WORKING PAPER · NO. 2020-50

Information Aggregation in Stratified Societies

Marina Agranov, Ran Eilat, and Konstantin Sonin

JULY 2023

Becker Friedman Institute | Political Economics Initiative

5757 S. University Ave.
Chicago, IL 60637
Main: 773.702.5599
bfi.uchicago.edu

INFORMATION AGGREGATION IN STRATIFIED SOCIETIES

Marina Agranov
Ran Eilat
Konstantin Sonin

July 2023

Information Aggregation in Stratified Societies
Marina Agranov, Ran Eilat, and Konstantin Sonin
July 2023
JEL No. D72,D83

ABSTRACT

We analyze a model of political competition in which the elite forms endogenously to aggregate information and advise the uninformed median voter which candidate to choose. The median voter knows whether or not the endorsed candidate is biased toward the elites, but might still prefer the biased candidate if the elite's endorsement provides sufficient information about her competence. The elite size and the degree of information aggregation by the elite depend on the extent to which the median voter follows the elite's advice. A higher cost of redistribution minimizes the elite's information advantage, hinders information transmission, and decreases the expected competence of the elected politician.

Marina Agranov
Division of Humanities and Social Sciences
California Institute of Technology
228-77 Caltech
Pasadena, CA 91125
and NBER
magranov@hss.caltech.edu

Ran Eilat
Ben-Gurion University
eilatr@bgu.ac.il

Konstantin Sonin
Harris School of Public Policy
University of Chicago
1307 E. 60th Street
Chicago, IL 60637
ksonin@uchicago.edu

Introduction

Economic progress requires efficient institutions of information aggregation. The idea that the public can benefit from trusting a small group of better informed people – be it politicians, professional public servants, journalists, or academic scholars — in making political decisions is as old as the idea of a representative democracy. Information transmission, however, might be fragile. For example, it breaks down if the informed elites are suspected, rightly or not, that they exploit their power to promote own interests at the expense of the general public. In these cases, the social cohesion, social welfare, and the strength of the democratic system all decline.

The recent wave of populism has been often attributed to the breakdown of trust between elites and voting masses (Algan et al., 2017; Dustmann et al., 2017; Guriev and Papaiannou, 2021). Inglehart and Norris (2016) consider the 2016 Brexit vote as a rejection of the informed elite's advice. In Eichengreen (2018), the breakdown of trust results from a combination of economic insecurity and the inability of the political system to address the demand for change. Guiso et al. (2018) show that populist policies that disregard long-term economic harm emerge when voters 'lose faith' in the institutions and elites.[1] This literature hints that loss of faith or trust in experts impedes the dissemination and transmission of valuable information in society and hinders the ability to make informed economic decisions.

In this paper, we offer a simple political model that explores the above intuition and relates information aggregation by an elite, the inefficiency of redistribution, and the willingness of uninformed voters to follow the elite's advice. The population consists of two groups: the Elites minority group, which forms endogenously to aggregate information dispersed among its members, and the remaining members of the society, the Commons. Two politicians compete for office and differ along two dimensions: their competence in generating resources for the economy and their affinity with the Elites. The members of the Elites group observe imperfect signals about the candidates' abilities, share these signals among themselves, and endorse one of the candidates based on the aggregated information. When the uninformed Commons elect a politician, they take into account the fact that the Elites are interested not only in the candidate's competence, but also in the candidate's bias towards them. This bias is important because, depending on the cost of redistribution, it affects how politicians distribute resources in the economy.[2] The Commons' willingness to follow the Elites' advice plays a critical role: if there is no trust, the Elites' endorsement is ignored, and valuable information is lost.

[1] In a classic study, Dornbusch and Edwards (1991) emphasized that populist policy "have almost unavoidably resulted in major macroeconomic crises that have ended up hurting the poorer segments of society."

[2] We follow the standard assumption in political economy and interpret the losses of redistribution as dead-weight loss of taxation (Acemoglu and Robinson, 2001).

An important feature of our modeling approach is that all agents are *ex ante* identical. As a result, the Elites-Commons stratification, measured by the relative size of the two groups, is an outcome of the elite formation process, rather than an exogenous parameter.[3] By separating the elite-formation stage and the political game, we are able to unpack the relationship between information aggregation at the former stage and trust in the Elite's advice at the latter stage.

In equilibrium, if the cost of redistribution is low, Commons will follow the Elite's endorsement. As in Crawford and Sobel (1982), the equilibrium in which information is transmitted is welfare-improving. However, if the cost of redistribution is relatively high, the Commons will not trust the Elites' advice, resulting in a loss of valuable information. Thus, the negative relationship between the willingness to follow the Elites' endorsement and the cost of redistribution is driven by the information mechanism. Because of the dead-weight losses of taxation, the relative benefit that the Elites obtain from having a biased politician in power increases with the cost of redistribution. As a result, the Elite's endorsement becomes less informative when the redistribution costs are high.

Our approach allows us to study a particular channel that relates information aggregation, which we model using the framework of Argenziano, Severinov and Squintani (2016), and the relationship between the elite and the rest of the society: the endogenous formation of a group that shares information. All agents are *ex ante* identical, but those who form "the Elites" aggregate individual information, giving this group an informational advantage over the rest of the population. When the Commons are unwilling to follow the advice of the Elites, the incentives to form a large "information-sharing club" diminish. However, in equilibrium, the optimal size of the Elites strikes a balance between information aggregation and resource exploitation. This balance ensures that Commons adhere to the advice of the informed Elites, thereby enhancing the expected competence of the elected politician.

Relationship to the literature. There is a substantial theoretical literature that focuses on the impact of third-party (e.g., media or special interest group) endorsements following the classic paper by Grossman and Helpman (1999). In our paper, there is no third party: the pivotal voter knows that the elite's endorsement is biased, yet tries to take advantage of the information that is contained in it. Myerson (2008) models trust as an equilibrium phenomenon, but the context is very different: trust is what keeps the autocrat's lieutenants abiding his command.

Chakraborty and Ghosh (2016) consider a model of Downsian competition between two office-seeking parties, in which voters that care about both the policy platform and "character"

[3] For the remainder of the paper we will stick with this interpretation of the notion of stratification: higher relative size of the minority elites corresponds to the lower stratification in the society.

of candidates make a decision based on a media endorsement.[4] The media has its own policy agenda and, though voters know that the media's endorsement is based solely on information about the candidate's character, candidates in equilibrium pander to the media's policy preferences. Chakraborty and Yılmaz (2017) analyze a model of two-sided expertise that can be used to evaluate endorsements and elections with multiple informed parties with different interests; Chakraborty, Ghosh and Roy (2020) offer a model of elite endorsement and policy advocacy in a spatial model. In our model, the breakdown of information transmission is akin to the nonexistence of influential endorsements when the interests are too divergent.

In Martinelli (2006), voters decide whether to acquire information before making a choice. In Prato and Wolton (2016), successful communication between candidates and voters during the pre-election campaign requires both an effort from the candidates and attention from voters (See also Prato and Wolton, 2018, on populism as political opportunism by incompetent politicians and Pastor and Veronesi, 2020, for an equilibrium model of populism where voters elect a populist in response to rising inequality.) In Kartik and van Weelden (2019), uncertainty generates reputationally-motivated policy distortions in office, regardless of the policymaker's true preference, so voters might prefer a "known devil to the unknown angel." In our setting, a similar outcome occurs via a different mechanism when the pivotal voter ignores the recommendation of the elite and votes for the unbiased politician, in which case valuable information is lost.[5]

Finally, our paper is related to the literature on club formation (Tiebout, 1956; Roberts, 2015; Acemoglu, Egorov and Sonin, 2012). As Ray (2011) observes, the literature on endogenous formation of clubs that aggregate information is scarce. In our model, elites form endogenously, with the optimal size satisfying the natural club formation requirements: current members want neither to accept new members nor to expel any of the current ones. The novel feature of our club formation process is information aggregation: the benefit of having a larger club is that the aggregated information is based on more independent signals and is, therefore, more precise.

