The Common Determinants of Legislative and Regulatory Complexity *

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Abstract

Legislative and regulatory reforms often contain various forms of complexity – multiple contingencies, exemptions and alike. Complexity may be desirable if it better satisfies the needs of political constituencies, and if these benefits are higher than the potential increase in administrative costs. Both benefits and costs are better understood by a reform drafter than by the other players involved in the reform process. This asymmetric information on the costs and benefits of complexity creates incentives for inefficiently complex policies. We show that reform drafters use complexity to pander to persuade their political principals to adopt reforms, when the latter are less informed about the costs consequences of the proposed complexity. Nevertheless, institutional contexts where reform drafters are overseen by political principals are not always leading to greater complexity than in systems without overseers, as long as the drafters face informational constraints regarding the costs and benefits of complexity.

Keywords: Complex Reforms, Delegated Policymaking, Bureaucratic Implementation Costs, Political Pandering.

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1 Introduction

Political leaders are called upon to address difficult public policy problems. Climate change mitigation, adaptation to new technologies, or the response to global health crises are just a few examples of challenges for which new policies, laws or regulations, need to be drafted. The experience in many countries in recent decades has been one of increasingly complex new policies, with laws or regulations abundant in contingencies, exemptions, and special provisions.[1] This increasing complexity makes laws and regulations more difficult to understand and navigate, and these difficulties are likely to exacerbate voter disengagement, lower accountability of politicians, and lead to a more negative perception of public institutions.[2] Yet, how much of the increased complexity of laws and regulations is due to the nature of the new policy challenges and how much of it is due to structural and political factors is an open question. Given its wide-ranging political implications, understanding the different drivers of complexity is a first-order concern.

In this paper, we formally model the emergence of complexity in the policymaking process. We start from the fundamental observation that a principal role for politicians in representative democracies is to support policies that best capture the demands and preferences of their political constituencies. That is, to support policies that accurately account for the social benefits and the social costs imposed on their different political constituencies. In some cases, achieving this goal requires adopting a complex set of policy contingencies or offering exemptions and special provisions for various societal groups. In other cases, a simple across-the-board policy may achieve the objective without specific customization.[3]

[1]See e.g. Gratton et al. (2021), Teles (2013).

[2]See Davis (2017) for a discussion of this issue.

[3]Consider the example of the reforms needed to achieve the goals set forth in the Paris Climate Agreement. The heads of governments agreed in 2015 to drastically reduce greenhouse gas emissions. Since the treaty's signing, the relevant agencies and governments had the task of formulating policy recommendations to achieve this goal. These may come in the form of simple blanket policies which require all industries to reduce emissions by a given percentage. Or they may come as a complex policy which allows for tailored rules and exemptions across sub-industries. The relative benefit of each policy depends on whether the economic

Yet, while the objective may be clear, it is very rare for any politician to have deep knowledge of the social benefits and costs of every policy proposal she is asked to vote on. She instead relies on the drafter of the policy proposal to know this information and to offer up the best policy. This works well as long as the politician and the policy drafter have similar preferences. But things quickly break apart if there is conflict of interests between these two players.

Our model shows that informational asymmetries over a policy's social costs and benefits, together with conflict of interests between policy drafters and political decision makers spills into inefficient policy complexity. These structural aspects of the policymaking process contribute to increasing complexity above any efficient level dictated by technological or economic variables.

Naturally, these two tensions only capture one avenue for inefficient complexity, necessarily leaving out other institutional details that likely also contribute to increased complexity. Nevertheless, we single out these two tensions as a crucial first step in dissecting the multifaceted drivers of complexity. They are a natural starting point given their central place in the study of both legislative and bureaucratic policymaking. Informational asymmetries in policymaking have been the central focus of a large literature in legislative and bureaucratic politics (e.g. Calvert, McCubbins and Weingast, 1989; Epstein and O'halloran, 1994; Gailmard, 2002; Huber and McCarty, 2004; Bendor and Meirowitz, 2004). Similarly, the divergence of interests between career-concerned and socially-minded policymakers has been widely studied for the case of politicians (Canes-Wrone, Herron and Shotts, 2001; Gratton et al., 2021) or bureaucrats (e.g. Brehm and Gates, 1999; Carpenter, 2001; Shepherd and You, 2020). The implications of these two tensions for policy complexity open up the path for understanding how common political economy concerns feed into complexity.

costs of emissions reduction are not vastly different across sub-industries or regions.

Model Summary. We consider a general policymaking setting in which a policy proposer (the drafter) requires the approval of a political decision maker in order for a policy to be adopted. This captures, for instance, the problem for a legislator trying to get the vote of a pivotal member of her party, or a bureaucrat trying to get a regulatory proposal past her political overseer.[4] We purposefully focus on the commonly-encountered asymmetries between policy proposers and political decision makers, leaving out institutional details specific to any one setting. There are two types of asymmetries: the proposer has better information about the effects of the policy he drafted, and there may be conflict of interests between the proposer and the decision maker. For the first asymmetry, the proposer has information about whether the state of the world is such that it is beneficial to add multiple contingencies or exemptions, i.e., to make the policy more complex; and also about whether making the law or rule more complex is desirable in terms of costs, for instance implementation or administrative costs. Overall, a complex policy is beneficial (efficient) when its complexity is matched to the state of the world and its implementation costs are not overwhelming.

Whether this asymmetric information is conducive to complex policies when they are not beneficial, i.e., to inefficient complexity, depends on the objectives of the proposer. This is the second source of asymmetry: the proposer may or may not be aligned with the decision maker in terms of objectives. With some known probability, the proposer has the same preferences as the decision maker, and therefore drafts only beneficial policies. Yet, there is also the possibility that the proposer does not share the decision maker's objective. He may instead be purely career concerned, so that getting a policy passed is his main concern. Under this 'mild' form of a conflict of interest, where the proposer is not actively opposed to or biased against the decision maker's objective, a pandering incentive materializes.

[4] We discuss in Section 6 the role of congressional or presidential oversight in the rule-making process. See also Bawn (1995); McCubbins, Noll and Weingast (1989); De Mesquita and Stephenson (2007)

Too Much Complexity? Does the pandering incentive by the conflicted proposer lead to policy complexity? We show that the answer is not necessarily, and we uncover the key condition under which this happens. Pandering leads to inefficient complexity only when there is high uncertainty about the social cost of the policy. The gains from pandering are obtained when manipulating the policy's complexity increases the chances that it will be approved by the decision maker. When the social costs are uncertain, the proposer can 'muddy the waters' for the decision maker by strategically drafting a complex reform, regardless of its suitability. This manipulates the decision maker into expecting low social costs, so she becomes positively inclined to adopt the proposed policy. The complexification strategy by the proposer facilitates the passing of proposals, but at the cost of inefficient complexity. Yet, this strategy is not viable if the decision maker has more extreme expectations, either of very high costs or of very low costs. In those cases, her beliefs cannot be easily manipulated through policy complexity, and she will either approve or deny the policy based on her expectation of the costs. When there are no gains for the proposer from adding unnecessary complexity, the policy proposals will not be biased towards complexity.

Implications. Our results imply that inefficient complexity is most likely to arise when there is asymmetric information about the consequences of a policy reform, when there may be conflict of interest between proposer and decision maker, and when there is high uncertainty about the social costs of the reform. This suggests that inefficient complexity may arise in policy domains where the expertise advantage of proposers is highest. Exploring this implication further, we find that a higher informational advantage for the proposer increases the probability of both the best and the worst outcomes. When expected social costs are low, a higher informational advantage reduces the proposer's benefit from pandering, and it becomes easier to sustain an equilibrium with only efficient complex policies. When the expected social costs of a complex policy are high, a higher informational advantage for the proposer increases the benefit of pandering, and it makes it easier to sustain an equilibrium with inefficient complex policies.

The empirical implication is stark: as politicians find it harder to understand which policy solutions are suited for today's challenges, higher reliance on experts leads to polarized outcomes: increased efficiency and less complexity when social costs are expected to be low, and increased inefficiency and more complexity when social costs are expected to be high.

Empirical Connections. The model's insights help to reconcile findings in the recent empirical literature on legislative production and complexity. Gratton et al. (2021) found that in the case of Italian legislation, more complexity was associated with more inefficient reforms. On the other hand, using data from U.S. state legislatures, Ash, Morelli and Vannoni (2020) show that higher complexity improves economic growth and reform efficiency. The negative effects of legislative complexity described in Gratton et al. (2021) are obtained for the post-1992 period, when reform proposers in Italy had intermediate valence and there was a large demand for reforms. With high uncertainty about the state of the world and the career concerns of legislative proposers identified in that work, our model indeed predicts Kafkaesque complexification outcomes. On the other hand, the positive effects of legislative complexity on efficiency obtained in Ash, Morelli and Vannoni (2020) are shown under lower uncertainty about social costs. The asymmetric information on social costs is mitigated by information transmission across U.S. states about the effects of similar policies. Put together, these empirical findings highlight the non-trivial relationship between complexity and efficiency developed formally in our model.

Related literature. This paper contributes to the literature on the organization of policymaking and its effects (McCarty, 2017; Slough, 2022; Snowberg and Ting, 2022; Foarta, 2021). To keep focus on the policy proposal process and resulting complexity, we abstract away from the underlying market or electoral processes that generate the social costs and benefits of a complex reform or the need for reforms in the first place.[5]

We also relate to the pandering literature and its applications in political economy (Canes-Wrone, Herron and Shotts, 2001; Maskin and Tirole, 2004; Acemoglu, Egorov and Sonin, 2013; Judd et al., 2017). As in Che, Dessein and Kartik (2013), we move away from the electoral context and consider pandering in the policymaking process, in the relation between policy drafters, either bureaucrats or legislators, and their political principals. We also expand this setting to allow policies to differ in terms of their complexity, and for pandering to occur through the complexity channel.

Central to our model is the view that complex policies are strategically drafted when the legislative or regulatory environment makes it difficult for the veto player to discern the consequences of a proposed reform. The idea of complexity being linked to how difficult it is for the decision maker to understand the policy's consequences is introduced and analyzed in a general model in Asriyan, Foarta and Vanasco (2020). Here, the policymaking environment requires adjustment along a key dimension: the consequences of a policy depend on the state of the world, so that a complex policy is not always worse than a simple policy.[6] A classic reference in law and economics for the way in which we describe complexity is Epstein (1995). The role of administrative costs in our model is consistent with that classic perspective, but our model adds the characterization of when costly complexifications are adopted, depending on the asymmetric information and the conflict of interests between political actors.

When applied to rulemaking, our model considers explicitly the possibility that a proposer who is a bureaucrat may have different objectives other than social cost considerations.

