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16 March 2013

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First Draft March 16, 2013; Current Draft December 10, 2015

Abstract

This paper studies how voters' demand for reform affects the probability that economic reforms are adopted and, conditional on being adopted, their quality. We consider a model of electoral competition with rationally inattentive voters in which the success of policy changes is tied to a politician's unobservable competence. We show that when the demand for reform is high, the electoral process becomes over-responsive: Candidates promise reforms despite their inability to carry-out welfare-improving policy changes. As voters must then choose between potentially harmful reforms or no reform, high demand for reform tends to be associated with lower probability of reform and/or lower quality of reform. We explain how our results help organize the mixed evidence regarding the impact of crises on the likelihood of reform.

JEL Classification: D72, D78, D83.

Keywords: Crises, Reforms, Rationally Ignorant Voters, Campaigns.

*We thank Avidit Acharya, Scott Ashworth, Laurent Bouton, Ethan Bueno de Mesquita, Peter Buisseret, Micael Castanheira, Allan Drazen, Justin Fox, Navin Kartik, Pablo Montagnes, Roger Myerson, Larry Samuelson, Francesco Squintani, Dustin Tingley, Gabriel Ulyssea, Richard Van Weelden, seminar participants at APSA, MPSA, Princeton, University of Chicago, Harris School, Collegio Carlo Alberto, Mannheim, University of Oslo, ECARES, SITE, and EITM Institute for helpful comments, as well as Kate Anthony and Richard Jung for excellent research assistance. We are especially grateful to Bård Harstad, for very valuable feedback. All remaining errors are the authors' responsibility. A previous version of the manuscript was circulated under the title: "Information and Reforms: Electoral Campaigns and the Voters' Curses."
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1 Introduction

Under what conditions are economic reforms likely to pass and succeed? Confronted with a stark divergence between widely accepted academic prescriptions and policy practice (e.s., Drazen, 2000, p.403), copious studies have investigated how the existence of *political constraints* impedes the adoption of welfare-improving reforms. Previous scholarship has stressed the role of policy-makers' electoral concerns (e.g., Fu and Li, 2014), the difficulty of recruiting competent policy-makers into public service (e.g., Mattozzi and Merlo, 2007), and conflicts over the allocation of costs and benefits (e.g., Alesina and Drazen, 1991).[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 recipient of politicians' decisions and their support for reformist agenda, necessary for their adoption in democratic systems, is not always guaranteed (Stokes, 1996). Second, the relationship between economic conditions and the strength of political obstacles to reform remains somewhat elusive: The conventional scholarly wisdom that economic crises trigger reform has been called into question by several empirical studies (e.g., Drazen and Easterly, 2001; Pop-Eleches, 2009).

In this paper, we show how poor economic conditions can trigger voters' skepticism towards candidates promoting changes and lead to a decrease the probability of reforms and/or an increase in the likelihood of botched reforms. In bad economic times, the electoral process becomes over-responsive: Candidates propose a reformist agenda despite not having the competence to carry out welfare-improving policy changes. The electoral appeal of reformist candidates then decreases, and so can the overall probability of reform. While we are not the first to stress the role of voters in the implementation of reforms,[2] our theory highlights the importance of considering the strategic interactions between politicians and voters. Voters' opinion of reforms and candidates' willingness to propose policy change cannot be understood separately.

We study a model with a representative voter (to whom we reserve the pronoun 'she') and two candidates competing for office. Candidates privately observe their level of competence and choose a platform: a status quo policy or a reform policy, which is politically costly to

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

[2]See, for example, the seminal contribution of Fernandez and Rodrick (1991) in the case of individual uncertainty about the consequences of reform.

implement. Competence has three properties in our setting. First, the cost of implementing the reform policy is lower for a competent politician than an incompetent one. Second, the reform policy benefits the voter only if carried out by a competent politician. Third, competence cannot be directly revealed to the voters; only policy platforms can be credibly communicated.

The voter, however, is cognitively constrained: in order to learn candidates' platforms, she needs to pay costly attention to the electoral campaign. Electoral communication, moreover, requires "effort" (e.g., campaign spending) by candidates. Greater communication effort and/or attention increases the probability that the voter learns a candidate's platform.

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. A novel implication of our approach is that voter's incentive to pay attention to the campaign is endogenous to politicians' equilibrium behaviors *and* to the voter's demand for reform, which we define as the difference in voter's payoffs between a successful reform policy and the status quo policy.

When the screening problem faced by the voter is severe enough (i.e., competent and incompetent politicians' cost of implementing the reform policy are relatively close), the electoral process performs best (i.e., the voter's welfare is maximized) when candidates play a separating strategy profile: commit to the reform policy only if competent.[3] In a separating assessment, the probability of reform is positive, whereas the probability of a botched reform is zero. 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), a separating equilibrium does not exist 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. The voter would pay great attention to the campaign: The gain from successful reform is high and platforms are a perfect signal of competence, so learning a candidate's reformist commitment is very valuable. As a result, the electoral reward for committing to the reform policy would be large. While this would encourage a

[3] As multiple equilibria can arise in our model, we select the equilibrium which maximizes the voter's welfare. As such, we focus on the best case scenario for the voter.

competent candidate to commit to the reform policy, it would also discourage an incompetent candidate from proposing the status quo policy. Despite his higher implementation cost, an incompetent candidate would then prefer to deviate and propose the reform policy. When demand for reform is high, the voter would pay too much attention for a separating equilibrium to exist.

The reasoning above implies that when reforms are most needed, electoral competition no longer protects the voter from harmful policy change. In any equilibrium with a positive probability of reform, the voter also faces the risk of botched reforms. Due to this risk, high demand for reform does not necessarily increase the likelihood of reform. The correlation between these two variables depends critically on the payoff loss resulting from a reform carried out by an incompetent politician, which we refer to as the voter's *selection concern*.

When the selection concern is high, the welfare-maximizing equilibrium is unresponsive: neither candidate proposes the reform policy. When the voter's selection concern is intermediary, under certain conditions on the implementation cost, the welfare-maximizing equilibrium features one candidate promising the reform policy independently of his type, whereas his opponent always promises the status quo policy. In this asymmetric equilibrium, learning the reformist candidate's platform is only an imperfect signal of competence. Compared to the separating equilibrium, the voter is more skeptical about the value of electoral communication and pays less attention to the campaign. This, in turn, results in a low probability of electing the reformist candidate. High demand for reform is then associated with a relatively low probability of reform and a relatively high probability of botched reform. Consequently, a high demand for reform translates into a relatively high probability of (successful and botched) reforms only when the voter's selection concern is low.

Our results have important implications for understanding how crises—defined as a period of high demand for reform—affect the adoption of economic reforms. While the conventional wisdom holds that crises trigger reforms (Tommasi and Velasco, 1996), empirical evidence on the issue have been mixed. A few papers confirm the conventional wisdom (e.g., Alesina et al., 2006; Prati et al., 2013), but 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 Easterly and Drazen

(2001) document, crises decrease the likelihood of reforms whenever political competence matters.