The rest of the paper is organized as follows. Section 2 briefly reviews the main features of anti-elite politics. In Section 3, we introduce our model. In Section 4, we assume a fixed size of the elite and provide a characterization of the equilibrium, along with some comparative statics analysis. In Section 5 we endogenize the size of the elite. Section 6 concludes.

[4] As defined in Chakraborty and Ghosh (2016), "character" is similar to "valence" (Groseclose, 2001; Aragones and Palfrey, 2002; Banks and Duggan, 2005). Kartik and McAfee (2007) were the first to introduce voters' uncertainty about valence. Bernhardt, Câmara and Squintani (2011) consider a dynamic citizen-candidates model with candidates that have both ideology and valence characteristics.

[5] For other models of cheap talk in elections, see Harrington (1992), Panova (2017), Schnakenberg (2016), and Kartik, Squintani and Tinn (2015).

2 Anti-Elite Politics

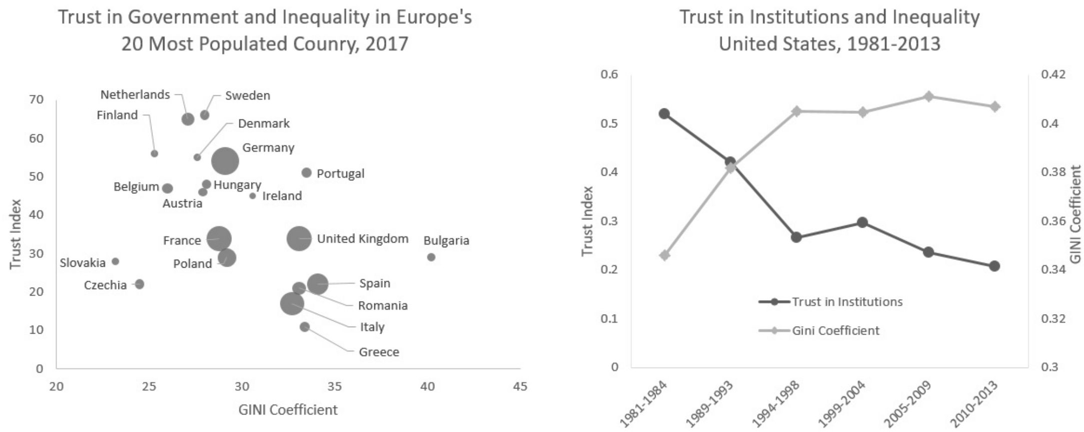
The notion of the anti-elite politics has perhaps as long pedigree as politics itself. In 1820s, Andrew Jackson rode a horse as the champion of the "common man" against the emerging New England "aristocracy". In 1930s, the populist Louisiana Senator Huey Long threatened the dominance of Franklin Delano Roosevelt. Senator McCarthy did not run for president in 1950s, but his anti-elitism was bipartisan — he attacked professionals in both the Democratic and Republican administration – and highly popular at the peak.

In the 21st century, the anti-elite politics is most commonly associated with notion of populism. In fact, the most inclusive definition of populism adopted in the major recent survey by Guriev and Papaiannou (2021) from Mudde (2004) and Mudde and Kaltwasser (2017) defines it as a "thin-centered ideology" that considers society to be ultimately stratified into two homogeneous, antagonistic groups: "the pure people" and "the corrupt elite."

Rodrik (2017) points out that the modern populists often target the new elites, "unelected technocrats running central banks, independent regulatory agencies and international organizations, mainstream media, national and international NGOs, and corporate lobbyists". Rodrik goes on to argue that the solutions that elite offers on immigration, trade, outsourcing, or automation have been often indeed skewed towards the elites' interests. What our theory adds to this picture is that the distrust of the elites and the low quality of these elites are mutually reinforcing. When the people distrust the elites, the elites have low incentives to aggregate information, which leads to even more distrust as the quality of advice worsens.

In the 21st century Europe, the populism was fueled primarily by the issues of immigration and increased policy control by technocratic bureaucrats. Nowadays, populist parties represent a significant chunk of voters: the Freedom Party in Austria, the National Rally (formerly the National Front) in France, the League and the Five Star Movement in Italy, the Dutch Party for Freedom and the Forum for Democracy in the Netherlands, the True Finns Party in Finland, the People's Party in Denmark, the UK Independence Party and the Brexit Party in Great Britain. In our theory, there is no political positioning. However, the main force is exactly what drives the anti-elite populism: in an ideal world with full commitment, a competent pro-elite politician would commit to a position that would guarantee information transmission, and, therefore, the election of a more competent candidate. Our model demonstrates how this inability to commit translates into mistrust, which, in turn, leads to low level of information aggregation.

Keefer, Scartascini and Vlaicu (2019) analyze survey data from 6,000 respondents in seven Latin American countries to demonstrate the critical link between populism, trust, and the quality of government: voters who express low trust are significantly more likely to prefer populist



(a) Cross-country data

(b) United States data

Figure 1: Relationship between Trust and Inequality

policies, which in turn are determined by low quality of government.

Another important relationship that arises endogenously in our model is the one between redistribution costs and willingness of the voters to use the elite's advice, which contains valuable information. Figure 1 illustrates the negative correlation between the level of political trust, a common sociological variable, and wealth inequality, which is positively correlated with redistribution costs, in two ways. Trust, as measured by opinion polls, is an imperfect proxy for the willingness to follow political endorsement; still, this is the best measure available to researchers. Panel (1a) uses data from the 20 most populated countries in Europe in 2017; similar picture may be obtained if one uses trust in media instead of the trust in governments, both of which are imperfect but reasonable proxies for trust in elites. The simple OLS regression detects negative relation between inequality as measured by the GINI coefficient and any of these two measures of political trust ($p = 0.03$ for trust in media and $p = 0.08$ for trust in governments).[6] Panel (1b) presents the evolution of political trust in institutions in the US from 1981 to 2013.[7] In general, the decrease in trust is accompanied by a steady increase in inequality (Piketty and Saez, 2003). In our model, this correlation arises for pure informational reasons: greater redistribution costs lead to diverging interests among different groups, which impedes the flow of information and decreases trust. Consequently, valuable information is lost and welfare declines. Not surprisingly, the growing inequality contributes to the rise of populism (Pastor and Veronesi, 2020).

[6] Trust data are taken from the Eurobarometer 88 database. The trust index is the percentage of people who "tend to trust"the national government in each country in 2017. GINI coefficient data and population data are taken from the Eurostat database for 2017. See Dustmann et al. (2017) for more illustrations.

[7] Trust data are taken from the World Values Survey, which is conducted every five years and asks respondents the following questions: "I am going to name a number of organizations. For each one, could you tell me how much confidence you have in them?" There are four possible answers: (a) A great deal, (b) Quite a lot, (c) Not very much, and (d) None at all. We plot the average fraction of respondents who answered either (a) or (b) when asked about parliament, the government and political parties.