[5]For the connection to electoral processes, see Levy, Razin and Young (2022) and Morelli, Nicoló and Roberti (2021) for models on the connection between the demand of populism and the strategic supply of simplistic policy platforms. See Backus and Little (2020) for a model about whether a proposer will offer a policy in the first place.

[6]For a model where the proposer directly chooses the complexity of the environment itself, see Perez-Richet and Prady (2011).

However, we focus on career concerns alone as the source of conflict of interests. We leave out the additional possible sources of conflict of interests identified in the literature, as bureaucratic drift or bureaucratic slack.[7] Moreover, in our model we focus exclusively on the setting in which there is oversight involved in the policy adoption process. The desirability conditions for oversight itself are explored formally in De Mesquita and Stephenson (2007). Relatedely, recent contributions to the formal literature have shown that there may be ambiguous social welfare effects of centralizing policymaking within the executive (Judd and Rothenberg, 2020) or avoiding interest group input in the rulemaking process (Bils, Carroll and Rothenberg, 2020). In Section 5, we discuss how these ambiguous effects of centralizaton extend to the complexity of the resulting policies.

2 A Formal Model of Reform Complexity

2.1 Setup

The formal model has a proposer (PR) who drafts a reform y to a status quo policy, and a decision maker (DM) who either adopts or opts to keep the status quo. The reform y may be simple or complex, y^S or y^C, and which type of reform is suitable depends on the state of the world and on its associated cost. The proposer may also choose to not draft a reform, in which case $y = \emptyset$ and the status quo is kept.

The Reform. Our model focuses on two key questions around complex reforms: (1) when are they desirable given the specific social or economic needs? and (2) when are they desirable given the additional costs created by complexity?

[7]Drift refers to the possibility that an agency may be captured by regulated entities or interest groups (Niskanen, 1971; Stigler, 1971), whereas bureaucratic slack refers to effort incentives (Moe, 1990). Obviously bureaucratic drift and slack are examples of other potential sources of complexity that are specific to rulemaking. We decided to keep them out of the model because our focus is on the determinants of complexity that are common to both legislative production and rulemaking.

To address the first question, we assume that the proposer privately observes a state of the world $\theta \in \{\theta^S, \theta^C\}$, where state θ^S calls for a simple reform and state θ^C calls for a complex reform. The state indicates the social benefit of the reform. In state θ^C, the benefits are distributed unequally across society, so that a complex reform that specifies many contingencies and exemptions achieves a better outcome. In state θ^S, a simple, one-size-fits-all type of policy achieves the highest benefit. State θ^C occurs with publicly known probability $\kappa \in (0, 1)$.

To address the second question, we consider the possible variation in the social cost of adding complexity, a cost we denote by Γ. A simple reform has zero cost, whereas a complex reform has either a low cost, L (which we assume is also zero), with probability $\pi \in (0, 1)$ and a high cost, H (above zero), with probability $1 - \pi$. The proposer knows the cost of his complex reform. The high social cost could be due for instance to high administrative costs of implementing a complex reform, which an expert proposer is better able to discern, or because of the costs created by opaque exemptions or loopholes added in the reform by the proposer.

The Decision Maker. The decision maker receives the reform proposal $y \in \{y^S, y^C, \emptyset\}$ and decides whether to adopt the reform ($d = 1$) or not ($d = 0$). If she rejects the reform or adopts $y = \emptyset$, the status quo is kept and the $DM's$ payoff is normalized to 0. If she adopts a reform y^S or y^C, her payoff depends on the reform's social benefit and cost:

$$u(y, \theta, \Gamma) = b(y, \theta) - c(y, \Gamma), \tag{1}$$

where the term $b(y, \theta)$ is the social benefit, which is lower if the state does not match the reform type; the term $c(y, \Gamma)$ is the reform's implementation cost, which is 0 if $y = y^S$ and $c(y^C, L) = 0$; the only case where the cost is positive is $c(y^C, H) > 0$.

The Conflict of Interest. With probability $\alpha > 0$, the proposer is aligned with the DM, type A, in that his payoff is the same as the $DM's$: $u^{PR}(y, \theta, \Gamma|A) = u(y, \theta, \Gamma)$. This could be socially-minded bureaucrat or a politician fully aligned with the pivotal voter. With probability $1 - \alpha$, the proposer is not aligned with the DM, type P. This proposer is a pandering type, whose only objective is to get a reform passed:

$$u^{PR}(y, \theta, \Gamma|P) = \begin{cases} 1 & \text{if d=1 and } \; y \in \{y^S, y^C\} \\ 0 & \text{if d=0 or } \; y = \emptyset. \end{cases} . \tag{2}$$

The pandering type allows us to model a core concern around increasing complexity, namely that it is a by-product of career incentives related to the production of laws or rules alone (as in Gratton et al., 2021). In line with this motivation, notice that the proposer cannot freely choose the cost of a complex reform, Γ. A bureaucrat is constrained by the implementation capacity of the agency, whereas a politician faces the complexity costs associated with delivering the exemptions lobbied for by his constituency.

Finally, to focus our analysis on the more interesting cases, we exclude the possibility that a reform is good for the DM in all circumstances. We consider instead the case in which a very costly complex reform is the worst outcome for the DM:

Assumption 1 *The following conditions hold for the $DM's$ payoff:*

1. *If $\Gamma = H$, a complex reform has negative payoff: $b(y^C, \theta^C) - c(y^C, H) < 0$;*

2. *If $\Gamma = L$, a complex reform has positive payoff: $b(y^C, \theta^S) > 0$;*

3. *There is a low from adopting reform y^S in state θ^C: $b(y^S, \theta^C) < 0$;*

4. *The loss from a reform that mismatches the state of the world is lower than the loss from a reform that has high cost: $b(y^S, \theta^C) \geq b(y^C, \theta^C) - c(y^C, H)$.*

Conditions (1) and (3) together yield the implication that $b(y^S, \theta^C) < 0 < b(y^C, \theta^S)$, i.e., there is a higher social benefit created by a complex reform in state θ^S than by a simple reform in state θ^C. In other words, it is better to have additional contingencies and exemptions when they are not needed, than to not have needed contingencies. Point (4) makes a direct comparison between the social welfare loss in case the policy mismatches the state, and the welfare loss in case it has high cost. We take social cost as the dimension of the information asymmetry along which the DM is especially wary of making a mistake.

An Example. For concreteness, consider the following example of payoffs that satisfy the above conditions, and which we will use to illustrate our results graphically: $b(y^S, \theta^S) = b(y^C, \theta^c) = 1$, $b(y^S, \theta^C) = -1$, $b(y^C, \theta^S) = 0.7$, $c(y^C, H) = 2$:

DM's Payoff Example

	$\theta^{\mathbf{S}}$	$\theta^{\mathbf{C}}$
$\mathbf{y^S}$	1	-1
$\mathbf{y^C, L}$	0.75	1
$\mathbf{y^C, H}$	-1.25	-1

2.2 Equilibrium Concept

We consider the Pure Strategy Perfect Bayesian Equilibria of this game, which we define as follows.

Definition 1 *A profile of strategies* $r(\theta, \Gamma|PR) : \{\theta^S, \theta^C\} \times \{L, H\} \to \{y^S, y^C, \emptyset\}$, $d(y) : \{y^S, y^C, \emptyset\} \to \{0, 1\}$ *is a Pure Strategy Perfect Bayesian Equilibrium if there exist belief* $\mu(\theta, \Gamma, PR|y)$ *such that:*

- *(Pandering Proposer's best reply) For every* θ,Γ, $\forall y \in \{y^S, y^C, \emptyset\}$, $d(r(\theta, \Gamma|P)) \geq d(y)$;

- *(Aligned Proposer's best reply) For every θ, Γ, $\forall y \in \{y^S, y^C, \emptyset\}$, $u(r(\theta, \Gamma|A), \theta, \Gamma) \geq u(y, \theta, \Gamma)$;*

- *(DM's best reply) For every y, $\forall \bar{d} \in \{0, 1\}$,*

$$\sum_{\theta, \Gamma, PR} u(d(y, \theta, \Gamma)\mu(\theta, \Gamma, PR|y) \geq \sum_{\theta, \Gamma, PR} u(\bar{d}, \theta, \Gamma)\mu(\theta, \Gamma, PR|y).$$

- *(Bayes' consistency) Belief μ is consistent with updating via Bayes' rule whenever possible.*

We characterize each possible equilibrium. Since we are interested in the emergence of inefficient complexity, we focus on the 'best case scenario' in which inefficiency would be lowest. That is, we select the best equilibrium for the DM given parameters (π, κ), and we denote this equilibrium by $BPBE$. We therefore disuss the best possible outcome for the DM. By making this selection, we can discuss in our results the lower bound on inefficient complexity that emerges given informational asymmetries over costs and benefits and conflict of interests between proposers and decision makers.

2.3 Policies under Only One Tension

We start with two benchmarks to highlight the reasons why inefficient complex reforms may emerge. First, consider the case where there is no conflict of interest between proposer and decision maker.

Proposition 1 (No Conflict of Interest) *When $\alpha = 1$, in the $BPBE$, the DM adopts the reform with probability one and the aligned proposer's reform choice is $r(\theta^S, L) = r(\theta^S, H) = y^S$, and $r(\theta^C, L) = y^C$, $r(\theta^C, H) = \emptyset$.*

An aligned proposer drafts the reform that is suitable to the state of the world, and only offers the complex policy if, additionally, its social cost is low. There is therefore no inefficient complexity.

Once the proposer may be the pandering type ($\alpha < 1$), she benefits from getting any reform passed. The pandering proposer can harness her informational advantage over the social costs of complexity in order to convince the DM to adopt a reform even when the reform is inefficiently complex. The next result shows that in order to do this, the proposer needs the two sources of informational asymmetry in our model. With no informational advantage over costs, inefficient complexity does not emerge.

Proposition 2 (Observable Costs) *When $\alpha < 1$ and the social costs of a complex proposal are seen by the DM, in the $BPBE$:*

1. *If $\Gamma = L$, both proposer types offer y^S when $\theta = \theta^S$ and y^C when $\theta = \theta^C$; the DM adopts the reform with probability one.*

2. *If $\Gamma = H$, the pandering proposer offers y^S in both states; the aligned proposer offers y^S after θ^S and $\emptyset$ after θ^C; the DM's decision is*

$$d(y^S) = 1 \textit{ iff } \kappa \leq \frac{b(y^S, \theta^S)}{b(y^S, \theta^S) - (1-\alpha) \cdot b(y^S, \theta^C)}, \tag{3}$$

$$d(y^C) = 0, \tag{4}$$

$$d(\emptyset) = 1. \tag{5}$$

With observable costs, any complex reform is efficient: it is offered only when the state of the world calls for it, and when such a reform offers the highest payoff for the DM.

