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Rational Ignorance, Populism, and Reform*

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Abstract

This paper studies how voters' demand for economic reforms affects the probability of their adoption and their chances of success. We study a model of electoral competition with rationally ignorant voters in which the success of a reform is tied to a politician's unobservable competence. We show that when voters' demand for reform is high, candidates engage in a form of populism and propose reformist agendas regardless of their ability to successfully carry them out. As voters are then faced with either risky populist reformers or policy inaction, the relationship between demand for reform and the probability of their adoption depends on how harmful botched reforms are. Our results help organize the mixed empirical evidence regarding the impact of crises on the likelihood of reform. They also suggest that the rise of populism may cause political disenchantment rather than the other way round.

JEL Classification: D72, D78, D83.

Keywords: Crises, Populism, Rational Inattention

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1 Introduction

Under what conditions are economic reforms successfully enacted? Confronted with a stark divergence between widely accepted academic prescriptions and policy practice (e.g., Drazen, 2000, p.403), numerous studies have identified *political constraints* stifling reform. These include politicians' electoral concerns, their human capital, distributional conflicts, and uncertainty over the consequences of reform.[1]

While addressing important aspects of the problem, previous theoretical works generally fall short on two points. First, the role of voters is not well understood: Voters are not passive recipients of politicians' decisions, and their support for reformist agendas is not always guaranteed (Stokes, 1996). Second, the relationship between economic conditions and the political constraints on reform remains somewhat elusive. For instance, the conventional scholarly wisdom that economic crises trigger reform has received serious empirical challenges (e.g., Drazen and Easterly, 2001; Pop-Eleches, 2009).

In this paper, we show that voters' greater demand for reform does not necessarily correlate with increased support for reformist candidates. High demand for reform generates populism whereby candidates adopt reformist agendas regardless of their ability to successfully carry them out. As a result, the average competence of reformist candidates falls, and so does voters' opinion of politicians advocating policy change. Depending on the consequences of an unsuccessful reform, the voter welfare-maximizing equilibrium exhibits either (i) a status quo bias where the probability of reform adoption (henceforth, probability of reform) is significantly reduced, or (ii) a form of rational populism where reform is more likely to be adopted but also more likely to be botched. These results imply that the chances of reform implementation in times of high demand for change—such as economic crisis—depend critically on the type of reforms being envisioned by politicians or suggested by international organizations.

While others have stressed the role of voters' uncertainty in the adoption of reforms (Fernandez and Rodrik, 1991; Drazen, 2000, Chapter 13.), our theory is unique in highlighting how voters' demand for reforms affect the strategic interaction between politicians and voters. Voters' opinion of reformist agendas and candidates' willingness to propose them cannot be

[1]We review the literature in Section 1.1. For an excellent review of the early literature on this issue, see Drazen (2000, Chapter 10 and 13).

understood separately, and are related in a subtle way.

Our model features two candidates competing for office and a representative voter (to whom we reserve the pronoun 'she'). Candidates privately observe their competence level and choose a platform: They can either commit to a status quo policy or to a reform policy (which is costlier to implement). In our setting, competence has three key characteristics. First, competence decreases a politician's cost of implementing the reform policy. Second, it affects the quality of its implementation: The voter prefers reform to the status quo if and only if it is implemented by a competent politician as incompetent politicians produce botched reforms. Third, candidates cannot directly reveal their competence to the voter.

Unlike competence, policy platforms can be credibly communicated during an electoral campaign, but this process is not friction-less. Specifically, (as in Prato and Wolton, 2016) successful learning of candidates' platform requires that the voter pays costly attention to the campaign and the candidate exerts communication effort to reach the voter (e.g., campaign spending).

The voter's rational ignorance plays a key role in our theory. As the reform policy is costly to implement, candidates need to be electorally rewarded for their reformist commitment, which can occur only if the voter pays sufficient attention to the campaign. For the voter, the value of learning a candidate's platform depends on her expected payoff from selecting a reformist candidate. This payoff, in turn, is a function of three elements: (i) the voter's *demand for reform*—the payoff gain from a successful reform over the status quo—, (ii) their *selection concern*—the payoff loss from a botched reform relative to the status quo—, and (iii) competent and incompetent candidates' strategic platform choices.

A novel implication of our approach is that voters' incentive to pay attention to the campaign depends on politicians' equilibrium behavior, which in turn responds to voters' attention. Absent variation in attention, the probability of reform and its chances of success would not be affected by voter's demand for reform and selection concern.[2]

When the screening problem faced by the voter is non-trivial (i.e., politicians' costs of implementing the reform policy vary little with competence), the voter welfare is maximized when candidates play a separating strategy and commit to the reform policy only if compe-

[2]To address the multiplicity of equilibria that is often encountered in games of imperfect information, we focus on the best-case scenario for the voter, and select the Perfect Bayesian equilibrium that maximizes the voter ex-ante welfare.

tent. Under this candidates' strategy profile, the probability of reform is positive and the probability of botched reform is null. We show that even though commitment to reform entails a cost (it is not cheap talk) and this cost is lower for competent candidates (the single-crossing condition holds), this separating strategy cannot be part of an equilibrium when the demand for reform is high.

To understand this result, suppose that in time of high demand, only competent candidates were to propose the reform policy. In that case, the voter would pay great attention to the campaign, since platforms are a perfect signal of competence and the payoff gain from electing a competent candidate is large. But very high attention by the voter magnifies the electoral reward associated with a reformist agenda, and all candidates—competent and incompetent—prefer to propose the reform policy. As a result, a separating strategy is not individually rational for candidates whenever the demand for reform is relatively high.

The reasoning above implies that when reforms are most needed, electoral competition become comparatively less effective at protecting the voter from harmful policy changes. In any pure strategy equilibrium with a positive probability of reform, incompetent candidates engage in a form of populism by campaigning on reform policies that they know will be harmful. As platforms are no longer fully informative about candidates' competence, the voter becomes skeptical of reformist agenda and reduces her attention to the campaign. In our model, democratic disenchantment is triggered by the rise of populist candidates, not the other way round. In equilibrium, higher demand for reform can be associated with a lower likelihood of policy change. We show that this correlation depends critically on the voter's selection concern.

When the selection concern is large, the equilibrium which maximizes voter welfare exhibits a *stifling of reform*: either all candidates commit to the status quo, or reformist candidates are unlikely to win as a result of voter's skepticism. When the voter's selection concern is relatively small, the welfare-maximizing equilibrium features a form of *rational populism* in which most candidates (in some cases, all of them) adopt a reformist stance. As a result, the reform policy is likely to be adopted but faces a significant probability of failure.

Our results imply that the the adoption of reform and its likelihood of success depend on the underlying economic conditions and on the type of policy domain in a subtle way. In particular, the correlation between crises—arguably a time of high demand for reform—and

policy changes is not unambiguously positive. When the social costs of botched reforms are high (e.g., reforms require certain political skills), crises should stifle reform. Only when these costs are moderate crises should trigger reform.

While our results go against the conventional wisdom that reforms are more likely in time of crises (Tommasi and Velasco, 1996), they help explain the mixed empirical evidence on the issue. A few papers confirm the conventional wisdom (e.g., Alesina et al., 2006; Prati et al., 2013), whereas several others find that crises reduce the probability of reforms (e.g., Campos et al., 2010; Mian et al., 2014). As our theory shows, the effect of crises on reforms cannot be properly understood without controlling for the importance of competence (as approximated by the selection concern). Indeed, as Drazen and Easterly (2001) document, crises decrease the likelihood of reforms whenever political competence is crucial for success and crises trigger reform only on policy dimensions in which the voter's selection concern is arguably low.

1.1 Related Literature

This paper belongs to a literature studying political constraints to reform and, more broadly, to accountability. Previous theories have stressed the role of policy-makers' reputational concerns (e.g., Fu and Li, 2014), the difficulty of recruiting competent policy-makers into public service (e.g., Mattozzi and Merlo, 2007), the influence of special interest groups on candidate's behavior (e.g., Baron, 1994; Grossman and Helpman, 1996; Prat, 2002; Coate, 2004; Ashworth, 2006), conflicts over the allocation of the costs of reforms (e.g., Alesina and Drazen, 1991), and uncertainty over the distributions of their benefits and costs (Fernandez and Rodrik 1991).

Our paper shows that the electorate's demand for reform can also be an impediment to its adoption and success due to candidates engaging in populism, defined as incompetent candidates proposing harmful reforms. As such, our notion of rational populism is complementary to Acemoglu et al. (2013) (where it is driven by concerns to signal one's ideological congruence, rather than expertise) and to more traditional notions of anti-elitism, anti-globalism and anti-pluralism (see, e.g., Judis, 2016, Mueller, 2016, and Guiso et al., 2017). Our findings also provide an interesting counterpart to Majumdar and Mukand (2004) who show that unsuccessful policy changes may trigger more reforms and successful changes less reforms,

due to politicians' reputation concerns.

Joining a growing literature, our paper focuses on the role of electoral communication in shaping candidates' behavior. Most previous works view campaigns as a unidirectional process: candidates informing voters (e.g., Prat, 2002; Coate, 2004; Ashworth, 2006; Dewan and Hortala-Vallve, 2017) or strategically choosing messages to influence their electoral decision (Aragonès et al., 2014; Westermark, 2004), or voters choosing whether to acquire information about candidates (e.g., Martinelli, 2006; Svolik, 2013; Hortala-Vallve and Larcinese, 2016). Our approach to rationally ignorant voters, instead, builds upon Dewatripont and Tirole (2005), and allows for voters (receivers) information to depend on their level of attention and candidates' (senders') effort.

A few studies analyze rationally ignorant voters in settings with fixed alternatives, in which the key issue is information aggregation (e.g., Martinelli, 2006; Oliveros, 2013; Levy and Razin, 2015).[3] To our knowledge, only a handful of papers embed rationally ignorant voters in a political agency setting. Hortala-Vallve and Larcinese (2016) and Svolik (2013) examine, in different contexts, how institutional factors interact with voter's ability to observe politicians' actions and learn from them. Glaeser et al. (2005), Ashworth and Bueno de Mesquita (2014), Ogden (2017), and Nunnari and Zapal (2017) study how various behavioral biases influence candidates' platform choices. Matejka and Tabellini (2016) embed rational inattention in a probabilistic voting model to study the relationship between ideology and information, as well as the resulting electoral incentives for public good and targeted spending. The present manuscript complements this literature by analyzing how economic conditions affect policy outcomes via politicians' electoral incentives.