1.1 Related Literature

Several papers study political settings with rationally ignorant voters. Previous works, however, generally consider settings with fixed alternatives and study how well dispersed information is aggregated in large electorates (e.g., Martinelli, 2006; Oliveiros, 2013).[4] To our knowledge, only a handful of papers embed rationally ignorant voters in a political agency setting. Hortala-Vallve et al. (2013) show that restriction on politicians' scope of authority meant to limit policy swings that are harmful for poor voters might be counterproductive when voters face a high cost of attention. Svolik (2013) examines the probability that democracy stabilizes when politicians are potentially corrupt and it is costly for voters to observe politicians' actions. Matejka and Tabellini (2015) introduce 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. Prato and Wolton (2015a) study how rational ignorance tends to exacerbate or mitigate electoral imbalances (defined as asymmetries in voters' opinions of party labels and candidates). In a companion paper (Prato and Wolton, 2015b), we focus on voter's behavior and show that voter's lack of attention cannot be conflated with a lack of interest for politics.[5] The present manuscript complements this literature by analyzing how economic conditions affect policy outcomes via politicians' electoral incentives.

Our paper also contributes to the literature on the importance of electoral campaigns for a functioning democracy. Several papers study how interest groups tilt candidates' platforms in their favor in exchange for campaign contributions (e.g., Baron, 1994; Grossman and Helpman, 1996; Prat, 2002; Coate, 2004; Ashworth, 2006). Aragonès et al. (2014) consider how politicians can use campaign messages to manipulate voters' electoral decisions. In contrast, campaigns in our theory serve as a signal of candidates' competence, whose

[4] The notion of agents' "rational inattention" (Sims, 1998; 2010) has also been used in the macroeconomic literature to study issues such as nominal rigidities (Maćkowiak and Wiederholt, 2009) or the home bias (Van Nieuwerburgh and Veldkamp, 2009).

[5] A few papers also consider how voters' behavioral biases affect elected officials' allocation of resources (e.g., Ashworth and Bueno de Mesquita, 2014) or polarization in public opinion (e.g., Levy and Razin, 2015).

informativeness is endogenous to candidates' behaviors.[6] Further, by considering rationally ignorant voters, we propose a new approach to electoral campaign building on Dewatripont and Tirole (2005): Voters' (receivers') information is endogenous to their level of attention and to candidates' (sender's) effort. Other models of electoral campaigns are unidirectional: they either study candidates informing voters (e.g., Prat, 2002; Coate, 2004; Ashworth, 2006; Dewan and Hortala-Vallve, 2013) or voters learning about candidates (e.g., Martinelli, 2006; Svolik, 2013; Hortala-Vallve et al., 2013).

The rest 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 analyze a one-period three-player electoral game where a representative voter elects one of two candidates (1 and 2). Before the campaign candidate $j \in \{1, 2\}$ privately observes his type $t \in \{c, n\}$, where c denotes competent and n incompetent. It is common knowledge that the probability candidate j is competent is $Pr(t = c) = q$. 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 choice 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—

[6] Westermark (2004) also considers a model where candidates can use campaign expenditures to signal their fixed policy preferences to voters.

i.e., the voter observes candidate j's platform—is $y_j x$ (Figure 1). After the campaign, the voter elects one of the two candidates, whom we denote by $e \in \{1, 2\}$.

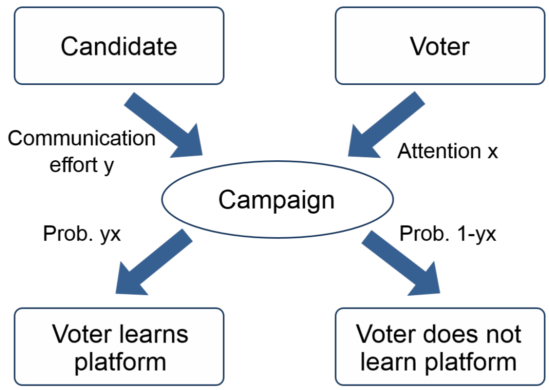


Figure 1: Voter's learning during the campaign

The voter's utility function depends on the policy implemented by the elected politician and her level of attention. When the elected politician implements the status quo policy, the voter's payoff does not depend on the politician's competence, and is normalized to zero. When the the elected politician implements the reform policy, the voter's payoff depends on the politician's competence. Specifically, the voter enjoys a payoff gain of $G > 0$ (relative to the status quo) if the politician is competent, and suffers a loss $L = \tau G$ if the politician is incompetent. The parameter G captures the voter's benefit from a successful reform, or her *demand for reform*. The parameter τ, instead, represents the damage from having a reform carried out by an incompetent politician, and captures the voter's *selection concern*.

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 utility function is then:

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

Candidates are office-motivated. We normalize their payoff from being out of office to 0. A politician's payoff from being 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 $j \in \{1, 2\}$ assumes the following form:

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

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. The electoral campaign takes place. 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: 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 to decide which candidate to elect when indifferent), and excluding weakly-dominated strategies. 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 equilibrium based on the voter's expected payoff (a common criterion in the literature on election). 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 and candidates' payoffs.

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

1. *$C_v(\cdot)$ and $C(\cdot)$ are twice continuously differentiable, strictly increasing and strictly convex on $(0, 1]$;*

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

3. $C_v'''(0) = 0$

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

Properties 1 and 2 follow directly from Dewatripont and Tirole (2005). Property 3 is novel and guarantees that competent candidates and the voter exert strictly positive communication effort when candidates play a separating strategy profile (that is, a candidate commits to the reform policy only when competent). We impose Property 4 in order to guarantee the uniqueness of candidates' equilibrium communication efforts and voter's level of attention in a separating equilibrium. It is meant to simplify the exposition and relaxing this assumption would not affect our result (which would apply to the highest and lowest equilibrium communication levels).

As argued by Rodrick (1996),voters are unwilling to simply act a rubber stamp of an ambitious reformist agenda. We thus impose a restriction on the voter's selection concern to incorporate voter's initial skepticism.

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

Assumption 2 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 ability and the payoff loss caused by a botched reform (i.e., a reform implemented by an incompetent politician).

2.2 Discussion

The main novelty of our framework is that the probability that the voter learns a candidate's platform depends critically on her level of attention to the campaign. As such, in our set-up, the voter is "rationally ignorant" as defined by Downs (1957). Our approach to voter learning is 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. While intuitive, this complementarity assumption is not essential to derive our results: as long as voter attention is costly and can vary, candidates' equilibrium platform choice would be a function of her level of attention and (while the analysis would be more complicated) our results would go through.

The voter's key electoral concern regards the successful implementation of a major shift in economic policy. The reform can be a change of economic paradigm, as in Latin America in the 1980's, 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 1990's) or welfare benefits (such as Portugal's recent spending cuts). The reform policy can be thought as an experiment where success does not depend on the state of the world (as in Callander 2011a and 2011b), but on political competence. Competence in our set-up can be thought as a politician's ability to correctly set the pace and scope of the reform as well as as the compensation of winners and losers, which significantly increase the probability that the reform will be successful (Haggard and Webb, 1993). An incompetent politician does not possess these skills and dramatically increases the risk of badly engineered reforms, which impose a large cost on society, as the Latin America experience demonstrates (Dornbusch, 1988; Krueger, 1993).

The economic environment is captured by two parameters: the demand for reform G and the selection concern τ. We relate G to the economic conditions, and τ to the type of policy domain affected by the reform. Large G are associated with worse economic conditions, where a politicians' competence is more valuable. Large τ correspond to more complex policy domains, where lack of competence in carrying out reform produces nefarious consequences.

