A Commitment Theory of Populism*

Massimo Morelli[†] Antonio Nicolò[‡] Paolo Roberti [§]

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Abstract

We propose a theory of populism as simplistic or unconditional commitment. Economic crises as well as social and cultural threats may be responsible for increased demand of simple credible policies, and reduced trust in the ability and reliability of representative politicians without policy commitments. We show under what conditions politicians choose to supply simplistic commitments in equilibrium and how this choice interacts with competence, anti-elite rhetoric and complementary fake news strategies. Whenever an equilibrium exists with one party choosing populist commitments and the other choosing delegation to experts, the former is always the one displaying lower moral universalism, consistent with the prevalence of populist supply choices on the right of the political spectrum, with nationalism, closed border policies and protectionism.

Keywords: Populism, Competence, Commitment, Information Acquisition, Interest Groups, Moral Universalism.
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†Bocconi University, IGIER, PERICLES and CEPR. Email: massimo.morelli@unibocconi.it
‡University of Padua and University of Manchester
§Free University of Bozen-Bolzano

1 Introduction

The recent literature on the populism wave that emerged in the aftermath of the great recession[1] has focused mostly on what may have caused it on the *demand* side, i.e., primarily looking at the different perceptions that voters now have in liberal democracies. A first set of economists and some political scientists have focused on economic insecurity as a main source of mistrust in traditional institutions and demand for protection policies (see e.g. Algan et al, 2017, Guiso et al, 2017 and 2019, Ananyev and Guryev, 2018). In particular, the immigration threat (see e.g. Laitin, 2018), the globalization threat (see e.g. Autor et al, 2016, Rodrik, 2017, and Colantone and Stanig, 2019) and the automation threat (see e.g. Acemoglu and Restrepo, 2017) are considered the clearest and main examples of significant changes that could all increase economic insecurity of certain classes of citizens and determine demand for protection of some sort. A second set of scholars in the social sciences focus instead on cultural causes of the demand of populism (see e.g. Inglehart and Norris, 2019). Moreover, a third recent set of papers have emphasized the changes in social identification, making the national vs global identity become the most relevant cleavage, even more relevant than the standard left-right ideology cleavage (see e.g. Gennaioli and Tabellini, 2019, Besley and Persson, 2019, and Shayo, 2009).

All these three mechanisms, well summarized in the survey article by Guriev and Papaioannou (2020), may have played a significant role for the creation or sharp increase of a demand of populism. Such a demand of populism takes mainly two forms: (1) a demand of policies and credible promises *for the people* combined with strong anti-elite rhetoric,[2] and (2) a demand of *protection*, which in turn could be protection from the immigration or globalization or automation threat if the cause is mainly economic, or can take the form of identity and cultural protection otherwise (see e.g. Guiso et al, 2017). These two key elements – anti-elite sentiment and lower trust in representative democracy on the one hand, and greater demand of factual protection on

[1] For a general discussion of the role of the great recession see Judis (2016).

[2] See e.g. Mudde (2004) for the most recognized definition of populism in political science, which focuses primarily on the pure people against corrupt elite framing.

the other – together lead more people to desire unconditional policies: brexit, build walls, close harbors and borders, fight Chinese globalization threat, nationalism. All the documented economic and cultural threats lead to disillusion, disengagement, apathy, short-term protection preferences and lower weight on the common good.

In this paper we take these changes in demand as given, and we focus instead on the supply side. We propose a theory of populism as unconditional policy commitment, also uncovering a simple rationalization of a number of other complementary features of the observed supply of populism.

In our model of two-party competition voters care about the common good and their private benefits.[3] Importantly, while voters perfectly understand which policy favors their private interest, what is the optimal policy that determines the common good requires delegation to a competent leader. The optimal policy for the common good is typically complex and state contingent. Delegation implies that citizens have to monitor their politicians and acquire information on how they should adjust policy making to the changing circumstances, in order to pursue the common good. If voters put a high probability that the politician is either incompetent or dishonest or potentially capturable by lobbies, the best strategy could be commitment to implement a simple policy, often the one demanded by the majority of people in the absence of information (pandering). Our key parameter λ is the weight that an individual puts on the common good policy dimension in her utility function. When someone puts a low weight on the utility loss from not getting the common good policy right, hence placing a relatively higher weight on private benefits, she/he is an individual who could be described as having "low moral universalism", using the terminology in Enke et al. (2021).[4] Enke et al. (2021) emphasize fear of cheating as the fear justifying low trust and low altruism for distant people. Similarly, someone who fears corruptibility of a delegated representative (perhaps because of a perception of existence of a very strong elite or interest group

[3]Private benefits could be anything from transfer promises to one's own group, protection of communal values, or even fixed values like being pro-choice or pro-life, all things that can be protected only conditional on the victory of one's own party and do not depend on information.

[4]In Enke et al. (2021) moral universalism refers explicitly to trust and altruism for all, so that an individual with low moral universalism can be thought of as someone who instead trusts and cares only about people in her group, broadly defined. Placing a low weight on the common good with respec to private benefits is simply a generalization of this dichotomy.

influence) may end up putting low importance on her extra competence, in the determination of the common good policy. Distrust on state functioning, wariness towards representative democracy, fear towards globalization cause lower moral universalism and correlate with nationalism, protectionism, closed border policies, simple committed policies, which are all features of populist left as well as populist right, to different degrees.

First we study this relation via a simple principal-agent model, where each principal chooses between a commitment strategy or delegation to a competent agent, who is supposed to decide policies (if elected) after observing the realization of a relevant state of the world. Since a third player, i.e. an interest group, a lobby or even a supranational institution, can influence the non-committed politician when the state of the world is not common knowledge, then it follows that the choice of commitment, pandering to what seems right to the majority ex ante, is the more likely the greater the expected bias and the probable strength or influence of the interest group, and the lower is the expected ability and honesty of the potential uncommitted politician. We then generalize the insight by allowing for endogenous information acquisition, and considering principals as citizens-voters who need to decide whether to turn-out or not – elections with endogenous participation. We show that the choice of a simple ex ante commitment depends on that λ parameter mentioned above, i.e. on the weight that voters give to the public goods provided by the state or, equivalently, the trust that such a provision can affect their utility. Whenever an asymmetric equilibrium exists, where one party chooses populist commitment and the other does not, the one choosing populist commitment must be the one with lower (average) moral universalism. On the other hand, ideological polarization, or an increase in the private benefits that a group may receive, does not necessarily lead to an increase in the probability that a populist equilibrium arises.

We will then show that fake news and anti-elite rhetoric are part of the same political strategy of a party that chooses to select a candidate with commitment. The complex network of information sources, and difficulty to verify the reliability of the many potential information pieces and information sources that characterize technology today, create a higher cost (and/or lower benefit) of information acquisition, and this, together with the lower trust in state institutions taken as an exogenous demand change, push both demand and supply to go in the simple commitment direction. But complexity and information acquisition costs are not fixed, and can be manipulated. Politicians of all levels of competence may indeed have (different) incentives to provide fake news and make information extraction difficult. In a two candidate competition between a committed candidate and a non-committed one, the former benefits from increasing the cost of information acquisition. Indeed the opponent becomes relatively less attractive, as it is costlier to discipline her through information acquisition. Also the non-committed candidate may have incentives to produce fake news and increase the relative information acquisition costs of voters, in order to increase the probability of negotiating a quid-pro-quo with the interest groups. Since the benefits from misinformation differ, it follows that the amount of costly effort in creating fake news will also differ. We show that committed candidates produce more fake news, but fake news by both is possible in equilibrium, when the non-committed candidate dislikes voter monitoring.

Finally, we show that commitment may be implicit and self enforcing: in the absence of a commitment technology, a world with low trust in politicians favors an incompetent candidate, who does not have any more information than voters about the optimal policy. Hence once elected, his only rational choice is to go for the citizens' ex ante optimal policy. Otherwise the policy maker would prove that to be biased. Commitment and incompetence are reinforcing mechanisms.

Our model has some features in common with Kartik et al. (2017), who show that in electoral competition the equilibrium degree of discretion left to a politician depends like in our model on the level of trust. Another related paper on the delegate-trustee trade-offs (but on political accountability) is Fox and Shotts (2009), while on the importance of credibility also see Van Weelden (2013). On the generalizability of our insights on commitment vs flexibility see Amador et al. (2006). Existing economic theories of populism emphasize pandering: Acemoglu et al. (2013) focus primarily on extremism (especially left-wing), whereas our theory does not imply extremism by populists. Levy et al. (2020) depict populist policies as simplistic ones desired by unsophisticated voters, who sometimes win elections because of intense dislike of the status quo. Crutzen et al. (2020) show that if the people are divided in an informed minority and an uninformed majority, parties tend to cater more to the better informed or elite, and hence the common people develop disaffection for the traditional parties, leading to entry incentives for a populist third party. Unlike Levy et al. (2020) and Crutzen et al. (2020), we do not think that the two parties in a two-party competition can be thought of as distinguished by cognitive ability or information levels, but rather by different degrees of moral universalism (see Enke et al, 2021, to see clear evidence about the fact that moral universalism is the single most important parameter characterizing the main political divide in western democracies). Prato and Wolton (2017) view populism as primarily political opportunism by incompetent politicians, but they do not link it to complexity of the environment, turnout incentives, disillusion for the common good. Gennaro et al. (2020) displays a simple argument for the connection between anti-elite rhetoric and economic conditions, one of the components of the set of complementary features displayed in this paper. Ghosh and Tripathi (2012) study a model of electoral competition between an ideologue committed to a fixed policy and an idealist who implements the ex post choice of the majority, and show that in equilibrium voters may prefer the committed candidate. However the reason for the inefficient choice of a fixed policy is completely different and is due to the presence of common and idiosyncratic shocks that change voters' preferences after the election: voters may vote for the candidate who commits to an ex-ante policy because they fear to be a minority ex-post. Bueno De Mesquita and Friedenberg (2011) discuss another reason why voters may prefer a candidate who is an "ideologue", who always wants the same policy regardless of the state to a pragmatist whose preferred policy depends on the realization of the state: it is easier to gain electoral control on the former one.

The paper is organized as follows: in section 2 we present the simplest possible baseline model, and the consequent baseline results are described in section 3. Section 4 is the core of the paper, where we sequentially and incrementally display the most interesting implications of the model when we add endogenous information acquisition, endogenous participation, fake news production and anti-elite campaigning. In the conclusions (section 5) we will come back to the claim that this paper offers a novel and rich characterization of all the major complementary components of populist supply, and we will discuss some important avenues for future research. All proofs are relegated to an appendix.

2 The baseline model

Let there be two principals, $G = A, B$, who need to choose their respective delegated candidates for policy making, $g = a, b$. One of the two agents will be then chosen randomly with probability 1/2 to make the policy choice for all.[5] We will denote by $w = a, b$ the selected (winner) policy maker for the country at time 1.

At the time in which the principals choose their agents (time 0), there is uncertainty about the optimal policy q^* in a uni-dimensional policy space. The optimal policy for the policy decision making stage (time 1) is going to be a realization from a distribution f on the reals (with cumulative F), with mean $\bar{q}$ and variance σ^2.

Suppose that each principal can either ask her chosen agent to commit ex-ante to policy $\bar{q}$ at time 0, or give the agent free hand to choose the policy ex post, counting on the positive probability that the delegated agent will have more information to choose the policy better than it could at time zero. Formally, the binary choice for principal G is between policy mandate $P_G = C$ (committed agent) or else $P_G = NC$ (uncommitted agent, or full delegation to the agent to choose at time 1).

For each principal there are two potential agents to choose from, one with ability $d = h$ and one with ability $d = l$, $1 > h > l \geq 0$. The ability $d = h, l$ translates one-to-one in the probability d with which the agent with that ability can observe the realization of the optimal policy at time 1. If G chooses g with $d_g = l$ there is no cost; whereas there is a cost $\epsilon > 0$ for G if she wants to select the agent with $d_g = h$.