Put together, the above two benchmarks clarify the two necessary conditions for inefficient complexity in the reform process: the existence of pandering proposers, and informational asymmetries about both the costs and the benefits of complex reforms. In the next section we will show how uncertainty over costs and proposer alignment leads to two sources of inefficiency from complex reforms: a complex reform being proposed when the state is θ^S, and a complex reform being proposed when the social costs are high ($\Gamma = H$).

3 Pandering Proposers and Inefficient Complexity

With asymmetric information over both costs and benefits, and with pandering proposers in the mix, we have the conditions for complexity to emerge even when it is not socially beneficial. Notice first that the aligned proposer's equilibrium strategy matches that of Proposition 1, as she has no interest to mislead the DM into adopting an inefficient policy. The pandering proposer's reform choice will take into account the DM's beliefs and the strategy of the aligned type. Given each pair of parameters (κ, π), we solve for the $BPBE(\kappa, \pi)$. We obtain four different equilibria which are a $BPBE$ in a subset of the (κ, π) space. The following Proposition describes each of these.

Proposition 3 *In any pure strategy $BPBE$, the aligned proposer uses the strategy given in Proposition 1. There exist thresholds $\pi_1(\kappa), \pi_2, \pi_3(\kappa)$ for the BPBEs as follows:*

1. *(**Simplification**) If $\pi \geq \pi_1$, and $\Gamma = L$, proposer P offers y^S after θ^S, and y^C after θ^C, while if $\Gamma = H$, he offers y^S in both states, and the DM adopts the reform: $r(\theta, L|P) = y^C$ if and only if $\theta = \theta^C$; $\quad r(\theta, H|P) = y^S$; $\quad d(y) = 1$.*

2. *(**Matching**) If $\pi \in [\pi_2, \pi_1)$, proposer P offers y^S after θ^S, and y^C after θ^C, and the DM adopts the reform: $r(\theta, \Gamma|P) = y^C$ if and only if $\theta = \theta^C$; $\quad d(y) = 1$.*

3. *(**Complexification**) If $\pi < \pi_1$ and $\pi \in [\pi_3, \pi_2)$, proposer P offers y^C in both states if $\Gamma = L$, and he offers y^S after θ^S and y^C after θ^C if $\Gamma = H$; the DM adopts the reform: $r(\theta, L|P) = y^C$; $\quad r(\theta, H|P) = y^C$ if and only if $\theta = \theta^C$; $\quad d(y) = 1$.*

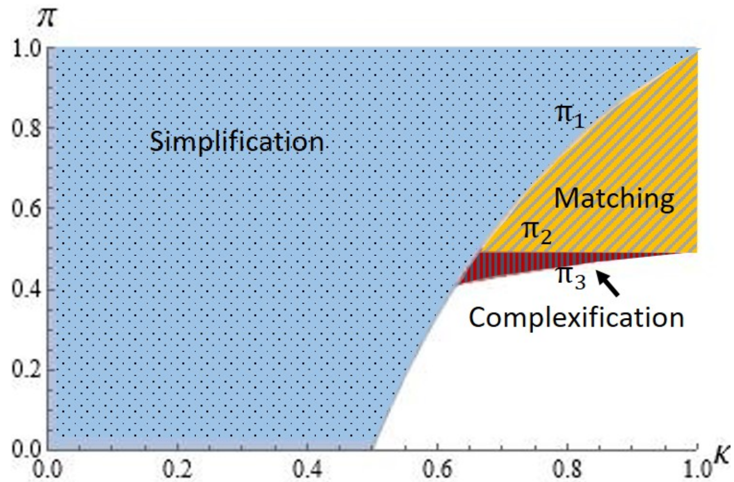


Figure 1: Illustrates the $BPBE$ in the parameter space (κ, π): Simplification in the blue (dotted) area, Matching in the yellow (diagonal stripes) area, Complexification in the red (vertical stripes) area, Rejection of reforms in the white area. In this and all subsequent figures we use the payoffs from the numerical example given in the text and $\alpha \to 0$.

4. ***(Rejection)*** *If* $\pi < \min\{\pi_1, \pi_3\}$*, proposer* P *offers* y^S *in both states, and the DM rejects the reform:* $r(\theta, \Gamma|P) = y^S; \quad d(y) = 0.$

These four different equilibria are illustrated in Figure 1 in the (κ, π) space. Notice first that the pandering proposer always offers a reform, even when the aligned proposer offers $y = \emptyset$. This happens because the pandering proposer can take advantage of the asymmetric information regarding social costs and benefits. He uses this informational advantage to get a reform passed, even if it is not beneficial for the DM. This introduces inefficiency in any equilibrium: either too much 'reformism' where a reform is adopted when it should not be, or 'gridlock' where no reforms happens because the DM believes inefficient reforms are likely.

The best equilibrium for the DM in this setting is the Simplification equilibrium, where the pandering proposer offers a complex reform only when the state is θ^C and the social costs are low, and otherwise she offers a simple reform. Nevertheless, there is inefficiency in this equilibrium because the pandering proposer will offer the simple reform in state θ^C when $\Gamma = H$. In that case, the efficient response would be to keep the status quo,

$y = \emptyset$; yet, the pandering proposer benefits from getting a reform done, even if it hurts the DM. In equilibrium, the DM understands the proposer's incentives, so she adopts a simple reform only if she believes that θ^C and $\Gamma = H$ are jointly sufficiently unlikely. The value $\pi_1(\kappa)$ captures the minimum probability that $\Gamma = L$ at which the $DM's$ expected payoff is positive given this equilibrium play, and thus the Simplification equilibrium is sustainable above this threshold.

When the Simplification equilibrium is not sustainable, the next best equilibrium is Matching, where the pandering proposer offers the reform with the highest social benefit (matches the state θ), while ignoring social costs. This leads to inefficient complex reforms, namely complex reforms adopted when social costs are high. The Matching equilibrium is sustainable as long as the DM expects inefficient complex reforms (i.e., high social costs) with a low enough probability. That is, as long as π is above the threshold π_2.

When π is so low that Matching is not sustainable, the best equilibrium for the DM is Complexification. In this equilibrium, inefficiency comes from two sources. First, complex reforms are offered when social benefits are high (θ^C) but social costs are also high ($\Gamma = H$). Second, complex reforms are offered when social costs are low ($\Gamma = L$), but social benefits are also low ($\theta = \theta^S$). In this equilibrium, the pandering proposers manipulates reform complexity in order to drive up the $DM's$ belief that adopting a complex reform would not lower her payoff. He does this by drafting complex reforms with higher probability when social costs are low. This is inefficient for the DM, because complex reforms are drafted even though simple reforms would yield higher social benefits. The threshold $\pi_3(\kappa)$ denotes the minimum probability π at which this equilibrium is sustainable. This threshold is increasing in κ: the probability of a negative payoff is higher when θ^C is more likely, because it is in that state that a complex reform may carry high social costs in equilibrium.

Finally, when the Complexification equilibrium is not sustainable, the only equilibrium that can be sustained is the one where no reform is adopted. This happens when the DM

expects social costs of complex reforms to be high ($\Gamma = H$), but she also expects the state of the world to call for complexity ($\theta = \theta^C$). She therefore finds herself unable to obtain the social benefit of a reform without paying high social costs. This calculus leads to gridlock, where reforms are not possible and the status quo is kept.

Complexity under Uncertain Social Costs. To sum up the result of Proposition 3, when the cost of complexity is likely to be low (π is high and the equilibrium is Simplification), complex reforms are offered only when their social cost is low. On the other hand, when there is high uncertainty about social costs (π is intermediate and the equilibrium is Matching or Complexification), there is higher likelihood of complex reforms. Moreover, under Complexification, the likelihood of inefficient complexity increases, due to mismatching the state of the world and due to high social costs. This dual effect is summarized in the following Proposition.

Proposition 4 *Uncertainty over the social costs of complex reforms has the following implications for the adoption and efficiency of complex reforms:*

1. *If $\pi \geq \pi_1$, only efficient complex reforms are proposed and adopted: only in state θ^C and when the cost is low, $\Gamma = L$;*

2. *If $\pi_3 \leq \pi < \pi_1$, inefficient complex reforms are offered and adopted: in state θ^C when the cost is H and, if $\pi_3 \leq \pi < \min\{\pi_1, \pi_2\}$ also in state θ^S where simple reforms would bring higher benefits at the same cost;*

3. *If $\pi < \min\{\pi_1, \pi_3\}$, efficient complex reforms are not offered: y^S or $\emptyset$ are offered and no reform is adopted.*

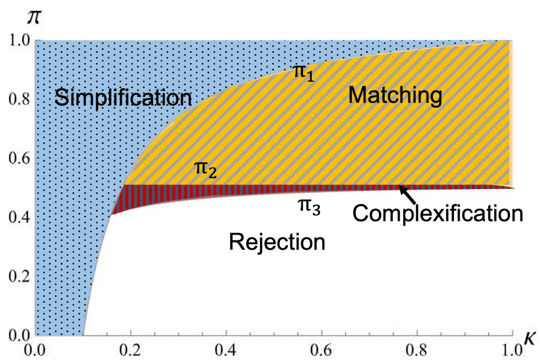
When social costs are expected to be low, any reform is adopted, and there is no incentive for the proposer to offer an inefficient complex reform. When expected costs of complexity are high, complex reforms are rejected, so even efficient ones are not offered. When the DM faces high uncertainty over the cost of reforms (intermediate π), she is willing to adopt a complex reform if she believes it is sufficiently likely to come with low social costs ($\Gamma = L$). This gives the proposer the incentive to pander by offering the complex reform in state θ^S, when it is inefficient. It also gives the proposer the incentive to offer the complex reform when costs are high, amplifying the inefficiency.