On a technical level, this paper is closely related to Prato and Wolton (2016).[4] Specifically, the model of electoral communication and the analysis leading up to the non-existence of a separating equilibrium (Proposition 1) is very similar to the results presented in Prato and Wolton (2016). The two papers, however, differ in two critical dimensions. First, while Prato and Wolton (2016) focus on voter behavior and examine the relationship between interest and attention in politics, the present work analyzes policy-makers' incentives and

[3]The notion of agents' "rational inattention" (Sims, 1998; 2010) has also been used in the macroeconomic literature to study issues such as nominal rigidities (Mačkowiak and Wiederholt, 2009), the home bias (Van Nieuwerburgh and Veldkamp, 2009), or informational flows in organizations (Calvó-Armengol et al., 2015).

[4]Prato and Wolton (2017) study how rational ignorance tends to exacerbate or mitigate electoral imbalances (defined as asymmetries in voters' opinions of party labels or candidates) in a model without moral hazard (which play a key role in the present analysis).

their impact on the type and quality of policy-making. Second, it provides a complete equilibrium characterization. This, in turns, allows us to identify the impact of the voter's selection concern on the probability of reform, which cannot be foreseen from Prato and Wolton (2016).

The remainder of the paper proceeds as follows. In the next Section, we describe the model. In Section 3, we study conditions under which the democratic system performs best. In Section 4, we characterize equilibrium outcomes when demand for reform is high. Section 5 applies our findings to the empirical literature on crises and reform. Section 6 discusses the robustness of our results and Section 7 concludes. Proofs are collected in the Appendix. In the Supplemental Appendix, we provide a few ancillary results.

2 Model

We study a one-period game with a representative voter and two candidates (1 and 2). Before the campaign candidate $j \in \{1,2\}$ privately observes his type $t_j \in \{c,n\}$, where c denotes competent and n incompetent. It is common knowledge that the probability candidate j is competent is $Pr(t_j = c) = q$. Candidate j can credibly commit to a policy platform, either a status quo policy ($r_j = 0$) or a reform policy ($r_j = 1$), which is costly to implement. The effect of competence is two-fold. First, the cost of carrying out the reform policy is lower for a competent politician than an incompetent one. Second, the voter benefits from the reform policy (compared to the status quo) only if it is enacted by a competent politician.

While a candidate's competence is unobservable to the voter, she can learn a candidate's platform during the campaign. The probability the voter learns a candidate's platform, however, depends on her level of attention to the campaign ($x \in [0,1]$) and on the candidate's communication effort to reach her ($y_j \in [0,1],\ j \in \{1,2\}$, which cannot be directly observed). For tractability reason, we assume that the probability that communication is successful—the voter observes candidate j's platform—is $y_j x$. After the campaign, the voter elects one of the two candidates, whom we denote by $e \in \{1,2\}$.

The voter's utility function depends on the policy implemented by the elected politician and her level of attention. When the status quo policy is implemented, the voter's payoff is independent of the politician's competence, and is normalized to zero. When the reform

policy is implemented, the voter enjoys a payoff gain of $G > 0$ (relative to the status quo) if the politician is competent, and suffers a loss τG, with $\tau \geq 0$, if the politician is incompetent. Due to cognitive constraints (or the opportunity cost of listening to political messages), paying attention to politics is costly for the voter, as captured by the function $C_v(\cdot)$. The voter's preferences are represented by the following utility function:

$$u_v(r_e, x) = \begin{cases} r_e G - C_v(x) & \text{if } e \text{ is competent} \\ -r_e \tau G - C_v(x) & \text{otherwise} \end{cases} \tag{1}$$

Candidates are office-motivated. We normalize their payoff from being out of office to 0. A politician's payoff in office is equal to 1 when he chooses the status quo policy, and $1 - k_t$ when he implements the reform policy. The *implementation cost* k_t, $t \in \{c, n\}$ captures the time, resources and political capital required to carry out a reformist agenda, and satisfies: $0 < k_c < k_n < 1$. Candidates also face a cost $C(\cdot)$ to reach the voter, which corresponds to the difficulty of defining and disseminating a clear message in a noisy environment. The utility function of candidate $j \in \{1, 2\}$ is then:

$$u_j(r_j, y_j; t) = \begin{cases} 1 - k_t r_j - C(y_j) & \text{if elected} \\ -C(y_j) & \text{otherwise} \end{cases} \tag{2}$$

To summarize, the timing of the game is:

1. Nature draws the type $t_j \in \{c, n\}$ of candidate $j \in \{1, 2\}$.
2. Candidate $j \in \{1, 2\}$ privately observes his type and credibly commits to either the status quo policy ($r_j = 0$) or the reform policy ($r_j = 1$).
3. During the campaign, candidate $j \in \{1, 2\}$ exerts communication effort y_j. Simultaneously, the voter chooses her level of attention x. With probability $y_j x$, communication is successful and the voter learns candidate j's platform (r_j). Otherwise, the voter does not observe r_j.
4. The voter elects one of the two candidates: $e \in \{1, 2\}$.
5. The elected candidate e implements r_e, the game ends, and payoffs are realized.

The equilibrium concept is Perfect Bayesian Equilibrium (PBE) in pure strategies (with the caveat that the voter tosses a fair coin when indifferent), and excluding weakly-dominated strategies (we discuss mixed strategy equilibria in the robustness section). A formal definition of PBE in our setting can be found in Appendix A (see Definition 1). When more than one such PBE exist, we select the PBE that maximizes the voter ex-ante welfare (a common criterion in the literature). Hereafter, the term PBE refers to strategy profiles satisfying Definition 1 and the term 'equilibrium' refers to the voter welfare-maximizing PBE.

2.1 Assumptions

We impose some restrictions on the voter's and candidates' payoffs.

Assumption 1. *The functions $C_v(\cdot)$ and $C(\cdot)$ satisfy the following properties:*

i *Both are twice continuously differentiable, strictly increasing, and strictly convex on* $(0, 1]$*;*

ii $\lim_{x\to 0} C_v'(x) = \lim_{x\to 0} C'(y) = 0$, $\lim_{x\to 1} C_v'(x) = \lim_{x\to 1} C'(y) = \infty$

iii $C_v''(0) = 0$

iv $C''(\cdot)$ *and* $C_v''(\cdot)$ *are weakly increasing*

Assumption 1.i and 1.ii follow directly from Dewatripont and Tirole (2005). Assumption 1.iii is novel and sufficient for positive attention to be individually rational for voters at the campaigning stage—provided that platforms are informative signals of policy outcomes. We impose Assumption 1.iv in order to guarantee the uniqueness of candidates' communication efforts and voter's attention level in a separating PBE. It is meant to simplify the exposition and relaxing this assumption would not affect our results.[5]

As argued by Rodrik (1996), voters are unwilling to simply act as rubber stamp of an ambitious reformist agenda. We thus assume the voter is initially conservative (in a Burkean sense):

Assumption 2. *The selection concern τ satisfies:* $q - (1 - q)\tau < 0$.

[5]Specifically, our results would apply to the highest and lowest equilibrium communication levels. As an example, the function $(1 - x)^{-1} - 1 - x - x^2$ satisfies the assumptions. More generally, one can replace Assumption 1.iii with a weaker condition ($C_v''(0)C''(0) < \underline{c}$, with $\underline{c} < q(1 - q)(1 - k_c)\frac{G}{2}$) without affecting any of the paper's results.

Assumption 3 implies that absent updates from the electoral campaign, the voter prefers the status quo policy to the reform policy, due to her prior about candidate j's competence and the payoff loss caused by a botched reform (i.e., a reform implemented by an incompetent politician).

Finally, we assume that the voter's screening problem is nontrivial.

Assumption 3. *There exists* $k^*(k_c) \in (k_c, 1]$*, such that* $k_n < k^*(k_c)$

This assumption guarantees that, whenever individually rational, in equilibrium candidates play a separating strategy: Commit to the reform only if competent, as formally shown in Lemma A.6 in the Appendix.[6] Unlike Prato and Wolton (2016), we maintain the assumption on the implementation costs throughout the paper as it allows us to characterize the set of PBE and the equilibrium of the game for all parameter values.

2.2 Discussion

The main novelty of our framework is that the probability of learning a candidate's platform depends critically on the voter's costly attention to the campaign. As such, in our set-up, the voter is "rationally ignorant" (Downs, 1957). Our approach is also consistent with experimental and empirical works documenting that voters are cognitively constrained (Body, 2014; Brocas et al., 2014) and learn incrementally (Neuman et al., 1992; Zaller, 1992). Furthermore, our campaigning technology assumes complementarity between the voter's level of attention and candidates' communication efforts: greater voter attention increases the effectiveness of a candidate's communication effort, and vice versa. This complementarity assumption, however, is not essential for our results but facilitates the analysis.[7]

The voter's key electoral concern regards the successful implementation of a major shift in economic policy. Specifically, our model is geared towards policy areas (i) with a substantial "common value" component and (ii) for which political (as opposed to technical) skills are required for successful implementation.

[6] When $k_n - k_c$ is large, there can exist an asymmetric PBE in which a candidate proposes the reform policy independently of his type and his opponent plays a separating strategy. Such asymmetric PBE can dominate a separating PBE when the difference between implementation costs is large. The existence of such PBE is subject to the same incentive compatibility constraints that are necessary for a separating PBE to exist. As such, our key insights extend to this asymmetric PBE, albeit at the cost of a significantly more convoluted analysis.

[7] As long as voter attention is a costly choice variable, candidates' platform choices should respond to it, and our results would go through.

We model two dimensions of a policy domain: the *demand for reform* G and the *selection concern* τ. Parameter G captures the economic conditions and the value of a successful reform relative to the status quo. Parameter τ captures the importance of a politician's skills for success and the baseline appeal of the status quo policy relative to the downside risk of botched reform. A large G is associated with worse economic conditions, in which a successful reform is more valuable. A large τ corresponds to (i) more complex policy domains, where lack of competence in carrying out reforms has important welfare consequences, and (ii) high-risk situations in which the damage of botched reform is substantial.

3 Conditions for successful reforms

Due to the social cost of botched reforms, guaranteeing that only competent politicians implement reforms appears like a first-order concern.

Under the assumptions, the constrained first-best for the voter's perspective is that both candidates play a separating strategy profile in which they commit to the reform policy only when competent. In this case, platforms are perfect signals of competence, and increased attention directly augments the probability of electing a competent reformist candidate. To determine the conditions for existence of a separating PBE, we first establish some general properties of the voter's and candidates' behavior. In the remainder of this section the analysis proceeds informally; formal statements of all intermediary lemmas are relegated to the Appendix.

First, since an incompetent candidate's benefit from holding office is weakly lower than a competent politician's (due to the difference in implementation costs), the former always exerts weakly less communication effort.

Second, the status quo policy is the default option for all candidates, since it entails no implementation cost. Neither type thus has an incentive to actively advertise a commitment to the default option. Commitments to the reform policy, on the other hand, have to be advertised. As a consequence, successful communication must always raise a candidate's winning probability, otherwise commitment to reform would never be individually rational (see Lemma A.2). Hence, a candidate exert positive communication effort if and only if he commits to the reform policy (see Lemma A.3).