At time 1 if the agent is committed, the policy implemented is $\bar{q}$, which maximizes voters' expected utility in terms of the common good at time 0. If the agent is uncommitted, she chooses

[5] We add later in the paper the possibility of primaries and general elections with endogenous turnout choices, to replace the random draw of one of the two agents in the simple baseline.

the policy to implement. Nature makes the realization of the optimal policy q^* common knowledge with probability $S \in (0,1)$. When q^* becomes common knowledge we assume that the agent without commitment chooses q^* [6]

The final crucial player in the game will be called for simplicity the lobby L, whose ideal policy q^L is drawn independently at time 1 from a distribution ϕ on the reals (with cumulative Φ), with mean $\bar{q} + b$ and variance τ^2 sufficiently low.[7]

We also assume that $\lim_{x \to \pm\infty} \phi(x)x^2 = 0$, i.e., that the probability that the lobby's bliss point is extreme is sufficiently low.

At time 0 the principals are uncertain whether the lobby will be active or not at time 1: with probability $p(1-S)$ the lobby will be active and hence will make a transfer offer to the uncommitted policy-maker in exchange for choosing the lobby's ideal policy; and with probability $(1-p) + pS$ the lobby will not be active and hence will not interfere with policy making.[8]

The lobby (if active) makes a take-it-or-leave-it monetary offer $m > 0$ to the agent, and if the offer is accepted the chosen policy must be the one advocated by the lobby, q^L. When making this choice, the lobby does not know what the optimal policy q^* for the principals is (recalling that the lobby is active only when q^* is not common knowledge). On the other hand, the agent will know it with probability $S + d(1-S)$.

Let us now describe the payoffs: for each principal G

$$U^G(q) = -\lambda^G (q - q^*)^2 + I^G \mathbb{1}_{w=g}.$$

The weight λ^G represents the intensity of principal G's preference for the common-value policy

[6] A behavioral justification of this assumption would be that voters re-elect the politician unless is corrupt with probability 1, which would be the case if she chooses a policy different from q^* when it is common knowledge.

[7] Formally, we assume that $\phi(q^L)$ is a traslation by an amount b, of a distribution function $\hat{\phi}(\cdot)$,$\phi_b(q^L) = \hat{\phi}(q^L+b)$, where distribution $\hat{\phi}(\cdot)$ has the same expected value than distribution $f(\cdot)$. Hence for $b = 0$, q^L and q^* have the same expected value $\bar{q}$, while for a different b, q^L has mean $\bar{q} + b$.

[8] Note that even when the lobby exists (probability p) it is assumed not to be active with probability S, because with common knowledge of the optimal policy we simply assume that the transfer needed to bribe the policy maker to choose q^L is made unaffordable by the retrospective voting consideration mentioned in footnote 6.

q. I^G is the principal's private benefit, which can be obtained only when the policy maker is the principal's representative.[9] The private benefits dimension of political preferences does not depend on information, whereas the state of the world realization matters for the utility from the common value policy q.

Without loss of generality, we assume $0 < \lambda^A \leq \lambda^B$.

The payoff function for the policy-maker w is

$$U^w(q) = R - \lambda^w \left(q - q^*\right)^2 + m,$$

where R are the standard ego-rents from holding office and m is the money that may be obtained from the lobby. λ^w denotes the expected moral universalism of the selected policy-maker, which is the same for both principals.[10]

The payoff function for the lobby is

$$U^L(q) = -\lambda^L(q - q^L)^2 - m,$$

where $\lambda^L > \lambda^w$.

To summarize, the time-line is as follows:

Time 0: Each principal G chooses $P_G \in \{C, NC\}$ and $g \in \{h, l\}$;

Nature chooses with a coin toss a policy-maker w between the two agents chosen at time 0;

Time 1: Nature chooses q^* from f and q^L from ϕ. If w is committed then the policy is $\bar{q}$. If w is uncommitted, then q^* becomes common knowledge with probability S and q^* is implemented; the

[9] I^G could be interpreted as job-protection or any private benefit accruing only to (group) G when g wins. I^A (I^B) could alternatively be the value attached by A (B) to having a pro-life (pro choice) policy maker in power. In both interpretations I^G is not state dependent. In the first interpretation of I^G, λ^G would be close to the concept of *Moral Universalism* introduced by Enke et al. (2021).

[10] As we will see, both principals have the incentive to select a representative with the maximum possible λ. Hence we stack the deck against corruptibility. We will see at the end that if there are reasons to believe (from modifications of the model) that different principals or voters may want delegates with different λs, our results will further strengthen, since there will be an additional connection between communal values and distrust for elites.

lobby becomes active with probability $p(1-S)$, and in that case makes a take-it-or-leave-it offer m to w as a quid-pro-quo for having q^L implemented, and w accepts or rejects, and chooses policy based on her posterior beliefs.

We study the Bayesian Nash Equilibria of this game.

3 Baseline equilibrium analysis

We solve the game starting from the policy choices of the selected politician at the end of the game tree. If $w = g$ has mandate $P_G = C$ then the committed policy choice is $\bar{q}$; if w has mandate $P_G = NC$, then with probability S the common knowledge of q^* induces policy choice q^* no matter what by assumption. If instead the realization of q^* has not been revealed by Nature, then

1. If the lobby is active:

   (a) with probability d^w, w observes which is the optimal policy q^* and chooses q^L (accepts m) if

   $$-\lambda^w \left(q^* - q^L\right)^2 + m > 0,$$

   and chooses q^* otherwise.

   (b) with probability $1-d^w$, w does not observe which one is the optimal policy and chooses q^L if

   $$m > \bar{m}(q^L) := \lambda^w \left[\sigma^2 + \int_{q^* \in \mathbb{R}} \left(q^* - q^L\right)^2 dF\left(q^*\right)\right]$$

   and chooses $\bar{q}$ otherwise.

2. If the lobby is not active, then w chooses q^* with probability d^w and $\bar{q}$ otherwise.

The lobby's offer is characterized by the following lemma:

Lemma 1. *There exists $\underline{\lambda}^L < \infty$ such that the equilibrium offer $m^*(q^L)$ is greater or equal than $\bar{m}(q^L)$ for every realization of q^L for all $\lambda^L > \underline{\lambda}^L$.*

We assume for the rest of the paper that $\lambda^L > \underline{\lambda}^L$: the lobby's preference for having a distorted policy is sufficiently strong that it offers a bribe which is accepted by an uncommitted politician who did not know the optimal policy.

Knowing that $m^*(q^L) \geq \bar{m}(q^L)$, it follows that the lobby's optimal offer is a solution of the following minimization problem:

$$\min_{m \geq 0} d^w \left[\int_{q^*: m > \lambda^w (q^* - q^L)^2} m dF\left(q^*\right) + \lambda^L \int_{q^*: m < \lambda^w (q^* - q^L)^2} \left(q^* - q^L\right)^2 dF\left(q^*\right) \right] + (1 - d^w) m.$$

We can derive the following comparative statics corollary:

Corollary 1. *m^* is increasing in λ^L and in d^w.*

The expected loss for the principal when the lobby is active can be defined as:

$$\begin{aligned} \bar{L} := d^w \int_{q^L \in \mathbb{R}} \int_{q^*: m^*(q^L) > \lambda^w (q^* - q^L)^2} \left(q^* - q^L\right)^2 dF\left(q^*\right) d\Phi\left(q^L\right) + \\ (1 - d^w) \int_{q^L \in \mathbb{R}} \int_{q^* \in \mathbb{R}} \left(q^* - q^L\right)^2 dF\left(q^*\right) d\Phi\left(q^L\right). \end{aligned}$$

$\bar{L}$ depends on the two distributions, on the competence of the elected policy maker and on the equilibrium strategy of the lobby $m^*(\cdot)$, which is increasing in the winner's competence. It is possible to show that for λ^L sufficiently large, $\bar{L}$ is increasing in b and decreasing in d^w, if the lobby has a finite budget constraint. Therefore there are two reasons why a principal who prefers an uncommitted mandate should select a more competent agent: first a type h observes at time 1 the optimal policy with higher probability, second it is also less likely that she accepts the offer of an active lobby. It is also clear that $\bar{L}$ is decreasing in λ^w, hence λ^w should be the maximum possible for each principal.

We are now ready to establish the baseline result:

Proposition 1. *1. For $\epsilon > 0$ but small enough, any G that chooses $P_G = C$ also chooses $d^g = l$; in contrast, if $P_G = NC$ then $d^g = h$.*

2. *Group G is more likely to choose $P_G = C$ the higher b and p are, and the lower are h, λ^w and S.*

This baseline result establishes that pandering to what we expect to be right today (a form of populism) is indeed more appealing for the principal (voter) when corruption is high and costly (p, b high), when even the best available politicians are not that great (h low) and it is difficult to keep politicians honest (S low).

In this baseline setting where information is exogenous and the selection of w is random, λ^G does not matter for the choice of commitment vs delegation, whereas it will become crucial as soon as we endogenize information and introduce elections.

4 Adding information, mobilization, ideology, anti-elitism and fake news

With respect to the intuitive results of the baseline equilibrium analysis above, we are interested in exploring dimensions that are less often discussed in relation to populism: (1) what role could the intensity λ of common value preferences versus ideology play? (2) What may explain the existence of the equilibrium in which one party chooses commitment but the other does not? And what roles do the fundamentals play in such cases in the determination of the probability of winning for the populist party? (3) Which role does citizens' willingness to be informed about political and economic issues play in their voters' choice? (4) What happens when we augment the model by allowing for primaries and general elections rather than a simple principal-agent choice, and how do endogenous turnout and mobilization strategies modify the baseline result? (5) Is the ex ante pandering commitment component of populism conducive to anti-elite rhetoric and fake news production incentives, two components of populist politics often emphasized in the political science literature? In this section we offer an answer to all these questions.

4.1 Endogenous information

In the baseline model we assumed that an agent is randomly selected to be the winner and we kept an exogenous probability S of ex post information for the principal. We now argue that adding just one component to the baseline model, namely making S endogenous, is sufficient to make the intensity parameter λ^G a relevant one, and, moreover, to create the possibility of asymmetric equilibria. In this section we start answering the above questions exploring the role of citizens' willingness to acquire information about what is the ex-post optimal policy to implement.

Assume that, in case the selected policy-maker w has no commitment, each principal can choose effort $s_G \in [0, 1]$, with cost $c(s)$ increasing and convex, $c'(0) = 0$, $\lim_{s\to 1} c'(s) = +\infty$, and with effectiveness $S(s_A, s_B) = \frac{s_A+s_B}{2}$. The rest of the model remains the same.[11]

Let $s^*_G \in (0, 1)$ denote the optimal amount of information acquired by principal G, we can sign the comparative statics with respect to all fundamental parameters, and explain the impact of endogenous information acquisition w.r.t. the baseline results:

Proposition 2. *When information is endogenous we have that*

1. *A high λ^G reduces the net cost of information acquisition, hence makes $P_G = NC$ more likely w.r.t. a principal with lower λ^G. In other words, ceteris paribus the commitment option is chosen by principals with lower moral universalism.*

2. *Given $\lambda^A < \lambda^B$ it is possible to find parameter values under which $P_A = C$ and $P_B = NC$, while it is impossible to find an equilibrium with $P_A = NC, P_B = C$.*

3. *The comparative statics w.r.t. p, b, h of Proposition 1 continue to hold, but, the more information acquisition takes place in equilibrium, the smaller becomes the effects of such fundamentals on the possibility of a populist commitment equilibrium.*

A lower λ^G implies a lower benefit of having an ex-post optimal common-value policy compared to the private cost of information acquisition. Intuitively, if λ^A is low and λ^B is high, it is possible

[11] Clearly, when the policy maker is committed, the optimal information acquisition is zero.

that for principal B it is worth investing on monitoring ex post and hence endorse a non committed politician of type h, whereas for A the extra cost of information acquisition would be too high. To see what effects an increase of p and b has on the amount of information acquired in equilibrium by citizens, consider a set of parameters such that in equilibrium $P_G = NC$: an increase in either p or b increases the information acquisition, but a further increase of these parameters may induce a switch to $P_G = C$ and, when both principals choose C, information acquired in equilibrium drops to zero. Thus,

Corollary 2. *An increase in corruption threats (higher p and b) has a non monotonic effect on information acquisition.*

4.2 Mobilization

The virtue of a baseline model with a simple principal-agent delegation logic is simplicity, and it allowed us to already establish baseline results on the impact of corruption, expected competence of politicians, and intensity of common-value policy preferences on the possibility of a strategic populist commitment choice. In the endogenous information acquisition extension we have consistently given the principal the possibility to acquire information. But the principal should actually be a voter. Moreover, mobilization is an important dimensions of interest in the study of populism (see e.g. Gennaro et al., 2020, and references therein). Hence we need to introduce elections with endogenous participation. Moreover, introducing endogenous participation, ideology or private benefits I^G matter for turnout.