4 Complexity and the Information Environment

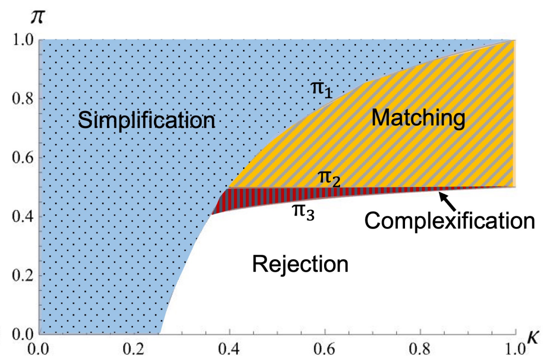
The results so far highlight the importance of informational asymmetries, along with conflict of interests between proposers and decision makers, for generating inefficient complexity. A natural question is whether reducing the informational asymmetry will also reduce inefficient complexity. To examine this question, we consider the possibility that the decision maker could independently obtain some information about the social benefit of a proposed reform. In particular, consider the case in which the DM observes a signal $\rho \in \{s, c\}$ about θ. The signal has precision $1 - z$, where $z \in \left[z^{\min}, \frac{1}{2}\right]$, and $z^{\min} > 0, z^{\min} \to 0$. The value z is a measure of the size of the $DM's$ information disadvantage about the social benefit of complexity.[8] It measures how complicated is the legislative or regulatory environment in which the reform is proposed. The higher the z, the more difficult it is for the DM to understand the state of the world, and therefore which reform type is best suited for the current conditions.

Faced with any reform proposal, the $DM's$ uses her signal to update her belief about the state of the world and about the suitability of the reform. The problem is otherwise similar to the one analyzed above, and it leads to a similar set of $BPBEs$ as in Proposition 3:

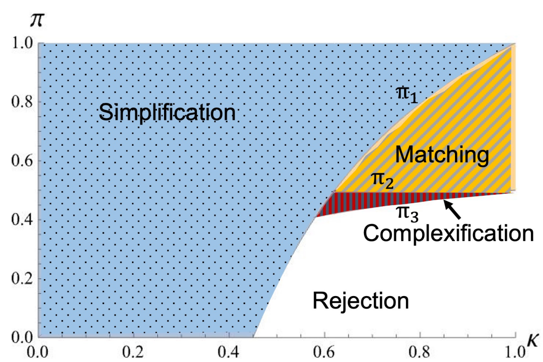
[8] We assume strict inequality because at $z = 0$ there is no imperfect information about θ.



(a) Low noise: $z = 0.1$



(b) Medium noise: $z = 0.25$



(c) High noise: $z = 0.45$

Figure 2: Illustrates the expansion or contraction of the $BPBE$ regions in the parameter space (κ, π) as the DM becomes more informationally disadvantaged. The three different values of z, from low to high, are as noted under each panel.

Proposition 5 (Extended Proposition 3) *In any pure strategy $BPBE$, the aligned proposer uses the strategy given in Proposition 1. There exist thresholds $\pi_1(\kappa, z), \pi_2, \pi_3(\kappa, z)$ and $\bar{\kappa}(z)$ such that the $BPBE$s is Simplification for $\pi \geq \pi_1$, it is Matching for $\pi \in [\pi_2, \pi_1)$, Complexification for $\pi < \pi_1$ and $\pi \in [\pi_3, \pi_2)$, and Rejection for $\pi < \min\{\pi_1, \pi_3\}$.*

Proposition 5 extends Proposition 3 to the case where the DM can extract some information about the state of the world. The thresholds $\pi_1 - \pi_3$ from Proposition 3 are the thresholds obtained in Proposition 5 with $z = 0.5$, that is, when the signal is uninformative. The resulting equilibrium regions for different values of z are illustrated in Figure 2.

Lowering the $DM's$ information disadvantage has two main effects. First, in the equilibria where reforms are adopted, the bounds π_1 and π_3 increase as z decreases. This contracts the regions of the parameter space where the $BPBE$ is either Simplification or Complexification. As the DM has better information about the state of the world, the pandering proposer has less room to manipulate the reform away from its matching state of the world. This means that there is less inefficiency in terms of complex reforms being offered when the state is θ^S or simple reforms being offered when the state is θ^C. The price paid for this is, however, more inefficiency in terms of complex reforms offered when the social costs are high (when $\Gamma = H$) – as the region of the Matching equilibrium expands.

The second effect of $DM's$ additional information extraction is that it expands the region of the parameter space where reforms are rejected. Better information for the DM reduces the ability for the pandering proposer to manipulate her beliefs, and it makes reform adoption less likely when social costs are expected to be high.

The effect of higher informational asymmetry about θ depends therefore on whether Γ is expected to be high (in which case the Matching equilibrium is replaced by Simplification) or if Γ is expected to be low (in which case the Rejection equilibrium is replaced by Complexification). This is summarized in the following Corollary:

Corollary 1 *When the decision maker has a larger information disadvantage relative to the proposer (higher z), the likelihood of inefficient complex reforms decreases when social costs are expected to be low ($\pi \geq \pi_2$). It increases when social costs are expected to be high and the state of the world is likely to require complexity, $\pi_3(\kappa, 1/2) < \pi < \min\{\pi_2, \pi_1(\kappa, 1/2)\}$.*

5 Centralization of Policymaking

Our model can also be viewed through the lens of a checks and balances system: the proposer cannot have his policy implemented unless it is approved by a veto player, DM. A reform

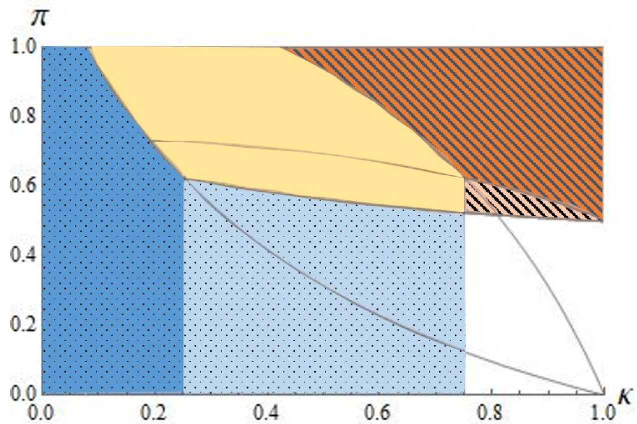


Figure 3: Illustrates the single decision maker's policy choice given $z = 0.25$. In the dark blue (dotted) region, y^S is chosen regardless of signal, in the light blue (dotted) region, y^S is chosen after $\rho = s$ and the status quo is kept after $\rho = c$. In the dark orange (striped) region, y^C is chosen regardless of signal, in the light orange (striped) region, y^C is chosen after $\rho = c$ and the status quo is kept after $\rho = s$. In the yellow (solid) region, y^S is chosen after $\rho = s$ and y^C is chosen after $\rho = c$. In the white region, the status quo is kept regardless of signal.

process that does not involve delegated rule making would naturally remove the pandering incentive. In this section, we explore whether this institutional change would be sufficient to improve outcomes.

Consider the alternative of a singular proposer-decider who chooses a reform with the same uncertainty about the state of the world and the social costs as the DM in the main model. She chooses the policy that maximizes her expected utility (y^S, y^C, or the status quo). As in our main model, the proposer-decider has a prior π that the complex reform will have low cost. To maximize her expected payoff, the decision maker picks a simple reform y^S if θ^S is sufficiently likely, i.e., if κ is low or $\rho = s$, and a complex reform y^C if θ^C and $\Gamma = L$ are sufficiently likely, i.e., if κ is high, $\rho = c$ and π is sufficiently high. Otherwise, if she expects θ^C and $\Gamma = H$, she will choose to keep the status quo. The decision maker's optimal choice at each (κ, π) is illustrated in Figure 3.

Once pandering is eliminated, the inefficiencies stemming from the strategic drafting of proposals disappear. However, the DM also loses a source of additional information, as the reform choice no longer offers any indication about the state of the world or the cost feasibility of the considerable complex rule or law. As such, the equilibrium with *only efficient* complex reforms is no longer possible.

Proposition 6 *Without delegated policymaking with an expert proposer, there cannot be an equilibrium with only efficient complex reforms. Either there are no complex reforms or a complex reform is inefficient with positive probability (y^C is adopted when $\theta = \theta^S$ or $\Gamma = H$).*

Delegated policymaking, like in systems with checks and balances, helps decrease the frequency of type I errors, outside the Complexification region, where the DM approves y^C less often. Yet, it increases the frequency of type I errors inside the Complexification region, where the decision maker approves y^C when it follows state θ^S or costs $\Gamma = H$. This insight complements that of Gratton and Morelli (2022), where checks and balances reduce the frequency with which bad reforms are approved (type I errors), but they also increase the frequency with which good reforms are rejected (type II errors).

This institutional comparison adds another angle to the debate on whether shifting the authority over approving the details of reforms from legislators to regulators will result in more simplification (as argued by Teles, 2013) or whether it would increase instability (as argued by Besley and Mueller, 2018), and by extension complexity, as the environment becomes more uncertain. Our results bring a note of caution to both these theses. As shown above, complexity comparisons depend on the fundamentals.

6 Discussion

Information Asymmetries and Conflict of Interests in Policymaking. The focus of our model has been on the implications for policy complexity of two key tensions in policymaking: asymmetric information about the social costs and benefits of a new policy, and conflict of interests between policy drafters and political decision makers. As discussed in the introduction, this focus brings the advantage of zooming in to two commonly studied tensions in legislative and bureaucratic policymaking. The cost, of course, is that the model necessarily abstracts away from institutional details that encourage complexity, and other aspects like electoral concerns. This is done as a necessary first step in dissecting the various channels for increased complexity.

We consider a common dynamic between policy proposers and political principals. A better-informed reform drafter offers up the reform, which must be adopted by a less-informed political decision maker. In the context of rule-making in the United States, both at the state and federal levels, the proposer is oftentimes a bureaucrat, who has expertise on the topic, that is, better information on the relevant state of the world θ or relevant cost state Γ (Bendor and Meirowitz, 2004). For instance, Cates (1983), as quoted in Ting (2009), provides the following anecdote: faced with a proposal to reform Social Security in 1950, Senator Eugene Millikin (R,CO) complained that "[t]he cold fact of the matter is that the basic information is alone in possession of the Social Security Agency. There is no private actuary...that can give you the complete picture...I know what I am talking about because I tried to get that."

The bureaucrat is subject to direct oversight from the executive through the Office of Information and Regulatory Affairs (OIRA). Any proposed rule must pass the OIRA review. As explained by De Mesquita and Stephenson (2007): "Though OIRA cannot formally veto a regulatory proposal, in practice the review process gives OIRA the ability to delay indefinitely regulations it finds unsatisfactory." We can therefore map OIRA to the decision maker in our model.

Finally, there is scope for conflict of interests, where some bureaucrats may not seek to maximize the social good (as discussed extensively in Brehm and Gates, 1999; Carpenter, 2020). A bureaucrat who is motivated by career concerns may find implementing the reform valuable, but is not directly impacted by the outcome of that reform, as shown empirically by Shepherd and You (2020) in the U.S. context.