3 Setup

Consider a democratic society that consists of a large finite number of citizens, denoted by N. The citizens engage in two sequential interactions: First, they form two social groups, Elites and Commons. Second, they participate in a political game where their interests depend on the group to which they belong. As part of the political game, information about the competence of politicians can be communicated from Elites to Commons. Whether this information affects the voting decisions of Commons defines the level of *trust* in the society. In this section, we describe in detail the components of the model and the timing of the game.

Elite formation. In the first stage of the game the group of Elites is formed. We assume that the group size, denoted by k, is determined *endogenously* so as to maximize the utility of the group members. In particular, in equilibrium, Elite members do not want to change the group size by accepting or removing members. All citizens who are not part of Elites form the group of Commons. We denote the share of Elites in the citizenry by $\lambda = k/N$, and focus on the case that Elites is the minority group, i.e. $\lambda < \frac{1}{2}$.

The political game. The citizens have to elect one of two politicians into office. Once elected, the politician determines how to allocate the available resources between the two groups. As the majority, Commons can unilaterally decide the identity of the elected politician. However, Elites have an advantage over Commons: the information possessed by Elite members aggregates, making them better informed than Commons about the competence of the candidates. Because all citizens within each group receive the same level of resources, there are no collective action problems within groups.

The two politicians running for office differ along two dimensions: their preferences for resource allocation between the groups, and their ability to create resources for the economy (to which we refer as their competence). We assume that one of the politicians, denoted by U, is unbiased and assigns equal importance to the marginal per capita consumption of Elites and Commons. The other politician, denoted by B, is biased towards the Elites. The level of bias is determined by a parameter $\alpha \in \mathbb{R}^{+}$ known to both Elites and Commons. The value of α represents the strength of ties the biased politician shares with Elites relative to Commons, where larger values reflect higher leniency towards Elites.

We denote by $a^{j} \in \{0, \alpha\}$ the level of bias of politician $j \in \{U, B\}$ and by $x^{E} \geq 0$ and $x^{C} \geq 0$ the per capita consumption of Elites and Commons, respectively. The objective function of politician $j \in \{B, U\}$ is given by:

$$v\left(x^C, x^E\right) = \left(x^C + a^j\right)^{1-\lambda}\left(x^E\right)^{\lambda}. \tag{1}$$

The functional form of Equation (1) reflects a compromise between the politicians' egalitarian and utilitarian motives. The objective function of the unbiased politician is sometimes referred to as the Nash collective utility function (see, e.g., Moulin, 2004, and Kaneko and Nakamura, 1979, for a discussion of some desirable properties of this function). The objective function of the biased politician is different in that the importance of a marginal unit of Commons' per capita consumption is discounted, and this discount is stronger as α increases.

The competence of politicians in creating resources depends on a state of the world, denoted by θ, which is drawn from a uniform distribution over the interval $[0, 1]$. However, the citizens are unable to directly observe θ, and instead they observe only noisy signals about it, in a way that is described below. We denote the competence of politician $j \in \{B, U\}$ by θ^j and assume that

$$\theta^B = 1 + \theta, \tag{2}$$

$$\theta^U = 2 - \theta. \tag{3}$$

Consequently, the *ex ante* expected competence of each of the politicians is the same: $\mathbb{E}[\theta^B] = \mathbb{E}[\theta^U] = \frac{3}{2}$. The biased politician is more competent than the unbiased one if and only if $\theta > \frac{1}{2}$, which occurs with a probability of one-half.

The politician in office allocates the available resources θ^j among the two groups such that

$$\lambda x^E + (1 - \lambda)\, x^C \cdot \psi = \theta^j. \tag{4}$$

The parameter ψ captures the cost of redistribution, i.e., the cost of converting a unit of Elites' consumption x^E into a unit of Commons' consumption x^C.[8] To simplify our analysis, we assume that $\alpha \cdot \psi < 1$.

Information structure. To model the information structure in society, we adopt the framework developed in Argenziano, Severinov and Squintani (2016). Specifically, we assume that *after* the group of Elites is formed, and *after* the state θ is realized (but cannot be directly observed by the citizens), each member of Elites conducts a (conditionally) independent experiment that

[8] Acemoglu and Robinson (2001, 2006) simply assume that redistributive taxation results in welfare losses; that is, that $\psi \geq 1$. The micro-foundation for this effect is the classic "no distortion at the top" result in contract theory (see, for example, Bolton and Dewatripont, 2005).

results in either a success or a failure. The probability of success is equal to the true value of θ. Consequently, a successful experiment serves as a signal that θ is high, implying that the biased candidate is the more competent one. Conversely, a failed experiment serves as a signal that θ is low, implying that the unbiased candidate is the more competent one.

We assume that Elite members share the outcomes of their experiments, enabling all members of the club to observe all the outcomes. This assumption captures the general intuition that evaluating politicians' competence is a complex task that requires expertise, time investment, and interaction with others who possess private information. In our model, these interactions are represented through the sharing of information among club members.[9]

In our basic setup we make the simplifying assumption that Commons cannot conduct experiments, and thus they are uninformed until they receive the endorsement of Elites. However, in Section 5 we show that under some mild restrictions on the cost of redistribution this assumption is not crucial in the following sense: even if Commons were capable of conducting their own experiments, but unable to share the outcomes, they would still choose not to do so when the size of Elites is determined endogenously (Proposition 6).[10] In other words, when the size of Elites is optimal, the information conveyed by Elites' endorsement is sufficient to make each commoner disregard the outcome of her own experiment, eliminating the need to conduct an experiment at all. Therefore, we regard our restriction on information collection of Commons as a relatively minor assumption.

Endorsements and voting. While Commons constitute the majority of the population and can effectively decide who is elected, Elites possess better information. It is thus in the interest of both groups to share the information held by Elites to increase the chance that the more competent politician is elected.

We assume that Elites cannot credibly share their information with Commons (i.e., they cannot reveal the number of successful experiments) nor can they commit to a strategy of information disclosure in advance. Thus, information transmission between the two groups takes the form of "cheap talk" (Crawford and Sobel, 1982). Specifically, after observing the total number of

[9]Our assumption that the elites have access to superior information is in line with a large body of literature on the sociology of elites. For example, Khan (2012) argues that knowledge capital is one of the five significant types of resources typically controlled by the elites (the other four types of resources are political, economic, social and cultural). To accumulate knowledge capital, which translates into informational advantage in our model, elites facilitate a network of social connections between group members to transfer information. These connections are created via social institutions such as elite schools and social clubs, which are used both to strengthen the ties between group members and to exclude outsiders. (See also Zimmerman, 2019, and Michelman, Price and Zimmerman, 2021.)

[10]More precisely, each commoner would be indifferent between conducting or not an experiment, since in any case the gathered information would not affect his actions. For any positive cost of experimentation, Commons would strictly prefer not to acquire information.

successful experiments, Elites can send a costless and unverifiable message to Commons, who update their beliefs about θ and elect their preferred candidate.

We denote by M the set of possible messages that Elites can send to Commons, and assume without loss of generality that $M = \{m_B, m_U\}$.[11] We interpret the message m_B as an *endorsement for the biased politician* and the message m_U as an *endorsement for the unbiased politician*. The strategy of Elites in the endorsement stage is denoted by $\sigma_E : L \to M$, where $\sigma_E(l)$ is interpreted as the endorsement when Elites observe $l \in L \equiv \{0, \dots, \lambda N\}$ successful experiments.

