naturally be thought of as a more optimistic environment, in which promising reform opportunities abound. Second, it can alternatively represent a deteriorating political or economic situation, e.g., when a large-scaled financial crisis has erupted, or a catastrophic incident in international relations unfolds. Extraordinary and unusual actions are typically expected in such circumstances, while the effectiveness of routine practices is generally cast into doubt. Either circumstance seems to be more in favour of reform. Fig. 1 testifies to a non-

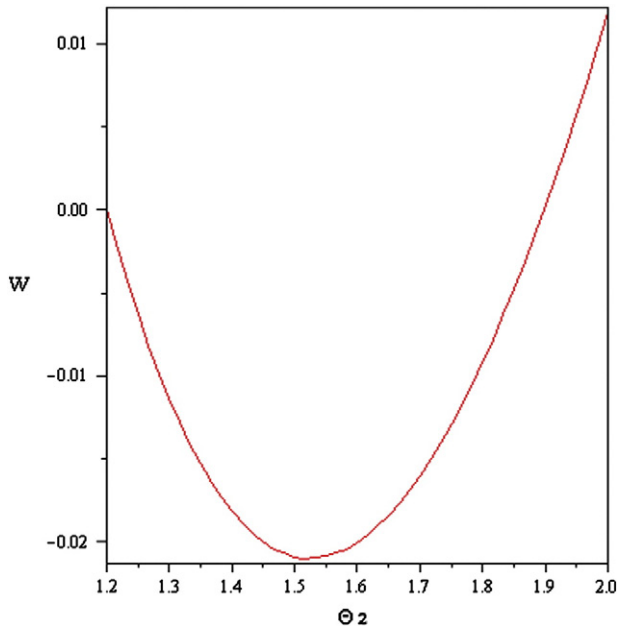


Fig. 1. An example that demonstrates the non-monotonic effect of  $\theta_2$  on social welfare ( $\theta_1 = 1.1, q = 1.0, \alpha = 0.2$ , and  $\hat{\theta} = 1.2$ ).

monotonic relationship between social welfare and  $\theta_2$  when  $\hat{\theta}$  is given. Society can be better or worse off when more opportunities are available. The more favourable distribution forces the low type to risk more, which increases the loss from his inefficient reforms. Our paper can thus be linked to the literature on crises and reforms. It provides an alternative perspective to understand a politician's incentive to (or not to) push forward “necessary” reform when the political or socioeconomic environment demands the change or to evaluate the merits of reform under such a circumstance.<sup>12</sup>

### 5. Institutional design

In this section, we evaluate the welfare implications of alternative institutional environments and oversight mechanisms, which are embodied by a few key parameters of our model. First, we explore the optimal level of discretion to be given to the politician, embodied by the parameter  $\hat{\theta}$ , which can be interpreted as the “constitution” the legislature must abide by when it oversees the politician's policy initiatives. We show that, as a new insight of our analysis, institutional status quo bias may be justified as a means to limiting the damage caused by incapable politicians' risky policy initiatives driven by reputation concerns. We then investigate the ramifications of transparency in institutional environments, i.e., the amount of information the public can access regarding the politician's decision making and the resultant performance. We show that “decision transparency” and “consequence transparency” have decidedly different effects on welfare. In our ensuing discussion, we make our best effort to provide intuitive arguments while maintaining precision. The interested reader can find all detailed mathematical proofs in the Online Supplement.

#### 5.1. Optimal threshold rule for reform

In our model, a higher  $\hat{\theta}$  represents a more conservative rule that grants less authority to the politician, while a lower  $\hat{\theta}$  represents a

<sup>12</sup> For instance, Alesina and Drazen (1991) show that stabilization measures can be delayed when they have different distributional implications for rival interest groups. Prato and Wolton (2013) demonstrate that a political candidate may refrain from committing to a welfare-improving nontraditional policy (1) when communication is costly, and (2) when a special interest group could exercise independent electoral influence.