Third, there always exists an "unresponsive" PBE in which both candidates choose the status quo regardless of their types, voters pay no attention to the campaign, flips a coin to choose her representative, and the status quo policy is implemented with probability one (see Lemma A.4).

In light of these results, two conditions need to be met for a separating PBE to exist. First, it must be that the electoral reward for committing to the reform policy is large enough to compensate a competent candidate for the cost of advertising and carrying out a reformist commitment. This is a competent candidate's incentive compatibility constraint. Second, the electoral reward must also be small enough so that a non-competent candidate actually prefers to commit to the status quo rather than the reform policy. This is an incompetent candidate's incentive compatibility constraint.

A candidate's electoral reward for reform, in turn, depends critically on the voter's attention. When only competent candidates propose the reform, the value of learning a candidate's platform depends on the payoff gain G from electing a reformist candidate (who enacts a successful reform) compared to an incompetent politician who sticks to the status quo. The voter's level of attention in a separating assessment is thus an increasing function of her demand for reform. Since greater attention increases the effectiveness of a candidate's communication (due to the complementarity in the learning technology), a competent candidate's communication effort is also increasing in G. This result, formally shown in Lemma A.9, implies that the electoral reward for reform is strictly increasing in G.

Due to the relationship between a candidate's electoral reward for reformist commitment and the demand for reform, the existence of a separating PBE depends critically on the value of G. For low demand for reform, the voter pays little attention to the electoral campaign even if only competent candidates propose the reform policy. Consequently, the electoral reward for reformist commitment is low and, owing to the the implementation cost $k_c > 0$, no competent candidate has sufficient incentive to propose the reform policy. For high demand for reform, a competent candidate has sufficient electoral incentives to commit to the reform unless the implementation cost is very large. As such for sufficiently low k_c, there exists a lower bound on the demand for reform, denoted $\underline{G} > 0$, such that a competent candidate's incentive compatibility constraint in a separating assessment is satisfied if and only if $G \geq \underline{G}$.

High electoral reward associated with reformist commitment also means that a candidate's chance of winning the election when it proposes the status quo is low. Consequently, relatively high demand for reform increases an *incompetent* candidate's incentive to deviate and propose the reform policy. This implies that, unless the implementation cost k_n is very large, there exists $\overline{G} > \underline{G}$ such that an incompetent candidate's incentive compatibility constraint in a separating assessment is satisfied if and only if $G \leq \overline{G}$. The next proposition summarizes the analysis above.

Proposition 1. *There exist unique $\overline{k_c}$ and $\overline{k_n}$ (independent of G) such that:*
(i) When $k_c \geq \overline{k_c}$, a separating strategy profile is not a PBE for any parameter value;
(ii) When $k_c < \overline{k_c}$ and $k_n \geq \overline{k_n}$, there exists a unique $\underline{G} > 0$ such that the equilibrium is separating if and only if $G \geq \underline{G}$;
(iii) When $k_c < \overline{k_c}$ and $k_n < \overline{k_n}$, there also exists a unique $\overline{G} > \underline{G}$ such that the equilibrium is separating if and only if $G \in [\underline{G}, \overline{G}]$.

Proposition 1 highlights that an increase in the demand for reform can induce a change in candidates' platform choices. This change, however, depends critically on the voter's rational ignorance. If attention was fixed, G would have no effect on candidates' behavior (specifically, on their incentive compatibility constraints).

Since a separating assessment maximizes the voter welfare, there exists of a non-monotonic relationship between the voter's demand for reform and her welfare (see Figure 1b). Indeed, when $k_c < \overline{k_c}$ and $k_n < \overline{k_n}$, the voter's equilibrium expected payoff has a discontinuous drop at $\overline{G}$.

This section implies that unless reforms entail large implementation costs, the equilibrium is separating only when the demand for reform is intermediary. In all that follows, we assume that $k_c < \overline{k_c}$ $k_n < \overline{k_n}$, and study how the probability of policy and the likelihood of botched reform change when G crosses the threshold $\overline{G}$.

4 Reform in Times of High Demand

The Stifling of Reform

When $G > \overline{G}$, the equilibrium can be either unresponsive (candidates always propose the status quo policy) or one of several *over-responsive* PBE, in which at least one candidate commits to the reform policy when incompetent.

Regardless of which equilibrium arises, Proposition 2 shows that when the payoff from reform is highly responsive to a politicians' competence, in times of high demand the electorate faces a significant drop in the probability of reform (to 0, if the equilibrium becomes unresponsive.)

Proposition 2. *There exists $\overline{\tau}^0$ and $\overline{\tau} \leq \overline{\tau}^0$ such that:*
(i) for all $\tau > \overline{\tau}^0$, the equilibrium is unresponsive for all $G > \overline{G}$ and the probability of reform drops to zero as G crosses $\overline{G}$.
(ii) for all $\tau > \overline{\tau}$, the probability of reform decreases as G crosses $\overline{G}$.

Proposition 2 distinguishes between two possibilities as a function of the size of the selection concern. When τ is very large (case (i)), the cost of botched reforms is so high that the voter prefers an unresponsive PBE to any possible PBE with positive probability of reform.

Conversely, when the selection concern τ is intermediate (so botched reform is still significantly worse than the status quo), the equilibrium is over-responsive and asymmetric: one candidate—say, candidate 1—chooses reform regardless of his type, and the other—say, candidate 2—chooses the status quo regardless of his type. Notice that in an over-responsive equilibrium the campaign plays a radically different role compared to a separating assessment. Voters infer valuable information not from a candidate's platform (since both types propose the reformist platform), but from the event that communication is successful. While successful communication is a positive signal of competence and leads to 1's election, it is also imperfect. Consequently, the value of learning 1's platform is strictly decreasing in the downside risk that he is incompetent (τ). This form of rational skepticism about the usefulness of electoral communication results in low voter attention and low probability of electing a reformist candidate when τ is large enough. Hence, despite the commonly known presence

of a reformist candidate, the probability of reform still decreases as the demand of reform increases above $\overline{G}$.

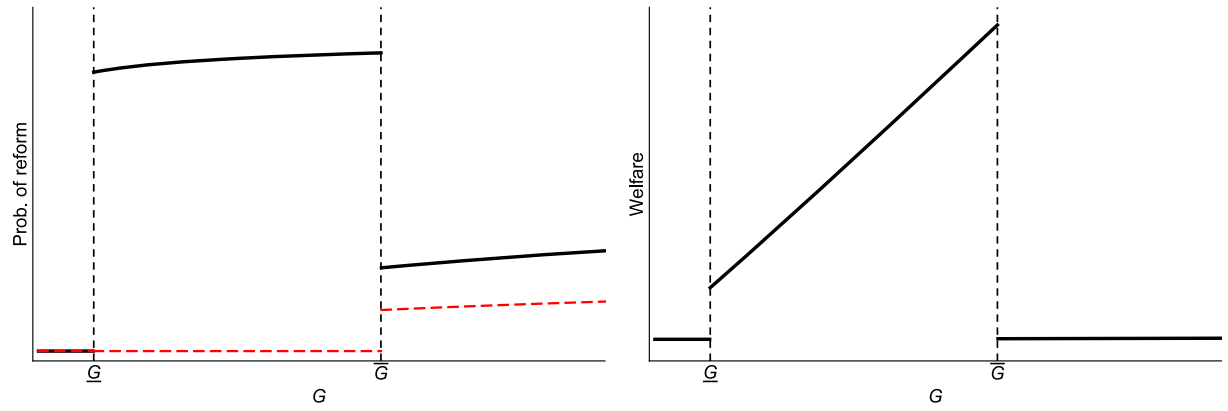
Rational Populism

When the voter's selection concern is relatively small, the equilibrium is always over-responsive. Our model thus uncovers a form of *rational populism*. In the best feasible PBE from the voter's perspective, at least one incompetent candidate commits to the reform policy despite common knowledge that his reform will be botched. As a result, for relatively low τ, the equilibrium probability of botched reform always increases when G goes over the threshold $\overline{G}$. Further, if the cost of botched reform is sufficiently low, the probability of reform *increases* because either both candidates always propose the reform or, despite her rational skepticism, the voter pays sufficiently attention to the reformist candidate when the equilibrium is asymmetric.

Proposition 3. *There exists $\underline{\tau}^R$ and $\underline{\tau}$, with $\underline{\tau}^R \leq \underline{\tau} \leq \overline{\tau}$ such that, in equilibrium:*
(i) for all $\tau < \underline{\tau}$ the probability of botched reform is strictly higher for $G > \overline{G}$ than for $G \in [\underline{G}, \overline{G}]$.
(ii) for all $\tau < \underline{\tau}^R$ the probability of botched reform and the probability of reform are strictly higher for $G > \overline{G}$ than for $G \in [\underline{G}, \overline{G}]$.

Observe that, by the reasoning above, rational populism can also stifle reform. In an asymmetric equilibrium, we can observe both an increase in botched reform when G goes over $\overline{G}$ (Proposition 3.(i)) and a decrease in the probability a reform is enacted (Proposition 2.(ii)). This case is illustrated in Figure 1a. Figure 1b in turn shows the welfare consequences of high demand for reforms. Voter welfare exhibits a discontinuous drop as G goes over $\overline{G}$ as in equilibrium, the risk of botched reforms becomes non-null and the voter is rationally skeptical about the value of campaign information.

The discontinuous drop in welfare at $\overline{G}$ we document can be related to the findings in Carrillo and Castanheira (2008), who show that candidates' invest in high-quality policies and voter welfare is higher when the likelihood that the electorate learns candidates' platforms is intermediary. Crucially, in this paper voters' learning is endogenous to their demand from reform and candidates' behavior, whereas it is exogenous in Carrillo and Castanheira's model.



(a) Probability of reform

(b) Voter's expected welfare

Figure 1: Equilibrium probability of reform and voter's welfare

In Figure 1b, the dark line is the voter's equilibrium welfare. In Figure 1a, the dark line is the probability the reform policy is implemented; the red dashed line is the probability of botched reform. Parameter values: $q = 1/2$, $k_c = 1/4$, $k_n = 1/2$, $\tau = 1.01$, $C_v(x) = (1/5)(1/(1-x) + x + 2\log(1-x) - 1)$, $C(y) = (1/10)(1/(1-x) + x + 2\log(1-y) - 1)$.

5 Populism, Crises, and Reforms

Our model generates two novel findings. First, periods of high demand for reform can generate rational populism. Second, due to the unavoidable risk of botched reform and the induced skepticism on the part of voters, the likelihood that any policy change is implemented when demand for reform is high can be lower than when demand for reform is intermediary. We turn to the implications of these two results in what follows.