After Elites endorse one of the candidates, each member of Commons updates his posterior belief about the state of the world θ (and therefore about the the competence of the politicians), and casts his vote. A strategy for a commoner, denoted by $\sigma_C : M \to \Delta\{B, U\}$, maps each message $m \in M$ to a probability distribution over the possible voting options (i.e., the biased candidate B, or the unbiased candidate U). Since Commons constitute the majority, the candidate they vote for gets elected into office.

Our solution concept is the Perfect Bayesian Equilibrium, and we assume that each citizen votes as if her vote is decisive, which is a weakly undominated strategy, in the voting stage.

Timing. To facilitate the analysis, we divide the timeline into two stages: the *formation stage* and the *political subgame*, as follows:

FORMATION STAGE:

1. A group of Elites is formed, with size k (corresponding to the share $\lambda = k/N$) that is optimal for the members of the Elites.

POLITICAL SUBGAME:

2. Nature determines the state of the world $\theta \in \Theta$
3. Members of Elites conduct experiments and share their outcomes with each other.
4. Elites endorse one of the politicians, either $B = (\theta^B, \alpha)$ or $U = (\theta^U, 0)$.
5. Commons cast their votes, either accpeting or rejecting Elites' endorsement.
6. The elected politician takes office and distributes resources.

[11] Formally, for any equilibrium in the game, there exists another equilibrium in which Elites send at most two messages with positive probabilities such that the distribution over outcomes in both equilibria is the same for almost all states $\theta \in \Theta$.

4 The Determinants of Trust

Our analysis consists of two parts. This section is the first part of the analysis, in which we characterize the equilibrium in the political subgame for a given exogenous share of Elites' size $\lambda = k/N$. The second part is presented in Section 5. It shows how to determine the optimal size of the Elites λ^*, taking into account how this choice affects behavior and payoffs in the political subgame.

To solve the political subgame, we work backwards. First, we derive the actions of the elected politician. Then, we find a pair of endorsement and voting strategies (σ_E,σ_C) for Elites and Commons, respectively, that constitute an equilibrium in the subgame. We show that Elites use a cutoff strategy for endorsement, and describe the conditions under which Commons are willing to accept the endorsement.

Actions of the elected politician. The actions of the politician in office depend on her type (θ^j, a^j). Specifically, the politician maximizes the objective given by Equation (1) subject to the constraint given by Equation (4). Solving the maximization problem shows that a politician of type (θ^j, a^j) allocates the per capita consumption of Elites (x^E) and Commons (x^C) as follows:

$$x^E\left(\theta^j, a^j\right) = \theta^j + (1-\lambda)\cdot a^j\psi, \tag{5}$$

$$x^C\left(\theta^j, a^j\right) = \frac{\theta^j}{\psi} - \lambda \cdot a^j. \tag{6}$$

Equations (5) and (6) suggest two useful observations. First, when redistribution is costless (i.e., $\psi = 1$), the unbiased politician ($a^j = a^U = 0$) distributes resources equally among all citizens, while the biased politician ($a^j = a^B = \alpha$) allocates a higher per capita amount of resources to Elites. When redistribution is costly (i.e., $\psi > 1$), even the unbiased politician allocates a higher per-capita amount of resources to Elites.[12]

Second, when the unbiased politician assumes office ($a^j = a^U = 0$), the share of Elites in the population (λ) does not affect allocations. By contrast, if the biased politician is elected, a larger share of Elites results in a decrease in the per capita consumption of *both* Elites and Commons.

Commons' trust and Elites' endorsement. Given a pair of strategies (σ_E, σ_C), denote by $\sigma_C(m_i)[B]$ the probability that a commoner votes for the biased politician when Elites send the message $m_i \in \{m_B, m_U\}$. Since messages are cheap talk, there is no loss of generality in assuming that the message m_B leads to a higher probability of electing B than message m_U, i.e.,

[12] These results are consistent with the well-documented fact that policy decisions of elected officials are responsive to the public preference, but in a way that strongly favors the more affluent and well-connected citizens, i.e., the elites. See, e.g., Gilens (2012) and Bartles (2017).

$\sigma_C(m_B)[B] \geq \sigma_C(m_U)[B]$.[13] We call an equilibrium (σ_C, σ_E) in the political subgame *responsive* if Elites' endorsements m_B and m_U induce different distributions over Commons' actions. Otherwise, we call the equilibrium *unresponsive*.

Recall that l denotes the number of successful experiments that were conducted by the k members of Elites. Thus, given θ and k, the number of successes l is distributed according to the binomial distribution. The probability to observe l successes is given by:

$$f(l|k,\theta) = \frac{k!}{l!(k-l)!}\theta^l(1-\theta)^{k-l}, \quad \text{for } 0 \leq l \leq k.$$

The posterior distribution of θ, given l successes in k trials, is a Beta distribution with parameters $l+1$ and $k-l+1$. Its density is given by

$$\phi(\theta|l,k) = \frac{(k+1)!}{l!(k-l)!}\theta^l(1-\theta)^{k-l}, \quad \text{for } 0 \leq \theta \leq 1. \tag{7}$$

The conditional expectation of θ, after observing l successes in k trials, is therefore given by:

$$\mathbb{E}[\theta|l,k] = \frac{l+1}{k+2}. \tag{8}$$

The conditional expectation given by Equation (8) proves useful for our next result that characterizes the strategy of Elites in a responsive equilibrium (if such an equilibrium exists).

Lemma 1 *Suppose that (σ_C, σ_E) is a responsive equilibrium. Then, Elites' strategy σ_E attains the following threshold structure:*

$$\sigma_E(l) = \begin{cases} m_B & \text{if } l \geq \hat{l}, \\ m_U & \text{if } l < \hat{l}, \end{cases}$$

where

$$\hat{l} \equiv \frac{k}{2} - \left(\frac{k}{2}+1\right)\alpha\psi(1-\lambda).$$

Proof. Suppose that (σ_C, σ_E) is a responsive equilibrium. Elites endorse the biased politician if

$$\begin{aligned} &\sigma_c(m_B)[B] \cdot x_E\left(\mathbb{E}\left[\theta^B|l,k\right],\alpha\right) + (1-\sigma_c(m_B)[B]) \cdot x_E\left(\mathbb{E}\left[\theta^U|l,k\right],0\right) \\ \geq &\sigma_c(m_U)[B] \cdot x_E\left(\mathbb{E}\left[\theta^B|l,k\right],\alpha\right) + (1-\sigma_c(m_U)[B]) \cdot x_E\left(\mathbb{E}\left[\theta^U|l,k\right],0\right). \end{aligned}$$

Plugging in the expressions for $x_E(\theta^B,\alpha)$ and $x_E(\theta^U,0)$ from Equation (5), and the expressions

[13]For any equilibrium in which $\sigma_C(m_B)[B] < \sigma_C(m_U)[B]$, one can simply "re-label" the messages to obtain an equilibrium that satisfies $\sigma_C(m_B)[B] \geq \sigma_C(m_U)[B]$ in which, for each state $\theta \in \Theta$, the distribution over outcomes is identical to that of the original equilibrium.

for θ^B and θ^U from Equations (2) and (3), we can rewrite the above condition as follows:

$$(\sigma_c(m_B)[B] - \sigma_c(m_U)[B]) \cdot (2\mathbb{E}(\theta|l,k) - 1 + (1-\lambda)\cdot\alpha\psi) \geq 0$$

In a responsive equilibrium, $\sigma_c(m_B)[B] > \sigma_c(m_U)[B]$. Therefore, the above inequality condition is satisfied for all $\mathbb{E}(\theta|l,k) \geq \frac{1}{2} - \frac{(1-\lambda)\cdot\alpha\psi}{2}$, or equivalently when $l \geq \hat{l} = \frac{k}{2} - \left(\frac{k}{2}+1\right)\alpha\psi(1-\lambda)$. ■

In a responsive equilibrium (if one exists), Elites endorse the biased candidate B if and only if they observe at least $\hat{l}$ successful experiments, as defined in Lemma 1. Otherwise, they endorse the unbiased candidate U. It is noteworthy that the threshold value $\hat{l}$ is smaller than $k/2$. That is, Elites endorse the biased candidate even if less than half of the group members observe a successful experiment.