Considered in an applied context, our model offers new implications that have not yet been considered empirically. Specifically, it delivers implications for the relationship between the information advantage of policy drafters and the complexity of regulation. As policy impact becomes harder for non-experts to understand, political principals become more informationally disadvantaged compared to expert drafters. Whether higher reliance on technocratic policymaking leads to good outcomes depends crucially on the expected (perceived) costs of new policies. For instance, applied to the bureaucratic context, an agency with high implementation capacity could be expected to deliver low cost policy implementation. A bureaucratic agency over which there are doubts regarding implementation capacity (intermediate π) will strategically become biased towards choosing complex and inefficient reforms. Finally, as visible in Figure 2, a bureaucratic agency viewed as lacking implementation capacity (low π) is unlikely to get its proposals adopted. Our model shows how politicians' views (their expectations) about costs (for instance due to bureaucratic implementation) can induce inefficient policies even when the bureaucracy has in fact high implementation capacity. This effect is magnified for policy issues where the political principal is less informed about the 'right' policy course, as summarized in the following remark.

Remark 1 *As the incidence of proposed policies is more difficult to evaluate, more polarized outcomes are likely to emerge out of the reform process: increased efficiency and less complexity when implementation costs are expected to be high, and increased inefficiency and more complexity when implementation costs are expected to be intermediate. Gridlock is common when implementation costs are expected to be high.*

In legislative settings, like in the parliamentary context of many European countries, the proposer is usually a member of the legislature. The decision maker is the relevant majority leader in the legislature or the party leader, who controls the vote over its adoption. The proposer politician may have the sole interest of getting a bill passed if he is strongly office-motivated. In that case, showing legislative activity signals competence to voters or furthers his career prospects (Canes-Wrone, Herron and Shotts, 2001; Gratton et al., 2021). The majority party leadership instead may be evaluated electorally based on the reform's outcome. Below we highlight this relationship between proposers and decision makers in two legislative empirical contexts, and discuss how the findings regarding complexity and efficiency can be reconciled in the context of our model.

Link to Existing Studies. Recent empirical findings have highlighted the relationship between legislative complexity, its efficiency and economic growth. Yet, studies from different institutional contexts and time periods show potentially opposing effects of increasing complexity on the quality of outcomes. On the one hand, higher legislative complexity has been shown to accompany lower quality legislation and more inefficiency. Gratton et al. (2021) examine the production of legislation in Italy during the First Republic (1948-1992) and the Second Republic (1992-2017). They show that higher political instability in the Second Republic is associated with lower quality and more complex legislation compared to the First Republic. They rationalize these findings by noting that higher political instability shortens the expected political horizon of legislators. This means that voters are called to evaluate the performance of legislators before their legislative proposals are fully implemented. This in turn incentivizes incompetent politicians to propose and get legislation passed, in order to appear hard-working and competent to voters. Therefore, as in our model, proposers derive a benefit if their reform is adopted, regardless of its contents. The increase in the production of laws is then shown to have increased the complexity of the legislation and decreased efficiency. This Kafkaesque loop determines endogenously a reduction of the expected quality of reforms.

On the other hand, higher legislative complexity in terms of reforms containing more contingent clauses and detail has been shown to accompany higher efficiency and economic growth in the context of the U.S. states over the period 1965-2012 (Ash, Morelli and Vannoni, 2020). The estimated effect is larger when economic uncertainty is higher, that is, the state of the world is more uncertain. They rationalize these findings by noting that state-level legislation in the U.S. is competitive, which leads to better information about which reforms have been implemented in other states and how that implementation unfolded. In our model, this would map to a lower implementation costs, thus a higher π.

At first glance, the above results present a puzzle as to when reforms that increase legislative complexity are desirable. Our model sheds light on this puzzle. Consider a policy area for which both in Italy and the U.S. in the late 80's there is the same relatively high likelihood κ that complex reforms are needed. Let both countries have also the same initial value π, at which we are in the Simplification $BPBE$ described in Proposition 3, close to the π_1 curve. A political instability shock like the one documented for the Italian case in the early 90's generated a flood of demands on the bureaucracy, reducing its expected capacity to implement policies and increasing expected costs (lower π in our model), bringing the polity in the bad Complexification region. It is exactly for intermediate values of π that we have inefficient policy complexifications. In the case of U.S. states, high inter-state competition in the 20th century generated contagion and learning that lowered implementation costs, leading to higher π. This brought π higher up in the Simplification region, represented graphically in Figure 1. This determined an increase in legislative complexity, as policy y^C is more likely when costs are more likely to be low (π higher), as well as an increase in efficiency. We summarize this insight in the following remark.

Remark 2 *Positive shocks that lower expected implementation costs produce efficient leg-*

islative or regulatory complexity. Negative shocks that decrease the expected implementation costs produce inefficient legislative or regulatory complexity.

7 Concluding Remarks

Higher complexity makes laws and regulations harder to understand and costlier to implement. These factors are likely to contribute to voter disengagement from the political process, costlier implementation of public policies, and a more negative perception of public institutions. Therefore, understanding the drivers and consequences of complexity has become a first-order concern. In this paper, we proposed a first model to incorporate policy complexity in policymaking setting. The formal model allows us to examine when and how complex policies are used strategically by reform proposers, and what this implies for the social benefit of complex policies. We showed that inefficient complex reforms are most likely when the expected social costs of reforms are intermediate. Such moderate expectations allow for complex rules to be adopted, even if they may contain bad or unnecessary provisions. The driving force behind inefficient complexity is the pandering incentive of better informed proposers facing a political principal with different preferences.

As mentioned in the introduction, our model restricts attention to only one channel of complexity. It does so in order to understand the effects of two common sources of inefficiency in political economy models. Our approach to modeling policy complexity choices can be extended to examining other institutional, electoral, and rent-seeking sources of complexity beyond those addressed in this paper.

In future research, the model may be extended to consider additional instruments that proposers may use. Inefficient complexity emerges when uncertainty about social costs is highest, and that is when proposers may want to reduce proposal complexity if they could additionally provide hard information about costs. Relatedly, a proposer may want to link multiple complementary reforms. Complementarities would reduce the incentive of decision makers to adopt any one complex reform, given the uncertainty around whether all connected reforms will also be adopted. Finally, future research on regime dynamics and constitutional design will benefit from the insights of this paper.

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The Common Determinants of Legislative and Regulatory Complexity

Online Appendix

September 2022

A Proofs

A.1 Proof to Proposition 1

Follows from the expression for $u(y, \theta, \Gamma)$ and Assumption 1.

A.2 Proof to Proposition 2

If the cost is $\Gamma = L$, the action profile that maximizes $DM's$ payoff is $r(\theta^S, L) = y^S,\ r(\theta^C, L) = y^C$, and $d(y) = 1$. Given observability of Γ, the matching behavior when $\Gamma = L$ is sustainable as a PBE. If $\Gamma = H$, adopting a complex reform is a weakly dominated strategy for the DM. The action profile that maximizes $DM's$ payoff is one where the proposer only offers y^S.

The DM expects to gain from adopting a policy y^S if

$$(1-\kappa)b(y^S, \theta^S) - (1-\alpha)\kappa b(y^S, \theta^C) \geq 0.$$

This implies that the strategy that maximizes $DM's$ payoff is

$$\begin{aligned}
&d(y^S) = 1 \iff \kappa \leq \frac{b(y^S, \theta^S)}{b(y^S, \theta^S) - (1-\alpha)b(y^S, \theta^C)} \\
&d(y^C) = 0 \\
&d(\emptyset) = 1.
\end{aligned}$$

Thus, offering only y^S is a weakly dominant strategy for proposer P and the above is a PBE.

A.3 Proof of Propositions 3 and 5

Note: the proof for Proposition 3 obtains by setting $z = 0.5$ below, whereas the proof for Proposition 5 obtains for $z \in [z^{\min}, 0, 5)$.

Given any decision strategy by the DM, and that Proposer A has the same utility as the DM, it follows that Proposer A's strategy is as in Proposition 1.

The decision maker's strategy. Given a proposal y, signal ρ and noise z, the DM adopts it if her expected utility gain is positive: $\mathbb{E}\left[u\left(y,\theta,\Gamma\right)|z,\rho,PR\right] \geq 0$.

We list below all the possible pure strategy equilibria where there is a positive probability of adoption by the DM:

1. (Simplification) We begin with the equilibrium where $r(\theta^S, H|P) = r(\theta^C, H|P) = y^S$, $r(\theta^S, L|P) = y^S$, $r(\theta^C, L|P) = y^C$, and $d(y, \rho) = 1$ for all y and ρ.

Since y^C signals $\Gamma = L$ and state θ^C, it is optimal for the DM to adopt the proposal. Upon observing y^S, there are 3 possibilities: (θ^C, H), (θ^S, L), and (θ^S, H). For signal $\rho = s$, the DM adopts if

$$\pi \geq \pi^S \equiv \frac{-(1-\alpha)\kappa \cdot z \cdot b(y^S,\theta^C) - (1-z)(1-\kappa)b(y^S,\theta^S)}{(1-\alpha)z \cdot \kappa \cdot b(y^S,\theta^C)}.$$

For signal c, the DM adopts if

$$\pi \geq \pi_1^C = \frac{-(1-\alpha)(1-z)\kappa \cdot b(y^S,\theta^C) - z(1-\kappa) \cdot b(y^S,\theta^S)}{-(1-\alpha)(1-z)\kappa \cdot b(y^S,\theta^C)}.$$

Finally, $z \leq 1/2$ implies $\pi_1^C \geq \pi_1^S$ and thus th equilibrium is sustainable if $\pi \geq \pi_1 \equiv \pi_1^C$.

The DM's expected payoff given this equilibrium play is

$$U^{(1)} = (1-\kappa)b(y^S, \theta^S) + \kappa\pi b(y^C, \theta^C) + \kappa(1-\pi)(1-\alpha)b(y^S, \theta^C). \tag{6}$$

2. (Matching) $r(\theta^S, H|P) = r(\theta^S, L|P) = y^S$ **, and** $r(\theta^C, H|P) = r(\theta^C, L|P) = y^C$, $d(\rho, z) = 1$.

After observing y^S, $\Pr\left(\theta = \theta^S | y^S\right) = 1$, and $\mathbb{E}\left[u\left(y^S, \theta^S, \Gamma\right)|z, \rho\right] > 0$, so the DM adopts with probability one. After observing y^C, the DM adopts if

$$\pi \geq (1-\alpha)\frac{-b(y^C, \theta^C) + c(y^C, H)}{\alpha b(y^C, \theta^C) + (1-\alpha)c(y^C, H)} \equiv \pi_2.$$

Clearly, $\frac{\partial \pi_2}{\partial z} = 0$. The DM's expected payoff given this equilibrium play is

$$U^{(2)} = (1-\kappa)b(y^S, \theta^S) + \kappa(1-(1-\pi)\alpha)b(y^C, \theta^C) - \kappa(1-\pi)(1-\alpha)c\left(y^C, H\right). \tag{7}$$

3. (Complexification) $r(\theta^S, H)|P = y^S$**,** $r(\theta^C, H|P) = y^C$ **and** $r(\theta^S, L|P) = r(\theta^C, L|P) = y^C$, $d(\rho, z) = 1$.