As noted above, competence also affects the cost of implementing the reform policy. For instance, competence is associated with a higher ability to overcome vetoes, a superior capacity to staff, insulate, and control bureaucracies (for a discussion of the costs associated with any policy change, see Hall and Deardoff, 2006). Additionally, the lower implementation cost might also result from politicians' concerns for their place in history books, which depends on the success or failure of reforms.[7]

[7] Politician could also care about voter's welfare. This complicates the analysis without affecting our main results as long as the weight on the voter's welfare is sufficiently small.

3 Conditions for well-functioning democracy

We first establish some general properties of the voter's and candidates' strategies on the equilibrium path. The voter elects the candidate who gives her the highest expected payoff given her beliefs about the candidates' competence. While successful electoral communication fully reveals a candidate's behavior if elected, it is not necessarily a perfect signal of competence. However, since a competent candidate faces a lower implementation cost, successful communication is always "good news"; it raises the voter's equilibrium posterior that the candidate is competent and consequently, always increases his electoral chances.

Lemma 1. *In any equilibrium, a candidate's probability of winning the election is (weakly) greater after successful communication.*

However, candidates do not always try to communicate their platform to the voter. Since the status quo policy is costless to implement, committing to $r = 0$ can be understood as a default option for a politician. A candidate has no incentive to pay a cost to reveal that he commits to his default option. Consequently, in equilibrium, unsuccessful communication lowers the voter's expectation that the candidate proposes reform. In turn, this implies that a candidate committing to the reform policy must exert strictly positive communication effort.

Lemma 2. *In any equilibrium, a candidate exerts strictly positive communication effort if and only if he commits to the reform policy ($r = 1$).*

Lemma 2 has two important implications. First, a candidate faces a double cost of committing to the reform policy: (i) a communication cost—$C(y)$—, borne regardless of the electoral outcome, and (ii) the implementation cost—k_t—, borne only when elected. Second, an 'unresponsive' strategy profile (candidates pool on the status quo and exert zero communication effort, the voter does not pay any attention to the campaign, and the election is decided by the flip of a coin) is always a PBE (see Lemma A.2 in the Appendix). However, the voter would be better off in a PBE in which candidates commit to the reform policy only when competent. Moreover, whenever the voter's screening problem is severe enough, this separating PBE is also the welfare-maximizing PBE for the voter.

Lemma 3. *There exists $k_n^* : [0, 1] \to [k_c, 1]$ such that, whenever $k_n < k_n^*(k_c)$, the equilibrium is separating if and only if a separating assessment is a PBE.*

When the screening problem is mild (i.e., the difference between the two types' implementation costs is large), the risk of electing an incompetent candidate proposing the reform policy is low. Now notice that the electoral attractiveness of a candidate—especially, when he commits to the reform policy only if competent—is high when his opponent proposes $r = 1$ even when incompetent. Consequently, an assessment with one candidate 'pooling' on reform and his opponent playing a separating strategy profile[8] might dominate the separating assessment, as the voter can raise the probability of welfare-improving reform without increasing too much the likelihood of a botched reform. The candidate playing a separating strategy profile, however, faces the same type of incentive compatibility constraints as in a separating assessment. Consequently, since such asymmetric assessment complicates significantly the analysis, we assume without great loss of generality that $k_n < k_n^*(k_c)$ for the remainder of this paper.

Lemmas 1 and 2 imply that a separating strategy profile is incentive compatible only if a competent candidate's electoral reward for committing to the reform policy is greater than the combined communication and communication costs. The reverse must hold true for a non-competent candidate.

As they play a critical role in the analysis, in a first step, we determine the the expected payoff of a type $t \in \{c, n\}$ candidate $j \in \{1, 2\}$—denoted $V_j(r_j, y_j; t)$ as function of platform ($r_j \in \{0, 1\}$) and communication ($y_j \geq 0$) choices—in a separating assessment. When candidate j commits to the reform policy, he wins the election with probability 1 when the voter only learns his platform, probability 0 when the voter learns only his opponent $-j$'s platform, and probability 1/2 in all other cases. The value of holding office is diminished by the implementation cost k_t. A candidate committing to the status quo policy does not exert any communication effort (Lemma 2) so the voter never learns his platform. His winning probability is 1/2 when the voter does not learn his opponent's platform and 0 otherwise. He enjoys the full payoff from office (1) when elected. We thus obtain (taking the voter's

[8] That is, candidate j anticipates his opponent plays a pooling strategy, candidate $k \neq j$ anticipates j plays a separating strategy, and the voter anticipates both candidates' strategy.

attention x and a competent candidate $-j$'s communication effort as given):

$$V_j(1, y_j; t) = \frac{1 + xy_j - qxy_{-j}}{2}(1 - k_t) - C(y_j) \tag{3}$$

$$V_j(0, 0; t) = \frac{1 - qxy_{-j}}{2} \tag{4}$$

Solving the model backward, the next lemma characterizes candidates' and the voter's optimal communication strategies when candidates play a separating strategy.

Lemma 4. *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 positive: $y_1^S(c) = y_2^S(c) \equiv y^S(c) > 0$ *and* $x^S > 0$*, where* $y^S(c)$ *and* x^S *solve*

$$C'(y^S(c)) = (1 - k_c)\frac{x^S}{2} \tag{5}$$

$$C_v'(x^S) = q(1 - q)Gy^S(c) \tag{6}$$

A competent candidate and the voter equate the marginal cost of communication effort/attention to its marginal benefit. For a candidate, the marginal benefit of communication is proportional to the increased probability of being elected net of the implementation cost (that is, $(1 - k_c)\frac{x^S}{2}$). For the voter, the marginal benefit of attention is proportional to the reduced probability of an electoral mistake—electing an incompetent candidate j when candidate $-j$ is competent—scaled by the benefit from avoiding such a mistake (that is, $q(1 - q)Gy^S(c)$). As the demand for reform G increases, so does the benefit of successful communication and, as a consequence, voter attention to the campaign. Since effort and attention are complementary, a competent candidate's communication effort is also increasing with G.

Lemma 5. *In a separating assessment, the voter's level of attention (x^S) and competent candidates' communication efforts ($y^S(c)$) increase with G.*

Intuitively, an increase in the demand for reform G should always benefit the voter. First, a greater G raises the voter's payoff when candidates play a separating strategy profile. Second, it increases the informativeness of the electoral process (voter's level of attention and competent candidates' efforts), and consequently reduces the risk of an electoral mistake. This intuition, however, does not take into consideration the effect of an increase in G on candidates' incentives to commit to the reform policy.

When making his platform choice, a competent candidate $j \in \{1, 2\}$ compares the difference in expected payoffs between proposing the status quo policy ($V_j(0, 0; c)$) and committing to the reform policy ($V_j(1, y_j^S(c); c)$), that is:

$$V_j(1, y_j^S(c); c) - V_j(0, 0; c) = \frac{y_j^S(c)x^S}{2}(1 - k_c) - C(y_j^S(c)) - k_c\frac{1 - qy_{-j}^S(c)x^S}{2}$$

This difference corresponds to the net electoral premium of committing to a reformist agenda. By the Envelope Theorem and Lemma 5, it is increasing in G as the effect of an increase in the demand for reform is twofold. First, it raises voter attention and the probability of electoral success conditional on choosing the reform policy. Second, it also decreases the value of choosing the status quo platform, as such choice is more likely to result in an electoral defeat.