Recent years have seen a rise in populism both in Europe (e.g., UKIP in the UK, Front National in France, AfD in Germany) and in the United States (e.g., Tea Party, Bernie Sanders, Donald J Trump). As in Guiso et al. (2017), populist candidates emerge because there exists an electoral demand for it. In this paper, however, populism is not driven by discontent with existing mainstream parties. Voters would rather avoid any populism, but cannot design appropriate incentives for competent and incompetent candidates due to their incomplete information and the blunt tool at their disposal. Populism, in some sense, is a necessary evil.[8] Nonetheless, it is detrimental through two channels: (i) it leads to botched reforms and (ii) it triggers voter's rational skepticism. If one equates skepticism with dissatisfaction with politics (as it reduces voter attention), our results suggest that,

[8]Despite similarities, the rational populism we document is also distinct from Acemoglu et al.'s (2013). In particular, under our approach populism is due to bad (incompetent) type seeking to mimic good (competent) types rather than good type trying to signal their congruence with the electorate.

contrary to Guiso et al.'s hypotheses, populism generates disenchantment rather than the other way round. Both, however, are caused themselves by the "excessively" high demand for reform.

Our theory, more generally, can be used to link economic conditions—and specifically the presence of a crisis—to the occurrence of reform and its likelihood of success, and help organize the existing empirical findings on the issue.

In our model, a reform can be a change of economic paradigm (including privatization and deregulation packages) as in 1980s Latin America, a major overhaul on a specific issue such as health care (e.g., the Affordable Care Act in 2010), labor laws (e.g., the reforms in New Zealand in the 1990s) or welfare benefits (such as Portugal's 2011 spending cuts). These policy domains can differ in two dimensions: the upside gain from successful implementation (G) and the downside risk—relative to inaction—from a botched reform (τ), which depends on the importance of a politician's skills and the depth of the crisis (i.e., the electorate's evaluation of the status quo relative to any type of reforms).[9]

Consistently with its empirical operationalization, we follow Drazen and Grilli (1993), Labán and Sturzenegger (1994a and 1994b), Mondino et al. (1996), and Drazen and Ilzetzki (2011) in linking a crisis to a period of large demand for reform $G > \overline{G}$ (in turn, $G \leq \overline{G}$ corresponds to more favorable economic time when reforms are less needed). Our model identifies three possible outcomes:

- Reformist Populism: When the crisis is very deep or the importance of a politician's competence is moderate relative to more technical skills ($\tau \leq \underline{\tau}^R$), reform is guaranteed as all candidates propose change, but the risk of botched reform is significant.

- Stifling of Reform: When the crisis is not too deep or the importance of a politician's competence is crucial ($\tau \geq \overline{\tau}$), no reform is implemented as all candidates propose the status quo.

[9]The political skills required for successful implementation of such reforms include: the ability to set the pace and scope of the reform or to engineer suitable compensation schemes for "losers" (Haggard and Webb, 1993), the shrewdness to successfully overcome veto players, the acumen to assemble effective coalitions or negotiate with international organizations and trade partners, the discernment required to staff, insulate, and control bureaucracies (for a discussion of the costs associated with any policy change, see Hall and Deardoff, 2006). As the Latin America experience demonstrates (Dornbusch, 1988; Krueger, 1993), unsuccessful and badly engineered reforms can impose significant costs on a society and politicians' competence play a key role for the successful implementation of major policy changes (e.g., Krueger, 1992; Naím, 1993; Bresser Pereira, 1994).

- Polarized Populism: When the depth of the crisis or the importance of politicians' competence are intermediate ($\tau \in [\underline{\tau}^R, \overline{\tau}]$), a "party of order or stability" competes against "a party of progress or reform" (Stuart Mill, 1859, Ch. II). Depending on G and τ, the probability of reform may be lower or higher than before the crisis; the likelihood of botched reforms is unambiguously greater.

Conventional wisdom holds that reforms are more likely in time of crises (Tommasi and Velasco, 1996). Empirical evidence on the association between crises and reform is mixed: Several studies document a negative effect (Williamson, 1994; Pop-Eleches, 2009; Campos et al., 2010; Castanheira et al., 2012; Pepinsky, 2012; Galasso, 2014; Mian et al., 2014), some corroborate the conventional wisdom (Lora and Olivera, 2004; Alesina et al., 2006; Prati et al., 2013), and others find negative or positive associations depending on the policy areas being analyzed (for a recent review of the literature, see Mahmalat and Curran, 2017). In particular, Drazen and Easterly (2001) find that crises are associated with a lower likelihood of reform in policy domains in which political skills are crucial in ensuring success—such as budget deficit and current account balance—, while crises tend to be associated with reform in policy domains in which technical knowledge is more important in ensuring success, such as inflation and black market premium.[10]

This paper provides a way to organize these seemingly inconclusive empirical findings. While none of the papers above test the specific mechanism identified in this paper (the increased incentive of incompetent candidate to propose a reformist agendas), our model suggests that the association between crises, the probability of reform, and the emergence of populist responses depend critically on the downside risk of a botched reform τ. In times in which voters are desperate for change (e.g., Latin America in 1980s and 1990s), a form of reformist populism is likely to emerge. When the status quo is not as dire (e.g., US and Europe in the aftermath of the Great Recession), polarized populism arises with a risky reformist option (e.g., Donald Trump or Emmanuel Macron) facing a strongly pro-status quo option (e.g., Hillary Clinton, Angela Merkel, or Mariano Rajoy). While the latter is ex-ante more likely to win the election, the former can nevertheless prevail.

Finally, our theory also predicts that reforms in time of crisis are always more likely to

[10]Drazen and Easterly (2001) measure reforms by the growth performance 5 years after the crisis. As such, their dependent variable does not distinguish clearly between low probability of reform and high probability of botched reform. Notice, however, that both are compatible with our theory.

be unsuccessful compared to more normal conditions despite the higher benefits of successful policy changes. While we are not aware of any existing empirical assessments of this claim, it accords with several anecdotal pieces of evidence. For example, in Latin America in the 1980s, periods of high inflation and negative growth led to attempts to reform an inefficient economic system (based on import-substitution industrialization) with stabilization and liberalization packages. But some of these packages turned out to be poorly designed, aggravating rather than solving the economic crisis (Krueger, 1992 and 1993; Mondino et al., 1996; Sturznegger and Tommasi, 1998). Some reformist attempts were also misguided, such as Alan Garcia's populist economic policies in Peru in 1985-1988 (e.g., his financial and banking reforms) which led to hyperinflation (Dornbusch, 1988). Other examples include Domingo Cavallo's *corralito* to fight inflation in 2001, or the more recent heterodox policies (as described in Cavallo, 2014) aimed at improving economic conditions in Argentina, which in both cases seem to have instead worsened the inflationary crisis.

6 Robustness

Mixed strategies In the baseline model, we focus on pure strategy PBE. Removing this restriction does not substantially alter the message of the paper (see Appendix C for more details). A mixed-strategy PBE can either be under-responsive (a c-type candidate mixes and a n-type candidate chooses the status quo) or over-responsive (a c-type candidate always proposes a reform and a n-type candidate mixes).[11] When G is large enough the probability of reform in an under-responsive PBE decreases in G, whereas when G is close enough to $\overline{G}$, the probability of botched reform and the (total) probability of reform increase in G in an over-responsive PBE. Interestingly, in any under-responsive PBE in mixed strategies, the probability of reform still drops discontinuously at $G = \overline{G}$ and so does voter welfare. In turn, while the over-responsive mixed strategy PBE shares similar features with the asymmetric PBE, it also differs in one critical dimension: Platforms remain a noisy signal of competence which attenuates voter's rational skepticism.[12]

Fully symmetric cost of reform Our results require that competent and incompetent

[11] We show that there is no other mixed-strategy PBE. In Appendix C, it should be noted, we assume existence and only characterize the properties of possible PBE.

[12] We would like to thank an anonymous reviewer for pointing this out.

politicians differ in some dimension for campaign to be informative. In the baseline model, competence reduces the cost of implementing reforms ($k_n > k_c$). It is not necessarily the case. All our insights, however, would survive if incompetent candidates faced a higher cost of reaching voters (e.g., $C'(y;n) = (1+\psi)C'(y;c)$, with $\psi > 0$) or successful communication of platforms also revealed a candidate's type with some probability $\zeta > 0$.[13]

Multiple levels of reform We conjecture that several of our main insights hold in a setting with continuous level of reform. Suppose that candidates choose a level of reform in the unit interval ($r \in [0,1]$) at policy cost $\kappa \mathbb{I}_{\{r \neq 0\}} + k_t r$. Further assume that the benefit of successful reform for the voter is $GQ(r)$, with $Q(\cdot)$ strictly quasi-concave with peak at $r^* \in (0,1)$ (the cost of botched reform is $\tau Q(r)G$). We expect a separating PBE in which competent candidates propose $r = r^*$ and incompetent no reform to exist for intermediate G. Above a certain threshold value for the demand for reform, the equilibrium is likely to feature some rational populism either because type c candidates propose over-reaching reforms ($r > r^*$) to signal their type (a form of populism akin to Acemoglu et al., 2013) or because type n candidates start proposing reforms. We leave a complete analysis of this set-up to future research.

Multiple voters By assuming a representative voter, we also abstract from informational asymmetries and coordination problems among citizens. Introducing multiple voters complicates the analysis substantially, but does not affect the message of the paper. Prato and Wolton (2016) extend a version of the model presented in this paper to an arbitrarily large electorate, and show that (a slightly modified version of) Proposition 1 still holds despite the presence of free-riding.

7 Conclusion

This paper studies how the demand for reform affects the likelihood and quality of reform in an environment with rationally ignorant voters. The electorate can obtain beneficial reforms and avoid botched reforms only when demand for reform is intermediate. In time of high

[13] More generally, our results are robust to the voter receiving a signal of candidates' competence as long as this signal is sufficiently noisy. The reason is that the voter does not care about competence per se, but wants to elect a competent candidate *who commits to the reform policy*. Therefore, the voter always has some incentive to pay attention to the campaign. A similar reasoning explains why our results are also robust to the presence of a (sufficiently small) probability that the voter observes the candidates' platforms without exerting effort. Details available upon request.

demand for reform (for instance, due to poor economic conditions), the risk of botched reform increases significantly as incompetent candidates engage in a form of populism by proposing policy change they know to be harmful.

The effect of high demand on the probability of reform, on the other hand, depends on the strength of the electorate's selection concern. When a politician's competence is very important for the success of reforms, the probability of reform decreases (either no candidate commits to a reformist agenda, or the electorate rationally exhibits high skepticism towards those who do, and elects them with low probability). Conversely, when the selection concern is low higher demand for reform does raise the probability of reform, but this comes with significant risks. The welfare-maximizing equilibrium exhibits a form of rational populism whereby some candidates propose reforms despite being unable to successfully enact them. By highlighting the role of voters' selection concern, our results can help organize the mixed empirical evidence on the relationship between crises and the likelihood of reform.