We introduce the following modifications of the model:

- **Voting:** Assume that each principal G of the baseline model is replaced by a party or group composed by χ^G citizens, who select candidate g in a primary. Citizens in each group have heterogeneous cost of voting, and given the common interest in each group only members with negative cost of voting turn out in the primaries; but in the general elections, where a runs against b, also agents with positive cost of voting can turn out, depending on the assumptions made on rational voting decisions. To stack the deck in favor of the maximum closeness to the single-principal baseline, we assume rule utilitarian voting a la Feddersen and Sandroni – group utility maximization determines the threshold cost of voting below which all members with such costs are mobilized. We also assume that before the general elections there is a realization of a random shock γ^G to the cost (or benefit) of voting for citizens of each group G, so that the probability of winning remains interior like in probabilistic voting models, and we can then trace the effects of the fundamental parameters on the probability of committed or uncommitted candidates getting elected.

- **Information acquisition**: Having replaced the single-principal of the baseline model with a voting selection, we have to be consistent also in terms of information acquisition, assuming that if the elected policy-maker is not committed then the endogenous information acquisition efforts are by the citizens once again. Consistently with the assumption that citizens have heterogeneous cost of voting, we assume that they are heterogeneous in their cost of information acquisition. The cost of information is a continuous increasing and convex function $k^v c(s_v)$ such that $c(0) = c'(0) = 0$, $\lim_{s \to 1} c'(s) = +\infty$, and k^v is a realisation from a uniform distribution between $\underline{k} \geq 0$ and $\overline{k} > \underline{k}$. Again, group utility maximization determines the threshold cost of information acquisition below which all members with such cost acquire information.

With these two modifications, all the substantive results of Propositions 1 and 2 are essentially unchanged. The lower is λ^G, the higher is the opportunity cost of being informed for a voter; and therefore there is a threshold under which voters prefer to elect a candidate who chooses the ex-ante optimal policy, such that no voter will acquire information ex-post. As a consequence, when an equilibrium in which the endogenous candidates propose different policies exist, then the candidate who offers commitment is the representative of party A, given $\lambda^A < \lambda^B$. Like in Proposition 2, the existence of an asymmetric equilibrium in which candidate a offers commitment while b is not committed is guaranteed under two sufficient conditions. The first is that an active lobby has a high willingness of distorting policy maker's choice. The second is that the expected welfare loss when the lobby is influencing the policy maker is intermediate. In fact, if the bias was too high, then even those citizens who have a high λ^G would prefer a commitment policy. In the opposite case, if the welfare loss due to lobbies' influence is small, no citizen would be too worried about the lobbies' influence and all would prefer to take the risk of having a policy that is contingent on the realization of the state of the world, even if lobbies distort policy maker's choices.

Ideology or private benefits did not affect the results in the baseline model with exogenous probability of winning, but in this extension with electoral competition the I^G parameters will start to matter. I^G is a component of a voter's utility function that is activated only when the voter's preferred party wins, and the effect of I^G on citizens' welfare does not depend on the realization of the state of nature. Therefore does not require any information acquisition by voters.[12] Leaving the technical details of the above modifications to the appendix, and continuing to denote the outcome of primaries of party G by $P_G \in \{C, NC\}$,we now summarize the substantive findings in the next proposition:

Proposition 3. *1. When the equilibrium is symmetric, displaying either both candidates with commitment or both without commitment, the probability of winning of the candidate of party G is increasing in I^G, χ^G and decreasing in I^{-G}, χ^{-G}.*

2. On the other hand, when the equilibrium is asymmetric with $P_A = C$ and $P_B = NC$, the probability of winning for each candidate is still increasing in its own I^G and size of the group, but the probability of winning depends also on $p, b, h, \lambda^A, \lambda^B$:

   (a) the probability that candidate a wins the election is increasing in p and b, and decreasing in h and λ^A;

   (b) while the probability that candidate b wins is increasing in λ^B.

3. An increase in I^A does **not** *necessarily imply higher propensity towards commitment:*

[12] To reiterate, pro-life vs pro-choice policies are hardly dependent on realizations of any state of the world or scientific discovery, and even in the private benefits interpretation cash is cash.

(a) *Consider a set of parameters such that an asymmetric equilibrium exists. If λ^A decreases or λ^B increases, the asymmetric equilibrium still exists. When the difference between the two weights λ^A and λ^B is large, an increase in I^A* **shrinks** *the set of parameters according to which the asymmetric equilibrium exists.*

(b) *In particular, if λ^B is large, when $I_A = 0$ the equilibrium is asymmetric, while for I_A sufficiently large the equilibrium is symmetric and both candidates propose no commitment.*

If I^G increases (higher ideological polarization or higher value given to some type of group-level protection or communal value) voters may prefer to increase the probability that their own candidate wins the election even if this implies not having their preferred policy-maker. Intuitively, consider $I^B = 0$, $I^A = 0$, λ^A small and λ^B large, such that the equilibrium is asymmetric. Suppose now that I^A increases: party B's members still only care about which common good policy is implemented, while party A's members now care more about which candidate is elected. It may then follo that they may switch to prefer a candidate without commitment, because the reduction in party B members' turnout is larger than for party A members and therefore an uncommitted candidate a has higher chance to win the election than a committed candidate. This shows that ideological polarization has nothing to do with populism. What matters the most for the existence of a populist equilibrium is λ, and, in particular, in an asymmetric equilibrium with only one populist it is the party with lower moral universalism that chooses a populist commitment.

4.3 Fake news and anti-elite rhetoric

We now incorporate in our analysis two relevant aspects of political campaigns that have raised attention in the recent years. The recent wave of populism in western democracies has been characterized by a rampant use of anti-elite rhetoric by populist candidates jointly with an increased diffusion of fake news and distorted information, often fomented by the same populist parties. We show that these phenomena are instrumental in boosting the electoral success of candidates proposing commitment policies.

4.3.1 Fake news

Suppose that each candidate $i \in \{a, b\}$ at the general election can exert a costly effort (or campaign budget) $f_i \in \mathcal{R}_+$ to produce fake news, which increase the cost of information acquisition by voters: $(k^v + f_1 + f_2)c(s_v)$. Let $\Phi(f)$ be the cost of producing fake news, assumed the same for both candidates, with $\Phi(0) = 0$, strictly increasing and convex.

Proposition 4. *Suppose party A's candidate proposes the commitment policy and party B's candidate no commitment.*

For R sufficiently large, candidate a exerts more effort than candidate b in producing fake news.

If both candidates propose no commitment in equilibrium and h is not too low, they exert a positive amount of effort in producing fake news.

The intuition of this result is straightforward. In case candidates compete in the general election offering different policies, candidate a benefits more than candidate b from an increase in the cost of information acquisition. In fact, an increase in the cost of information acquisition decreases party B's voters turnout and increases party A's voters turnout, as long as the value of winning the election is sufficiently large. It is interesting to note that even uncommitted candidates benefit from fake news, because a reduction in the amount of information acquired by voters increases the probability that the elected politician may get money from the lobby, if they are sufficiently competent. Therefore even in case fake news do not affect the probability of winning the election, as it is in case both candidates offer an uncommitted policy, still candidates exert a positive effort to lower citizens' monitoring

4.3.2 Anti-elite rhetoric

Populist rhetoric is characterized by a strong anti-elitism. In this subsection we suggest how anti-elite rhetoric aiming to affect voters' beliefs about the likelihood that lobbies and elites could distort politicians' actions is a natural complement of commitment policies. We assume here that the candidate who wins the primary of party G chooses how to allocate a unitary endowment of time between campaigning on competence and anti-elite rhetoric, as in Gennaro et al. (2020). Formally, the choice $t_g \in [0,1]$, $g = a, b$, has the following impact on group G citizens' beliefs of competence and possibility of elite capture: $p^{G,t_g} = p + \eta(t_g)$ for all $v \in G$, with $\eta(0) = 0,\ \eta' > 0,\ \eta(1) < (1-p)$, and $\hat{d}^G(t_g) = d^g + \gamma(t_g)$, with $\gamma(1) = 0,\ \gamma' < 0,\ \gamma(0) < (1 - d^g)$.

In words, the general election campaign effort by politician g of party G can be used to modify the prior of that party's citizens on either her competence or on the risk of elite capture.

Proposition 5. *A candidate $g \in \{a, b\}$ who proposes a commitment policy chooses $t_g = 1$, while a candidate j who proposes a non-commitment policy chooses $t_g = 0$.*

This proposition does not need a formal proof: it is evident that is a weakly dominant strategy for any candidate who proposes a commitment policy to allocate all her time campaigning to increase voters' perception on the probability that the lobby is active. Only in case both candidates propose a commitment policy a candidate is indifferent on which topic to devote her campaign. For a candidate who proposes a non-commitment policy it is a dominant strategy to devote her campaign to increase voters' beliefs about her competence. Notice that, even if we allow negative campaigning about the competence of the opponent, in an asymmetric equilibrium candidate g, who is proposing a non-commitment policy, would choose $t_g = 0$, because the competence of a candidate who commits to a policy is irrelevant. The candidate who chooses a commitment policy would still prefer to allocate her time on an anti-elite rhetoric as long as the mobilisation effect of this rhetoric is stronger than other effects.[13]

We remark that a corollary of our entire analysis is that we have uncovered a rationalization of why communal values can induce higher distrust for elites, two characteristics of populism previously not connected to each other.

[13] In a related paper, Gennaro et al. (2020) study the sensitivity of the anti-elite component of the populist campaign strategy in US elections to economic insecurity variation and district characteristics. The parameter λ in our model could be affected by economic and political conditions of a specific context.

4.4 Extensions

We now discuss a number of directions in which our results can be extended. First, we discuss the realistic possibility that the two parties have heterogeneous preferences over a unidimensional policy space. Second, we consider the case in which voters of different parties care about different policies; and finally we discuss the relation between competence and endogenous commitment.

4.4.1 Heterogeneous Preferences

In the paper we have talked about q as the common good. Very similar results hold if the two parties disagree on which is the policy that maximizes the common good in a given state. Suppose for simplicity that $q^* - \delta$ is the optimal policy for party A and $q^* + \delta$ is the optimal policy for party B. Consistently, a committed politician of party A would choose $\bar{q}^A$ and a committed politician of party B would choose $\bar{q}^B > \bar{q}^A$. Proposition 1 still holds because electoral competition does not play any role, but also the main results in all other propositions remain qualitatively the same, as long as δ is not too large. Specifically, in case the winning candidate is uncommitted, the voters of the losing party will continue to acquire information as long as they still prefer the optimal policy of the other party being implemented to the expected policy of the lobby. However, the amount of information that a voter acquires ex-post is larger when her own party' candidate wins the election compared to the case in which the opponent wins, because the benefit of acquiring information is higher. Another difference is that even voters with positive cost of voting may turn out in case both candidates commit, because the two policies will differ. Still, on each side the trade-offs we have studied above would remain qualitatively the same, since low λ on either side means low weight of their optimal policy in their utility function and leads to the selection of a populist in the party primary with greater probability.