When G is low, a competent candidate's incentive compatibility constraint is never satisfied (i.e., $V_j(1, y_j^S(c); c) - V_j(0, 0; c) < 0$). The voter pays little attention to the campaign, so the net electoral premium of a reformist agenda is low. A competent candidate then gets a higher expected payoff from proposing the status quo policy than from committing to the reform policy, and a separating assessment is not a PBE.[9] For large G, the voter pays high attention, and a competent candidate prefers to commit to the reform policy unless his implementation cost is very large, that is, unless k_c is such that $\lim_{G\to\infty} V_j(1, y_j^S(c); c) - V_j(0, 0; c) < 0$.

For a separating PBE to exist, it is also necessary that an incompetent candidate prefers to commit to the status quo policy. When a non-competent candidate deviates and proposes the reform policy, he chooses communication effort $\hat{y}^S(n)$, which solves $C'(\hat{y}^S(n)) = (1 - k_n)\frac{x^S}{2}$. By the same intuition as for the competent candidate's communication effort, $\hat{y}^S(n)$ increases with G. As a result, an incompetent candidate's electoral premium of committing to $r = 1$ is also increasing with the demand for reform. Therefore, unless the voters' screening problem is very mild (k_n is very large so $\lim_{G\to\infty} V_j(1, \hat{y}_j^S(n); n) - V_j(0, 0; n) < 0$), when G is large, a non-competent candidate prefers to commit to the reform policy, and a separating PBE fails

[9] In particular, notice that as G tends to 0 a competent candidate never commits to the reform policy since it is costly to implement and the electoral reward is null since the voter pays no attention to the campaign.

to exist.

Proposition 1. *There exist* $\overline{k_c} \in (0,1)$ *and* $\overline{k_n} : (0, \overline{k_c}) \to (k_c, 1)$ *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* $k_n \geq \overline{k_n}(k_c)$*, 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* $k_n < \overline{k_n}(k_c)$*, 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. Since a separating assessment maximizes the voter's welfare, there exists of a non-monotonic relationship between the voter's demand for reform and her welfare (see Figure 2a). Indeed, when $k_c < \overline{k_c}$ and $k_n < \overline{k_n}(k_c)$, the voter's equilibrium expected payoff has a discontinuous drop at $\overline{G}$.

The above analysis implies that when reforms do not entail large implementation costs (k_c and k_n are below the thresholds defined in Proposition 1), the equilibrium is separating only when the demand for reform is intermediary. A separating strategy profile cannot be a PBE when the demand for reform is low because the voter would pay *too little* attention to the campaign. Somewhat more surprisingly, a separating strategy profile is not a PBE when the demand for reform is high since the voter would pay *too much* attention to the campaign. In what follows, we study the consequences of this last result.

4 Reform in times of high demand

In all this section, we assume $G > \overline{G}$ so a separating assessment is not a PBE by Proposition 1. Two types of equilibria are then possible: an unresponsive equilibrium—candidates always propose the status quo policy—or an *over-responsive* equilibrium—at least one candidate commits to the reform policy when incompetent. The next proposition characterizes under which conditions the equilibrium is over-responsive (recall that 'equilibrium' refers to the welfare-maximizing PBE).

Proposition 2. *There exists* $\overline{\tau} : [k_c, 1] \to (q/(1-q), \infty)$ *and* $\underline{\tau} : [k_c, 1] \to (q/(1-q), \overline{\tau}]$ *such that:*

(i) for all $\tau > \overline{\tau}(k_n)$, the equilibrium is unresponsive for all $G > \overline{G}$ and the equilibrium probability of reform is always strictly lower for $G > \overline{G}$ than for $G \in [\underline{G}, \overline{G}]$.
(ii) for all $\tau < \underline{\tau}(k_n)$ the equilibrium is over-responsive for all $G > \overline{G}$ and the equilibrium probability of botched reform is strictly higher for $G > \overline{G}$ than for $G \in [\underline{G}, \overline{G}]$.

By Lemma 1, successful communication is always good news for the voter. However, because successful communication is only an imperfect signal of competence in an over-responsive assessment, the winning probability of an incompetent candidate promising reform is non null and so is the probability of botched reform.[10] As a result, the voter sometimes prefers no reform. Intuitively, when the selection concern τ is low (so a botched reform entails a relatively small payoff loss), the equilibrium is over-responsive in times of high demand for reform. Conversely, when the voter's selection concern τ is large (so a botched reform entails an important payoff loss) the equilibrium is unresponsive in times of high demand for reform.

Proposition 2 characterizes general properties of the equilibrium when the voter's demand for reform is large ($G > \overline{G}$). It illustrates how the electorate faces either a significant drop in the probability of reform (to 0) or a significant increase in the risk of botched reform (from 0). This heightened risk can result from either (i) a pooling PBE or (ii) an asymmetric PBE in which candidate $j \in \{1, 2\}$ pools on the reform policy ($r_j(t) = 1,\ t \in \{c, n\}$) while his opponent pools on the status quo policy ($r_{-j}(t) = 0,\ t \in \{c, n\}$).[11] In a pooling PBE, the reform policy is always implemented, not so much in the asymmetric PBE.

In an asymmetric equilibrium in which (say) candidate 1 separates, the voter elects 1 only after successful communication. Despite being an informative signal of competence, successful communication is also an imperfect signal, so the voter is skeptical about the value of learning candidate 1's platform and pays relatively little attention.

Owing to the voter's skepticism, when the equilibrium is asymmetric, the probability that the reformist candidate 1 is elected (and consequently the probability of reform) can be lower than in the separating equilibrium despite the higher the demand for reform.[12]

Proposition 3 establishes two necessary conditions under which an increase in G (for G

[10] As we have seen above, commitment to the reform policy is incentive compatible only if it is electorally rewarded.
[11] Recall that our restriction on k_n and Lemma 3 imply that a semi-separating assessment in which one candidate pools on reform and the other separates is not a PBE.
[12] Despite significant differences across settings, the intuition behind this result is similar to Dragu and Polborn (2014).

close to $\overline{G}$) is associated with a decrease in the overall probability of reform *and* an increase in the probability of botched reform.

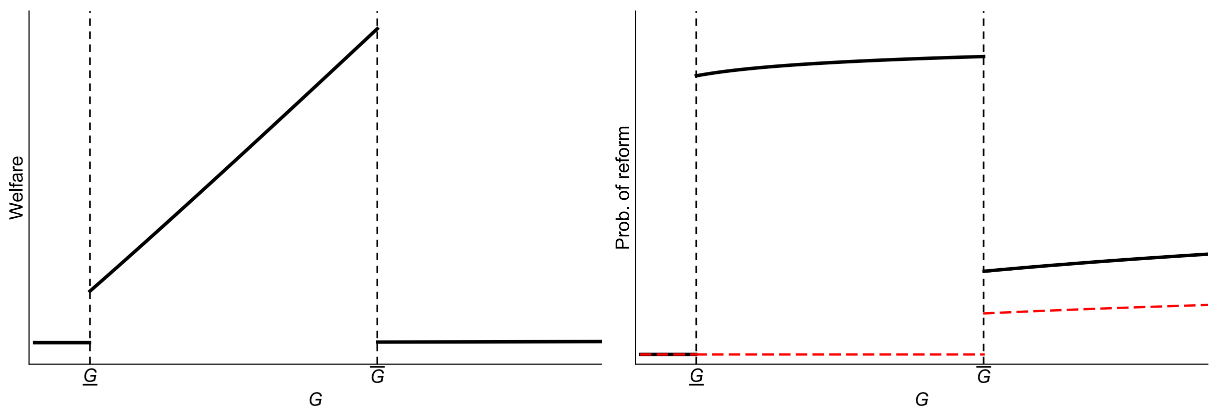
The first condition is that the implementation costs for both types must be close, so that learning a candidate's platform is a very noisy signal of his competence. Hence, the voter pays little attention to the campaign, and the electoral reward for committing to the reform policy is low. This low electoral reward implies that a pooling assessment where all candidates are reformist cannot be a PBE. Incompetent candidates (at least) prefer deviating to the status quo policy: they win with relatively high probability (1/2 whenever communication is unsuccessful, a likely event when voter attention is low) and do not pay the implementation and communication costs. In contrast, an asymmetric strategy profile does not face the same incentive compatibility problem. The reformist candidate is elected if and only if the voter learns his platform (unsuccessful communication is "bad news"). As such, he never has an incentive to deviate to the status quo policy.