more liberal rule that is more permissive of reform. Under a given threshold  $\hat{\theta}$ , the social welfare in the equilibrium can be written as a function

$$W = \underbrace{\alpha \int_{\hat{\theta}}^{\theta_2} [\theta - 4(1-q)] f(\theta) d\theta}_{W_1} + \underbrace{(1-\alpha) \rho^* \int_{\hat{\theta}}^{\theta_2} (\theta - 2) f(\theta) d(\theta)}_{W_2} . \quad (5)$$

The term  $W_1$  gives the overall expected contribution to social welfare by the high type, while  $W_2$  depicts that by the low type. While the former could be positive or negative, the latter is always negative because  $\theta_2 < 2$  by assumption. Ostensibly, a more conservative rule (higher  $\hat{\theta}$ ) triggers a trade-off: It reduces the possible gain from the high type, but in the mean time limits the damage from the low type. However, we show in our analysis below that the trade-off is more subtle.

**Lemma 1.** *The equilibrium probability of reform by the low type,  $\rho^*$ , strictly decreases with  $\hat{\theta}$ .*

The intuition of this lemma is as follows. The set of admissible reform shrinks when  $\hat{\theta}$  increases. Thus, when faced with a no-reform outcome, the public is more likely to attribute it to a lack of admissible reform opportunities ( $\theta < \hat{\theta}$ ), rather than the politician's low capability. The low-type politician obtains relatively higher reputation from maintaining the status quo. She is therefore relieved of the pressure to undertake risky reform, which causes  $\rho^*$  to fall. Hence, a higher threshold rule has two effects: a direct *prohibition effect* which prevents all reforms that fail to clear the threshold, and an indirect *pressure-relieving effect*, which incentivizes the low type against reform even if such reform is not expressly forbidden. With this result in mind, we proceed to characterize the optimal threshold.

Let  $\rho_{\hat{\theta}}^*$  denote the low type's equilibrium probability of reform associated with an arbitrary threshold  $\hat{\theta}$ . Then under a given threshold  $\hat{\theta}$ , the expected performance of a reform proposal with value  $\theta$  is given by

$$E(y|\theta, \hat{\theta}) = \alpha[\theta - 4(1-q)] + (1-\alpha)\rho_{\hat{\theta}}^* \cdot (\theta - 2).$$

Note that  $E(y|\theta, \hat{\theta})$  strictly increases with  $\theta$ . Further, define  $\underline{\rho} \equiv \lim_{\theta \rightarrow \hat{\theta}} \rho_{\hat{\theta}}^*$ . The following results were obtained.

#### Lemma 2

1. *Whenever*

$$\frac{(1-\alpha)\underline{\rho}}{\alpha} < \frac{\theta_2 - 4(1-q)}{2 - \theta_2}, \quad (6)$$

*there exists a unique  $\hat{\theta}^0 \in (4(1-q), \theta_2)$  that solves*

$$E(y|\hat{\theta}^0, \hat{\theta}^0) = \alpha[\hat{\theta}^0 - 4(1-q)] + (1-\alpha)\rho_{\hat{\theta}^0}^*(\hat{\theta}^0 - 2) = 0.$$

2. *Further, the cutoff  $\hat{\theta}^0$  exhibits the following property: For any  $\hat{\theta} \in [-\theta_1, \theta_2]$ ,*

$$E(y|\hat{\theta}, \hat{\theta}) \geq 0 \text{ if and only if } \hat{\theta} \geq \hat{\theta}^0. \quad (7)$$

The expression of  $E(y|\hat{\theta}, \hat{\theta})$  depicts the expected outcome from a “marginal” reform proposal, i.e., the proposal with a value of exactly  $\hat{\theta}$  under a given threshold  $\hat{\theta}$ . The property of  $\hat{\theta}^0$  makes it a natural benchmark in our subsequent thought experiment: We evaluate the ramifications of an arbitrary threshold rule  $\hat{\theta}$  when it deviates from the benchmark  $\hat{\theta}^0$ .