4.4.2 Multidimensional policies

Consider now an extension in which there are two national policies to be decided, e.g. security q_a and welfare policy q_b. Suppose for simplicity that for party A $\lambda^A_{q_a} > 0$ but $\lambda^A_{q_b} = 0$, and vice versa for party B, so that even if both policies enter additively in the utility function each voter considers only the policy dimension most important for her. In this case once again all our results qualitatively continue to hold, and, moreover, our results clarify the role of moral universalism for the choice of a populist strategy within each party: for party A a lower $\lambda^A_{q_a}$ implies that committing to "America first "or disengagement becomes preferable to more flexible security policies; similarly, for a voter of party B a lower $\lambda^B_{q_b}$ implies that a commitment to a simple citizenship income can be preferred to more inclusive and elaborate welfare policies. In fact, security at the more global level or welfare considerations for others have low relevance when moral universalism is low.

4.4.3 Incompetence as a commitment device

Some final remarks concern the possibility of endogenous and partial commitment. First, observe that as long as the commitment is credible, voters do not acquire information about the state of the world, so they never push the policy maker to change the ex-ante optimal policy. Still, a policy maker may learn with positive probability what is the ex-post optimal policy and realize that is very far from $\bar{q}$. If commitment is not full, a committed politician may propose to change ex-post the policy and voters will face the dilemma whether this bid depends on her superior knowledge or lobby pressure. If voters can select in the primary a candidate of any ability $d \in [0, 1]$, choosing a candidate with $d = 0$ is a commitment device. A candidate with zero ability will never learn the optimal ex-post policy and voters should assign probability one that the policy maker is derailed by the lobby. Di Tella and Rotemberg (2018) offer an explanation for the observation that voters sometimes seem to prefer incompetent politicians. In their model, voters are disappointment averse and more competent politicians are more likely to betray them. Our result offers an alternative explanation of why voters sometimes seem to prefer incompetent policy makers. Consistently, Sasso and Morelli (2021) show theoretically and Bellodi et al. (2021) confirm empirically that populist leaders can lead to the firing of expert bureaucrats and decreased bureaucratic performance. Together with the current paper, they show that the consequences of populism include poor policy implementation and decreased voter welfare.

Finally, in our model candidates can be either committed or uncommitted. However, we might consider the possibility that candidates could propose a partial commitment platform, like in Kartik et al. (2017). We conjecture that if candidates could commit to choose a policy within an interval, the size of the interval would shrink under the same conditions that make commitment more desirable in our paper. Most likely, the interval would probably not be symmetric around $\bar{q}$, but rather larger on the opposite side of the lobby bias.

5 Concluding remarks

This paper shows, starting from a simple model and then adding elements one by one incrementally, that an equilibrium supply of populism has a number of complementary characteristics: commitment to an ex ante popular policy (pandering); anti-elite rhetoric with no emphasis on competence, accompanied by fake news to make information acquisition and monitoring of politicians harder (lower accountability expected at election time); and equilibrium endogenous elite (lobby) activity consistent with the popular fear (possibly exacerbated by rhetoric). Moreover, we establish that greater ideological polarization is not related to the populism phenomenon, since we show that the space of parameters such that a populist equilibrium exists may actually shrink when ideological polarization increases. Instead, rather than ideological intensity, a key "demand side"parameter that affects the probability of a populist equilibrium and the probability of winning of a populist candidate in such an equilibrium is λ, which captures the notion of moral universalism proposed by Enke et al. (2021). Adam Smith in the last chapter of the wealth of nations already noticed that stagnation plus growing inequality, combined with excessive division of labor and fear of replacement by machines, may generate a collapse of the moral sentiments necessary for the good functioning of commercial society, namely ingenuity, frugality and prudence. But beside this decay of individual moral values that were functional to capitalism, as emphasized in Censolo and Morelli (2021), it is easy to imagine that also moral universalism may go down. Fear of globalization, distrust for politicians, increased fears of a zero-sum game, bring citizens to be less generous and more self-absorbed and therefore less prone to care about the utility of those distant from them, in space and intergenerationally, and hence to put a lower weight on common-value policies. The fact that the party with lower λ is the most likely to turn populist in a two-party competition is consistent with the observation that populism in western democracies emerged mostly on the right of the political spectrum: an average right-wing voter (an average Republican in the US) typically cares less about (and trusts less) the public good provision by the state.

One important direction for future research concerns dynamics. While Levy et al. (2020) study the dynamics of intensity of preferences of voters of two given groups, the sophisticated and the unsophisticated, the dynamics of learning that can be envisioned as a follow-up of our paper has as main components the interplay between learning on new policy dimensions and on the real power of the elite(s) in biasing policy-making. We fix the changes in demand, and we check conditions under which the different patterns on the supply side can emerge. Under some conditions a long phase of non populist equilibrium can be followed by short or long phases of populist equilibria, symmetric or asymmetric, and with different exit patterns depending on the fundamentals. While in an equilibrium where no country has a populist leader there may be no learning about the strength of lobbies or elites, once some countries fall into a populist equilibrium with a populist winner there could be interesting learning dynamics both on the variance of the optimal policy and on the strength of the elite(s). In particular, we conjecture that if the elite is monolitic or one-sided, then a populist equilibrium could last much longer than when there are multiple competing elites. An additional direction of extension of our model could be that when a populist is in office we can learn about the costs of populism or on unexpectedly important new policy dimension. For example the cost of having incompetent bureaucrats could be updated upwards during a pandemic, and on newly relevant dimensions like logistics. Another important conjecture on the potential follow-up implications of our model is that if the lobby is not expected to be extreme, then if the policy maker is more constrained (as it is the case for the policy-maker in a country with no independent monetary or fiscal policy) the value of uncommitted policy makers goes down, and populist equilibria can surface.

References

[1] Acemoglu, Daron, Georgy Egorov and Konstantin Sonin (2013): “A Political Theory of Populism,” *Quarterly Journal of Economics*, 771-805.

[2] Acemoglu, Daron and Pasqual Restrepo, (2017): “Robots and Jobs: Evidence from US Labor Markets”, NBER Working Paper No. 23285

[3] Algan, Yann, Sergei Guriev, Elias Papaioannou, and Evgenia Passari (2017): “The European Trust Crisis and the Rise of Populism”, Brookings Papers on Economic Activity, Fall.

[4] Amador, Manuel, Ivan Werning, and George Marios Angeletos (2006): “Commitment vs. Flexibility.” *Econometrica* 74(2): 365-96.

[5] Ananyev Maxim and Sergei Guriev (2018): “Effect of Income on Trust: Evidence from the 2009 Economic Crisis in Russia” , Economic Journal, 129 (619), 1082–1118,.

[6] Autor, David , David Dorn, Gordon Hanson and Kaveh Majlesi (2016): “Importing Political Polarization? The Electoral Consequences of Rising Trade Exposure,” *NBER* Working Paper No. 22637.

[7] Bellodi, Luca, Massimo Morelli and Matia Vannoni (2021): “The Cost of Populism for Bureaucratic Efficiency and Government Performance.” mimeo, Bocconi University.

[8] Besley, Timothy, and Torsten Persson (2019): “The Rise of Identity Politics,” unpublished manuscript.

[9] Coate, Stephen, and Michael Conlin. “A group rule-utilitarian approach to voter turnout: Theory and evidence,” American Economic Review 94.5 (2004): 1476-1504.

[10] Censolo, R., and M. Morelli (2021): “Adam Smith and the Roots of Populism” mimeo.

[11] Colantone, Italo and Piero Stanig (2019): “The Trade Origins of Economic Nationalism: Import Competition and Voting Behavior in Western Europe,” *American Journal of Political Science*

[12] Crutzen, Benoit, Dana Sisak and Otto. Swank (2020): “Left Behind Voters, Anti-Elitism and Popular Will,” Tinbergen Institute Discussion Paper n. 055.

[13] DiTella Rafael and Julio J. Rotemberg. 2018 “Populism and the return of the “Paranoid Style: Some evidence and a simple model of demand for incompetence as insurance against elite betrayal”, Journal of Comparative Economics, 46, 4, 988-1005.

[14] Enke, B., R. Rodriguez-Padilla and F. Zimmermann (2021): “Moral Universalism and the Structure of Ideology” *NBER* Working Paper No. 27511.

[15] Feddersen, Timothy, and Alvaro Sandroni: “A theory of participation in elections,” American Economic Review 96.4 (2006): 1271-1282.

[16] Feddersen, Timothy, and Alvaro Sandroni: “Ethical voters and costly information acquisition,” Quarterly Journal of Political Science 1.3 (2006): 287-311.

[17] Fox, Justin, and Kenneth W. Shotts (2009): “Delegates or Trustees? A Theory of Political Accountability.” *Journal of Politics* 72(4): 1225-37.

[18] Gennaioli, Nicola and Guido Tabellini (2019): “Identity, Beliefs, and Political Conflict,” unpublished manuscript.

[19] Gennaro, Gloria, Giampaolo Lecce and Massimo Morelli (2020): “The Strategy of Populism: Theory and Evidence from the United States,” mimeo, Bocconi university.

[20] Guriev, S., and Papaioannou (2020):

[21] Guiso, Luigi, Helios Herrera, Massimo Morelli, and Tommaso Sonno (2017): "Demand and supply of populism," *CEPR* DP 11871.

[22] Guiso, Luigi, Helios Herrera, Massimo Morelli, and Tommaso Sonno (2019): "Global Crises and Populism: the Role of Eurozone Institutions," *Economic Policy*, Volume 34, Issue 97, Pages 95-139.

[23] Inglehart, Ronald and Pippa Norris (2019), *Cultural Backlash: Trump, Brexit and Authoritarian Populism*, Cambridge, UK: Cambridge University Press.

[24] Judis, John B (2016): *The Populist Explosion. How the Great Recession Transformed American and European Politics*, New York, Columbia University Press.

[25] Kartik, Navin, Richard van Weelden and Stephane Wolton (2017): "Electoral Ambiguity and Political Representation", *American Journal of Political Science*, 61,4, 958-970.

[26] Laitin, David D. (2018): "Populism: the Muslim Connection." Keynote Address at the CESifo Conference *Globalization and Populism - Past and Present*, Venice, Italy, June 4-5.

[27] Levy, Gilat, Ronny Razin and Alwin Young (2020): "Misspecified Politics and the Recurrence of Populism", mimeo, LSE;

[28] Mudde, Cas (2004): "The Populist Zeitgeist." *Government and opposition*, 39(4), 541-563.

[29] Prato, C., and Wolton, S. (2017): "Rational Ignorance, Populism, and Reform," *European Journal of Political Economy.*

[30] Rodrik, Dani (2017): "Populism and the Economics of Globalization", CEPR DP 12119.

[31] Sasso, Gregory, and Massimo Morelli (2021): "Bureaucrats under Populism." mimeo, Bocconi University.

[32] Shayo, Moses (2009): "A Model of Social Identity with an Application to Political Economy: Nation, Class, and Redistribution, *American Political Science Review* 103(2), 147-174.

[33] Van Weelden, Richard (2013): "Candidates, Credibility, and Re-election Incentives." *Review of Economic Studies* 80(4): 1622-51.