Our second necessary condition is that the selection concern τ is intermediary so the voter pays some—but not too much—attention to the campaign. A positive level of attention guarantees the equilibrium is asymmetric, and a relatively low level of attention guarantees that the overall probability of reform decreases discontinuously around $G = \overline{G}$.

Proposition 3. *There exists* $\widehat{k_n} : (0, \overline{k_c}) \to (k_c, 1)$ *such that for all* $k_n \leq \widehat{k_n}(k_c)$*, there exists* $\tau_R(k_n) \geq q/(1-q)$ *and* $\tau_0(k_n) > \tau_R(k_n)$ *such that at* $G = \overline{G}$*:*
(i) For all $\tau \in (q/(1-q), \tau_R(k_n)]$ *(possibly an empty interval), the overall probability of reform and the probability of botched reform increase discontinuously with* G*;*
(ii) For all $\tau \in (\tau_R(k_n), \tau_0(k_n)]$*, the overall probability of reform decreases and the probability of botched reform increases discontinuously with* G*;*
(iii) For all $\tau > \tau_0(k_n)$*, the overall probability of reform discontinuously decreases to* 0 *with* G*.*

The voter experiences a drop in the overall probability of reform and an increase in the probability of botched reform only if the equilibrium is asymmetric. This equilibrium, however, has the empirically plausible property that the election pits a "party of order or stability" against "a party of progress or reform" (Stuart Mill, 1859, Ch. II). This result can also be related to the empirically documented association between high demand for reform and political polarization (Mian et al., 2014).

To summarize our findings, Figure 2 illustrates how voter equilibrium welfare (2a) and the probability of reform (2b) change with the demand for reform G in the case of intermediate selection concern (Proposition 3.ii) When the equilibrium is separating, the voter's (ex-ante) welfare is maximized. When the demand for reform is above $\overline{G}$, the equilibrium is asymmetric. As an incompetent candidate wins the election with positive probability, the voter's welfare decreases substantially, but remains strictly positive, despite the lower probability of reform and the positive probability of botched reform. The reason is that competent candidates are significantly more likely to be elected.



(a) Voter's expected welfare

(b) Probability of reforms

Figure 2: Equilibrium probability of reforms and voter's welfare

In Figure 2a, the dark line is the voter's equilibrium welfare. In Figure 2b, 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 Crises and (the lack of) reform

As an application of our theory, we consider reforms in time of crisis. While there is no standard definition of crisis in electoral and policy-making models, we follow Drazen and Grilli (1993), Labán and Sturzenegger (1994a and 1994b), Mondino et al. (1996), and Drazen and Ilzetzki (2011) and assume that a crisis is captured by a large demand for reform G, especially $G > \overline{G}$. Inversely, a low G corresponds to a favorable economic time when reforms are less needed.

While conventional wisdom holds that reforms are more likely in time of crises (Tommasi and Velasco, 1996), empirical evidence on the issue have been mixed. Several studies document a negative effect of crisis on the likelihood of reforms (Williamson, 1994; Pop-Eleches, 2009; Campos et al., 2010; Castanheira et al., 2012; Pepinsky, 2012; Galasso, 2014; Mian et al., 2014). Some papers, on the other, corroborate the conventional wisdom (Lora and Olivera, 2004; Alesina et al., 2006; Prati et al., 2013). This paper provides a way to organize these seemingly inconclusive empirical findings.

Our model suggests that the probability of reform in time of crisis depends critically on the voter's selection concern, τ. When it is high (τ greater than $\overline{\tau}$ or $\tau_R(\cdot)$), a crisis impedes rather than triggers reforms (compared to more favorable economic time, $G \in [\underline{G}, \overline{G}]$). As a result of voters' increased demand, either no candidate proposes reform (Proposition 2) or the voter's increased skepticism reduces the electoral chances of those who do (Proposition 3).[13] When the voter's selection concern is relatively low (τ lower than $\underline{\tau}$ or $\tau_R(\cdot)$), a crisis can be positively correlated with reform. As a high selection concern arguably approximates the difficulty to define the right policies to solve a crisis (the importance of competence), our results provide a theoretical foundation for Drazen and Easterly's (2001) empirical findings that a crisis does not favor reforms when there is no clear solution to it.[14]

Due to the over-responsiveness of the electoral process, our theory also predicts that reforms in time of crisis are always more likely to be unsuccessful compared to more normal conditions. 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 1980's, 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 badly 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 caused an episode of hyperinflation (Dornbusch, 1988). Other examples include Alberto Cavallo's *corralito* to fight inflation in 2001, or the more recent heterodox policies (as

[13]The few theoretical papers which study how the likelihood of reforms vary with economic conditions suggest that crises should trigger reform (Drazen and Grilli, 1993; Labán and Sturznegger, 1994a and b; Mondino et al., 1996).

[14]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 by Proposition 3.ii.

described in Cavallo, 2014) aimed at improving economic conditions in Argentina, which in both cases seem to have instead triggered an inflationary crisis.

6 Robustness

The set-up analyzed in this paper in the simplest to convey the intuition for our main results: the non-existence of a separating PBE for large (or low) demand for reform and the risk of over-responsiveness in time of crisis. The model can be extended in several dimensions. First, 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 to learn about a candidate's platform.[15]

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 (2015) 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. Indeed, despite the presence of free-riding in information acquisition, each voter always has an incentive to pay a small, but positive level of attention to the campaign. When all voters' efforts are aggregated, the probability that *at least one* voter learns candidates' platforms increases with the demand for reform G and the number of voters. As a result, multiple voters can make the existence of a separating PBE more difficult (i.e., $\overline{G}$ decreases with the size of the electorate).

7 Conclusion

This paper studies how economic conditions affect the likelihood and quality of economic reform in an environment with rationally ignorant voters. The electorate can obtain beneficial reforms and avoid botched reforms only when demand for reform is intermediary. In time of high demand for reform (for instance, due to poor economic conditions) the risk of botched

[15]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.

reform increases significantly. The effect of high demand on the overall probability of reform, on the other hand, depends on the strength of the electorate's selection concern. When it is high (i.e., competence is very important), the probability of reform decreases as 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. High demand for reform is associated with a high probability of reform only when the selection concern is low. 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 costs and benefits or group 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 new theoretical framework.

References

Alesina, Alberto and Allan Drazen. 1991. "Why are Stabilizations Delayed?" American Economic Review, 81(5): 1170-1188.

Alesina, Alberto, Silvia Ardagna, and Francesco Trebbi. 2006. "Who Adjusts and When? On the Political Economy of Reforms." NBER Working Paper 12049.