In this paper, we restrict our attention to a common-value environment among voters (using a representative voter). This assumptions allows us to show that welfare-beneficial reforms can be impeded when demand is high even if there is no uncertainty about the distribution of their costs and benefits or groups blocking their adoption. A promising avenue for future research, however, is to study the effect of distributional conflicts on the adoption of economic reforms within our theoretical framework.

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A Equilibrium definition and proofs

Up to Proposition 1, the analysis closely mirrors Prato and Wolton (2016). However, since the model has different notation and assumptions, in this Appendix we present all proofs.

We first introduce some notation. Denote by $\sigma_j(t) = (r_j(t), y_j(t)) \in \{0,1\} \times [0,1]$ the strategy (policy choice and communication effort) of a type $t \in \{c,n\}$ candidate $j \in \{1,2\}$. The tuple of strategies is denoted by $\sigma_j \equiv (\sigma_j(c), \sigma_j(n))$. Denote by $m_j \in \{\emptyset, r_j\}$ the outcome of electoral communication: if $m_j = \emptyset$ ($m_j = r_j$), communication has been unsuccessful (successful) and the voter does not observe (observes) candidate j's platform. We also denote by $\mu(m_j, x) \equiv \mu_j$ the voter's posterior belief that candidate j is competent conditional on her level of attention x and observing m_j . Finally, denote voter's electoral strategy (probability of electing candidate 1): $Pr(e=1) = s_1(m_1, m_2, x) \in [0,1]$.

Definition 1. *The players' strategies form a Perfect Bayesian Equilibrium (PBE) if the following conditions are satisfied.*

1) $s_1(m_1, m_2, x) = \begin{cases} 1 & \\ 1/2 & \Leftrightarrow E_\mu(u_v(r_1, x)|m_1, \sigma_1) \gtreqless E_\mu(u_v(r_2, x)|m_2, \sigma_2); \\ 0 & \end{cases}$

2) $y_j(t, r_j) = \arg\max_{y \in [0,1]} \; E(u_j(r_j, y; t)|x, s_1, \sigma_{-j}), \; j \in \{1,2\}, \; t \in \{c,n\}$;

3) $x = \arg\max_{x \in [0,1]} \; E(u_v(r_e, x)|s_1, \sigma_1, \sigma_2)$;

4) $\forall j \in \{1,2\}, \; t \in \{c,n\}$,

$r_j(t) = \begin{cases} 1 & \\ & \Leftrightarrow E(u_j(1, y_j(t,1); t)|x, s_1, \sigma_{-j}) \geqslant E(u_j(0, y_j(t,0); t)|x, s_1, \sigma_{-j}); \\ 0 & \end{cases}$

When indifferent, we assume that candidates follow the strategy which maximizes the voter's welfare.

5) $\mu(m_j, x)$ *satisfies Bayes' rule whenever possible.*

Condition 1) is equivalent to the requirement that, after observing m_j and m_{-j}, the voter elects candidate $j \in \{1,2\}$ with probability 1 rather than his opponent $(-j)$ if and only if ($\forall m_j, \; m_{-j}, \; \sigma_j$, and σ_{-j}):

$$\mu_j r_j(c)G - (1-\mu_j) r_j(n)\tau G > \mu_{-j} r_{-j}(c)G - (1-\mu_{-j}) r_{-j}(n)\tau G \tag{3}$$

Let $\Gamma(\sigma_j(t), \sigma_{-j}) = E\left\{\mathbb{I}_A + \frac{\mathbb{I}_B}{2} \middle| r_j(t), y_j(t); \sigma_{-j}\right\}$ be the probability that a type $t \in \{c, n\}$ candidate j is elected when he plays strategy $\sigma_j(t)$ and his opponent plays σ_{-j}, where A is the event "equation (3) holds" and B is the event "both sides of (3) are equal." The expectation operator is over the probability of successful communication with candidate $j \in \{1, 2\}$, candidate $-j$ and candidate $-j$'s type. $\Gamma(\sigma_j(t), \sigma_{-j})$ is increasing with $\mu(r_j(t), x)r_j(c)G - (1 - \mu(r_j(t), x))r_j(n)\tau G$ and $\mu(\emptyset, x)r_j(c)G - (1 - \mu(\emptyset, x))r_j(n)\tau G$.

Lemma A.1. *There is no equilibrium in which $r_j(c) = 0$ and $r_j(n) = 1$.*

Proof. The proof is by contradiction. First, suppose $\sigma_j(n) = (1, y_j(n))$, with $y_j(n) > 0$ and $r_j(c) = 0$. When communication with the voter is successful, a n type candidate j is elected with strictly positive probability if and only if (by (3)): $-\tau G \geq \mu_{-j} r_{-j}(c)G - (1 - \mu_{-j})r_{-j}(n)\tau G$. When communication with the voter is not successful, a type n candidate j is elected with strictly positive probability if and only if: $-(1 - \mu(\emptyset, x))\tau G \geq \mu_{-j} r_{-j}(c)G - (1 - \mu_{-j})r_{-j}(n)\tau G$. Given the properties of the communication cost functions and $y_j(n) > 0$, we have $\mu(\emptyset, x) \in (0, 1)$. Then it must be that: $-(1 - \mu(\emptyset, x))\tau G > -\tau G$. Therefore, a type n candidate's probability of being elected is strictly greater when $m_j = \emptyset$. Since a candidate always values being in office ($k_n < 1$) and communication is costly, $\sigma_j(n) = (1, y_j(n))$ is strictly dominated by $\sigma_j(n) = (1, 0)$, a contradiction. Suppose a type n candidate j plays $\sigma_j(n) = (1, 0)$. Since the voter never observes his platform, his choice of $r_j(n)$ does not affect his probability of being elected. Since the reform is costly ($k_n > 0$), it must be that $\sigma_j(n) = (1, 0)$ is weakly dominated by $(0, 0)$. □

Lemma A.2. *In any equilibrium, a candidate's winning probability is (weakly) greater after successful communication.*

Proof. Fix candidate $-j$'s strategy σ_{-j}. Using Lemma A.1, we need to consider only three cases: 1) $r_j(c) = 0,\ r_j(n) = 0$, 2) $r_j(c) = 1,\ r_j(n) = 0$, and 3) $r_j(c) = 1,\ r_j(n) = 1$. In case 1), successful communication has no impact on the probability of being elected (the voter's payoff is independent of a candidate's type). In case 2), using a similar reasoning as in the proof of Lemma A.3, a type n must exerts zero communication effort. Successful communication thus reveals that a candidate is competent and implements the reform. By (3), candidate j's probability of winning the election is weakly higher after successful communication. In case 3), at the communication stage, both types solve the same maximization problem, modulo

the implementation cost:

$$y_j(t,1) = \arg\max_{y\in[0,1]} \{\Gamma((1,y),\sigma_{-j})(1-k_t) - C(y)\}$$

Suppose $\mu(1,x) < \mu(\emptyset,x)$. Then $\Gamma((1,y),\sigma_{-j})$ is strictly decreasing in y, which implies $y_j(c,1) = y_j(n,1)$ (the objective function is strictly decreasing in y). But then $\mu_j(1,x) = \mu_j(\emptyset,x)$, a contradiction. Hence it must be that $\Gamma((1,y),\sigma_{-j})$ is weakly increasing in y. □

Lemma A.3. *In any equilibrium, a candidate exerts strictly positive communication effort if and only if he commits to the reform policy ($r = 1$).*

Proof. Necessity. We prove the counterpart: $r_j = 0 \Rightarrow y_j = 0$. On the equilibrium path, given $r_j(t)$, the maximization problem of a type $t \in \{c,n\}$ candidate $j \in \{1,2\}$ chooses $y_j(t)$ is: $\max_{y\geq 0}\Gamma((r_j(t),y),\sigma_{-j})(1-r_j(t)k_t)-C(y),\ j\in\{1,2\}\ t\in\{c,n\}$ The solution $y_j(t)$ affects $\Gamma(.;.)$ only through the probability that the voter observes $m_j(t) = r_j(t)$. Using Lemma A.1, we just need to focus on two cases: 1) $r_j(c) = r_j(n) = 0$ and 2) $r_j(c) = 1$ and $r_j(n) = 0$. In case 1), since the voter anticipates correctly candidates' strategies in equilibrium, communication has no effect on a candidate's electoral chances. Since communication is costly, it must be that: $y_j(t) = 0$. In case 2), $\mu_j(r_j(n),x) = 0$ and, by (3), $\Gamma((r_j(n),y),\sigma_{-j})$ must be strictly decreasing in y, which immediately implies $y_j(n) = 0$.
Sufficiency. Suppose that a candidate chooses $r = 1$. Using a similar reasoning as in Lemma A.1, $\forall t \in \{c,n\}\ \sigma(t) = (1,0)$ is weakly dominated by $(0,0)$. So on the equilibrium path, $r = 1 \Rightarrow y > 0$. □

Lemma A.4. *For all parameter values, an unresponsive strategy profile in which $r_j(t) = 0$ $\forall(j,t) \in \{1,2\}\times\{c,n\}$ and $x = 0$ is a PBE.*

Proof. Given $x = 0$, we have $m_j = \emptyset,\ \forall y_j \in [0,1],\ j \in \{1,2\}$. Using (3), the voter's expected policy payoff from electing candidate $j \in \{1,2\}$ is 0. Consequently, candidate j's probability of winning the election does not depend on his or his opponent's platform choice: $\Gamma(\sigma_j(t),\sigma_{-j}) = 1/2,\ \forall\sigma_j(t),\ \sigma_{-j},\ t\in\{c,n\},\ j\in\{1,2\}$. Using a similar reasoning as in Lemma A.1, a type $t \in \{c,n\}$ candidate $j \in \{1,2\}$ has no incentive to deviate from $\sigma_j(t) = (0,0)$. Given $\sigma_j(t) = (0,0)$ and communication is costly, the voter has no incentive to exert strictly positive communication effort. Hence, the proposed strategies constitute an

equilibrium for all parameter values, and the implied probability of winning the election is 1/2 for each candidate $j \in \{1,2\}$ of each type. □

Lemma A.5. *There exists* $k_n^{SS} : [0,1] \to [0,1]$ *satisfying* $k_n^{SS}(k_c) > k_c$ *such that, when* $k_n \leq k_n^{SS}(k_c)$, $r_j(c) = 1$ *and* $r_j(n) = 0$ *imply that, in any PBE,* $r_{-j}(c) = 1$ *and* $r_{-j}(n) = 0$ *for* $j \in \{1,2\}$.