Appendix

Proof of Lemma 1: Consider a lobby with preferred policy q^L that makes an offer to a politician without knowing whether she is informed or not: with probability d^w the politician is informed and with complementary probability is not. The minimum offer that an uninformed politician accepts is equal to $\bar{m}(q^L)$. If the lobby makes an offer m lower than $\bar{m}(q^L)$ the lobby gets in expected term a payoff equal to

$$-(1-d^w)\lambda^L\left(\bar{q}-q^L\right)^2 - d^w\left[\int_{q^*:m>\lambda^w(q^*-q^L)^2} m dF\left(q^*\right) + \lambda^L\int_{q^*:m<\lambda^w(q^*-q^L)^2}\left(q^*-q^L\right)^2 dF\left(q^*\right)\right].$$

If the lobby offers $\bar{m}(q^L)$ it gets

$$-(1-d^w)\bar{m}(q^L)-d^w\left[\int_{q^*:\bar{m}(q^L)>\lambda^w(q^*-q^L)^2}\bar{m}(q^L)dF\left(q^*\right) + \lambda^L\int_{q^*:\bar{m}(q^L)<\lambda^w(q^*-q^L)^2}\left(q^*-q^L\right)^2 dF\left(q^*\right)\right].$$

The derivative of the lobby's utility, if $m < \bar{m}(q^L)$, is

$$\begin{aligned}-d^w m f\left(\sqrt{m/\lambda^w}+q^L\right)\frac{1}{2\sqrt{m\lambda^w}} - d^w m f\left(-\sqrt{m/\lambda^w}+q^L\right)\frac{1}{2\sqrt{m\lambda^w}}+\\ d^w\lambda^L\frac{m}{\lambda^w}f\left(\sqrt{m/\lambda^w}+q^L\right)\frac{1}{2\sqrt{m\lambda^w}}+\\ d^w\lambda^L\frac{m}{\lambda^w}f\left(-\sqrt{m/\lambda^w}+q^L\right)\frac{1}{2\sqrt{m\lambda^w}} - d^w\int_{q^*:m>\lambda^w(q^*-q^L)^2} dF\left(q^*\right).\end{aligned}$$

This derivative is positive if λ^L is sufficiently large. The jump in utility at $m = \bar{m}(q^L)$ is positive if $-(1-d^w)\lambda^w\left[-\sigma^2+\int_{q^*\in\mathbb{R}}\left(q^*-q^L\right)^2 dF\left(q^*\right)\right] > -(1-d^w)\lambda^L\left(\bar{q}-q^L\right)^2$. The following holds: $-\sigma^2+\int_{q^*\in\mathbb{R}}\left(q^*-q^L\right)^2 dF\left(q^*\right) = \int_{q^*\in\mathbb{R}}\left\{-\left(\bar{q}\right)^2+2\bar{q}q^*+\left(q^L\right)^2-2q^*q^L\right\}dF\left(q^*\right) = \left(\bar{q}-q^L\right)^2$. Therefore this jump in utility is positive if $\lambda^L > \lambda^w$. Hence when λ^L is sufficiently large, the lobby always offers an amount of money that convinces the uninformed politician.

$\square$

Proof of Corollary 1: If the solution is internal, m^* solves

$$+(1-d^w)+d^w m f\left(\sqrt{m/\lambda^w}+q^L\right)\frac{1}{2\sqrt{m\lambda^w}}+d^w m f\left(-\sqrt{m/\lambda^w}+q^L\right)\frac{1}{2\sqrt{m\lambda^w}}-$$
$$d^w\lambda^L\frac{m}{\lambda^w}f\left(\sqrt{m/\lambda^w}+q^L\right)\frac{1}{2\sqrt{m\lambda^w}}-d^w\lambda^L\frac{m}{\lambda^w}f\left(-\sqrt{m/\lambda^w}+q^L\right)\frac{1}{2\sqrt{m\lambda^w}}+$$
$$d^w\int_{q^*:m>\lambda^w(q^*-q^L)^2}dF\left(q^*\right)=0.$$

In the previous lemma we have proven that the solution is larger than $\bar{m}\left(q^L\right)$. If the solution is internal, in m^* the second derivative must be positive.

Hence, when the solution is internal, by the implicit function theorem, the derivative of m^* with respect to λ^L has the same sign of the following expression:

$$d^w\frac{m}{\lambda^w}f\left(\sqrt{m/\lambda^w}+q^L\right)\frac{1}{2\sqrt{m\lambda^w}}+d^w\frac{m}{\lambda^w}f\left(-\sqrt{m/\lambda^w}+q^L\right)\frac{1}{2\sqrt{m\lambda^w}},$$

which is positive. The derivative of m^* with respect to d^w has the same sign of the following expression:

$$1-mf\left(\sqrt{m/\lambda^w}+q^L\right)\frac{1}{2\sqrt{m\lambda^w}}-mf\left(-\sqrt{m/\lambda^w}+q^L\right)\frac{1}{2\sqrt{m\lambda^w}}+$$
$$\lambda^L\frac{m}{\lambda^w}f\left(\sqrt{m/\lambda^w}+q^L\right)\frac{1}{2\sqrt{m\lambda^w}}+$$
$$\lambda^L\frac{m}{\lambda^w}f\left(-\sqrt{m/\lambda^w}+q^L\right)\frac{1}{2\sqrt{m\lambda^w}}-\int_{q^*:m>\lambda^w(q^*-q^L)^2}df\left(q^*\right),$$

which is positive because $\frac{\lambda^L}{\lambda^w}>1$. Notice that, when λ^L is sufficiently large, the solution is not internal and $m^*=\mu$, where μ is the budget constraint of the lobby. We can also compute the derivatives of the expected loss $\bar{L}$ with respect to b and d^w.

Let us now prove that the expected loss $\bar{L}$ increases with b, when λ^L and μ are sufficiently large. Let us first show that the derivative of the second integral in $\bar{L}$ increases with b, taking advantage of an integration by parts:

$$\int_{q^L\in\mathbb{R}}\int_{q^*\in\mathbb{R}}\left(q^*-q^L\right)^2 dF\left(q^*\right)\frac{\partial}{\partial b}\phi_b\left(q^L\right)dq^L=\int_{q^*\in\mathbb{R}}\left(q^*-q^L\right)^2\hat{\phi}(q^L+b)|_{-\infty}^{+\infty}dF\left(q^*\right)+$$
$$2\int_{q^L\in\mathbb{R}}\int_{q^*\in\mathbb{R}}\left(q^*-q^L+b\right)dF\left(q^*\right)\hat{\phi}\left(q^L\right)dq^L=2\int_{q^L\in\mathbb{R}}\int_{q^*\in\mathbb{R}}q^*dF\left(q^*\right)\hat{\phi}\left(q^L\right)dq^L-$$
$$2\int_{q^L\in\mathbb{R}}\int_{q^*\in\mathbb{R}}q^LdF\left(q^*\right)\hat{\phi}\left(q^L\right)dq^L+2b\int_{q^L\in\mathbb{R}}\int_{q^*\in\mathbb{R}}dF\left(q^*\right)\hat{\phi}\left(q^L\right)dq^L.$$

Recall that $\lim_{q^L\to\pm\infty}\left(q^*-q^L\right)^2\hat{\phi}(q^L+b)=0$. Moreover, the expected values of distributions f and $\hat{\phi}$ are equal. Hence the derivative of the second integral in $\bar{L}$ with respect to b is equal to $(1-d^w)2b$, which is positive if $b>0$. Consequently, if $\mu\to\infty$, the derivative of the first integral in $\bar{L}$ with respect to b is equal to d^w2b. It follows that, for μ sufficiently large, the derivative of $\bar{L}$ with respect to b is positive, if $b>0$. The derivative of $\bar{L}$ with respect to d^w, when λ^L is sufficiently large (and therefore $m^*=\mu$), is equal to

$$\int_{q^L\in\mathbb{R}}\int_{q^*:\mu>\lambda^w(q^*-q^L)^2}\left(q^*-q^L\right)^2dF\left(q^*\right)d\Phi\left(q^L\right)-\int_{q^L\in\mathbb{R}}\int_{q^*\in\mathbb{R}}\left(q^*-q^L\right)^2dF\left(q^*\right)d\Phi\left(q^L\right)<0.$$

□

Proof of Proposition 1: Let us prove each point sequentially.

1. Consider the incentive compatibility constraint, when G selects C:

$$-\lambda^G\sigma^2>-\lambda^G(1-S)\left[(1-p)(1-d^g)\sigma^2+p\bar{L}\right]. \tag{1}$$

   Hence, if G chooses C, her utility is independent of the competence of her agent. Given that selecting a competent agent is costly, G selects an agent with low competence $d^g=l$. Instead, when G chooses NC, her utility is increasing in d^g, because $(1-p)(1-d^g)\sigma^2$ decreases in d^g and, when λ^L is sufficiently large, $\bar{L}$ decreases in d^g. Therefore, if G chooses NC, she selects a competent agent, for a positive but not too large ϵ.

2. Analyzing inequality (1), the utility from choosing NC decreases with b, because $\frac{\partial \bar{L}}{\partial b} > 0$. The comparative statics of utility from choosing NC with respect to p have the same sign of $-(\bar{L} - (1-d^g)\sigma^2)$. The following lemma shows that the last expression is negative.

Lemma 2. *If $b = 0$, $(1-d^g)\sigma^2 < \bar{L} < \sigma^2 + \tau^2$.*

Proof of Lemma 2. First of all notice that the following holds:

$$\bar{L} < \int_{q^* \in \mathbb{R}} \int_{q^L \in \mathbb{R}} \left(q^* - q^L\right)^2 d\Phi\left(q^L\right) dF\left(q^*\right),$$
$$\bar{L} > (1-d^g) \int_{q^* \in \mathbb{R}} \int_{q^L \in \mathbb{R}} \left(q^* - q^L\right)^2 d\Phi\left(q^L\right) dF\left(q^*\right).$$

Moreover, for $b = 0$, the following holds:

$$\int_{q^* \in \mathbb{R}} \int_{q^L \in \mathbb{R}} \left(q^* - q^L\right)^2 d\Phi\left(q^L\right) dF\left(q^*\right) =$$
$$\int_{q^* \in \mathbb{R}} \int_{q^L \in \mathbb{R}} \left(q^* - \bar{q} - q^L + \bar{q}\right)^2 d\Phi\left(q^L\right) dF\left(q^*\right) =$$
$$\int_{q^* \in \mathbb{R}} \int_{q^L \in \mathbb{R}} [(q^* - \bar{q})^2 + \left(q^L - \bar{q}\right)^2 - 2\left(q^* - \bar{q}\right)\left(q^L - \bar{q}\right)] d\Phi\left(q^L\right) d\Phi\left(q^*\right) = \sigma^2 + \tau^2.$$

Hence the lemma is proven. Finally, notice that, for large λ^L and lobby's budget constraint μ, $\bar{L}$ increases with b, hence $\bar{L} > (1-d^g)\sigma^2$ for any value of $b \geq 0$.

The rest of the comparative statics follow from the analysis of the utility from choosing NC. Notice finally that λ^G can be simplified in inequality (1), hence λ^G does not influence the choice between C and NC when S is a given parameter.

□

Proof of Proposition 2: We prove each point sequentially.

(i) Conditional on choosing NC, each principal maximizes

$$-\lambda^G(1-S)\left[(1-p)(1-h)\sigma^2 + p\bar{L}\right] - c\left(s_G\right).$$

When s_G^* is interior, the FOC that determines it is:

$$\lambda^G \left[(1-p)(1-h)\sigma^2 + p\bar{L}\right] = 2c^{'}\left(s_G^*\right). \tag{2}$$

The existence of s_G^* is ensured by the INADA conditions on $c(\cdot) : c'(0) = 0, \lim_{s \to 1} c'(s) = +\infty$. The second order conditions are satisfied because $c(\cdot)$ is convex. Notice that λ^G increases the amount of information acquisition. Next consider the condition for an equilibrium where G selects NC:

$$-\lambda^G \left[-\sigma^2 + (1 - S^*)\left[(1-p)(1-h)\sigma^2 + p\bar{L}\right]\right] + c\left(s_G^*\right) < 0. \tag{3}$$

Note that, for $\lambda^G = 0$, G is indifferent between the two policies, because G does not acquire any information. Moreover the derivative of the lhs of inequality (3) with respect to λ^G is equal to $-\sigma^2 + (1 - S^*)\left[(1-p)(1-h)\sigma^2 + p\bar{L}\right]$, where the derivatives s_G^* with respect to λ^G are omitted. Indeed, by the envelope theorem the derivative of the utility from no commitment with respect to s_G^* is zero. The second derivative of the difference in utilities with respect to λ^G is negative, because $\frac{\partial S^*}{\partial \lambda^G} = \frac{1}{2}\frac{\partial s_G^*}{\partial \lambda^G} > 0$, hence the difference in utilities is concave in λ^G and it is zero at $\lambda^G = 0$. This proves the first point, because either the difference in utilities is negative for every $\lambda^G > 0$, or it is positive for every $\lambda^G > 0$, or there exists a threshold for λ^G such that it is positive only below such threshold.