Aragonès, Enriqueta, Micael Castanheira, and Marco Giani. 2014. "Electoral Competition through Issue Selection." American Journal of Political Science, forthcoming.

Ashworth, Scott. 2006. "Campaign finance and voter welfare with entrenched incumbents", American Political Science Review 100 (01): 55-68.

Ashworth, Scott and Ethan Bueno de Mesquita. 2014. "Is Voter Competence Good for Voters?: Information, Rationality, and Democratic Performance." American Political Science Review 108 (3): 565-587.

Baron, David P. 1994. "Electoral competition with informed and uninformed voters." American Political Science Review 88(1): 33-47.

Body, Olivier. 2014 "When Is Speech Silver and Silence Golden? A Field Experiment on an Information Campaign." ECARES working paper 2014-32.

Brocas, Isabelle, Juan D. Carrillo, Stephanie W. Wang, and Colin F. Camerer. 2014. "Imperfect Choice or Imperfect Attention? Understanding Strategic Thinking in Private Information Games." Review of Economic Studies 81: 944-970

Campos, Nauro F., Cheng Hsiao, and Jeffrey B. Nugent. 2010. "Crisis, What Crisis? New Evidences on the Relative Roles of Political and Economic Crises in Begetting Reforms." Journal of Development Studies 46(10): 1670-1691.

Callander, Steve. 2011a. "Searching by Trial and Error." American Economic Review 101(6): 2277-2308.

Callander, Steve. 2011b. "Searching for Good Policies." American Political Science Review, 105(4): 643-662.

Caselli, Francesco and Massimo Morelli. 2004. “Bad Politicians.” Journal of Public Economics, 88(3): 759-782.

Castanheira, Micael, Gaëtan Nicodème, and Paolo Profeta. 2012. “On the political economics of tax reforms: survey and empirical assessment.” International Tax and Public Finance, 19(4): 598-624.

Cavallo, Domingo F. 2014. “Argentina’s present and its intriguing economic history.” In *Handbook of Emerging Economies,* edited by Robert E. Looney. Abingdon, UK and New York, NY: Routledge.

Coate, Stephen. 2004. ”Political Competition with Campaign Contributions and Informative Advertising.” Journal of the European Economic Association: 772-804.

Dewatripont, Matthias and Jean Tirole. 2005. “Modes of Communication.” Journal of Political Economy, 113 (6): 1217-1238.

Dornbusch, Rudiger. 1988. “Peru on the Brink.” Challenge, 31(6): 31-37.

Downs, Anthony. 1985 [1957]. *An Economic Theory of Democracy.* Boston: Addison Wesley.

Drazen, Allan. 2000. *Political economy in macroeconomics.* Princeton: Princeton University Press.

Drazen, Allan and Vittorio Grilli. 1993. “The Benefit of Crises for Economic Reforms.” American Economic Review, 83(3): 598-607.

Drazen, Allan and William Easterly. 2001. “Do Crises Induce Reform? Simple Empirical Tests of Conventional Wisdom.” Economics and Politics, 13(2): 129-157.

Drazen, Allan and Ethan Ilzetzki. 2011. “Kosher Pork.” NBER Working Paper No. 16667.

Fernandez, Raquel and Dani Rodrik. 1991. “Resistance to Reform: Status Quo Bias in the Presence of Individual-Specific Uncertainty.” American Economic Review, 81(5): 1146-1155.

Fu, Qiang and Ming Li. 2013. "Reputation-concerned policy makers and institutional status quo bias." Journal of Public Economics 110: 15 - 25.

Galasso, Vincenzo. 2014. "The Role of political partisanship during economic crises." Public Choice, forthcoming.

Grossman, Gene M., and Elhanan Helpman. 1996. "Electoral competition and special interest politics." The Review of Economic Studies 63 (2): 265-286.

Hall, Richard L. and Alan V. Deardorff. 2006. "Lobbying as Legislative Subsidy," American Political Science Review, 100(1):69-84.

Haggard Stephan and Steven B. Webb. 1993. "What Do We Know About the Political Economy of Economic Policy Reform?" The World Bank Research Observer 8(2): 143-168.

Hortala-Vallve, Rafael, Valentino Larcinese, and Stephanie Rickard. 2013. "The Perverse Consequences of Policy Restrictions in the Presence of Asymmetric Information." London School of Economics, Discussion Paper EOPP 048.

Krueger, Anne O. 1992. *Economic Policy Reform in Developing Countries.* Oxford: Basil Blackwell.

Krueger, Anne O. 1993. *Political Economy of Policy Reform in Developing Countries.* Cambridge: MIT Press.

Labán, Raúl and Federico Sturzenegger. 1994a. "Fiscal conservatism as a response to the debt crisis." Journal of Development, 45: 305-324.

Labán, Raúl and Federico Sturzenegger. 1994b. "Distributional Conflict, Financial Adaptation, and Delayed Stabilizations." Economics and Politics, 6(3): 257-276.

Levy, Gilat, and Ronny Razin. 2015. "Correlation Neglect, Voting Behavior, and Information Aggregation." American Economic Review 105(4): 1634-45.

Lora, Eduardo and Mauricio Olivera. 2004. "What makes reforms likely: Political economy determinant of reforms in Latin America." Journal of Applied Economics, 7(1):99-135.

Mackowiak, Bartosz and Mirko Wiederholt. 2009. "Optimal Sticky Prices under Rational Inattention." American Economic Review 99(3), 769-803.

Martinelli, César. 2006 "Would rational voters acquire costly information?" Journal of Economic Theory 129(1): 225-251.

Mattozzi, Andrea and Antonio Merlo. 2007. "Mediocracy." NBER Working Paper 12920.

Mian, Atif, Amir Sufi, and Francesco Trebbi. 2014. "Resolving Debt Overhang: Political Constraints in the Aftermath of Financial Crises." American Economic Journal: Macroeconomics, 6(2): 1-28.

Mondino, Guillermo, Federico Sturzenegger and Mariano Tommasi. 1996. "Recurrent High Inflation and Stabilization: A Dynamic Game." International Economic Review, 37(4): 981-996.

Neuman, Russell, Marion R. Just, and Ann N. Crigler. 1992. *Common knowledge: news and the construction of political meaning.* Chicago: University of Chicago Press.

Oliveros, Santiago. 2013. "Abstention, Ideology, and Information Acquisition." Journal of Economic Theory 148(3): 871-902.

Ortoleva, Pietro, and Erik Snowberg. 2015. "Overconfidence in Political Behavior." American Economic Review 105(2): 504-35.

Pepinsky, Thomas B. 2012. "Do Currency Crises Cause Capital Account Liberalization?" International Studies Quarterly 56(3): 544-559.

Persson, Petra. 2013. "Attention Manipulation and Information Overload." Unpublished manuscript.

Pop-Eleches, Grigore. 2009. *From Economic Crisis to Reform: IMF Programs in Latin America and Eastern Europe.* Princeton: Princeton University Press.

Prat, Andrea. 2002. "Campaign advertising and voter welfare." The Review of Economic Studies 69 (4): 999-1017.

Prati, Alessandro, Massimiliano Gaetano Onorato, and Chris Papageorgiou. 2013. "Which reforms work and under what institutional environment? evidence from a new data set on structural reforms." Review of Economics and Statistics 95(3): 946-968.

Prato, Carlo and Stephane Wolton. 2015. "Electoral Imbalances and their Consequences." Unpublished manuscript.