Notice that the threshold $\hat{l}$ decreases with a greater redistribution cost (ψ) or a larger politician bias (α). That is, Elites need fewer successful experiments to endorse the biased politician B when the redistribution cost and/or politician bias are greater. Intuitively, this is because, all else being equal, the benefit for Elites of electing the biased politician increases with these quantities. On the other hand, an increase in Elite's share (λ) leads to a higher threshold $\hat{l}$. This is because a greater share of Elites *reduces* the per capita consumption of each Elites' member, thereby weakening Elites' incentive to endorse the biased politician.

We assume that if a responsive equilibrium in the political subgame exists, then it is played. However a responsive equilibrium may not necessarily exist.[14] In the remainder of this section we examine the necessary and sufficient conditions for the existence of such an equilibrium, and study its properties.

4.1 Existence of a responsive equilibrium

To study the existence of a responsive equilibrium we begin by characterizing what Commons learn from endorsements when Elites employ the cutoff strategy defined in Lemma 1. We then examine whether it is in the interest of Commons to follow the endorsement.

In a responsive equilibrium, Elites' endorsements convey information regarding the state of the world θ, which defines the competence of politicians. The expected value of θ, conditional on an endorsement for the biased politician, is:

$$\mathbb{E}(\theta|m_B) = \sum_{\tilde{l}=\hat{l}}^{k} \Pr\left(\tilde{l}|\hat{l} \leq l \leq k\right) \cdot \mathbb{E}\left(\theta|\tilde{l},k\right) = \frac{3-\alpha\psi(1-\lambda)}{4} - \frac{1}{2(k+2)} \tag{9}$$

[14] As is standard in signaling games, an unresponsive equilibrium always exists. For example, Elites always endorsing the biased politician, and Commons always voting for the unbiased one is one such equilibrium.

where $\Pr\left(\tilde{l} \mid \hat{l} \leq l \leq k\right)$ denotes the probability to observe exactly $\tilde{l}$ successes, conditional on the event that the overall number of successes is between $\hat{l}$ and k.[15] Similarly, the expected value of θ, conditional on an endorsement for the unbiased politician, is:

$$\mathbb{E}\left(\theta|m_U\right) = \sum_{\tilde{l}=0}^{\hat{l}-1} \Pr\left(\tilde{l}|0 \leq l \leq \hat{l}-1\right) \cdot \mathbb{E}\left(\theta|\tilde{l}, k\right) = \frac{1-\alpha\psi\left(1-\lambda\right)}{4}. \tag{10}$$

where $\Pr\left(\tilde{l} \mid 0 \leq l \leq \hat{l}-1\right)$ denotes the probability to observe exactly $\tilde{l}$ successes, conditional on the event that the overall number of successes is between 0 and $\hat{l}-1$.[16]

Recall that according to Equations (2) and (3), the competence of the biased candidate (θ^B) increases with θ, while the competence of the unbiased candidate (θ^U) decreases with θ. Therefore, as the cost of redistribution (ψ) increases, the endorsement m_B provides a *weaker* indication for the competence of the biased politician B, whereas the endorsement m_U provides a *stronger* indication for the competence of the unbiased politician U. We show later that as the number of citizens (N) grows, the optimal number of Elite members (k^*) increases, while their share in the citizenry ($\lambda^* = k^*/N$) converges to zero. Thus, when N is large, the expected value of the state θ conditional on an endorsement for the biased candidate (i.e., $\mathbb{E}\left(\theta|m_b\right)$, as given by Equation 9) converges to $\left(3-\alpha\psi\right)/4$ and the competences of the biased and unbiased politicians, upon being endorsed by Elites, converge to $\left(7-\alpha\psi\right)/4$ and $\left(7+\alpha\psi\right)/4$, respectively.

We now turn to determine whether and when Commons are inclined to follow the endorsements of Elites, given what they have learned from these endorsements.

Endorsements for the unbiased politician. Suppose that Elites employ the cutoff strategy defined in Lemma 1 and endorse the unbiased politician (i.e., send the message m_U). It is straightforward to verify that Commons always accept such an endorsement. This is because $\mathbb{E}\left[\theta^U|m^U\right] \geq \mathbb{E}\left[\theta^B|m^U\right]$. Therefore, upon hearing m_U, Commons deduce that the quality of the unbiased politician is higher. Since, in addition, the unbiased politician allocates resources more equally, it is always optimal for Commons to accept an endorsement for the unbiased politician.

Endorsements for the biased politician. Suppose that Elites employ the cutoff strategy defined in Lemma 1 and endorse the biased politician (i.e., send the message m_B). It is optimal for commons to accept this endorsement if, based on the information they learn from the fact that m_b is sent, their expected payoff from electing the biased politician is greater than their ex-

[15] The term $\Pr\left(\tilde{l}|\hat{l} \leq l \leq k\right)$ is equal to $1/(k-\hat{l}+1)$ because θ is distributed uniformly.
[16] The term $\Pr\left(\tilde{l}|0 \leq l \leq \hat{l}-1\right)$ is equal to $1/\hat{l}$ because θ is distributed uniformly.

pected payoff from electing the unbiased one. Formally, Commons follow an endorsement for the biased politician (m_B) if and only if

$$\mathbb{E}[x^C(\theta^B, \alpha) \mid m_B] \geq \mathbb{E}[x^C(\theta^U, 0) \mid m_B].$$

By Equations (6) and (9), the above condition is satisfied if and only if the cost of redistribution (ψ), does not exceed an upper bound $\overline{\psi}(\lambda, \alpha)$:

$$\psi \leq \overline{\psi}(\lambda, \alpha) = \frac{\lambda N}{\alpha(\lambda + 1)(\lambda N + 2)} \tag{11}$$

Thus, if the redistribution cost (ψ) exceeds the threshold $\bar{\psi}(\lambda, \alpha)$, a responsive equilibrium cannot exist. In this case, Commons do not trust Elites and disregard their advice. By contrast, if the redistribution cost is less than $\bar{\psi}(\lambda, \alpha)$, a responsive equilibrium exists. In this equilibrium, Commons follow Elites' endorsement despite the fact that sometimes Elites recommend a biased politician of lower quality than the unbiased one. The following proposition summarizes the above discussion.

Proposition 1 *For any share of Elites λ and any bias of the Elites' candidate α, there exists a redistribution cost threshold $\bar{\psi}(\lambda, \alpha)$, given by Equation (11), such that if $\psi > \bar{\psi}(\lambda, \alpha)$, then Commons disregard Elites' endorsements and always elect the unbiased politician. If $\psi \leq \bar{\psi}(\lambda, \alpha)$, there exists a responsive equilibrium: Elites recommend the biased politician if and only if they observe more than $\hat{l}$ successful experiments. Commons always accept Elites' endorsements.*

Proposition 1 illustrates the critical role played by the cost of redistribution in determining the degree information transmission in equilibrium. When the redistribution cost is low, Commons tolerate the informational distortions that come with Elites' endorsements and follow their recommendations. When the redistribution cost is high, trust breaks down and Commons disregard the endorsements, despite their informative content. The positive correlation between the cost of redistribution and the degree of inequality, together with the negative correlation between the equilibrium level of willingness to follow the Elite's advice and the redistribution cost, are consistent with the evidence described in Section 2.