(ii) We need the following lemma to prove point (ii), where the utility from policy NC of G is denoted by $v^G(NC) = -\lambda^G (1 - S^*)\left[(1-p)(1-h)\sigma^2 + p\bar{L}\right] - c\left(s_G^*\right)$.

Lemma 3. *$v^A(NC)/\lambda^A < v^B(NC)/\lambda^B$.*

Proof of Lemma 3. Notice that the following holds:

$$\frac{\partial}{\partial \lambda^G}\left\{[-\lambda^G\left(1 - \frac{1}{2}s_G^*\right)\left(p\bar{L} + (1-p)(1-h)\sigma^2\right) - c(s_G^*)]/\lambda^G\right\} = \frac{c(s_G^*)}{(\lambda^G)^2} > 0, \tag{4}$$

where again the derivatives of s_G^* with respect to λ^G are omitted, because of the envelope theorem.

The inequality $v^A(NC)/\lambda^A < v^B(NC)/\lambda^B$ is equivalent to

$$\frac{1}{\lambda^A}\left[-\lambda^A\left(1-\frac{1}{2}s_B^*\right)\left(p\bar{L}+(1-p)(1-h)\sigma^2\right)-c(s_A^*)\right] <$$
$$\frac{1}{\lambda^B}\left[-\lambda^B\left(1-\frac{1}{2}s_B^*\right)\left(p\bar{L}+(1-p)(1-h)\sigma^2\right)-c(s_B^*)\right],$$

where $\frac{1}{2}s_A^*$ has been simplified on the lhs and rhs of the inequality. Notice that

$$\frac{1}{\lambda^A}\left[-\lambda^A\left(1-\frac{1}{2}s_B^*\right)\left(p\bar{L}+(1-p)(1-h)\sigma^2\right)-c(s_A^*)\right] <$$
$$\frac{1}{\lambda^B}\left[-\lambda^A\left(1-\frac{1}{2}s_A^*\right)\left(p\bar{L}+(1-p)(1-h)\sigma^2\right)-c(s_A^*)\right],$$

because acquiring s_A^* amount of information is optimal for A, and it is independent on the presence of the amount of information acquired by B, which enters linearly in the optimization problem of A. The last expression is also lower than $\frac{1}{\lambda^B}\left[-\lambda^B\left(1-\frac{1}{2}s_B^*\right)\left(p\bar{L}+(1-p)(1-h)\sigma^2\right)-c(s_B^*)\right]$, because inequality (4) holds. Hence it is proven that $v^A(NC)/\lambda^A < v^B(NC)/\lambda^B$.

We now proceed to prove point (ii). Consider the conditions for an equilibrium where A selects C and B selects NC:

$$-\lambda^A\sigma^2 > -\lambda^A\left(1-S^*\right)\left[(1-p)(1-h)\sigma^2+p\bar{L}\right]-c\left(s_A^*\right), \tag{5}$$
$$-\lambda^B\sigma^2 < -\lambda^B\left(1-S^*\right)\left[(1-p)(1-h)\sigma^2+p\bar{L}\right]-c\left(s_B^*\right). \tag{6}$$

Let us focus on the conditions of B. When $b=0$, and τ (the variance of the lobby's bliss point) sufficiently low, the inequality is satisfied. Indeed, substituting $\bar{L}=\sigma^2+\tau^2$ (see lemma 2) and considering $s_B^*=0$ and $s_A^*=0$ (which are all substitutions inducing lowerbounds on the utility from NC), inequality (6) can be rewritten as follows: $\tau^2 < \frac{1-p}{p}h\sigma^2$, therefore for τ sufficiently low the inequality is satisfied.

When $b\to\infty$, inequality (6) is not satisfied, because $\frac{\partial\bar{L}}{\partial b}>0$, with the derivative not converging to 0 for high levels of b. Therefore, there exists a threshold $\bar{b}$ such that inequality (6) is satisfied with equality. Let us consider $b = \bar{b}$. Inequalities (6) and (5) can be rewritten as follows:

$$-\sigma^2 > -\left(1 - S^*\right)\left[(1-p)(1-h)\sigma^2 + p\bar{L}\right] - \frac{c\left(s_A^*\right)}{\lambda_A},$$
$$-\sigma^2 < -\left(1 - S^*\right)\left[(1-p)(1-h)\sigma^2 + p\bar{L}\right] - \frac{c\left(s_B^*\right)}{\lambda_B}.$$

Notice that, by lemma 3, the following holds:

$$-\sigma^2 = -\left(1 - S^*\right)\left[(1-p)(1-h)\sigma^2 + p\bar{L}\right] - \frac{c\left(s_B^*\right)}{\lambda_B} > -\left(1 - S^*\right)\left[(1-p)(1-h)\sigma^2 + p\bar{L}\right] - \frac{c\left(s_A^*\right)}{\lambda_A}.$$

Hence, inequality (5) is satisfied. For b marginally larger than $\bar{b}$, inequality (6) is satisfied with strict inequality and inequality (5) holds, if λ^A is not marginally lower than λ^B.

(iii) When deriving the utility from NC with respect to p, b and h, the same comparative statics of Proposition 1 hold, because by the envelope theorem, the derivative of s_G^* with respect to these parameters are not included. We next study the relationship between information acquisition, parameters p, b and h, and the utility from NC. In order to do so, we assume that the cost of information acquisition is parameterized by $y > 0$, so that the cost function is $\frac{1}{y}c(\cdot)$. In this way, a larger y increases information acquisition. The relationship between information acquisition, parameter p and the utility from NC is captured by the following cross-derivative:

$$\frac{\partial^2}{\partial y \partial p}\left\{-\lambda^G\left(1 - S^*\right)\left[(1-p)(1-h)\sigma^2 + p\bar{L}\right] - c\left(s_G^*\right)\right\} =$$
$$\frac{1}{2}\frac{\partial s_G^*}{\partial y}\lambda^G\left[\bar{L} - (1-h)\sigma^2\right],$$

which is positive, hence an increase in information acquisition reduces the negative effect of p on the utility from NC. The same holds for parameter b. Similarly an increase in information acquisition reduces the positive effect of h on the utility from NC.

□

Proof of Corollary 2 When the policy maker is uncommitted, by the envelope theorem, the derivative of s^*_G with respect to p has the same sign of the derivative of the lhs in FOC (2)

$$\lambda^G \left[\bar{L} - (1-h)\sigma^2 \right],$$

which is positive by lemma 2. Similarly it can be proven that, when principal G chooses NC the derivative of s^*_G with respect to b is positive. We have already shown that an increase in p (b) reduces the set of parameters for which NC is an equilibrium action by principal G. Hence, as p (b) increases, information acquisition increases. There is however, a threshold for p (b) above which both principals choose C and information acquisition drops to zero. Therefore the effect of p (b) on information acquisition is non-monotonic.

□

Proof of Proposition 3

Let us first define formally the extended model with voters. We will then briefly go through the subgame equilibrium analysis by backward induction.

Citizens-Voters

There is a unitary mass of citizens V. Each citizen $v \in V$ belongs to one of two parties, A and B. Party $G \in \{A, B\}$ has mass χ^G. For each party we assume that there exist two potential candidates, where candidate i is associated to ability level d^i, with $d^i \in \{h, l\}$, $1 > h > l > 0$. There is also a lobby that intervenes after elections, as in the baseline model. The first node where citizens play is the simultaneous primaries node. Each citizen v of party g observes d^i for each candidate i and the campaign $P_i \in \{C, NC\}$ chosen by each candidate i . Denoting by E^G the set of candidates in the g primary, we can say that each citizen of party g decides:

1) whether to turnout or not in the primary ($t^{pr}_v = 1(0)$ respectively) given the cost of voting $z^V \in [\underline{z}, \bar{z}]$ with $\underline{z} < 0 < \bar{z}$, drawn from a uniform distribution;

2) nd conditional on turning out, which candidate $i \in E^G$ to vote for, given the pair d^i, P_i of each candidate. Selecting a high quality candidate implies a cost $\epsilon > 0$ as in the baseline model.

Second, in the general election node all citizens simultaneously decide whether to turn out or not ($t_v^{ge} = 1(0)$ respectively), with cost of voting for voter v in g equal to $z^V + \gamma^G$, where γ^G is a party specific voting cost shock materializing for the general election (see below). Conditional on turnout any citizen votes for her party candidate, like in all mobilization models.[14]

The third and last history where voters move is after elections: upon observing who won, all citizens simultaneously decide how much information to acquire, given the specific individual realization of information acquisition cost, and given the relative benefit of information acquisition in terms of the possibility to discover what is the optimal policy that the policy-maker should pursue.

As in the baseline model, individual gathering of information has a public good component: it affects the probability that the optimal policy is discovered by some citizens, who can provide public and credible evidence about which policy should be chosen. When this occurs, the elected politician is forced to implement the optimal policy. In other words, with probability $S = \int_{v \in V} s_v dv$ the optimal policy is discovered by the society, and reelection concerns (unmodeled here) push an elected uncommitted politician to implement it. With probability $1 - S$ citizens do not know what is the optimal policy, and in this case the elected politician w observes the optimal policy with probability d^w, but it remains private information whether she observed it or not.

Citizen v of party g derives the following utility from policy q and realized optimal policy q^*:

$$U^{v,g}(w, q, q^*) = -\lambda^G (q - q^*)^2 + I^G \mathbb{1}_{w=g} - k^V c(s_v) - (z^V + \gamma^G)\mathbb{1}_{t_v^g e=1} - z^V \mathbb{1}_{t_v^{pr}=1}.$$

The weight $\lambda^G > 0$ captures the relative importance of the common policy w.r.t. ideology I^G for a citizen of party g, where we assume $\lambda^A \leq \lambda^B$.

Nature

Beside choosing the initial distribution of individual costs of voting, from a distribution with support $[\underline{z}, \bar{z}]$, with $\underline{z} < 0 < \bar{z}$, Nature also chooses a party-specific voting cost shock $\gamma^G \in$

[14]We can easily show that actually in our model we do not need to constrain voting decisions to remain within the party by assumption, since the other assumptions already give this restriction for free.

$[-1/2, 1/2]$ common to all members of $g = A, B$ that modifies the distribution of voting costs right before the general elections. Each voter observes only their own party shock, not the one of the other party. γ^G is for simplicity distributed uniformly. Moreover, after elections Nature chooses a realization of information acquisition costs, the optimal policy $q^* \in \mathbb{R}$, and whether the optimal policy is revealed to all players (with probability S). Finally, the action set for the elected politician and the lobby are equal to the baseline model.