Prato, Carlo and Stephane Wolton. 2015. "The Voters' Curses: Why We Need Goldilocks Voters." American Journal of Political Science, forthcoming.

Rodrik, Dani. 1996. "Understanding Economic Policy Reform." Journal of Economic Literature 34: 9-41.

Sims, Christopher A. 1998. "Stickiness." Carnegie-Rochester Conference Series on Public Policy 49, 317-356.

Sims, Christopher A. 2010. "Rational inattention and monetary economics." In *Handbook of Monetary Economics, 3: 155-181.* Elsevier.

Stokes, Susan C. 1996. "Public opinion and market reforms: the limits of economic voting." Comparative political studies 29(5): 499-519.

Mill, John Stuart. 1869. textitOn Liberty. London: Longman, Roberts & Green.

Svolik, Milan W. 2013. "Learning to Love Democracy: Electoral Accountability and the Success of Democracy." American Journal of Political Science 57(3): 685-702.

Tommasi, Mariano and Andrés Velasco. 1996. "Where are we in the Political Economy of Reform?" The Journal of Policy Reform 1(2): 187-238.

Van Nieuwerburgh, Stijn and Laura Veldkamp. 2009. "Information Immobility and the Home Bias Puzzle." Journal of Finance 64(3), 1187-1215.

Westermark, Andreas. 2004. "Extremism, campaigning and ambiguity." Games and Economic Behavior 47(2): 421-452.

Williamson, John. 1994. "Panel Discussion on the Political Economy of Policy Reform" in *The Political Economy of Policy Reform* John Williamson editor. Washington, D.C.: Institute for International Economics.

Zaller, John. 1992. *The Nature and Origins of Mass Opinion.* Cambridge: Cambridge University Press.

A Equilibrium definition and 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 observes (does not observe) 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) $s_1(m_1, m_2, x) = \begin{cases} 1 \\ 1/2 \\ 0 \end{cases} \Leftrightarrow E_\mu(u_v(r_1, x)|m_1, \sigma_1) \gtreqqless E_\mu(u_v(r_2, x)|m_2, \sigma_2)$;

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

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

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}):

$$\mu_j r_j(c)G - (1 - \mu_j)r_j(n)\tau G > \mu_{-j} r_{-j}(c)G - (1 - \mu_{-j})r_{-j}(n)\tau G \tag{7}$$

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 (7) holds" and B is the event "both sides of (7) 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 (7)): $-\tau G \geq \mu_{-j} r_{-j}(c) G - (1-\mu_{-j}) r_{-j}(n) \tau G$. 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 $(0, 0)$. □

Proof of Lemma 1. 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 2, a type n must exerts zero communication effort. Successful communication thus reveals that a candidate is competent and implements the reform. By (7), 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 $\mu_j(1,x) = \mu(\emptyset,x)$, a contradiction. Hence it must be that $\Gamma((1,y),\sigma_{-j})$ is weakly increasing in y. $\square$

Proof of Lemma 2. 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), $\mu(r_j(n)) = 0$ and, by (7), $\Gamma((r_j(n),y),\sigma_{-j})$ 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, $r = 1 \Rightarrow y > 0$. $\square$

Lemma A.2. *For all parameter values, an unresponsive strategy profile in which both candidates (independently of their type) commit to the status quo policy without exerting communication effort, and the voter does not pay attention to the campaign is a PBE.*

Proof. Given $x = 0$, we have $m_j = \emptyset,\ \forall y_j \in [0,1],\ j \in \{1,2\}$. Using (7), 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. $\square$

Lemma A.3. *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 2, 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):

$$\frac{C_v'^{SS})}{G} = (1-q)\left[q y_1^{SS}(c) - (1-q)\tau y_1^{SS}(n) - q(1+\tau)(1 - 2\alpha_2^{SS}(c)) y_1^{SS}(n)\right] \tag{8}$$

$$C'(y_1^{SS}(t)) = (q(1 - \alpha_2^{SS}(c)) + (1-q)) x^{SS}(1 - k_t) \tag{9}$$

$$C'(y_2^{SS}(c)) = (q\alpha_1^{SS}(c) + (1-q)\alpha_1^{SS}(n)) x^{SS}(1 - k_c) \tag{10}$$

We claim that, for the semi-separating assessment to be a PBE, it is necessary that the voter elects candidate 1 when (and only when) she learns his platform *and* does not learn candidate 2's. Suppose not. Since successful communication with candidate 2 is a perfect signal of competence, then it must be that candidate 1 is also elected when (i) communication with both candidates is unsuccessful ($m_1 = m_2 = \emptyset$) or (ii) candidate 1 is not elected when only communication with candidate 2 fails ($m_1 = 1, \quad m_2 = \emptyset$). 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 2, 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 9, $\alpha_1(n)$ 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 $r_j(n) = 0\ \forall\ \in 1, 2$. We use the superscript S to denote the candidates' optimal communication efforts and the voter's optimal attention associated with this assessment.

Proof of Lemma 3. We set $k^*(k_c) = k^{SS}(k_c)$. Notice that, by lemma A.3, 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), where 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), where 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), where without loss of generality (wlog) 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.2).
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.[16] From Lemma 2, $V_v^N = 0$. 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 4 for more details). Given $C_v(0) = 0$, it must be that $V_v^S > qG > 0$. In the

[16] It can be checked that the probability is symmetric when candidates play a symmetric strategy, see Lemma 4 and the Supplemental Appendix for more details.

Supplemental Appendix, we also show that

$$V_v^A = qG\alpha_c^A - (1-q)\tau G\alpha_n^A - C_v(x^A) \tag{11}$$

$$V_v^P = qG - (1-q)\tau G + q(1-q)(1+\tau)G(\alpha_c^P - \alpha_n^P) - C_v(x^P) \tag{12}$$

First, notice that $\alpha_c^A < 1$ implies $V_v^S > V_v^A$. To see why we must also have $V_v^S > V_v^P$, 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.4. *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 2) $y_j^S(n) = 0$, $j \in \{1,2\}$, the above inequality implies that the voter always elects candidate 1 when communication with either candidates is unsuccessful, by (7). 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. □

Proof of Lemma 4. Equation 5 follows directly from the First Order Condition of the maximization problem $\max_{y\in[0,1]} V_j(1,y;c)$ $j \in \{1,2\}$, with $V_j(1,y;c)$ defined by (3).
The voter's electoral strategy is in this assessment: $s_1(\emptyset,\emptyset) = 1/2$ (by Lemma A.4), $s_1(1,1) = 1/2$ (since $\mu(1,x) = 1$ for both candidates), $s_1(1,\emptyset) = 1$, and $s_1(\emptyset,1) = 0$. The voter solves the following maximization problem:

$$\max_{x\in[0,1]} \left\{ q^2G + (1-q)q\left(y_2xG + (1-y_2x)\frac{G}{2}\right) + (1-q)q\frac{G}{2}(1+y_1x) - C_v(x) \right\} \tag{13}$$

We thus have the following FOC:

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

Where the second equality comes from the fact that $y_1 = y_2$ by (5). It follows that $y^S(c)$

and x^S ($j \in \{1,2\}$) are defined by the system (5)- (6). 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. □

Proof of Lemma 5. From lemma 4, $(y^S(c), x^S)$ is the unique solution of (5)-(6). Using the properties of $h(x)$, we must have $h(x) <$ (resp. $>$) $0 \quad \forall\ x \in (x^S, 1] \quad$ (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.5. *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 $\left(\frac{dY_c(x)}{dk_c} = \frac{-x}{C''(Y_c(x))} < 0\right)$. □