Proof. First, we prove by contradiction that $r_j(c) = 1$ and $r_j(n) = 0 = r_{-j}(c) = r_{-j}(n)$ cannot be a PBE strategy profile. If it is, then the voter elects candidate $j \in \{1,2\}$ after successful and unsuccessful communication since her expected utility from doing so is strictly positive (given $\lim_{y\to 1} C'(y) = \infty$, $y < 1$ and $\mu(\emptyset, x) \in [0,1]$), whereas the expected utility from electing candidate $-j$ is 0. Since communication is costly and has no effect on electoral outcome, a type c candidate j does not exert communication effort. By Lemma A.3, he cannot choose $r_j(c) = 1$ on the equilibrium path. A contradiction.

We also know from Lemma A.1, that $r_{-j}(c) = 0, \quad r_{-j}(n) = 1$ cannot be part of a PBE. There remains to show that $r_{-j}(c) = r_{-j}(n) = 1$ is also not incentive compatible under the assumption.

Consider a semi-separating assessment (SS) when (without loss of generality) 1 pools on the reform policy ($r_1(c) = r_1(n) = 1$) and 2 separates ($r_2(c) = 1, \quad r_2(n) = 0$). Denote $\alpha_j^{SS}(t) = x_j^{SS} y_j^{SS}(t)$, $j \in \{1,2\}$, $t \in \{c,n\}$, the communication efforts satisfy (see the Supplemental Appendix for details):

$$\frac{C_v'(x^{SS})}{G} = (1-q)\left[q y_1^{SS}(c) - (1-q)\tau y_1^{SS}(n) - q(1+\tau)(1-2\alpha_2^{SS}(c)) y_1^{SS}(n)\right] \tag{4}$$

$$C'(y_1^{SS}(t)) = (q(1-\alpha_2^{SS}(c)) + (1-q)) x^{SS}(1-k_t) \tag{5}$$

$$C'(y_2^{SS}(c)) = (q\alpha_1^{SS}(c) + (1-q)\alpha_1^{SS}(n)) x^{SS}(1-k_c) \tag{6}$$

We claim that, for the semi-separating assessment to be a PBE, it is necessary that the voter elects candidate 1 if and only if she learns his platform *and* does not learn candidate 2's. Suppose not. We need to consider two cases: (i) candidate 1 is also elected when communication with both candidates is unsuccessful ($m_1 = m_2 = \emptyset$ so the 'only if' fails and (ii) candidate 1 is not elected when only communication with candidate 2 fails ($m_1 = 1, \quad m_2 = \emptyset$) so the 'if' fails. In the second case, candidate 1 is elected with probability zero, and thus has no incentive to commit to the reform policy. In the first case, candidate 1

would be always elected unless communication with candidate 2 fails, and hence would have no incentive to exert positive communication effort. By Lemma A.3, this contradicts $r_1(t) = 1$ for both types. Hence, we must have $\mu_1(\emptyset) - (1-\mu_1(\emptyset))\tau \leq \mu_2(\emptyset) \leq \mu_1(1) - (1-\mu_1(1))\tau$, which requires $\tau \leq \frac{\mu_1(1)-\mu_2(\emptyset)}{1-\mu_1(1)}$. Notice that (omitting the superscript SS for notational simplicity)

$$\mu_2(\emptyset) = \left[1 + \frac{1-q}{q}\frac{1}{1-\alpha_2(c)}\right]^{-1} \quad , \quad \mu_1(1) = \left[1 + \frac{1-q}{q}\frac{\alpha_1(n)}{\alpha_1(c)}\right]^{-1}.$$

Substituting these values into the condition $\tau \leq \frac{\mu_1(1)-\mu_1(\emptyset)}{1-\mu_1(1)}$ and rearranging, we obtain the following necessary condition for the existence of a semi-separating equilibrium:

$$\frac{\frac{1}{1+\frac{1-q}{q}\frac{\alpha_1(n)}{\alpha_1(c)}} - \frac{1}{1+\frac{1-q}{q}\frac{1}{1-\alpha_2(c)}}}{1 - \frac{1}{1+\frac{1-q}{q}\frac{\alpha_1(n)}{\alpha_1(c)}}} > \frac{q}{1-q} \quad \Leftrightarrow \quad \frac{1}{1-\alpha_2(c)}\left(\frac{\alpha_1(c)}{\alpha_1(n)} - 1\right) > \frac{1}{1-q}$$

Since the LHS of the last inequality approaches zero as k_n approaches k_c (by inspection of 5, $\alpha_1(n)$ approaches $\alpha_1(c)$ as k_n approaches k_c), there exists $\widehat{k_n}^{SS}(k_c, G, \tau) > k_c$ such that the inequality above is violated for all $k_n \leq \widehat{k_n}^{SS}(k_c, G, \tau)$. We then obtain $k_n^{SS} = \min_{(G,\tau)\in\mathbb{R}^2_+}\{\widehat{k_n}^{SS}(k_c, G, \tau)\}$. □

An assessment is called *separating* if and only if it features $r_j(c) = 1$ and $r_j(n) = 0\ \forall j \in \{1, 2\}$. We use the superscript S to denote the candidates' optimal communication efforts and the voter's optimal attention associated with this assessment.

Lemma A.6. *There exists $k^*(k_c) > k_c$ such that whenever $k_n < k^*(k_c)$, the equilibrium is separating if and only if a separating assessment is a PBE.*

Proof of Lemma A.6. We set $k^*(k_c) = k^{SS}(k_c)$. Notice that, by lemma A.5, if candidate $j \in \{1, 2\}$ plays a separating profile, the same must happen to the two types of candidate $-j$. Hence, there are four possible types of equilibrium: (i) a separating assessment (S), in which both candidates commit to reform only when competent ($r_j(c) = 1 \quad \forall\ j \in \{1, 2\}$, $r_j(n) = 0 \quad \forall\ j \in \{1, 2\}$), (ii) a pooling assessment (P), in which all candidates propose the reform regardless of their type ($r_j(t) = 1 \quad \forall\ (j, t) \in \{1, 2\} \times \{c, n\}$), (iii) an asymmetric assessment (A), in which without loss of generality candidate j commits to reform regardless of his type and candidate $-j$ commits to the status quo regardless of this type ($r_j(t) = 1 \quad \forall\ t \in \{c, n\}$, $r_{-j}(t) = 0 \quad \forall\ t \in \{c, n\}$), and (iv) the unresponsive equilibrium (Lemma

A.4).

Let V_v^E be the expected payoff to the voter associated with assessment $E \in \{A, N, P, S\}$, and let α_t^E the implied probability of successful communication with a type t candidate.[14] From Lemma A.3, $V_v^N = 0$. It can be shown that $V_v^S = qG + (1-q)q\frac{\alpha_1^S(c)+\alpha_2^S(c)}{2}G - C_v(x^S)$ (see the proof of Lemma A.8 for more details). Given $C_v(0) = 0$, it must be that $V_v^S > qG > 0$. In the Supplemental Appendix, we also show that

$$V_v^A = qG\alpha_c^A - (1-q)\tau G\alpha_n^A - C_v(x^A) \tag{7}$$

$$V_v^P = qG - (1-q)\tau G + q(1-q)(1+\tau)G(\alpha_c^P - \alpha_n^P) - C_v(x^P) \tag{8}$$

First, notice that $\alpha_c^A < 1$ implies $V_v^S > V_v^A$. To see why $V_v^S > V_v^P$, notice that since $\alpha_c^P - \alpha_n^P < 1$, $V_v^P < qG - (1-q)^2\tau G + q(1-q)G < qG$, where the last inequality follows from the fact that $(1-q)\tau > q$. □

Lemma A.7. *A separating assessment is a PBE only if $\mu(m_1 = \emptyset, x^S) = \mu(m_2 = \emptyset, x^S)$ where x^S is the voter's optimal attention.*

Proof. The proof is by contradiction. Suppose candidates play a separating strategy and that without loss of generality $\mu(m_1 = \emptyset, x^S) > \mu(m_2 = \emptyset, x^S)$. Since (by Lemma A.3) $y_j^S(n) = 0,\ j \in \{1, 2\}$, the above inequality implies that the voter always elects candidate 1 when communication with either candidates is unsuccessful, by (3). A type n candidate 2's expected utility is thus 0. If a type n candidate 2 mimics a competent type's platform by choosing strategy $\hat{\sigma}_2(n) = (1, \hat{y}_2(n))$, where $\hat{y}_2(n) = \arg\max_{y\in[0,1]} \{\Gamma((1, y), \sigma_1^s)(1 - k_N) - C(y)\}$, his expected utility is strictly positive (since $C(0) = 0$ and $\Gamma((1, y), \sigma_1^s) > 0$ because $\mu(1, x^S) = 1$), a contradiction. □

Lemma A.8. *In a separating assessment, candidates' communication efforts and the voter's level of attention are unique, and satisfy:*

(i) incompetent candidates exert no communication effort: $y_j^S(n) = 0,\ j \in \{1, 2\}$;

(ii) competent candidates' communication efforts and the voter's level of attention are strictly

[14] It can be checked that the probability is symmetric when candidates play a symmetric strategy, see Lemma A.8 and the Supplemental Appendix for more details.

positive: $y_1^S(c) = y_2^S(c) := y^S(c) > 0$ *and* $x^S > 0$*, where* $y^S(c)$ *and* x^S *solve*

$$C'(y^S(c)) = (1-k_c)\frac{x^S}{2} \tag{9}$$

$$C_v'(x^S) = q(1-q)Gy^S(c) \tag{10}$$

Proof. By Lemma A.3, we must have $y_j^S(n) = 0,\ j \in \{1,2\}$. Consider now a c type $j \in \{1,2\}$. When choosing his communication effort, he takes as given his opponent's (y_{-j}) and the voter's (x) communication efforts. His expected utility, when he chooses communication effort y_j, is:

$$\begin{aligned} V_j(1, y_j; c) = q&\left(y_j x(1 - y_{-j}x) + \frac{y_j x y_{-j} x + (1 - y_j x)(1 - y_{-j}x)}{2}\right)(1 - k_c) \\ &+ (1-q)\left(y_j x + \frac{1 - y_j x}{2}\right)(1 - k_c) - C(y_j) \end{aligned} \tag{11}$$

The expression above follows from the fact that, in this assessment, $s_1(\emptyset, \emptyset) = 1/2$ (by Lemma A.7), $s_1(1,1) = 1/2$ (since $\mu(1,x) = 1$ for both candidates), $s_1(1,\emptyset) = 1$, and $s_1(\emptyset, 1) = 0$. In words, the voter flips a coin when communication with both is successful or unsuccessful (Lemma A.7). When communication is successful only with candidate 1 (2), she elects candidate 1 (2).