Equilibrium concept with ethical voting

The equilibrium concept could be defined as *Rule Utilitarian Bayesian Equilibrium* (RUBE):

Definition 1. *a strategy profile* $\{t_v^{pr}(P_i, d^i, z^V)_{i \in E^G, v \in g}\}$, $\{t_v^{ge}(P_a, P_b, z^V + \gamma^G)_{v \in g}\}$, $\{s_v(P_w, c^V)_{v \in V, w \in \{a,b\}}\}$, $\{P_i\}_{i \in E^G}$, $m(q^L)$

is a RUBE iff

1. *each citizen v makes all her three choices by following the decision rules that jointly maximize the utility of her party, as a best response to the expected strategies in the other party;*

2. *politicians and lobby follow the standard expected utility maximization criterion given their beliefs;*

3. *beliefs adjust according to Bayes rule whenever possible.*

The form of rule utilitarian behavior at the voting stages is a threshold voting cost below which the party members are required to turn out (in line with Coate and Conlin 2004 and Feddersen and Sandroni 2006a, 2006b). In particular, for the general elections the voting rule for group g is a threshold z^G below which group members are supposed to turn-out, and z^G is a function of the expected shock for the other group and the platforms of the two candidates. The choice of going to vote depend on the individual realization of the cost of voting and on the policies proposed by both candidates at the general election, P^A, P^B.

Equilibrium analysis

The lobbying equilibrium analysis is equal to the one in the previous model, hence omitted. Similarly to the baseline model with information acquisition, the equation that determines the amount of information acquisition by citizen $j \in G$ is

$$\frac{\lambda^G \chi^G \left(p\bar{L} + (1-p)(1-h)\sigma^2\right)}{k^j} = c^{'}\left(s_j^*\right),$$

where we already substitute $d^i = h$, because, as in the baseline model, if citizens select a candidate who proposes NC, they choose a candidate with ability h. The comparative statics are the same as in the baseline model. Additionally the amount of information acquisition increases with the population size χ^G. We analyze now citizens' decision on turnout. With abuse of notation with respect to the baseline model, let us define the citizen's expected utility of having an elected politician of ability h who proposes a no-commitment policy:

$$v^G(NC) = -\lambda^G \left(1 - \int_j s^{j*} dj\right)\left(p\bar{L} + (1-p)(1-h)\sigma^2\right) - \mathbb{E}_{k_i \in G}\left[k^i c\left(s^{i*}\right)\right].$$

Notice that citizens do not know their cost of acquiring information before election, The expected utility of having an elected politician who proposes a commitment policy, ex-ante optimal policy commitment is :

$$v^G(C) = -\lambda^G \sigma^2.$$

Let us denote by $\Delta\mathbb{E}(P^G, P^{-G})$ the difference between the expected utility for voters of group G of electing a candidate who proposes the optimal policy for their own group and the expected utility of having in office the candidate who proposes the policy P^{-G} that is optimal for the other party. If the two candidates propose the same policy and they have the same expected quality $\Delta\mathbb{E}(P^G, P^G)$ is zero. The following lemma illustrates voters' decision on turnout.

Lemma 4. *For each group G, there is a threshold $z^{*,G} = \frac{\left(\chi^G\right)^2}{\chi^{-G}}\left(\underline{z} + \bar{z}\right)\left(I^G + \Delta\mathbb{E}(P^G, P^{-G})\right) - \gamma^G$, such that only citizens in group G with a cost of voting below $z^{*,G}$ vote. The probability of winning of the candidate of group G depends positively on $I^G + \Delta\mathbb{E}(P^G, P^{-G})$ and negatively on*

$I^{-G} + \Delta\mathbb{E}(P^{-G}, P^{G})$.

Let us now prove the lemma.

Proof of Lemma 4: Let us first define group A's candidate probability of victory, which is the probability that group A's voters are more than group B's voters: $\mathbb{P}\left(\chi^A\left(\frac{z^A+\underline{z}}{\underline{z}+\overline{z}}\right) > \chi^B\left(\frac{z^B+\underline{z}}{\underline{z}+\overline{z}}\right)\right)$. Notice that we can simplify the denominator $\underline{z}+\overline{z}$. z^A maximizes the following expected utility for citizens in group A:

$$\chi^A\mathbb{P}\left(\chi^A\left(z^A+\underline{z}\right) > \chi^B\left(z^B+\underline{z}\right)\right)\left(I^A + v^A\left(P^A\right)\right) +$$
$$\chi^A\left[1-\mathbb{P}\left(\chi^A\left(z^A+\underline{z}\right) > \chi^B\left(z^B+\underline{z}\right)\right)\right]v^A\left(P^B\right) - \int_{-\underline{z}}^{z^A}\frac{z^i+\gamma^A}{\underline{z}+\overline{z}}dz^i,$$

where P^A and P^B are the policies proposed respectively by candidates a and b (selected in the primaries). z^B maximizes the corresponding aggregate utility for a member of group B. It follows that the best response function of group A is:

$$\chi^A\frac{\partial}{\partial z^A}\mathbb{P}\left(z^B < \frac{\chi^A}{\chi^B}z^A - \frac{\underline{z}(\chi^B-\chi^A)}{\chi^B}\right)\left(I^A + \Delta\mathbb{E}(P^A, P^B)\right) - \frac{1}{\underline{z}+\bar{z}}\left(z^A+\gamma^A\right) = 0.$$

Let us conjecture that $\frac{\partial}{\partial z^A}\mathbb{P}\left(\chi^A z^A > \chi^B z^B + \underline{z}(\chi^B-\chi^A)\right) = k^A$, a constant with respect to z^A. Similarly, we conjecture $\frac{\partial}{\partial z^B}\mathbb{P}\left(\chi^B z^B > \chi^A z^A + \underline{z}(\chi^A-\chi^B)\right) = k^B$. Hence, it follows that $z^A = k^A\chi^A\left(\underline{z}+\bar{z}\right)\left(I^A + \Delta\mathbb{E}(P^A, P^B)\right) - \gamma^A$. Analogously, from the best response function of group B, we get $z^B = k^B\chi^B\left(\underline{z}+\bar{z}\right)\left(I^B + \Delta\mathbb{E}(P^B, P^A)\right) - \gamma^B$. Given the best response function of group

B, the probability of winning of group A is

$$\begin{aligned}
\mathbb{P}\left(z^B < \frac{\chi^A}{\chi^B} z^A - \frac{\underline{z}(\chi^B-\chi^A)}{\chi^B}\right) = \\
\mathbb{P}\left(k^B \chi^B \left(\underline{z}+\bar{z}\right)\left(I^B + \Delta\mathbb{E}(P^B,P^A)\right) - \gamma^B < \frac{\chi^A}{\chi^B} z^A - \frac{\underline{z}(\chi^B-\chi^A)}{\chi^B}\right) = \\
\mathbb{P}\left(k^B \chi^B \left(\underline{z}+\bar{z}\right)\left(I^B + \Delta\mathbb{E}(P^B,P^A)\right) - \frac{\chi^A}{\chi^B} z^A + \frac{\underline{z}(\chi^B-\chi^A)}{\chi^B} < \gamma^B\right) = \\
\frac{1}{2} - k^B \chi^B \left(\underline{z}+\bar{z}\right)\left(I^B + \Delta\mathbb{E}(P^B,P^A)\right) + \frac{\chi^A}{\chi^B} z^A - \frac{\underline{z}(\chi^B-\chi^A)}{\chi^B},
\end{aligned}$$

and therefore $k^A = \frac{\chi^A}{\chi^B}$, confirming our initial conjecture. Similarly it can be proven that $k^B = \frac{\chi^B}{\chi^A}$, which implies that the best responses are

$$\begin{aligned}
z_m^{*,A} &= \frac{\left(\chi^A\right)^2}{\chi^B}\left(\underline{z}+\bar{z}\right)\left(I^A + \Delta\mathbb{E}(P^A,P^B)\right) - \gamma^A, \\
z_m^{*,B} &= \frac{\left(\chi^B\right)^2}{\chi^A}\left(\underline{z}+\bar{z}\right)\left(I^B + \Delta\mathbb{E}(P^B,P^A)\right) - \gamma^B.
\end{aligned}$$

Finally the probability of winning of the candidate of group A is

$$\begin{aligned}
\frac{1}{2} - \frac{\chi^B}{\chi^A}\chi^B \left(\underline{z}+\bar{z}\right)\left(I^B + \Delta\mathbb{E}(P^B,P^A)\right) + \\
\frac{\chi^A}{\chi^B}\left(\frac{\left(\chi^A\right)^2}{\chi^B}\left(\underline{z}+\bar{z}\right)\left(I^A + \Delta\mathbb{E}(P^A,P^B)\right) - \gamma^A\right) - \frac{\underline{z}(\chi^B-\chi^A)}{\chi^B}.
\end{aligned}$$

The lemma is proven. Lemma 4 proves points (i) and (ii) of Proposition 3, with an additional comment on the relationship between the probabilities of winning and λ^A, λ^B. The difference in utilities of group B (hence its probability of winning) clearly increases with λ^B, because the difference in utilities $v^G(C) - v^G(NC)$ is concave in λ^G. Moreover the derivative of $v^A(C) - v^A(NC)$ with respect to λ^A and of $v^B(C) - v^B(NC)$ with respect to λ^B are both equal to $-\sigma^2 + (1-S^*)\left[(1-p)(1-h)\sigma^2 + p\bar{L}\right]$, hence if $v^B(NC) - v^B(C)$ increases with λ^B, $v^A(C) - v^A(NC)$ decreases with λ^A.

Let us now prove point (iii) of Proposition 3. First of all, notice that the existence of an asymmetric equilibrium where group A supports a candidate who runs on C and group B a candidate who runs on NC, is guaranteed by Proposition 2, when $I^A = I^B = 0$ in the extended model, because citizens in each group are interested in selecting the candidate who maximizes their utility from policy. Next we investigate what happens when ideologies are positive, in particular when I^A grows large. We make use of two lemmas who prove point (iii) of Proposition 3.

Lemma 5. *Suppose λ^A is sufficiently low or λ^B is sufficiently large. An increase in party A's ideology I^A shrinks the set of parameters in which the equilibrium is asymmetric.*

Proof of Lemma 5: Let us define for simplicity $\mathbb{P}^G(C, NC)$ the probability that the candidate of party G wins when the candidate of party A proposes commmitment, and the candidate of group B proposes no commitment. Similarly we can define the probabilities referring to all the other possible policy proposals by candidates. Moreover we define the (subgame) equilibrium threshold for turnout of group g as a function of the policy proposals of the two candidates in the general election: $z^G(C, NC)$. Consider the conditions of group A, for an equilibrium where group A selects a candidate that proposes commitment and group B selects a candidate that proposes no commitment:

$$\mathbb{E}_{\gamma^A}\left\{\chi^A\mathbb{P}^A(C,NC)\left(I^A+v^A(C)\right)+\chi^A\left(1-\mathbb{P}^A(C,NC)\right)v^A(NC)-\int_{-\underline{z}}^{z^A(C,NC)}\frac{z+\gamma^A}{\underline{z}+\overline{z}}dz-\right.$$
$$\left.\chi^A\mathbb{P}^A(NC,NC)\,I^A-\chi^Av^A(NC)+\int_{-\underline{z}}^{z^A(NC,NC)}\frac{z+\gamma^A}{\underline{z}+\overline{z}}dz\right\}\geq 0. \tag{7}$$

If we derive the lhs of this inequality with respect to I^A we have the following expression:

$$\frac{\left(\chi^A\right)^4}{\left(\chi^B\right)^2}\left(\underline{z}+\overline{z}\right)\left(v^A(C)-v^A(NC)\right)-\left(\chi^B\right)^2\left(\underline{z}+\overline{z}\right)\left(v^B(NC)-v^B(C)\right), \tag{8}$$

which does not depend on I^A. By the envelope theorem we did not include the derivatives of the equilibrium threshold z^A with respect to I^A. Recall that we assume $v^B(NC) - v^B(C) > 0$ and

$v^A(C) - v^A(NC) > 0$. When either λ^A is sufficiently low, or λ^B is sufficiently large, expression (8) is negative, hence the probability that A deviates to no commitment increases with I^A.