If the threshold rule  $\hat{\theta}$  is more permissive (i.e., lower) than  $\hat{\theta}^0$ , “bad” reform will occur. In fact, all reforms with value in  $[\hat{\theta}, \hat{\theta}^0]$  must yield strictly negative expected outcomes. To see that, note that for all  $\theta \in [\hat{\theta}, \hat{\theta}^0]$ ,

$$E(y|\theta, \hat{\theta}) < E(y|\hat{\theta}^0, \hat{\theta}) < E(y|\hat{\theta}^0, \hat{\theta}^0).$$

The first inequality is because  $E(y|\theta, \hat{\theta})$  is strictly increasing in  $\theta$ , while the second is due to Lemma 1. In fact, by continuity, the expected outcome would be negative even for reforms with a value  $\theta$  just above  $\hat{\theta}^0$  under a threshold  $\hat{\theta} < \hat{\theta}^0$ .

In contrast, if the threshold rule is more restrictive (higher) than  $\hat{\theta}^0$ , it must thwart otherwise “good” reform. Reforms with value  $\theta \in [\hat{\theta}^0, \hat{\theta})$  will be ruled out. They would yield a positive expected outcome if adopted. Similar to the above argument for the more permissive threshold, all reforms with  $\theta \in (\hat{\theta}^0, \hat{\theta})$ , if implemented, would generate an expected outcome  $E(y|\theta, \hat{\theta})$  with

$$E(y|\theta, \hat{\theta}) > E(y|\hat{\theta}^0, \hat{\theta}) > E(y|\hat{\theta}^0, \hat{\theta}^0).$$

Again, by continuity, the expected outcome would be strictly positive even for reforms with a value  $\theta$  just below  $\hat{\theta}^0$ .

Hence,  $\hat{\theta}^0$  can be viewed as a “neutral” cutoff—it perfectly rules out “bad” reform, while it does not thwart otherwise beneficial reform. Given this conclusion, one may wonder whether  $\hat{\theta}^0$  is the optimal cutoff that maximizes social welfare. However, we show below that the optimal threshold is actually more conservative (higher) than  $\hat{\theta}^0$ .

To address this question, from Eq. (5) we may obtain the derivative of social welfare with respect to  $\hat{\theta}$ :

$$\frac{dW}{d\hat{\theta}} = f(\hat{\theta}) \left\{ \begin{array}{l} \underbrace{-\alpha[\hat{\theta}-4(1-q)]}_a - \underbrace{(1-\alpha)\rho_{\hat{\theta}}^* \cdot (\hat{\theta}-2)}_b \\ + (1-\alpha) \underbrace{\frac{d\rho_{\hat{\theta}}^*/d\hat{\theta}}{f(\hat{\theta})} \int_{\hat{\theta}}^{\theta_2} (\theta-2)f(\theta)d\theta}_c \end{array} \right\}. \quad (8)$$

An increase in the threshold  $\hat{\theta}$  affects social welfare through three venues. First, it reduces the potentially beneficial reform that is undertaken by the high type, and therefore decreases the associated gains. This loss is captured by the term  $a$ , which is negative whenever  $\hat{\theta} > 4(1-q)$ . Second, a higher cutoff  $\hat{\theta}$  reduces the expected loss from the inefficient reform that is undertaken by the low type. This effect is embodied by the term  $b$ . The above two are the result of the (direct) prohibition effect. Third, it exerts an indirect effect, the pressure-relieving effect, by reducing the low-type politician’s incentive to carry out reform, which is given by  $c$ .

The decomposition in Eq. (8) demonstrates that  $\hat{\theta}^0$  is never the optimal threshold. When  $\hat{\theta} = \hat{\theta}^0$ , the sum of the first two terms ( $a$  and  $b$ ) simply boils down to  $E(y|\hat{\theta}^0, \hat{\theta}^0)$ , and is equal to zero by the definition of  $\hat{\theta}^0$ . The last term,  $c$ , however, remains positive. It implies that social welfare can be improved by raising  $\hat{\theta}$  from  $\hat{\theta}^0$ : Although a more conservative threshold would prevent otherwise beneficial reform, it reduces  $\rho^*$ , thereby further deterring the detrimental reform of the low type. Hence, social welfare gains further through this indirect effect, which is term  $c$  in Eq. (8). A higher threshold  $\hat{\theta}$  not only restricts the set of admissible reform proposals  $[\hat{\theta}, \theta_2]$ , but also incentivizes the low type to reform less often for all  $\theta \geq \hat{\theta}$ .