After observing y^S, the $DM's$ belief about θ given Bayes' Rule is $\Pr\left(\theta = \theta^S | y^S\right) = 1$. Then, $\mathbb{E}\left[u\left(y^S, \theta^S, \Gamma\right)|z, \rho\right] > 0$ and with probability 1. After observing y^C, the DM adopts in the following cases:

- after $\rho = s$, if

$$\pi \geq \pi_3^S \equiv \frac{-(1-\alpha)\kappa z\left[b(y^C, \theta^C) - c\left(y^C, H\right)\right]}{\kappa z[\alpha b(y^C, \theta^C) + (1-\alpha)c(y^C, H)] + (1-\alpha)(1-\kappa)(1-z)b(y^C, \theta^S)};$$

- after $\rho = c$, if

$$\pi \geq \pi_3^C \equiv \frac{-(1-\alpha)\kappa(1-z)\left[b(y^C,\theta^C) - c\left(y^C,H\right)\right]}{\kappa(1-z)[\alpha b(y^C,\theta^C) + (1-\alpha)c(y^C,H)] + (1-\alpha)(1-\kappa)zb(y^C,\theta^S)},$$

and

$$\frac{\partial \pi_3^C}{\partial z} = \frac{(1-\alpha)^2\kappa(1-\kappa)\left[b(y^C,\theta^C) - c\left(y^C,H\right)\right]b(y^C,\theta^S)}{[\kappa(1-z)[\alpha b(y^C,\theta^C) + (1-\alpha)c(y^C,H)] + (1-\alpha)(1-\kappa)zb(y^C,\theta^S)]^2} < 0.$$

Since $\frac{1-z}{z} \geq \frac{z}{1-z}$, we have $\pi_3^C \geq \pi_3^S$. Thus, this equilibrium exists if $\pi \geq \pi_3^C$. The DM's expected payoff given this equilibrium play is

$$U^{(3)} = (1-\alpha)(1-\kappa)\pi b(y^C,\theta^S) + \kappa(1-(1-\pi)\alpha)b(y^C,\theta^C) + \\ ((1-\alpha)(1-\pi)+\alpha)(1-\kappa)b(y^S,\theta^S) - (1-\alpha)\kappa(1-\pi)c\left(y^C,H\right). \quad (8)$$

4. Equilibrium with $r(\theta^S,H|P) = r(\theta^C,H|P) = y^C$, $r(\theta^S,L|P) = y^S$, $r(\theta^C,L|P) = y^C$, $d\left(\rho,z\right) = 1$.

After y^S, $\Pr\left(\Gamma = L, \theta = \theta^S | y^S\right) = 1$, and so $u\left(y^S,\theta^S,L\right) > 0$. The DM thus adopts y^S with probability 1. After y^C, the DM adopts if

- after $\rho = c$:

$$\pi \geq (1-\alpha)\cdot \\ \frac{-(1-z)\kappa\left[b(y^C,\theta^C) - c(y^C,H)\right] - z(1-\kappa)\left[b(y^C,\theta^S) - c(y^C,H)\right]}{\alpha(1-z)\kappa b(y^C,\theta^C) + (1-\alpha)[(1-z)\kappa c(y^C,H) - z(1-\kappa)\left[b(y^C,\theta^S) - c(y^C,H)\right]]}.$$

- after $\rho = s:$

$$\pi \geq (1-\alpha)\frac{-z\kappa\left[b(y^C,\theta^C)-c(y^C,H)\right]-(1-z)(1-\kappa)\left[b(y^C,\theta^S)-c(y^C,H)\right]}{\alpha z\kappa b(y^C,\theta^C)+(1-\alpha)[z\kappa c(y^C,H)-(1-z)(1-\kappa)\left[b(y^C,\theta^S)-c(y^C,H)\right]]}.$$

Thus, the DM adopts if

$$\pi \geq \pi_4 \equiv (1-\alpha)\frac{-z\kappa\left[b(y^C,\theta^C)-c(y^C,H)\right]-(1-z)(1-\kappa)\left[b(y^C,\theta^S)-c(y^C,H)\right]}{\alpha z\kappa b(y^C,\theta^C)+(1-\alpha)[z\kappa c(y^C,H)-(1-z)(1-\kappa)\left[b(y^C,\theta^S)-c(y^C,H)\right]]}.$$

The DM's expected payoff is

$$\begin{aligned} U^{(4)} = \kappa(\alpha\pi+1-\alpha)b(y^C,\theta^C)+(1-\kappa)(\alpha+(1-\alpha)\pi)b(y^S,\theta^S)+ \\ (1-\kappa)(1-\alpha)(1-\pi)b(y^C,\theta^S)-\kappa(1-\alpha)(1-\pi)c(y^C,H). \quad (9) \end{aligned}$$

5. Equilibrium with $r(\theta^S,L|P)=r(\theta^C,L|P)=y^C$ **and** $r(\theta^S,H|P)=r(\theta^C,H|P)=y^S$, $d(\rho,z)=1$.

After y^C, $\Pr\left(\Gamma=L|y^C\right)=1$, and so $\mathbb{E}\left[u\left(y^C,\theta,L\right)|z,\rho\right]>0$. Thus, the DM adopts y^C with probability 1. After y^S, the DM adopts if

- after $\rho = c:$

$$\pi \geq \frac{-(1-\alpha)(1-z)\kappa\cdot b(y^S,\theta^C)-z(1-\kappa)\cdot b(y^S,\theta^S)}{-(1-\alpha)(1-z)\kappa\cdot b(y^S,\theta^C)-(1-\alpha)z(1-\kappa)b(y^S,\theta^S)} \equiv \pi_5,$$

- after $\rho = s:$

$$\pi \geq \frac{-(1-\alpha)z\kappa\cdot b(y^S,\theta^C)-(1-z)(1-\kappa)\cdot b(y^S,\theta^S)}{-(1-\alpha)z\kappa\cdot b(y^S,\theta^C)-(1-\alpha)(1-z)(1-\kappa)b(y^S,\theta^S)}$$

This equilibrium is sustainable if $\pi \geq \pi_5$. The expected utility for the DM is

$$U^{(5)} = \kappa\pi b(y^C, \theta^C) + (1-\kappa)((1-\alpha)(1-\pi)+\alpha)b(y^S, \theta^S) + \\ + \kappa((1-\alpha)(1-\pi)b(y^S, \theta^C) + (1-\kappa)(1-\alpha)\pi b(y^C, \theta^S). \quad (10)$$

6. (Pooling on y^S) $r(\theta^S, H|P) = r(\theta^C, H|P) = r(\theta^S, L|P) = r(\theta^C, L|P) = y^S$, $d\left(\rho, z|y^S\right) = 1, d\left(\rho, z|y^C\right) = 1$.

If policy y^C, it is adopted with probability one, as it must come from the aligned proposer. For y^S, the DM adopts with probability one if

$$\kappa \leq \kappa^{pool} \equiv \frac{z \cdot b(y^s, \theta^S)}{(1-\alpha)(1-z)b(y^S, \theta^C) + zb(y^S, \theta^S)}. \quad (11)$$

Notice also that

$$\frac{\partial \kappa^{pool}}{\partial z} > 0.$$

The DM's expected payoff is

$$U^{(6)} = (1-\kappa)b(y^S, \theta^S) + \kappa(1-\alpha)b(y^S, \theta^C). \quad (12)$$

7. Pooling on y^C: $r(\theta^S, H|P) = r(\theta^C, H|P) = r(\theta^S, L|P) = r(\theta^C, L|P) = y^C$, $d\left(\rho, z|y^S\right) = 1$, and $d\left(\rho, z|y^C\right) = 1$.

If y^S is offered, it is accepted with probability one, as it must come from the aligned proposer. If y^C is offered, the DM's adoption decision reduces to:

- After $\rho = c$:

$$\pi \geq \frac{\begin{array}{c}(1-\alpha)z(1-\kappa)b(y^c,\theta^S)+(1-\alpha)z(1-\kappa)c(y^C,H)\\ -(1-\alpha)(1-z)k\left[b(y^C,\theta^C)-c(y^C,H)\right]\end{array}}{\kappa(1-z)[\alpha b(y^C,\theta^C)+(1-\alpha)c(y^C,H)]+(1-\alpha)(1-\kappa)zc(y^C,H)}.$$

- After $\rho = s$:

$$\pi \geq \pi_7 \equiv \frac{\begin{array}{c}(1-\alpha)(1-z)(1-\kappa)b(y^c,\theta^S)+(1-\alpha)(1-z)(1-\kappa)c(y^C,H)\\ -(1-\alpha)zk\left[b(y^C,\theta^C)-c(y^C,H)\right]\end{array}}{\kappa z[\alpha b(y^C,\theta^C)+(1-\alpha)c(y^C,H)]+(1-\alpha)(1-\kappa)(1-z)c(y^C,H)}.$$

If $\pi \geq \pi_7$, then the $DM's$ optimal decision is to adopt y^C regardless of signal.

The DM's expected payoff is

$$U^{(7)} = \kappa(1-\alpha+\alpha\pi)b(y^C,\theta^C)+(1-\kappa)(1-\alpha)b(y^C,\theta^S)-(1-\alpha)(1-\pi)c(y^C,H). \quad (13)$$

8. Equilibrium with $r(\theta^S, L|P) = r(\theta^S, H|P) = y^C$ **and** $r(\theta^C, L|P) = r(\theta^C, H|P) = y^S$ This equilibrium is sustanable if α is sufficiently high, given that the aligned proposer is proposing the policy that matches the state. However, notice also that this equilibrium is clearly dominated by the equilibrium where the pandering proposer always matches the state.

9. Equilibrium with $r(\theta^S, L|P) = r(\theta^C, L|P) = y^S$ **and** $r(\theta^C, H|P) = y^C, r(\theta^S, H|P) = y^S$ This equilibrium is sustanable if α is sufficiently high, given that the aligned proposer is proposing y^C after $\theta = \theta^C$ and $\Gamma = L$. However, notice also that this equilibrium is clearly dominated by the Complexification equilibrium where the pandering proposer always gives the DM higher expected utility given y^C.