Proposition 1 also allows us to examine how the politician's bias (α) and the Elite's share of the population (λ) affect the level of trust that prevails in the political game. The effect of the parameter α, is clear: when the biased politician is more "Elites-oriented" (i.e., when α is higher) the threshold $\bar{\psi}(\lambda, \alpha)$ decreases, which makes Commons less receptive to endorsements. Intuitively, this is because a higher value of α decreases the per capita consumption of Commons' when they follow an endorsement for the biased politician.

The impact of the Elites share λ is more nuanced. A larger λ implies lower per capita consumption for Commons *and* for Elites when the biased politician is elected. While the former erodes trust, the latter enhances it. Holding the population size N fixed, a larger λ also leads to more experiments conducted by Elites, making their endorsement more informative and increases the willingness of Commons to accept it.

The following proposition summarizes the comparative statics of the redistribution cost threshold $\bar{\psi}(\lambda, \alpha)$:

Proposition 2 *The redistribution cost threshold $\bar{\psi}(\lambda, \alpha)$, defined in Equation (11), decreases in the politician's bias (α). It increases in the elite's share (λ) if $\lambda < \sqrt{2/N}$, and decreases in the Elite's share otherwise.*

4.2 Properties of a responsive equilibrium

Suppose that the redistribution cost ψ is below the threshold $\overline{\psi}$ so a responsive equilibrium exists. How does the competence of the elected politician depend on the cost of redistribution?

Inspection of Equations (9) and (10) reveals that the expected value of θ, conditional on each of the endorsements, m_B and m_U, decreases in the redistribution cost ψ. This implies that, on the one hand, when ψ is higher, an endorsement for the biased politician (m_B) conveys *less* information about her competence. And, on the other hand, when ψ is higher, an endorsement for the unbiased politician (m_U) conveys *more* information about her competence. Hence, the overall effect of ψ on the expected competence of the elected candidate depends on the ex ante probability that each of the endorsements is sent in a responsive equilibrium. The ex-ante probability of the endorsement m_B is given by:

$$\Pr(m_B) = \sum_{l=\hat{l}}^{k} \Pr(l|k) = \frac{(\alpha\psi(1-\lambda)+1)(k+2)}{2(k+1)} \tag{12}$$

And, the ex-ante probability of the endorsement m_U is given by:

$$\Pr(m_U) = \sum_{l=0}^{\hat{l}-1} \Pr(l|k) = \frac{k-(k+2)\alpha\psi(1-\lambda)}{2(k+1)}. \tag{13}$$

Computing the ex-ante expected competence of an endorsed candidate yields:

$$\begin{aligned}\mathbb{E}\left[\theta^j | j \text{ is endorsed}\right] &= \Pr(m_B)\cdot\mathbb{E}\left[\theta^B | m_B\right] + \Pr(m_U)\cdot\mathbb{E}\left[\theta^U | m_U\right] \\ &= \frac{7-\alpha^2\psi^2(1-\lambda)^2}{4} - \frac{(\alpha\psi(1-\lambda)+1)^2}{4(k+1)} \end{aligned} \tag{14}$$

Equation (14) shows that, although a larger redistribution cost (ψ) improves the informativeness of endorsing the unbiased politician, the overall effect of the cost of redistribution on the ex-ante competence of the endorsed politician is negative. The following proposition records this result:

Proposition 3 *Lower redistribution costs lead to more information transmission. Formally, let* ψ_1 *and* ψ_2 *be two levels of redistribution costs satisfying* $\psi_1 < \psi_2 < \overline{\psi}$*. Then, the expected competence of the politician elected under* ψ_1 *is higher than that of the elected under* ψ_2*.*

We conclude this section by briefly discussing how Elites could affect their payoff in the political subgame *if*, before observing the state, they could choose the bias level of "their" politician, α. On the one hand, a responsive equilibrium is always better for Elites than a non-responsive one. On the other hand, if the equilibrium is responsive, Elites' expected payoff increases in α. Therefore, Elites would prefer to increase the bias level so long as a responsive equilibrium exists.

Put differently, if Elites had access to a pool of candidates with different levels of α, they would choose to promote the political career of the candidate with the highest bias among those whose level of bias satisfies

$$\alpha \leq \bar{\alpha} \equiv \frac{\lambda N}{\psi(\lambda+1)(\lambda N+2)}$$

where $\bar{\alpha}$ is the level of bias which makes Equation (11) bind in equality. Thus, when Elites can choose the bias level of their candidate they always ensure the existence of a responsive equilibrium. Notice that as N grows, $\bar{\alpha}$ converges to $\frac{1}{\psi(1+\lambda)}$. Clearly, this conclusion hinges on the assumption that the chosen candidate's bias is commonly known (By contrast, in Kartik and van Weelden, 2019, politicians strategically use cheap talk to signal their bias; in Acemoglu, Egorov and Sonin, 2013, they have to adopt populist policies to signal their unbiasedness.)

5 The Optimal Size of Elites

In Section 4, we analyzed the impact of the cost of redistribution on the uninformed voter's willingness to follow the Elite's advice. The reverse question – How does Commons' willingness to listen affects the process of elite formation and information aggregation? – is no less critical. In this section, we analyze the optimal size of Elites; as the size of Elites is the number of conditionally independent signals about the state of the world, this is a study of how optimal information aggregation depends on the extent to which Commons follow Elites' endorsements.

In a responsive equilibrium, Elites' expected utility is given by

$$u_T^E(\lambda) \equiv \mathbb{E}\left[x^E\right] = \Pr(m_B) \cdot x^E\left(\mathbb{E}\left[\theta^B | m_B\right], \alpha\right) + \Pr(m_U) \cdot x^E\left(\mathbb{E}\left[\theta^U | m_U\right], 0\right)$$

The right-hand side of the equation represents the ex-ante expected level of per capita consumption for Elites in a responsive equilibrium. The first term corresponds to the expected per capita consumption when a biased politician is endorsed (and elected), and the second term corresponds to the expected per capita consumption when an unbiased politician is endorsed (and elected). By substituting the expressions from Equations (5), and (12)-(14), we obtain that:

$$u_T^E(\lambda) = \frac{3}{2} + \frac{\alpha^2\psi^2(1-\lambda)^2 + 2\alpha\psi(1-\lambda)}{4} + \frac{\alpha^2\psi^2(1-\lambda)^2 + \lambda N}{4(\lambda N + 1)}. \tag{15}$$

Suppose, for the time being, that λ can take any value in $\left[0, \frac{1}{2}\right]$. Our next lemma characterizes the share of Elites that maximizes $u_T^E(\lambda)$.