These preliminary analyses reveal that maximization of social welfare requires a more stringent threshold than  $\hat{\theta}^0$ . Our analysis yields the following result.

**Proposition 3.** A unique socially optimal cutoff  $\hat{\theta}^* \in (\hat{\theta}^0, \theta_2)$  exists if and only if Condition (6) is satisfied; otherwise, the public prefers no reform at all, i.e.,  $\hat{\theta}^* = \theta_2$ .

This proposition states that a unique (interior) optimal threshold  $\hat{\theta}^*$  exists, and it exceeds the neutral cutoff  $\hat{\theta}^0$  whenever  $\hat{\theta}^0$  exists, i.e., when condition in (6) is satisfied. The optimal threshold embodies “institutional status quo bias,” i.e., some beneficial reforms have to be rejected, but the resultant loss is offset by the benefit from discouraging reputation-driven reform by the low type.

When condition in (6) is not met, all reforms should be rejected in the social optimum. By Proposition 2, the condition is more likely to be satisfied when the probability of high type,  $\alpha$ , is higher, when the high type’s information is more accurate (or  $q$  is higher), or when the value of reform follows a higher distribution in the F.O.S.D. sense. Reform is likely to be socially beneficial only when its success is sufficiently likely and when it is compared favourably with the status quo.

We further obtain the following more general conclusions about the impacts of  $\alpha$  and  $q$  on the cutoff  $\hat{\theta}^*$ .

**Proposition 4.** When  $\hat{\theta}^* \in (\hat{\theta}^0, \theta_2)$ , the socially optimal cutoff  $\hat{\theta}^*$  decreases with  $\alpha$  and  $q$ .

Recall by Proposition 2 that under a given threshold  $\hat{\theta}$ , the low type’s equilibrium probability of reform  $\rho^*$  strictly decreases with  $\alpha$  and  $q$ , which increases the expected outcome for every admissible  $\theta$ . Hence, a higher  $\alpha$  or  $q$  substitutes away the need to discourage the low type from undertaking inefficient reform by raising  $\hat{\theta}$ , which comes at the cost of foregone beneficial reform opportunities. Proposition 4 states formally that a greater  $\alpha$  or  $q$  allows for less restriction on the politician’s discretion to embark on reform.

We further discuss how the distribution of  $\theta$  affects the optimal threshold rule  $\hat{\theta}^*$ . To allow for a simple and yet rich enough analysis, again, we restrict our attention to the uniform distribution on  $[-\theta_1, \theta_2]$  and consider an increase in the upper bound of the support,  $\theta_2$ , which leads to a uniform upward shift of probability mass.

**Proposition 5.** When  $\theta$  is uniformly distributed over  $[-\theta_1, \theta_2]$ , the socially optimal cutoff for reform,  $\hat{\theta}^*$ , strictly increases with  $\theta_2$ .

As suggested by Proposition 2.3, an increase in  $\theta_2$  forces the low type to risk more, i.e.,  $\partial\rho_{\hat{\theta}}^*/\partial\theta_2 > 0$ . Under a given threshold, it causes the expected performance of all admissible reform to fall, i.e.,  $\partial E(y|\theta, \hat{\theta})/\partial\theta_2 < 0$ . A more stringent rule is thus needed to combat the perverse incentive and reduce the resultant welfare loss. The increase in  $\theta_2$  thus unambiguously lifts the optimal threshold  $\hat{\theta}^*$ .

5.1.1. Public learning efficiency

In our preceding analysis of the optimal threshold rule, we have assumed that social welfare is derived purely from the immediate payoff from the politician’s policy performance. However, social welfare may involve other considerations. For instance, the public may also have an interest in learning about the politician’s competence. Effective learning generates long-term benefits, as it is critical for making informed decisions on selection, retention, and promotion.

Consider a given threshold  $\hat{\theta}$ . Let  $E\mu_t(\hat{\theta})$  be a politician’s expected reputation in the interaction conditional on him being type- $t$ . Apparently, a higher  $E\mu_H(\hat{\theta})$  implies more effective learning: The competence of a truly capable politician is more likely to be recognized. By contrast, a higher  $E\mu_L(\hat{\theta})$  indicates the opposite: An incapable politician hides his own type more effectively.