Using (3) and (4), the incentive compatibility constraint (IC) of a competent candidate $j \in \{1,2\}$ is:

$$\begin{aligned} & V_j(1, y_j^S(c); c) \geq V_j(0, 0; c) \\ \Leftrightarrow & \frac{1 + y_j^S(c)x^S - qy_{-j}^S(c)x^S}{2}(1-k_c) - C(y_j^S(c)) \geq \frac{1-q}{2} + q\frac{1 - y_{-j}^S(c)x^S}{2} \end{aligned} \tag{15}$$

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:

$$\begin{aligned} & V_j(1, \hat{y}_j^S(n); n) \leq V_j(0,0;n) \\ \Leftrightarrow & \frac{1+\hat{y}_j(n)x^S - qy_{-j}^S(c)x^S}{2}(1-k_n) - C(\hat{y}_j(n)) \leq \frac{1-q}{2} + q\frac{1-y_{-j}^S(c)x^S}{2} \end{aligned} \tag{16}$$

Lemma A.6. *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 5). A similar reasoning (using Lemma A.5) 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 $\lim_{G\to\infty} V_j(1, y_j^S(c); c) = V_j(0,0;c)$.[17] 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.6. If $k_c \geq \overline{k_c}$, (15) 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 (15) 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 (15) 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.6 (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).[18] 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

[17] While $\lim_{G\to\infty} x^S = 1$, the properties of the communication cost functions guarantee that $Y_c(1) < 1$. This implies that type c's communication effort and expected payoff are well defined even for arbitrarily large G.

[18] 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 (16)).

A.6 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 $G \geq \underline{G}$. $\square$

Lemma A.7. *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 $x^A > 0$. The communication efforts satisfy (see the Supplemental Appendix for details): $\frac{C_v'(x^A)}{G} = q y_1^A(c) - (1-q)\tau y_1^A(n)$ and $C'(y_1^A(t)) = (1 - k_t)x^A$. Define

$$h^A(x; \tau) := qY_c^A(x) - \tau(1-q)Y_n^A(x) - C_v'(x)/G, \tag{17}$$

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 $\partial h^A(x; q/(1-q)) = q(Y_c'(x) - Y_n'(x)) - \frac{C_v''(x)}{Gq}$. 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 17) 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 2). 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. $\square$

Lemma A.8. *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.7). It can be checked that $\overline{x}^P$ is increasing in τ (similar reasoning as in Lemma A.7).

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

$$\frac{\alpha^P_n(1-k_n)}{2} - C(y^P_n) \geq k_n \frac{1 - q\alpha^P_c - (1-q)\alpha^P_n}{2} \tag{18}$$

It can easily be checked that the left-hand side (right-hand side) of (18) is increasing (decreasing) with x^P. Hence, if (18) 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 (18) 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 (18)).[19] If (18) does not hold as $\tau \to \infty$, then denote (slightly abusing notation) $\tau^P_{Exist}(k_n, G) = \infty$. $\square$

Lemma A.9. *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 18 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 12 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

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

Using $\alpha^P_c < 1$, 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 $\tau^P_{Welf}(k_n) := \frac{q}{1-q}\left(1+\frac{1-k_n}{1-q}\right)$ so the claim holds for all $\tau \geq \tau^P_{Welf}(k_n)$. $\square$

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

Proof. Using Lemmas 3 and A.9, a pooling assessment is welfare-dominated by the unresponsive PBE. Giving our selection criterion, it cannot be an equilibrium. $\square$

Inspection of (11) reveals that the assessment (A), when it is a PBE, welfare-dominates the unresponsive equilibrium.

Proof of Proposition 2. (i) Let $\tau^N(k_n, G) := \max\{\tau^P_{Welf}(k_n, G), \widehat{\tau}^A(k_n, G)\} > q/(1-q)$ (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.7) and the pooling assessment is welfare dominated by the unresponsive PBE (Lemma A.9). Define $\overline{\tau} := \max_{G > \overline{G}} \tau^N(k_n, G)$ (dropping dependence on k_n for ease of exposition). The claims hold since

[19] We do not exclude the case when (18) holds for all τ (i.e., $\tau^P_{Exist}(k_n, G) = q/(1-q)$.

the equilibrium probability of reform drops to zero whenever $G > \overline{G}$.

(ii) 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 $\widehat{\tau}^A(k_n, G) > \tau^P_{Welf}(k_n, G)$ 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. □

Proof of Proposition 3. In all that follows, we assume that $G = \overline{G}$ (notice that $\overline{G}$ depends on k_n so as we vary k_n we also implicitly vary G). As a first step, we show that there exists $\widehat{k_n}(k_c)$ such that whenever $k_n \leq \widehat{k_n}(k_c)$, a pooling assessment is not a PBE when it welfare-dominates the unresponsive equilibrium (i.e., $\tau \leq \tau^P_{Welf}(k_n, G)$ by Lemma A.9). By Lemma A.8, it is sufficient to show that Equation 18 does not hold for the highest level of voter's attention $\overline{x}^P$. Using a similar reasoning as Lemma A.5, it can be checked that $\overline{x}^P$ is strictly increasing with k_n and $\overline{x}^P \to 0$ as $k_n \to k_c$ (recall $C'_v(x^P) = q(1-q)(1+\tau)(y^P(c) - y^P(n))$, $C'(y^P(t)) = (1-k_t)/2x^P$ so $y^P(n) \to y^P(c)$ as $k_n \to k_c$, and $\tau^P_{Welf}(k_n, G)$ is finite).[20] Consequently, as k_n approaches k_c, Equation 18 never holds. By continuity, there exists $\widehat{k_n}^P(k_c) > k_c$ such that a pooling strategy is never incentive compatible for an incompetent candidate for all $k_n < \widehat{k_n}^P(\tau)$. Define $\widehat{k}_n(k_c) = \min\{\widehat{k}^P_n(k_c), k^{SS}_n(k_c)\}$ to complete the first step of the proof.

We now prove the rest of the proposition so $k_c < k_n < \widehat{k_n}^P(\tau)$. Define the probability of reform in an asymmetric assessment by $\Pi^A(\tau) := q\alpha^A_c + (1-q)\alpha^A_n$. The corresponding quantity associated with a separating assessment is $\Pi^S := q + q(1-q)\alpha^S$ (by Lemma 4, 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 $\alpha^A_c > q$. Define $\overline{x}^A$ the highest solution to $h^A(x; \tau) = 0$, with $h^A(\cdot)$ defined by (17). By Lemma A.7, $\overline{x}^A$ 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 the overall probability of reform (weakly) increases at $G = \overline{G}$ if and only if $\tau \leq \tau_R$. Define $\tau_0 = \widehat{\tau}^A(k_n, \overline{G})$, the probability of botched reform increases discontinuously at $G = \overline{G}$ for all $\tau < \tau_0$ (since the equilibrium is asymmetric). For all $\tau > \tau_0$, the equilibrium is unresponsive, which completes the proof.[21] □

[20] Notice that $\overline{G} \to \underline{G}$ as $k_n \to k_c$ which tends to further depress the voter's level of attention reinforcing the main effect described in the text.

[21] At $\tau = \tau_0$, asymmetric assessment might be a PBE, but reformist candidate is never elected.