Lemma 2 *For sufficiently large values of N, the expected payoff of Elites $u_T^E(\lambda)$ given by Equation (15) is single-peaked in λ and has a unique maximum $\lambda^* = \lambda^*(N) \in \left(0, \frac{1}{2}\right)$. Furthermore, $\lambda^*(N)$ is asymptotically bounded below by $\underline{\gamma}N^{-\frac{1}{2}}$ and above by $\overline{\gamma}N^{-\frac{1}{2}}$ for some positive constants $\underline{\gamma} < \overline{\gamma}$.*

Proof. We calculate and examine the first, second, and third derivatives of u_T^E, and draw the following implications. First, for large enough N, the function u^E is increasing at 0 and decreasing at $\frac{1}{2}$, i.e. $\frac{d}{d\lambda}u^E(0) > 0$ and $\frac{d}{d\lambda}u^E\left(\frac{1}{2}\right) < 0$. Next, for a sufficiently large N, the function u^E is concave in the neighbourhood of zero, $\frac{d^2}{(d\lambda)^2}u^E(0) < 0$. Finally, for a sufficiently large N, the third derivative is always positive in the interval $\lambda \in \left[0, \frac{1}{2}\right]$. This last observation implies that the second derivative can be zero at most once, which means that the function u^E can switch from concavity to convexity once, but cannot switch back to concavity.

Suppose that N is sufficiently large so the above three properties hold. Since the function u^E is continuous, increasing at 0 and decreasing at $\frac{1}{2}$, then it must have at least one (local) maximum at some value $\lambda' \in \left[0, \frac{1}{2}\right]$. To show that this local maximum is unique, it suffices to show that the function cannot have a local minimum. If it did, then there should be a point, at which the continuous function u^E switches from concavity to convexity, which is impossible as argued above.

Denote the unique maximum $\lambda^* = \lambda^*(N)$. Evaluating $u_T^{E\prime}(\cdot)$ at $\lambda^* N^{-\frac{1}{2}}$, we get an expression whose sign is determined by the term $1-\alpha\psi\left(1+2(\lambda^*)^2\right)$. Thus, for a small $\varepsilon>0$ and a sufficiently large N, we have that $\left(\sqrt{\frac{1}{2\alpha\psi}-\frac{1}{2}}-\varepsilon\right)N^{-\frac{1}{2}}<\lambda^*(N)<\left(\sqrt{\frac{1}{2\alpha\psi}-\frac{1}{2}}+\varepsilon\right)N^{-\frac{1}{2}}$. ■

Since all agents are *ex ante* symmetric, Lemma 2 guarantees, generically, the existence of an equilibrium size $\lambda^* \in \left\{0, \frac{1}{N}, \frac{2}{N}, \ldots, \frac{1}{2}\right\}$ of Elites. Since $u_T^E(\lambda)$ is single-peaked over a domain when λ is continuous, it has at most two maxima when λ is discrete; in a generic case, it has a unique maximum. Now, suppose that λ^* is this maximum, and the club of $k^* = N\lambda^*$ members is formed. Clearly, this club satisfies our equilibrium criteria regardless of the decision-making rule within the club. That is, every member would prefer neither to accept any more members nor to expel anyone.

Of course, Lemma 2 does not guarantee the uniqueness of a stable club. One well-known reason for this is the observation that the instability of a sub-coalition makes a large coalition stable (e.g., Acemoglu, Egorov and Sonin, 2012). In our case, suppose that decisions regarding club membership are determined by majority voting, and that $k^* < \frac{N}{4}$, and assume that a club of size $2k^*$ is formed. First, observe that this club will not admit any additional members because the utility function of each member is single-peaked. Therefore, increasing membership would reduce the utility for each member. Second, there will be at least k^* members who would not agree to the removal of a single Elites member. Indeed, if at least one member from the $2k^*$-sized Elites is removed, there is a coalition of k^* members who have the majority to remove the remaining k^*-1 members. Thus, there is a blocking coalition of k^* members that make the $2k^*$-sized Elites stable.[17]

An Elites group that consists of k^* members is a natural outcome of the elite-formation process. This club forms if the formation process begins, naturally, with a club consisting of just one member. Proposition 4 formally states the existence result.

Proposition 4 *For sufficiently large values of N, Elites forms a stable club of size k^* in the elite formation stage. Moreover, for this club size, the condition for the existence of a responsive equilibrium given by Equation (11) is satisfied.*

Proof. The first part of the proposition follows from Lemma 2. To prove that a responsive equilibrium exists when the Elites' share is $\lambda^* = k^*/N$, we rewrite the condition in Equation (11) as follows:

$$\frac{-N\alpha\lambda^2\psi + N\lambda - 2\alpha\lambda\psi - N\alpha\lambda\psi - 2\alpha\psi}{\alpha(\lambda+1)(N\lambda+2)} \geq 0.$$

[17] This argument is admittedly heuristic, as we have not specified any game that leads to Elites formation. Still, given the equilibrium of the continuation game, the payoffs that citizens have *ex ante* satisfy the conditions for a non-cooperative club formation game in (Acemoglu, Egorov and Sonin, 2012). Thus, our argument can be made formal at the cost of introducing additional game-theoretic machinery.

The numerator is a quadratic function with two real roots, $\underline{\lambda}$ and $\overline{\lambda}$. A responsive equilibrium exists whenever $\lambda^* \in \left[\underline{\lambda}, \overline{\lambda}\right]$. This follows from the asymptotic boundedness of λ^* established in Lemma 2. ■

Proposition 4 and Lemma 2 imply that when N is sufficiently large, the number of members in Elites grows asymptotically as $\sqrt{N}$. Thus, as the size of the population grows, the optimal number of members in the Elites club grows without bound (k increases), but their proportion in the population goes to zero (i.e. $\lambda \to 0$).

After establishing the existence of an optimal equilibrium size for Elites, a natural question arises: what is the effect of the redistribution cost on the optimal size? Proposition 5 provides comparative statics results. Once again, these results follow from the analysis of the derivative of $u_T^E(\lambda)$, which is cubic in λ and has a single-peak on the interval $\left[0, \frac{1}{2}\right]$.

Proposition 5 *The optimal size of the Elites club k^* decreases with both the bias of the pro-elite candidate (α) and the cost of redistribution (ψ).*

Proposition 5 presents intuitive comparative statics results. One critical element is the breakdown of trust: with higher politician bias (α) and redistribution cost (ψ), the range of parameters for which Commons follow the Elites' endorsement narrows. In addition, increasing α and ψ decreases the value of information that a potential member of Elites contributes, reducing the benefit from a large club of Elites. As a result, the optimal size of Elites and the quality of information that Elites aggregate are lower.

Optimal Elites' size and Commons' experimentation. Our analysis so far assumed that Commons cannot conduct experiments. However, we will now show that if the size of Elites is determined optimally, then under a mild assumption on the size of $\alpha\psi$ (that captures the magnitude of the divergence of interests between Commons and Elites) Commons *do not want* to conduct experiments even if they can. This is because whenever the outcome of a commoner's experiment disagrees with Elites' endorsement, it is actually in the commoner's best interest to disregard her own signal. This result hinges, of course, on the assumption that Commons cannot share the outcomes of their experiments with each other.

Proposition 6 *Suppose that $\alpha\psi < 0.5$. When Elites' share is optimal, λ^*, Commons have no incentive to conduct experiments.*

Proof. Suppose first that a commoner conducts one experiment that fails. By Equation (7), the density function of his posterior belief about θ is given by $\hat{f}\,(\theta|\text{one failure observed}) = 2\,(1-\theta)$.