**Proposition 6.** The low-type politician’s expected reputation strictly increases with the threshold  $\hat{\theta}$ , while that of the high-type politician strictly decreases with it. That is,  $dE\mu_H(\hat{\theta})/d\hat{\theta} < 0$ , and  $dE\mu_L(\hat{\theta})/d\hat{\theta} > 0$ .



**Proposition 6** demonstrates that a more stringent threshold for reform (a higher  $\hat{\theta}$ ) prevents discovery of the politician's type. A smaller set of admissible reforms makes it easier for the low type to pool with his high-type counterpart and reveal less information about his type. Furthermore, recall that by **Lemma 1**, the low type's probability of reform decreases with an increase in the threshold, which in turn makes the inference from a failure less informative. To see that, when a reform fails, the posterior of the public is

$$\mu^f = \frac{1}{1 + \frac{1 - \alpha}{2} \frac{\rho_0^*}{\alpha(1-q)}}$$

which strictly increases when  $\rho_0^*$  decreases. A failure is more likely to be attributed to the bad luck of a high type instead of, as for a low type, incompetence. Both effects confound the public's learning.

When social welfare includes the consideration about effective learning, the optimal institution design must balance the conflict between efficiency in information revelation and that in policy performance. The latter requires a conservative threshold to rein in reform, while the former demands a more liberal environment, which encourages reform, thereby facilitating learning. An optimal cutoff that is lower than  $\hat{\theta}^*$  can then be expected. A full-scaled analysis is beyond the scope of the paper.

### 5.2. Transparency

Since enlightenment, there has been a widespread effort to promote transparency in public bodies. Open government, which exposes its practice to public oversight, is widely regarded as an essential element of a modern democracy. It is commonly held that public access to government information is essential for the accountability and efficiency in public service. Despite its benefits, the implications of transparency remain mixed when viewed through the lens of economics. The economics literature, e.g., **Prat (2005)** and **Levy (2007)**, has increasingly recognized the perverse incentive effect that can be triggered by more transparency.

Our framework, with moderate variation, allows us to consider transparency as an institutional element and evaluate its ramifications for social welfare. We consider two types of transparency: "decision transparency" and "consequence transparency."<sup>13</sup> Our analysis demonstrates that they lead to contrasting incentive effects and policy implications. In our discussion of both types of transparency, the measure of transparency we adopt is the probability that the public observes the relevant information, be it the decision or the consequence.

#### 5.2.1. Decision transparency

The politician decides whether to implement a reform proposal provided that the realized value  $\theta$  of the available proposal exceeds  $\hat{\theta}$ . One key assumption in our baseline setting is that the public cannot learn  $\theta$  if no reform is carried out. We now consider an alternative institutional environment in which the public can discover the decision process in the politician's office with a certain probability: When the status quo is maintained, the public is able to learn about the "counterfactual," i.e., the true realization of  $\theta$ , with a probability  $\tau \in [0,1]$ . Apparently, a larger  $\tau$  represents an environment with a higher level of transparency. The case  $\tau = 0$  corresponds to our baseline setting, in which the underlying decision process remains completely opaque.

The level of transparency can be determined by either the prevailing institutional environment or the nature of the relevant policy issues. The public, for instance, may have relatively more precise information

about the policy instruments or resources available to the government when a natural disaster strikes. By contrast, the public typically has only imprecise notions about the government's available options when the country faces a terrorist threat or a diplomatic crisis.<sup>14</sup>

### Proposition 7

1. For each given cutoff  $\hat{\theta} \in [-\theta_1, \theta_2]$ , there exists a unique divine and sincere equilibrium of the game in which, the high-type politician undertakes reform with probability one whenever he receives a proposal of value  $\theta \in [\hat{\theta}, \theta_2]$ , while the low-type politician undertakes reform with a probability  $\rho^*(\tau)$  when  $\theta \in [\hat{\theta}, \theta_2]$ . There exists a unique threshold probability  $\bar{\tau} \in (0, 1)$ , such that  $\rho^*(\tau) \in (0, 1)$  for  $\tau < \bar{\tau}$ , and  $\rho^*(\tau) = 1$  for  $\tau \geq \bar{\tau}$ .
2. For  $\tau < \bar{\tau}$ , the low type's equilibrium probability  $\rho^*(\tau)$  strictly increases with the level of transparency or the likelihood of discovery, i.e.,  $\partial \rho^*(\tau) / \partial \tau > 0$ .