Consider the conditions of group B, for an equilibrium where group A selects a candidate that proposes commitment and group B selects a candidate that proposes no commitment:

$$\mathbb{E}_{\gamma^B}\left\{\chi^B \mathbb{P}^B(C,NC)\left(I^B + v^B(NC)\right) + \chi^B\left(1 - \mathbb{P}^B(C,NC)\right)v^B(C) - \int_{-\underline{z}}^{z^B(C,NC)} \frac{z+\gamma^B}{\underline{z}+\overline{z}}dz - \right.$$
$$\left. \chi^B \mathbb{P}^B(C,C)\, I^B - \chi^B v^B(C) + \int_{-\underline{z}}^{z^B(C,C)} \frac{z+\gamma^B}{\underline{z}+\overline{z}}dz\right\} \geq 0.(9)$$

If we derive the lhs of this inequality with respect to I^A we have the following expression:

$$-\frac{\left(\chi^A\right)^3}{\chi^B}\left(\underline{z}+\overline{z}\right)\left(v^B(NC) - v^B(C)\right).$$

This expression is negative. Hence the incentives of group B to propose commitment increase.

$\square$

Lemma 6. *If λ^B and I^A are sufficiently large, then in equilibrium both candidates propose the no-commitment policy.*

Proof of Lemma 6: Consider the conditions (7) of group A, for an equilibrium where group A selects a candidate that proposes commitment and group B selects a candidate that proposes no commitment. By taking the derivative of the lhs of that inequality with respect to I^A, it can be noticed that, for a sufficiently large λ^B, the derivative becomes arbitrarily negative. Moreover notice that the derivative of the lhs of inequality (7) with respect to λ^B is

$$-\left(I^A + v^A(C) - v^A(NC)\right)\left(\chi^B\right)^2\left(\underline{z}+\overline{z}\right)\frac{\partial[v^B(NC) - v^B(C)]}{\partial\lambda^B},$$

which is negative, because $\frac{\partial[v^B(NC)-v^B(C)]}{\partial\lambda^B} > 0$. So the arbitrarily large decrease in the lhs of inequality (7), given by a large I^A, is not compensated by an increase in the lhs when λ^B is large. Hence for a sufficiently large λ^B, there exists a threshold for I^A such that, when I^A is larger than this threshold, the lhs of inequality (7) is negative: the candidate of group A proposes no commitment. Notice also that for a large I^A, it is always possible to find a sufficiently large λ^B such that the probability of winning of a group is strictly larger than 0 and strictly lower than 1, so the derivative of inequality (7) with respect to I^A takes expression (8). Now consider the conditions of group B, for an equilibrium where group A selects a candidate that proposes commitment and group B selects a candidate that proposes no commitment (condition (9)). Given that $v^B(NC) > v^B(C)$, for $I^B = 0$ group B's candidate proposes no commitment, because it is a dominant strategy and does not depend on the choice of group A's candidate and on the level of I^A. Notice moreover that, the derivative of the lhs of inequality (9) with respect to I^B is

$$\frac{\left(\chi^B\right)^4}{\left(\chi^A\right)^2}\left(\underline{z}+\overline{z}\right)\left(v^B(NC)-v^B(C)\right)-\left(\chi^A\right)^2\left(\underline{z}+\overline{z}\right)\left(v^A(C)-v^A(NC)\right). \tag{10}$$

Therefore, when λ^B is sufficiently large, expression (10) is positive, hence the probability that B deviates to commitment decreases with I^B. Notice moreover that the derivative of the lhs of inequality (9) with respect to λ^B is

$$\mathbb{P}^B\left(C, NC\right)\frac{\partial[v^B(NC)-v^B(C)]}{\partial\lambda^B},$$

which is positive. So the decrease in the probability that B's candidate deviates to commitment is not compensated by an increase in this probability when λ^B increases. Given that, for any level of I^A, and for $I^B = 0$, the dominant strategy by group B's candidate is to propose no commitment and given the sign of expression (10), this must be true also for any level of I^A and I^B and for the set of parameters such that group A's candidate proposes commitment. The same reasoning can be applied to the case in which group A's candidate proposes no commitment. Indeed, for $I^B = 0$, it is a dominant strategy for group B's candidate to propose no commitment. Consider the conditions of group B, for an equilibrium where group A selects a candidate that proposes no commitment and group B selects a candidate that proposes no commitment:

$$\mathbb{E}_{\gamma^B}\left\{\chi^B\mathbb{P}^B(NC,NC)\,I^B+\chi^B v^B(NC)-\int_{-\underline{z}}^{z^A(NC,NC)}\frac{z+\gamma^B}{\underline{z}+\overline{z}}dz- \right.$$
$$\left.\chi^B\mathbb{P}^B(NC,C)\left(I^B+v^B(C)\right)-\chi^B\left(1-\mathbb{P}^B(NC,C)\right)v^B(NC)+\int_{-\underline{z}}^{z^A(NC,C)}\frac{z+\gamma^B}{\underline{z}+\overline{z}}dz-\right\}\geq 0 \quad (11)$$

If we derive the lhs of this inequality with respect to I^B we have the following expression:

$$\frac{\left(\chi^B\right)^4}{\left(\chi^A\right)^2}\left(\underline{z}+\overline{z}\right)\left(v^B(NC)-v^B(C)\right)-\left(\chi^A\right)^2\left(\underline{z}+\overline{z}\right)\left(v^A(C)-v^A(NC)\right).$$

Hence, when λ^B is sufficiently large, this expression is positive and the same reasoning done for the equilibrium with A' candidate proposing commitment can be done for this equilibrium. Notice also that the derivative of the lhs of inequality (11) with respect to λ^B is positive.

□

Proof of Proposition 4: We focus on the asymmetric equilibrium where candidate a is committed and candidate b is not. The utility from policy of candidate a, if elected, is $-\lambda^w\sigma^2$. The utility from policy of candidate a, if b is elected, is $-(1-S)\lambda^w\left[(1-p)(1-h)\sigma^2+p\bar{L}\right]$. Candidate a maximizes

$$\mathbb{P}^A(C,NC)\left[-\lambda^w\sigma^2+R\right]-\left(1-\mathbb{P}^A(C,NC)\right)(1-S)\lambda^w\left[(1-p)(1-h)\sigma^2+p\bar{L}\right]-\Phi\left(f_a\right),$$

with respect to f_a. The utility from policy of candidate b, if she is elected and the optimal policy is not revealed through information acquisition, is

$$u(NC):=-(1-p)(1-h)\lambda^w\sigma^2+$$
$$-ph\int_{q^L\in\mathbb{R}}\int_{q^*:m^*(q^L)>\lambda^w(q^*-q^L)^2}\lambda^w\left(q^*-q^L\right)^2dF\left(q^*\right)d\Phi\left(q^L\right)+$$
$$-p(1-h)\int_{q^L\in\mathbb{R}}\int_{q^*\in\mathbb{R}}\lambda^w\left(q^*-q^L\right)^2dF\left(q^*\right)d\Phi\left(q^L\right).$$

The utility from lobbying of candidate b, if she is elected and the optimal policy is not revealed through information acquisition, is

$$\mathbb{E}[m^*] := ph \int_{q^L \in \mathbb{R}} \int_{q^*: m^*(q^L) > \lambda^w (q^* - q^L)^2} m^* dF(q^*)\, d\Phi\left(q^L\right) + p(1-h)m^*.$$

Candidate b therefore maximizes

$$\left(1 - \mathbb{P}^A(C, NC)\right)\left[(1-S)\left(u(NC) + \mathbb{E}[m^*]\right) + R\right] - \mathbb{P}^A(C, NC)\lambda^w \sigma^2 - \Phi\left(f_b\right),$$

with respect to f_b. Notice that, by increasing the cost of information acquisition, candidate g increases the probability that a is elected, because probability $\mathbb{P}^A$ depends negatively on the utilities of non-commitment of each group of citizens. Therefore, the best response f_a solves the following first order condition:

$$\begin{aligned}\left(-\lambda^w \sigma^2 + R + \lambda^w (1-p)(1-h)\sigma^2 + \lambda^w p\bar{L}\right)\left(\frac{\left(\chi^B\right)^2}{\chi^A} + \frac{\left(\chi^A\right)^3}{\left(\chi^B\right)^2}\right)\left(\underline{z} + \overline{z}\right)\mathbb{E}_{k^i}\left[k^i c\left(s^{i*}\right)\right] + \\ \left(1 - \mathbb{P}^A(C, NC)\right)\lambda^w\left[(1-p)(1-h)\sigma^2 + p\bar{L}\right]\frac{\partial S}{\partial f_a} = \Phi'\left(f_a\right),\end{aligned} \tag{12}$$

where by the envelope theorem, derivatives with respect to s^i in the utilities of voters are not included. Expression $-\lambda^w \sigma^2 + R + \lambda^w (1-p)(1-h)\sigma^2 + \lambda^w p\bar{L}$ is the difference in utility for candidate a when she is elected with respect to her opponent. This difference is positive, otherwise candidate a would not find convenient to run in the primaries. Moreover, the following holds: $\frac{\partial S}{\partial f_g} < 0$, because a larger cost of information acquisition reduces all citizens' information. Hence candidate a benefits from fake news because, increasing the cost of monitoring, she reduces the expected benefit of the voter of electing a non committed candidate and therefore increases her chances to be elected. However if she is not elected, a higher cost of information acquisition implies less monitoring for her opponent and therefore a has a lower expected utility from policy. The best response f_b solves the following first order condition:

$$-\Big((1-S)\left(u(NC)+\mathbb{E}[m^*]\right)+R+\lambda^w\sigma^2\Big)\left(\frac{\left(\chi^B\right)^2}{\chi^A}+\frac{\left(\chi^A\right)^3}{\left(\chi^B\right)^2}\right)(\underline{z}+\overline{z})\,\mathbb{E}_{k^i}\left[k^i c\left(s^{i*}\right)\right]+ \tag{13}$$
$$-\Big(1-\mathbb{P}^A(C,NC)\Big)\left(u(NC)+\mathbb{E}[m^*]\right)\frac{\partial S}{\partial f_b}=\Phi'\left(f_b\right),$$

where again, by the envelope theorem, derivatives with respect to s^i in the utilities of voters are not included. Expression $(1-S)\left(u(NC)+\mathbb{E}[m^*]\right)+R+\lambda^w\sigma^2$ is the difference in utility for candidate b when she is elected with respect to her opponent. This difference is positive, otherwise candidate b would not find convenient to run in the primaries. If h is sufficiently large, $u(NC)+\mathbb{E}[m^*]$ is positive, which means that the non-committed politician is in expectation better off when citizens do not discover the optimal policy, giving her the chance of being lobbied. In this case candidate b benefits from increasing the cost of information acquisition because it reduces voter's monitoring ex-post and consequently increases the possibility in case of election of implementing her preferred policy, when she is biased. However increasing the cost of information acquisition implies that the voter reduces her utility of voting for the non-committed candidate, hence the probability that her opponent a wins increases. When candidates have strong incentives to win elections, that is R sufficiently large, the lhs of equation (12) is larger than the lhs of equation (13), hence the committed candidate produces more fake news than non-committed candidate. The latter candidate could be producing a positive amount of fake news, if the lhs of equation (13) is positive, or zero otherwise. When instead both candidate are non-committed, each candidate maximizes

$$\frac{1}{2}\left[(1-S)\left(u(NC)+\mathbb{E}[m^*]\right)+R\right]+\frac{1}{2}(1-S)u(NC)-\Phi\left(f_g\right),$$

with the following first order condition:

$$-\left(u(NC)+\frac{1}{2}\mathbb{E}[m^*]\right)\frac{\partial S}{\partial f_g}=\Phi'\left(f_g\right).$$

If h is sufficiently large, both non-committed candidates produce a positive amount of fake news, in order to reduce the ex-post monitoring by citizens.

$\square$