After rearranging, we get that a competent candidate 1 chooses his communication effort y_j to maximize: $\max_{y_j \in [0,1]} \left(\frac{1+y_j x}{2}\right)(1-k_c) - q(1-k_c)\frac{y_{-j}x}{2} - C(y_j)$. We get the following First-Order Condition (FOC):

$$C'(y_j(c)) = \frac{1-k_c}{2}x \tag{12}$$

The voter's electoral strategy is in this assessment: $s_1(\emptyset, \emptyset) = 1/2$ (by Lemma A.7), $s_1(1,1) = 1/2$ (since $\mu(1,x) = 1$ for both candidates), $s_1(1,\emptyset) = 1$, and $s_1(\emptyset, 1) = 0$. The voter thus solves the following maximization problem:

$$\max_{x \in [0,1]} \left\{ q^2 G + (1-q)q\left(y_2 x G + (1 - y_2 x)\frac{G}{2}\right) + (1-q)q\frac{G}{2}(1 + y_1 x) - C_v(x) \right\} \tag{13}$$

We thus have the following FOC:

$$C_v'(x) = q(1-q)\frac{G}{2}(y_1 + y_2) = q(1-q)Gy_1 \tag{14}$$

Where the second equality comes from the fact that $y_1 = y_2$ by (9). It follows that $y^S(c)$ and x^S ($j \in \{1,2\}$) are defined by the system (9)- (10). We now show that this system has a unique strictly positive solution.

Let $Y^S(x) = (C')^{-1}\left(\frac{1-k_c}{2}x\right)$ and $h(x) = q(1-q)Y^S(x) - C_v'(x)/G$. Since $C_v(.)$ and $C(.)$ are thrice continuously differentiable, the function $h(.)$ is twice continuously differentiable. A necessary and sufficient condition for the existence of a strictly positive $y^S(c)$ and x^S is that the function $h(x)$ has at least one strictly positive zero (since the voter's welfare is increasing in $y^S(c)$ by the Envelope Theorem, our criterion selects the *largest* zero of $h(x)$). Given the properties of the communication cost functions, $h(0) = 0$ and $h(1) < 0$. Therefore, to show that $h(x)$ has a unique strictly positive zero, it is sufficient to show that (i) $h'(0) > 0$ and (ii) $h'(x)$ is decreasing. Differentiating $h(\cdot)$ using the definition of $Y_c^S(x)$ yields $h'(x) = q(1-q)\frac{(1-k_c)/2}{C''(Y_c^S(x))} - \frac{C_v''(x)}{G}$. Using the convexity of $C(\cdot)$ and the fact that $C_v''(0) = 0$, we can write $h'(0) \propto \frac{1-k_c}{2} > 0$. Uniqueness follows from the fact that $C''(\cdot)$ and $C_v''(x)$ are both weakly increasing. Notice that uniqueness and continuity of $h(x)$ in k_c and G imply that x^S and $y^S(c)$ are continuous in k_c and G. □

Lemma A.9. *In a separating assessment, the voter's level of attention x^S and a competent candidate's communication effort $y^S(c)$ increase with G.*

Proof. From lemma A.8, $(y^S(c), x^S)$ is the unique solution of (9)-(10). Using the properties of $h(x)$, we must have $h(x) <$ (resp. $>$) $0 \quad \forall\ x \in (x^S, 1]$ (resp. $\forall\ x \in (0, x^S]$). Hence, at x^S, $h(x)$ must cross the horizontal axis from above. Since, for given x, $h(x)$ is continuous and decreasing in $1/G$, the lemma immediately follows. □

Lemma A.10. *In a separating assessment, the voter's attention (x^S) and competent candidates' communication efforts ($y^S(c)$) decrease with the competent candidates' implementation cost (k_c).*

Proof. Notice that $h(x)$ is continuous and decreasing in k_c $\left(\frac{dY_c(x)}{dk_c} = \frac{-x}{C''(Y_c(x)} < 0\right)$. □

Let $V_j(r_j, y_j; t)$ denote the the expected payoff of a type $t \in \{c, n\}$ candidate as a function of his platform ($r_j \in \{0,1\}$) and communication ($y_j \geq 0$) choices in a separating assessment. Taking the voter's attention x and a competent candidate $-j$'s communication effort as given,

we obtain:

$$V_j(1, y_j; t) = \frac{1 + xy_j - qxy_{-j}}{2}(1 - k_t) - C(y_j) \tag{15}$$

$$V_j(0, 0; t) = \frac{1 - qxy_{-j}}{2} \tag{16}$$

Using (15) and (16), the incentive compatibility constraint (IC) of a competent candidate $j \in \{1, 2\}$ is:

$$\begin{aligned} & V_j(1, y_j^S(c); c) \geq V_j(0, 0; c) \\ \Leftrightarrow & \frac{1 + y_j^S(c)x^S - qy_{-j}^S(c)x^S}{2}(1 - k_c) - C(y_j^S(c)) \geq \frac{1 - q}{2} + q\frac{1 - y_{-j}^S(c)x^S}{2} \end{aligned} \tag{17}$$

Denote $\hat{y}_j(n)$ an incompetent candidate j's optimal communication effort when he commits to the reform policy: $\hat{y}_j(n)$ is defined by $C'(\hat{y}_j(n)) = \frac{1-k_n}{2}x^S$. An incompetent candidate j's (IC) is:

$$\begin{aligned} & V_j(1, \hat{y}_j^S(n); n) \leq V_j(0, 0; n) \\ \Leftrightarrow & \frac{1 + \hat{y}_j(n)x^S - qy_{-j}^S(c)x^S}{2}(1 - k_n) - C(\hat{y}_j(n)) \leq \frac{1 - q}{2} + q\frac{1 - y_{-j}^S(c)x^S}{2} \end{aligned} \tag{18}$$

Lemma A.11. *When candidates play a separating strategy,*
(i) An increase in G or a decrease in k_c relaxes the incentive compatibility constraint of a competent candidate $j \in \{1, 2\}$;
(ii) An increase in G or a decrease in k_c or k_n tightens the incentive compatibility constraint of an incompetent candidate $j \in \{1, 2\}$.

Proof. For a competent candidate, the effect of G follows from $d(V_j(1, y_j^S(c); c) - V_j(0, 0; c))/dG > 0$ since $dx^S/dG > 0$ and $dy_{-j}^S/dG > 0$ (Lemma A.9). A similar reasoning (using Lemma A.10) implies the result for k_c. The reasoning is reversed for an incompetent candidate (since the inequality is reversed in his (IC)). □

Proof of Proposition 1. We only prove necessity. The proof of sufficiency proceeds by the usual argument (details available upon request).

Point (i). Denote $\overline{k_c}$, the unique solution to the equation $\lim_{G\to\infty} V_j(1, y_j^S(c); c) = V_j(0, 0; c)$.[15]

[15] While $\lim_{G\to\infty} x^S = 1$, the properties of the communication cost functions guarantee that $Y_c(1) < 1$.

To see that k_c^S exists, notice that for $k_c = 0$, $V_j(1, y_j^S(c); c) > V_j(0, 0; c)$, while for $k_c = 1$, $V_j(1, y_j^S(c); c) \leq 0 < V_j(0, 0; c)$. Uniqueness follows from Lemma A.11. If $k_c \geq \overline{k_c}$, (17) is never satisfied and a separating strategy profile cannot be an equilibrium.

Point (ii). We first prove existence of the unique threshold $\underline{G} \in (0, 1)$ such that (17) holds if and only if $G \geq \underline{G}$. Note that $x^S = 0$ when $G = 0$, which implies $y^S(c) = 0$. Given $k_c > 0$, $V_j(1, 0; c) < V_j(0, 0; c)$ so (17) does not hold at $G = 0$. Since $k_c < k_c^S$, there exists a finite G' such that $V_j(1, y_j^S(c); c) > V_j(0, 0; c)$ for all $G \geq G'$. Uniqueness follows directly from A.11 (i.e., the difference $V_j(1, y_j^*(c); c) - V_j(0, 0; c)$ is strictly increasing with G).

Existence and uniqueness of $k_n^S(k_c) \in (0, 1)$ follows from a similar reasoning as point (i).[16] The proof of $k_n^S(k_c) > k_c \quad \forall\ k_c < \overline{k_c}$ is by contradiction. Suppose not. Then by Lemma A.11 and the definition of k_c^S, $\lim_{k_n \to k_c} V_j(1, \hat{y}_j(n); n) - V_j(0, 0; n) < 0$, which contradicts the definition of $k_n^S(k_c)$. Define $\overline{k_n}(k_c) = \min\{k_n^S(k_c), k_n^{SS}(k_c)\}$.

For $k_n \geq \overline{k_n}(k_c)$, an incompetent candidate's (IC) is always satisfied, whereas a competent candidate's (IC) is satisfied if and only if $G \geq \underline{G}$.

Point (iii). The proof of existence and uniqueness of $\overline{G} \in (0, 1)$ follows from a similar reasoning as for $\underline{G}$. As $V_j(1, y_j(c); c) - V_j(0, 0; c)$ is decreasing with k_c and increasing with G, it can easily be checked that $\underline{G} < \overline{G}$ given $k_c < k_n$. Now, an incompetent candidate's (IC) is satisfied only if $G \geq \overline{G}$, whereas a competent candidate's (IC) is satisfied if and only if $G \geq \underline{G}$. □

Lemma A.12. *There exists $\widehat{\tau}^A : [0, 1] \times \mathbb{R}_+ \to [q/(1-q), \infty)$ such that the asymmetric assessment ($r_j(t) = 1$, $r_{-j}(t) = 0$, $j \in \{1, 2\}$, $t \in \{c, n\}$) is a PBE if and only if $\tau \leq \widehat{\tau}^A(k_n, G)$.*

Proof. Wlog suppose $j = 1$. In this asymmetric assessment (A), the voter elects candidate 1 only if she learns his platform $m_1 = 1$. A type $t \in \{c, n\}$ candidate 1's (IC) is then: $x^A y_1^A(t)(1 - k_t) - C(y_1^A(t)) \geq 0$, where the subscript A denotes optimal attention and communication effort (see the Supplemental Appendix for more details). Given $C(0) = 0$, it is clear that a necessary condition is $x^A > 0$. Voter's attention and candidate 1's communication

This implies that type c's communication effort and expected payoff are well defined even for arbitrarily large G.