The proposition states that a more transparent environment (i.e., a larger  $\tau$ ) presses the low type to mimic his high-type counterpart and reform more often. When the probability of discovery exceeds the threshold  $\bar{\tau}$ , the equilibrium leads to complete pooling between the two types, i.e.,  $\rho^*(\tau) = 1$ . The logic is straightforward. With a higher level of transparency, a no-reform outcome is more likely to be attributed to the politician's lack of competence rather than the lack of opportunities. An opaque institutional environment attenuates incompetent politicians' incentives to use policy choices to manipulate the public's perception.

Denote by  $W(\hat{\theta}|\tau)$  the expected social welfare under an arbitrary cutoff  $\hat{\theta}$  and an arbitrary transparency level  $\tau$ . We have

$$W(\hat{\theta}|\tau) = \underbrace{\alpha \int_{\hat{\theta}}^{\theta_2} [\theta - 4(1-q)] f(\theta) d\theta}_{W_1} + \underbrace{(1-\alpha) \rho^*(\tau) \int_{\hat{\theta}}^{\theta_2} (\theta - 2) f(\theta) d\theta}_{W_2}$$

The following is straightforward.

**Corollary 1.** Under a given cutoff  $\hat{\theta}$ , social welfare declines when a higher level of decision transparency is in place. To put it formally,  $\partial W(\hat{\theta}|\tau) / \partial \tau < 0$  for  $\tau < \bar{\tau}$ , and  $\partial W(\hat{\theta}|\tau) / \partial \tau = 0$  for  $\tau \geq \bar{\tau}$ .

Our analysis in this section yields both positive and normative implications. First, given our full equilibrium characterization for all transparency levels, we have testable predictions for a politician's posturing behaviour in different institutional environments and policy contexts. This complements our analysis in the baseline setting. Second, Corollary 1 demonstrates the existence of "wrong kind of transparency": An opaque institutional environment, paradoxically, improves social welfare!

**Gersen and Stephenson (2013)** argue that, based on previous work in the literature, limiting public access to government information is one possible cure for accountability pathologies. Our result echoes this rationale, as well as that of **Prat (2005)**, although our transparency and its negative effects take a different form from that of **Prat**. Our analysis in this section is also conceptually related to the literature on the impact of news media auditing, such as **Ashworth and Shotts (2010)**. **Ashworth and Shotts** show that media commentary, which offers opinions as to whether a political leaders' policy choice has been aligned with voters' interests, may not inhibit the leader's pandering. We show that revealing more information about the available reform opportunities unambiguously encourages posturing. These studies

<sup>13</sup> **Prat (2005)** focuses on a setting in which the agent's type is unknown to himself. By contrast, we focus on a setting where the politician knows his type, and his reform is a visible signal. Hence, we abstract away the concern regarding "action transparency" considered by **Prat**.

<sup>14</sup> We thank an anonymous referee for pointing out these potential implications.

focus on different contexts and examine different mechanisms, and therefore complement each other.<sup>15</sup>

### 5.2.2. Consequence transparency

The second type of transparency, consequence transparency, concerns itself with the ability of the public to learn the outcome of reform. We consider a situation in which the outcome of reform is not perfectly revealed to the public post-reform: There is a post-reform evaluation process that, with probability  $\eta$ , allows the public to find out how well a particular initiative has fared. Otherwise, the evaluation discovers nothing. The opaqueness can be caused by either institutional arrangement, or natural frictions in observation and evaluation processes. For instance, it takes years to observe the true outcome of the Fed's quantitative easing practice. It is equally difficult to evaluate comprehensively the actual contribution of an anti-terrorism measure to national security.