Ranking of Equilibria for the DM. We make the following observations:

Claim 1. $U^{(1)} > U^{(2)}$.

Proof: $U^{(1)} - U^{(2)} = c(y^C, H) - (1-\alpha)(b(y^C, \theta^C) - b(y^S, \theta^C))$, and from Assumption 1, $c\left(y^C, H\right) \geq b(y^C, \theta^C) - b(y^S, \theta^C)$, which implies $U^{(1)} - U^{(2)} \geq 0$.

Claim 2. $U^{(2)} > U^{(3)}$.

Proof: $U^{(2)} - U^{(3)} = (1-\alpha)\pi(1-\kappa) \cdot (b(y^S, \theta^S) - b(y^C, \theta^S)) \geq 0$.

Claim 3. $U^{(2)} > U^{(4)}$ and $\pi_4 > \pi_2$.

Proof:

$$U^{(2)} - U^{(4)} = (1-\alpha)(1-\kappa)(1-\pi)(b(y^S, \theta^S) - b(y^S, \theta^S)) > 0.$$

Notice that

$$\pi_4 > (1-\alpha)\frac{-b(y^C, \theta^C) + c(y^C, H)}{\alpha b(y^C, \theta^C) + (1-\alpha)c(y^C, H)} = \pi_2,$$

and therefore equilibrium (4) exists whenever equilibrium (2) also exists.

Claim 4. $U^{(1)} > U^{(5)}$ and $\pi_5 > \pi_1$.

Proof: First,

$$U^{(1)} - U^{(5)} = (1-\alpha)\pi(1-\kappa)(b(y^s, \theta^S) - b(y^C, \theta^S)) > 0.$$

Second, notice that

$$\pi_5 = \pi_1 \cdot \frac{-(1-\alpha)(1-z)\kappa \cdot b(y^S, \theta^C)}{-(1-\alpha)(1-z)\kappa \cdot b(y^S, \theta^C) - (1-\alpha)z(1-\kappa)b(y^S, \theta^S)} > \pi_1.$$

Thus, equilibrium (5) exists whenever equilibrium (1) also exists.

Claim 5. $U^{(3)} > U^{(7)}$ and $\pi_7 > \pi_3$.

Proof: First,

$$U^{(3)} - U^{(7)} = (1-\alpha)(1-\pi)(1-\kappa)(b(y^s, \theta^S) - b(y^C, \theta^S)) +$$
$$\alpha b(y^S, \theta^S) + (1-\alpha)(1-\pi)(1-\kappa)c(y^C, H) > 0.$$

Second, $\pi_7 > \pi_3$ by observing that π_7 is obtained by adding $(1-\alpha)z(1-\kappa)[c(y^C, H) - b(y^S, \theta^S)] > 0$ to both the numerator and the denominator in the expression for π_3.

Claim 6. $U^{(1)} > U^{(6)}$ and $\pi_1(\kappa^{pool}, z) = 0$.

Proof: First,

$$U^{(1)} - U^{(6)} = (1-\alpha)\kappa[b(y^C, \theta^C) - (1-\alpha)b(y^S, \theta^C)] > 0.$$

Second, from the expression for π_1, it immediately verifies that $\pi_1(\kappa^{pool}, z) = 0$.

Claims 3-6 imply that equilibria (4)-(7) cannot be $BPBEs$. Then, from Claims 1 and 2 it follows that $U^{(1)}(\kappa, z) > U^{(2)}(\kappa, z) > U^{(3)}(\kappa, z)$.

In sum, the Best Perfect Bayesian equilibrium may take forms $(1), (2), (3)$, with the boundaries between these regions given by $\pi_1, \pi_2, \pi_3,$.

Note on conditional approval. Notice that we cannot have an equilibrium where the DM approves a policy conditional on the signal. Unless the acceptance probability is identical across all policies, the pandering propser would find it profitable to derivate to the proposal with the higher acceptance probability. Pooling on any one policy and conditional approval based on signal is not possible because the aligned proposer is always offering the policy that gives the DM the highest utility.

A.4 Proof of Proposition 4

The result follows from Proposition 3:

1. If $\pi > \pi_1$, then the $BPBE$ is Simplification, and so $r(\theta^S, H|P) = r(\theta^C, H|P) = y^S$, and $r(\theta^S, L|P) = y^S$, $r(\theta^C, L|P) = y^C$, $d(\rho, z) = 1$. The reform y^C is proposed in state θ^C when $\Gamma = L$.

2. If $\pi_3 < \pi < \pi_1$, the $BPBE$ is either Matching or Complexification. In either equilibrium, $r(\theta^C, H|P) = y^C$ and $d(\rho, z) = 1$.

3. If $\pi < \min\{\pi_1, \pi_3\}$, then the $BPBE$ is Rejection, and $r(\theta^S, H|P) = r(\theta^C, H|P) = r(\theta^S, L|P) = r(\theta^C, L|P) = y^S$.

A.5 Proof of Corollary 1

As π_2 is not a function of z, and $\pi_3(\kappa, z) < \pi_2$, it follows the $BPBE$ for $\pi \geq \pi_2$ can only be Simplification or Matching. For this case, consider the boundary $\pi_1(\kappa, z)$, which, by Proposition 3 is decreasing in z. Thus, there exists a $z' \in \left[z^{\min}, 1/2\right]$ such that for $\pi_1(\kappa, z) \geq \pi_2$ the $BPBE$ is Simplification when $z \geq z'$ and Matching when $z < z'$. Then, as z increases, the $BPBE$ either remains the same or it switches from Matching to Simplification. This latter case implies $\Pr(y = y^C|H)$ decreases, whereas $\Pr(y = y^C|L)$ does not change. Hence, the probability of complex reforms weakly decreases in z if $\pi \geq \pi_2$.

Next, consider $\pi_3 \leq \pi < \pi_2$. By Proposition 3, $\pi_3(\kappa, z)$ is decreasing in z, whereas π_2 is independent of z. Thus, as z increases, the Complexification region expands. Yet, $\pi_1(\kappa, z)$ also decreases in z. Hence, for $\pi \in [\pi_1(\kappa, 1/2), \pi_3(\kappa, 1/2)]$, there exists $z'' \in \left[z^{\min}, 1/2\right]$ such that the $BPBE$ is Rejection for $z < z''$ and Complexification for $z \geq z''$. Hence, for $z < z''$, $\Pr(y = y^C) = 0$, and for $z \geq z''$, $\Pr(y = y^C|\Gamma = H \text{ or } \theta = \theta^S) > 0$.

A.6 Proof of Proposition 6

After signal $\rho = s$, the decision maker gets the following expected utility:

- if she implements y^S:

$$\frac{(1-z)\cdot(1-\kappa)}{(1-z)\cdot(1-\kappa)+z\cdot\kappa}\cdot\left[\pi\cdot u\left(y^S,\theta^S,L\right)+(1-\pi)\cdot u\left(y^S,\theta^S,H\right)\right]$$
$$+\frac{z\cdot\kappa}{(1-z)\cdot(1-\kappa)+z\cdot\kappa}\cdot\left[\pi\cdot u\left(y^S,\theta^C,L\right)+(1-\pi)\cdot u\left(y^S,\theta^C,H\right)\right].$$

- if she implements y^C:

$$\frac{(1-z)\cdot(1-\kappa)}{(1-z)\cdot(1-\kappa)+z\cdot\kappa}\cdot\left[\pi\cdot u\left(y^C,\theta^S,L\right)+(1-\pi)\cdot u\left(y^C,\theta^S,H\right)\right]$$
$$+\frac{z\cdot\kappa}{(1-z)\cdot(1-\kappa)+z\cdot\kappa}\cdot\left[\pi\cdot u\left(y^C,\theta^C,L\right)+(1-\pi)\cdot u\left(y^C,\theta^C,H\right)\right].$$

After signal $\rho = c$, the decision maker gets the following expected utility:

- if she implements y^S:

$$\frac{z\cdot(1-\kappa)}{(1-z)\cdot\kappa+z\cdot(1-\kappa)}\cdot\left[\pi\cdot u\left(y^S,\theta^S,L\right)+(1-\pi)\cdot u\left(y^S,\theta^S,H\right)\right]$$
$$+\frac{(1-z)\cdot\kappa}{(1-z)\cdot\kappa+z\cdot(1-\kappa)}\cdot\left[\pi\cdot u\left(y^S,\theta^C,L\right)+(1-\pi)\cdot u\left(y^S,\theta^C,H\right)\right].$$

- if she implements y^C:

$$\frac{z\cdot(1-\kappa)}{(1-z)\cdot\kappa+z\cdot(1-\kappa)}\cdot\left[\pi\cdot u\left(y^C,\theta^S,L\right)+(1-\pi)\cdot u\left(y^C,\theta^S,H\right)\right]$$
$$+\frac{(1-z)\cdot\kappa}{(1-z)\cdot\kappa+z\cdot(1-\kappa)}\cdot\left[\pi\cdot u\left(y^C,\theta^C,L\right)+(1-\pi)\cdot u\left(y^C,\theta^C,H\right)\right].$$

Since $z \leq \frac{1}{2}$, notice that

$$\frac{(1-z)\cdot(1-\kappa)}{(1-z)\cdot(1-\kappa)+z\cdot\kappa} \geq \frac{z\cdot(1-\kappa)}{(1-z)\cdot\kappa+z\cdot(1-\kappa)}.$$

Thus, the decision maker is in one of the following six cases:

1. Implements y^S regardless of signal if the expected utility after $\rho = c$ is positive. That is, $u\left(y^S, \theta^S, L\right) \neq u\left(y^S, \theta^S, H\right)$ or $u\left(y^S, \theta^C, L\right) \neq u\left(y^S, \theta^C, H\right)$,

$$\pi \geq \pi^{sb0}(\kappa, z) \equiv \frac{-z(1-\kappa)\,u\left(y^S,\theta^S,H\right)-(1-z)\,\kappa u\left(y^S,\theta^C,H\right)}{z(1-\kappa)\left[u\left(y^S,\theta^S,L\right)-u\left(y^S,\theta^S,H\right)\right]+(1-z)\,\kappa\left[u\left(y^S,\theta^C,L\right)-u\left(y^S,\theta^C,H\right)\right]},$$

or otherwise

$$\kappa \leq \kappa^{sb0}(z) \equiv \frac{z\cdot u\left(y^S,\theta^S,H\right)}{z\cdot u\left(y^S,\theta^S,H\right)-(1-z)\cdot u\left(y^S,\theta^C,H\right)},$$

and if y^S is preferred to y^C after $\rho = c$:

$$\pi \leq \pi^{sb}(\kappa, z) \equiv \frac{z(1-\kappa)\left[u\left(y^S,\theta^S,H\right)-u\left(y^C,\theta^S,H\right)\right]+(1-z)\,\kappa\left[u\left(y^S,\theta^C,H\right)-u\left(y^C,\theta^C,H\right)\right]}{\left\{\begin{array}{c} z(1-\kappa)\left[\left[u\left(y^S,\theta^S,H\right)-u\left(y^C,\theta^S,H\right)\right]-\left[u\left(y^S,\theta^S,L\right)-u\left(y^C,\theta^S,L\right)\right]\right] \\ +(1-z)\,\kappa\left[\left[u\left(y^S,\theta^C,H\right)-u\left(y^C,\theta^C,H\right)\right]+\left[u\left(y^C,\theta^C,L\right)-u\left(y^S,\theta^C,L\right)\right]\right] \end{array}\right\}}.$$