[16] The only difference is that the upper bound on k_n depends on k_c— $\overline{k_n}(k_c)$—since an incompetent candidate j's incentive compatibility constraint depends on k_c through the voter's and a competent candidate $-j$'s communication efforts, see (18)).

efforts satisfy (see the Supplemental Appendix for details): $\frac{C_v'(x^A)}{G} = qy_1^A(c) - (1-q)\tau y_1^A(n)$ and $C'(y_1^A(t)) = (1-k_t)x^A$. Define

$$h^A(x;\tau) := qY_c^A(x) - \tau(1-q)Y_n^A(x) - C_v'(x)/G, \tag{19}$$

where $Y_t^A(x) = (C')^{-1}((1-k_t)x)$. A necessary condition for existence of the equilibrium is thus that the equation $h^A(x;\tau) = 0$ has at least one interior zero. Notice that $h^A(\cdot)$ is supermodular in $(x, -\tau)$: $\frac{\partial^2 h^A}{\partial x \partial -\tau} = (1-q)\frac{dY_n(x)}{dx} > 0$, since $\frac{dY_n^A(x)}{dx} > 0$ by the convexity of $C(\cdot)$. Supermodularity implies that the extremas of the set $\{x \in [0,1] : h^A(x;\tau) = 0\}$ are weakly decreasing in τ (the opposite would require the existence of a point where $\partial h^A(x;\tau)/\partial x$ is decreasing in $-\tau$). Therefore, if $h^A(x; q/(1-q))$ has a strictly positive zero, then the necessary condition $x^A > 0$ holds for some $\tau \geq q/(1-q)$. Since $h^A(0; q/(1-q)) = 0$, it is sufficient for existence of a strictly positive zero to show that $\partial h^A(0; q/(1-q))/\partial x \geq 0$. Simple substitution yields $\partial h^A(x; q/(1-q))/\partial x = q(Y_c'(x) - Y_n'(x)) - \frac{C_v''(x)}{G}$. By assumption, $C_v''(0) \geq 0$. If $C''(0) > 0$, then $Y_c'(0)$ is bounded above and we obtain using the definition of $Y_t(x)$, $h_A'(0) \propto k_n - k_c > 0$. If, instead, $C''(0) = 0$, then continuity and differentiability of $Y_c(x)$ and $Y_n(x)$, $C''(x) > 0$, $\forall x > 0$, and $Y_c(x) - Y_n(x) > 0 \quad \forall x > 0$ together imply $\lim_{x\to 0} Y_c'(x) - Y_n'(x) > 0$. Suppose not, then it must exist $x' > 0$ such that $Y_c(x) - Y_n(x) \leq 0$, a contradiction.

Supermodularity and the definition of $h^A(x;\tau)$ (Equation 19) guarantees that there exists $\widehat{\tau}^A(k_n, G)$ such that for all $\tau > \widehat{\tau}^A(k_n, G)$, $h^A(x;\tau) < 0$ for all $x > 0$ (to see existence, take $\tau \to \infty$, dependence on k_n and G follows from the definition of $h^A(\cdot)$). Hence the asymmetric equilibrium exists only if $\tau \leq \widehat{\tau}^A(k_n, G)$.

For sufficiency, the proof that candidate 1 and the voter's strategies are best response on the equilibrium path follows from the usual argument. On the equilibrium path, candidate 2 does not exert communication effort (Lemma A.3). We need, however, to define the voter's belief after observing candidate 2's platform (out-of-equilibrium event). We impose $\mu_2(1, x^A) = q$. This belief implies that the voter elects candidate 1 whenever $m_1 = m_2 = 1$. To see this, notice that $\mu_1(1, x^A) > q$ since $\mu_1(1, x^A) - (1 - \mu_1(1, x^A))\tau > 0$ as $x^A > 0$. With this out-of-equilibrium belief, candidate 2 has no incentive to deviate since his electoral chances are unaffected by his platform choice (he is elected if and only if $m_1 = \emptyset$) and the reform policy is costly. Hence, we have that $\tau \leq \widehat{\tau}^A(k_n, G)$ is a sufficient condition for the asymmetric

equilibrium to exist. □

Lemma A.13. *There exists* $\tau^P_{Exist} : [0,1]\times\mathbb{R}_+ \to [q/(1-q),\infty)$ *such that a pooling assessment* $(r_j(t)=1,\ j\in\{1,2\},\ t\in\{c,n\})$ *is a PBE only if* $\tau \geq \tau^P_{Exist}(k_n, G)$.

Proof. Under a pooling assessment (P), candidates' communication efforts and the voter's attention satisfy (see the Supplemental Appendix for details): $\frac{C'_v(x^P)}{G} = q(1-q)(1+\tau)(y^P(c)-y^P(n))$ and $C'(y^P(t)) = \frac{1-k_t}{2}x^P$. The voter's optimal level of attention, x^P, solves $h^P(x) = q(1-q)(1+\tau)(Y^P_c(x) - Y^P_n(x)) - \frac{C'_v(x)}{G}$ (where $Y^P_t(x) = (C')^{-1}((1-k_t)x/2)$). Denote $\overline{x}^P$ the highest solution to $h^P(x)=0$ (existence follows from a similar reasoning as in Lemma A.12). It can be checked that $\overline{x}^P$ is increasing in τ (similar reasoning as in Lemma A.12).

A pooling assessment is a PBE only when a non competent candidate's (IC) is satisfied. Recall $\alpha^P_t = x^P y^P(t),\ t\in\{c,n\}$, an incompetent candidate's (IC) is given by (see the Supplemental Appendix for details):

$$\frac{\alpha^P_n(1-k_n)}{2} - C(y^P_n) \geq k_n \frac{1-q\alpha^P_c-(1-q)\alpha^P_n}{2} \tag{20}$$

It can easily be checked that the left-hand side (right-hand side) of (20) is increasing (decreasing) with x^P. Hence, if Equation 20 does not hold for $\overline{x}^P$, it does not hold for any solution to the communication subform. Using $\overline{x}^P$ increasing with respect to τ, if Equation 20 holds as $\tau\to\infty$, there exists $\tau^P_{Exist}(k_n,G)\in[q/(1-q),\infty)$ such that a pooling equilibrium exists only if $\tau\geq\tau^P_{Exist}(k_n,G)$ (dependence on k_n and G follows from the definition of $\overline{x}^P$ and Equation 20).[17] If Equation 20 does not hold as $\tau\to\infty$, then denote (slightly abusing notation) $\tau^P_{Exist}(k_n,G)=\infty$. □

Lemma A.14. *There exists* $\tau^P_{Welf} : [0,1]\to[q/(1-q),\infty)$ *such a pooling assessment* $(r_j(t)=1,\ j\in\{1,2\},\ t\in\{c,n\})$ *yields positive expected utility to the voter only if* $\tau<\tau^P_{Welf}(k_n)$.

Proof. Inspection of Equation 20 reveals that a pooling assessment is a PBE only if $\alpha^P_n(1-k_n) > k_n(1-q\alpha^P_c-(1-q)\alpha^P_n)$. Rearranging, we obtain that the difference $\alpha^P_c-\alpha^P_n$ is bounded above by $\frac{\alpha^P_c-k_n}{1-qk_n}$. Inspection of Equation 8 reveals that $V^P_v \propto q-(1-q)\tau+q(1-q)(\alpha^P_c-\alpha^P_n)(1+\tau)-\frac{C_v(x^P)}{G}$. As a consequence, a necessary condition for $V^P_v\geq 0$ is

$$q-(1-q)\tau+q(1-q)\frac{\alpha^P_c-k_n}{1-qk_n}(1+\tau)>0.$$

[17] We do not exclude the case when Equation 20 holds for all τ (i.e., $\tau^P_{Exist}(k_n,G)=q/(1-q)$).

Using $\alpha_c^P < 1$, straightforward algebraic manipulation yields that a necessary condition is $(1-qk_n)(q-\tau(1-q))+q(1-q)(1+\tau)(1-k_n) \geq 0$. Define $\tau_{Welf}^P(k_n) := \frac{q}{1-q}\left(1+\frac{1-k_n}{1-q}\right)$ so the claim holds for all $\tau \geq \tau_{Welf}^P(k_n)$. □

Corollary A.1. *When $\tau \geq \tau_{Welf}^P(k_n)$, a pooling assessment is not an equilibrium.*

Proof. Using Lemmas A.6 and A.14, a pooling assessment is welfare-dominated by the unresponsive PBE. Giving our selection criterion, it cannot be an equilibrium. □

Inspection of Equation 7 reveals that the assessment (A), when it is a PBE, welfare-dominates the unresponsive equilibrium.

Proof of Proposition 2. (i) Let $\tau^N(k_n, G) := \max\{\tau_{Welf}^P(k_n, G), \widehat{\tau}^A(k_n, G)\} > q/(1-q)$ (the inequality follows from the definition of $\widehat{\tau}^A(k_n, G)$). Above $\tau^N(k_n, G)$, the equilibrium is unresponsive since the asymmetric assessment is not a PBE (Lemma A.12) and the pooling assessment is welfare dominated by the unresponsive PBE (Lemma A.14). Define $\overline{\tau}^0 := \max_{G>\overline{G}} \tau^N(k_n, G)$ (dropping dependence on k_n for ease of exposition). The claims hold since the equilibrium probability of reform drops to zero whenever $G > \overline{G}$.

(ii) In all that follows, we assume that $G = \overline{G}$. When $\tau \geq \tau_{Welf}^P$, the pooling equilibrium is dominated by the unresponsive equilibrium (Lemma A.14). Define the probability of reform in an asymmetric assessment by $\Pi^A(\tau) := q\alpha_c^A + (1-q)\alpha_n^A$. The corresponding quantity associated with a separating assessment is $\Pi^S := q + q(1-q)\alpha^S$ (by Lemma A.8, the voter's level of attention and a competent candidate's effort are independent of τ). Hence, a necessary condition for the probability of reform to increase at $G = \overline{G}$ is $\alpha_c^A > q$. Define $\overline{x}^A$ the highest solution to $h^A(x;\tau) = 0$, with $h^A(\cdot)$ defined by (19). By Lemma A.12, $\overline{x}^A$ is decreasing with τ and as $\tau \to \widehat{\tau}^A(k_n, \overline{G})$, $\overline{x}^A \to 0$. Therefore, there exists $\tau_R \in [q/(1-q), \widehat{\tau}^A(k_n, \overline{G}))$ (if $\lim_{\tau \to q/(1-q)} \Pi^A(\tau) < \Pi^S$, then denote $\tau_R = q/(1-q)$) such that $\Pi^A(\tau) \geq \Pi^S \Leftrightarrow \tau \leq \tau_R$. Finally, let $\overline{\tau} = \max\{\tau_{Welf}^P, \tau_R\}$. □

Proof of Proposition 3. (i) Define $\underline{\tau} := \min_{G>\overline{G}} \widehat{\tau}^A(k_n, G)$ (again dropping dependence on k_n for ease of exposition). By definition of $\widehat{\tau}^A(\cdot)$, $\underline{\tau} > q/(1-q)$. By definition of $\overline{\tau}$, $\underline{\tau} \leq \overline{\tau}$ (both are equal when $\widehat{\tau}^A(k_n, G) > \tau_{Welf}^P(k_n, G)$ for all G, a sufficient condition). The asymmetric PBE always welfare-dominates the unresponsive PBE for $\tau \leq \underline{\tau}$ and involves a strictly positive probability of botched reform (unlike the separating PBE when it exists). Hence the claim holds.

(ii) Using the proof of proposition 2, we can simply set $\underline{\tau} = \min\{\tau^P_{Welf}, \tau_A\}$, so at $G = \overline{G}$, the equilibrium is either (i) pooling or (ii) asymmetric with a higher probability of reform than separating. □