The parameter  $\eta$  reflects the level of transparency in the political environment – how well the public can effectively monitor the policy performance of a politician. Now, the equilibrium condition for the low-type politician to mix between reform and the status quo can be rewritten as

$$\mu^0 = \eta \left( \frac{1}{2} \mu^s + \frac{1}{2} \mu^f \right) + (1-\eta) \mu^n,$$

where  $\mu^n$  is the reputation of the politician if the post-reform evaluation does not discover the performance of the reform, while  $\mu^s$  and  $\mu^f$  are his reputation when the reform succeeds and fails, respectively.

### Proposition 8

1. For each given cutoff  $\hat{\theta} \in [-\theta_1, \theta_2]$  and  $\eta \in (0, 1)$ , there exists a unique *divine and sincere equilibrium* of the game. In the equilibrium, the high-type politician undertakes reform with probability one whenever he receives a proposal of value  $\theta \in [\hat{\theta}, \theta_2]$ , while the low-type politician undertakes reform with a probability  $\rho^*(\eta) \in (0, 1)$  whenever the high type does.
2. For  $\eta \in (0, 1)$ , the low type's equilibrium probability  $\rho^*(\eta)$  strictly decreases with the likelihood of discovery,  $\eta$ , i.e.,  $\partial \rho^*(\eta) / \partial \eta < 0$ .

The proposition indicates that a more opaque environment encourages the low type to take more risk. By undertaking the reform with any positive probability  $p$ , the reputation of the low-type politician if no discovery is made,  $\mu^n$ , is strictly higher than his reputation from choosing the status quo,  $\mu^0$ . To put it intuitively, the low-type politician will be punished less severely if his failure is less likely to be found out, which incentivizes him to take more risk.

Denote by  $W(\hat{\theta}|\eta)$  the expected social welfare under an arbitrary cutoff  $\hat{\theta}$  and an arbitrary transparency level  $\eta$ . The following is straightforward.

**Corollary 2.** Under a given cutoff  $\hat{\theta}$ , social welfare increases when a higher level of consequence transparency is in place. To put it formally,  $\partial W(\hat{\theta}|\eta) / \partial \eta > 0$  for  $\eta \in (0, 1)$ .

Corollary 2 states that consequence transparency improves social welfare, as it deters a low-type politician from undertaking inefficient reform. The implications contrast those of decision transparency: Social welfare suffers when policy performance can be effectively hidden from public scrutiny. Our results echo those of Prat (2005) and Gersen and

Stephenson (2013). Our results lend support to the positive effects of various measures that could help the public understand the government's policy performance, e.g., informative media coverage and policy analyses conducted by independent entities.

## 6. Concluding remarks

In this paper, we study a politician's incentive to implement reform when his true ability is privately known but he is concerned about the public's perception of his competence. The politician thus chooses his policy to maximize his reputation payoff. We find that a high-talent politician always attempts to reform as much as possible, which compels his low-talent counterpart to conduct socially inefficient reform. Further, we explore the socially optimal level of empowerment in the presence of such reputation concerns. We find that the social optimum can be achieved only if the institutional rule is sufficiently conservative, which embodies proper status quo bias. Though conservative rules prevent some otherwise efficient reform, they improve social welfare by removing pressure from the low-talent politician to undertake excessive reform so as to appear competent. Finally, we show that decision transparency and consequence transparency have decidedly different implications for social welfare, the former negative and the latter positive.

Our analysis has been limited to a stylized setting for the sake of expositional efficiency and mathematical tractability. This still leaves open many possibilities for other variations. For instance, it can be readily extended to a dynamic setting in which the politician makes his policy choice repeatedly. The observation of the pressure-to-prove-oneself phenomenon (Proposition 2.1) has provided immediate implications: A politician who has failed in the past is more likely to take radical action in the future, because past failure lowers his public ratings. It would be interesting to explore in a multi-stage setting the politician's incentives to reform and evaluate institutional arrangements by taking into account the roles played by the length of his terms in office.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.jpubeco.2013.11.008>.

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<sup>15</sup> This literature, such as Ashworth and Shotts (2010), typically considers the media as a strategic player, who actively interacts with the political leader and chooses its own reporting strategy. Warren (2012) focuses more on how media's biases affect its incentive to acquire useful information. We assume that the level of transparency is exogenously given and focus on the politician's strategic response to varying levels of transparency.

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