Thus, if $u\left(y^S, \theta^S, L\right) \neq u\left(y^S, \theta^S, H\right)$ or $u\left(y^S, \theta^C, L\right) \neq u\left(y^S, \theta^C, H\right)$, then

$$\pi \in \left[\pi^{sb0}(\kappa, z), \pi^{sb}(\kappa, z)\right].$$

If $u\left(y^S,\theta^S,L\right)=u\left(y^S,\theta^S,H\right)$ and $u\left(y^S,\theta^C,L\right)=u\left(y^S,\theta^C,H\right)$, then

$$\pi \leq \pi^{sb}(\kappa,z) \text{ and } \kappa \leq \kappa^{sb0}(z).$$

2. Implements y^C regardless of signal if the expected utility after $\rho = s$ is positive:

$$\pi \geq \pi^{cb1}(\kappa,z) \equiv \frac{-\left(1-z\right)\left(1-\kappa\right)u\left(y^C,\theta^S,H\right)-z\kappa u\left(y^C,\theta^C,H\right)}{\left(1-z\right)\left(1-\kappa\right)\left[u\left(y^C,\theta^S,L\right)-u\left(y^C,\theta^S,H\right)\right]+z\kappa\left[u\left(y^C,\theta^C,L\right)-u\left(y^C,\theta^C,H\right)\right]},$$

and if y^C is preferred to y^S after $\rho = s$:

$$\pi \geq \pi^{cb}(\kappa,z) \equiv \frac{\left(1-z\right)\left(1-\kappa\right)\left[u\left(y^S,\theta^S,H\right)-u\left(y^C,\theta^S,H\right)\right]+z\kappa\left[u\left(y^S,\theta^C,H\right)-u\left(y^C,\theta^C,H\right)\right]}{\left\{\begin{array}{c}\left(1-z\right)\left(1-\kappa\right)\left[u\left(y^S,\theta^S,H\right)-u\left(y^C,\theta^S,H\right)\right]+z\cdot\kappa\left[u\left(y^S,\theta^C,H\right)-u\left(y^C,\theta^C,H\right)\right]\\-\left(1-z\right)\left(1-\kappa\right)\left[u\left(y^S,\theta^S,L\right)-u\left(y^C,\theta^S,L\right)\right]-z\cdot\kappa\left[u\left(y^S,\theta^C,L\right)-u\left(y^C,\theta^C,L\right)\right]\end{array}\right\}}.$$

Thus, she implements y^C regardless of signal if

$$\pi \geq \max\left\{\pi^{cb1}(\kappa,z),\pi^{cb}(\kappa,z)\right\}.$$

3. Implements y^S after $\rho = s$ and y^C after $\rho = c$ if

(i) the expected utility is higher from y^S than from y^C after $\rho = s$ and higher from y^C than from y^S after $\rho = c$,

$$\pi \in \left(\pi^{sb},\pi^{cb}\right);$$

(ii) the expected utility is positive from adopting the reforms according to this strategy:

$$\pi > \pi^{cb0}(\kappa, z) \equiv \frac{-z(1-\kappa)u\left(y^C,\theta^S,H\right)-(1-z)\kappa u\left(y^C,\theta^C,H\right)}{z(1-\kappa)\left[u\left(y^C,\theta^S,L\right)-u\left(y^C,\theta^S,H\right)\right]+(1-z)\kappa\left[u\left(y^C,\theta^C,L\right)-u\left(y^C,\theta^C,H\right)\right]}, \quad (14)$$

and (iii) if $u\left(y^S,\theta^S,L\right) \neq u\left(y^S,\theta^S,H\right)$ or $u\left(y^S,\theta^C,L\right) \neq u\left(y^S,\theta^C,H\right)$,

$$\pi > \pi^{sb1}(\kappa, z) \equiv \frac{-(1-z)(1-\kappa)u\left(y^S,\theta^S,H\right)-z\kappa u\left(y^S,\theta^C,H\right)}{(1-z)(1-\kappa)\left[u\left(y^S,\theta^S,L\right)-u\left(y^S,\theta^S,H\right)\right]+z\kappa\left[u\left(y^S,\theta^C,L\right)-u\left(y^S,\theta^C,H\right)\right]},$$

while otherwise

$$\kappa \leq \kappa^{sb1}(z) \equiv \frac{z\cdot u\left(y^S,\theta^C,H\right)}{(1-z)\cdot u\left(y^S,\theta^S,H\right)-z\cdot u\left(y^S,\theta^C,H\right)}.$$

To sum up: the DM implements y^S after $\rho = s$ and y^C after $\rho = c$ if

- if $u\left(y^S,\theta^S,L\right) \neq u\left(y^S,\theta^S,H\right)$ or $u\left(y^S,\theta^C,L\right) \neq u\left(y^S,\theta^C,H\right)$,

$$\max\left\{\pi^{cb0}(\kappa,z),\pi^{sb},\pi^{sb1}(\kappa,z)\right\} < \pi < \pi^{cb}.$$

- if $u\left(y^S,\theta^S,L\right) = u\left(y^S,\theta^S,H\right)$ and $u\left(y^S,\theta^C,L\right) = u\left(y^S,\theta^C,H\right)$

$$\max\left\{\pi^{cb0}(\kappa,z),\pi^{sb}\right\} < \pi < \pi^{cb},$$
$$\kappa \leq \kappa^{sb1}(z).$$

4. Implements y^S after $\rho = s$ and keeps status quo after $\rho = c$ if

(i) the expected utility is positive after adopting y^S when $\rho = s$: if $u\left(y^S,\theta^S,L\right) \neq$

$u\left(y^S, \theta^S, H\right)$ or $u\left(y^S, \theta^C, L\right) \neq u\left(y^S, \theta^C, H\right)$, $\pi > \pi^{sb1}(\kappa, z)$,and otherwise $\kappa < \kappa^{sb1}(z)$;

(ii) the expected utility is higher after y^S than after y^C if $\rho = s$:

$$\pi < \pi^{cb}(\kappa, z),$$

and

(iii) the expected utility is negative if either y^C or y^S is adopted when $\rho = c$:

$$\pi < \pi^{cb0}(\kappa, z),$$

and if $u\left(y^S, \theta^S, L\right) \neq u\left(y^S, \theta^S, H\right)$ or $u\left(y^S, \theta^C, L\right) \neq u\left(y^S, \theta^C, H\right)$,

$$\pi < \pi^{sb0}(\kappa, z),$$

or otherwise

$$\kappa > \kappa^{sb0}(z),$$

To sum up, the DM implements y^S after $\rho = s$ and keeps status quo after $\rho = c$ if:

- when $u\left(y^S, \theta^S, L\right) \neq u\left(y^S, \theta^S, H\right)$ or $u\left(y^S, \theta^C, L\right) \neq u\left(y^S, \theta^C, H\right)$,

$$\pi^{sb1}(\kappa, z) < \pi < \min\left\{\pi^{cb0}(\kappa, z), \pi^{cb}(\kappa, z), \pi^{sb0}(\kappa, z)\right\},$$

- when $u\left(y^S, \theta^S, L\right) = u\left(y^S, \theta^S, H\right)$ and $u\left(y^S, \theta^C, L\right) = u\left(y^S, \theta^C, H\right)$

$$\pi < \min\left\{\pi^{rbh}(\kappa, z), \pi^{cb}(\kappa, z)\right\}$$
$$\kappa \in \left(\kappa^{sb0}, \kappa^{sb1}\right)$$

5. Implements y^C after $\rho = c$ and keeps status quo after $\rho = s$ if

   (i) the expected utility is positive after adopting y^C when $\rho = c : \pi > \pi^{cb0}(\kappa, z)$;

   (ii) the expected utility is higher after y^C than after y^S if $\rho = c : \pi > \pi^{sb}(\kappa, z)$;

   (iii) the expected utility is negative if either y^C or y^S is adopted when $\rho = s$:

$$\pi < \pi^{cb1}(\kappa, z)$$

   and if $u\left(y^S, \theta^S, L\right) \neq u\left(y^S, \theta^S, H\right)$ or $u\left(y^S, \theta^C, L\right) \neq u\left(y^S, \theta^C, H\right)$,

$$\pi < \pi^{sb1}(\kappa, z)$$

   or otherwise

$$\kappa > \kappa^{sb1}(z).$$

   To sum up, the DM implements y^C after $\rho = c$ and keeps status quo after $\rho = s$ if:

   - when $u\left(y^S, \theta^S, L\right) \neq u\left(y^S, \theta^S, H\right)$ or $u\left(y^S, \theta^C, L\right) \neq u\left(y^S, \theta^C, H\right)$,

$$\max\left\{\pi^{sb}(\kappa, z), \pi^{cb0}(\kappa, z)\right\} < \pi < \min\left\{\pi^{cb1}(\kappa, z), \pi^{sb1}(\kappa, z)\right\},$$

   - when $u\left(y^S, \theta^S, L\right) = u\left(y^S, \theta^S, H\right)$ and $u\left(y^S, \theta^C, L\right) = u\left(y^S, \theta^C, H\right)$

$$\max\left\{\pi^{sb}(\kappa, z), \pi^{cb0}(\kappa, z)\right\} < \pi < \pi^{cb1}(\kappa, z) \text{ and } \kappa > \kappa^{sb1}$$

6. Keeps the status quo if none of the above conditions hold.

The problem with a single decision maker has policy y^C as part of the solution only in cases (2), (3) and (5) above. In case (2), the reform y^C is adopted when θ^S or $\Gamma = H$, and in those cases it is inefficient. In cases (3) and (5), the reform y^C is adopted when $\rho = c$. Thus, with probability z, the state is θ^S, and with probability $1 - \pi$, we have $\Gamma = H$, and therefore the reform is inefficient.