From the commoner's perspective, the probability of observing l successes when k more experiments are conducted is given by:

$$\Pr(l \mid k,\text{one failure observed}) = \int_0^1 2(1-\theta)\frac{k!}{l!(k-l)!}\theta^l(1-\theta)^{k-l}\,d\theta = \frac{2(k+1-l)}{(k+1)(k+2)}.$$

By Lemma 1, Elites endorse the biased politician if they observe at least $\hat{l}$ successes. From the commoner's perspective, the probability that exactly l successes are observed by Elites, conditional on the event that Elites observe at least $\hat{l}$ successful experiments, and that he observed one failed experiment, is then given by

$$\frac{\Pr(l \mid k,\text{one failure observed})}{\sum_{j=\hat{l}}^{k}\Pr(j \mid k,\text{one failure observed})} = \frac{\frac{2(k+1-l)}{(k+1)(k+2)}}{\sum_{j=\hat{l}}^{k}\frac{2(k+1-j)}{(k+1)(k+2)}} = \frac{2k+2-2l}{\left(k-\hat{l}+1\right)\left(k-\hat{l}+2\right)}.$$

Denote the conditional expectation of θ as a function of k by $H_F(k)$. We then have that:

$$H_F(k) = \sum\nolimits_{l=\hat{l}}^{k}\frac{2k+2-2l}{\left(k-\hat{l}+1\right)\left(k-\hat{l}+2\right)}\cdot\mathbb{E}[\theta|l,k+1] = \frac{k+2\hat{l}+3}{3(k+3)}. \tag{16}$$

The commoner votes for the biased politician whenever $2H_F(k)-1-\alpha\lambda\psi \geq 0$. Using Equation 16, the expression for $\hat{l}$ (as defined in Lemma 1), and the fact that $k = N\lambda$ we rewrite the above inequality as follows:

$$\frac{1}{3(N\lambda+3)}\left(-N\alpha\lambda^2\psi + \left(-5\alpha\psi + \left(\frac{1}{2}-\alpha\psi\right)2N\right)\lambda - (4\alpha\psi+3)\right) \geq 0.$$

Lemma 2 implies that for N sufficiently large, the sign of the left-hand side of the above inequality is determined by the sign of $\left(\frac{1}{2}-\alpha\psi\right)$. Since $\frac{1}{2} > \alpha\psi$, the commoner votes for the biased politician even though his experiment failed. A similar argument shows that if a commoner conducts a successful experiment, but Elites endorse the unbiased politician, the commoner finds it optimal to follow the advice of Elites. ■

Proposition 6 establishes that when the club size of Elites is λ^*, even if a commoner were to conduct an experiment on her own, she would choose to disregard its outcome and follow Elites' endorsement. Intuitively, the reason behind this is that Elites' sharing the outcomes of their experiments makes the informativeness of their endorsement sufficiently strong to dominate the informativeness of the experiment of any single commoner.

Finally, notice that club size k^* is optimal for Elites even if Commons can conduct experiments. This is because, for sufficiently large N, Elites are always worse off when Commons acquire information and decide the outcome of the elections rather than follow Elites' recommendation.[18] Thus, when N is sufficiently large, a club of size λ^* (which is optimal when Commons cannot, or do not want to, acquire information) is better for Elites compared to any smaller club size that potentially induces Commons to conduct experiments.

6 Conclusion

Recently, there has been a noticeable decline in voters willingness to follow the elites' advice, both as measured by opinion polls and by surges of support for anti-elite, populist politicians and parties. We provide a political model in which the endogenously formed elite has an information advantage over the rest of society, and the median voter elects a politician after considering the elite's endorsement. When the cost of redistribution are low, the interests of the elite and median voter in electing a competent leader are aligned, the formed elite is relatively large, and valuable information is aggregated and successfully transmitted in equilibrium. In contrast, when the society is stratified, there is a complete breakdown of trust, which results in no information transmission and a decrease in the competence of the elected politician.

[18]To see this, notice that by Equation (15), when N is sufficiently large and the club size is λ^*, the expected utility of an Elite member converges to $7/4 + (\alpha\psi)/2 + (\alpha^2\psi^2)/4$. When Commons vote based on their own signal, the quality of the elected politician is bounded above by $7/4$, the probability of electing the biased politician is bounded above by $1/2$, and the expected utility of an Elite member is therefore bounded above by $7/4 + (\alpha\psi)/2$, according to Equation (5).

References

Acemoglu, Daron, and James A Robinson. 2001. "A theory of political transitions." *American Economic Review*, 91(4): 938–963.

Acemoglu, Daron, and James A. Robinson. 2006. *Economic Origins of Dictatorship and Democracy.* Cambridge University Press.

Acemoglu, Daron, Georgy Egorov, and Konstantin Sonin. 2012. "Dynamics and stability of constitutions, coalitions, and clubs." *American Economic Review*, 102(4): 1446–76.

Acemoglu, Daron, Georgy Egorov, and Konstantin Sonin. 2013. "A Political Theory of Populism." *The Quarterly Journal of Economics*, 128(2): 771–805.

Algan, Yann, Sergei Guriev, Elias Papaioannou, and Evgenia Passari. 2017. "The European Trust Crisis and the Rise of Populism." *Brookings Papers on Economic Activity*, 2: 309–400.

Aragones, Enriqueta, and Thomas R Palfrey. 2002. "Mixed equilibrium in a Downsian model with a favored candidate." *Journal of Economic Theory*, 103(1): 131–161.

Argenziano, Rossella, Sergei Severinov, and Francesco Squintani. 2016. "Strategic Information Acquisition and Transmission." *American Economic Journal: Microeconomics*, 8(3): 119–55.

Baier, Annette. 1986. "Trust and antitrust." *Ethics*, 96(2): 231–260.

Banks, Jeffrey S, and John Duggan. 2005. "Probabilistic voting in the spatial model of elections: The theory of office-motivated candidates." In *Social choice and strategic decisions*. 15–56. Springer.

Bartles, Larry, M. 2017. *Unequal Democracy: The Political Economy of the New Gilded Age.* Princeton University Press.

Bernhardt, Dan, Odilon Câmara, and Francesco Squintani. 2011. "Competence and Ideology." *Review of Economic Studies*, 78(2): 487–522.

Bolton, Patrick, and Mathias Dewatripont. 2005. *Contract Theory.* The MIT Press.

Bénabou, Roland. 1996. "Inequality and Growth." In *NBER Macroeconomics Annual 1996, Volume 11. NBER Chapters*, 11–92. National Bureau of Economic Research, Inc.

Chakraborty, Archishman, and Bilge Yılmaz. 2017. "Authority, Consensus, and Governance." *The Review of Financial Studies*, 30(12): 4267–4316.

Chakraborty, Archishman, and Parikshit Ghosh. 2016. "Character endorsements and electoral competition." *American Economic Journal: Microeconomics*, 8(2): 277–310.

Chakraborty, Archishman, Parikshit Ghosh, and Jaideep Roy. 2020. "Expert-Captured Democracies." *American Economic Review*, 110: 1713–51.

Crawford, Vincent P, and Joel Sobel. 1982. "Strategic information transmission." *Econometrica*, 1431–1451.

Dornbusch, Rudiger, and Sebastian Edwards. 1991. *The Macroeconomics of Populism in Latin America.* University of Chicago Press.

Dustmann, Christian, Barry Eichengreen, Sebastian Otten, André Sapir, Guido Tabellini, and Gylfi Zoega. 2017. *Europe's Trust Deficit: Causes and Remedies. Monitoring International Integration 1*, CEPR Press.

Egorov, Georgy, and Konstantin Sonin. 2011. "Dictators and their viziers: Endogenizing the loyalty–competence trade-off." *Journal of the European Economic Association*, 9(5): 903–930.

Eichengreen, Barry. 2018. *The Populist Temptation: Economic Grievance and Political Reaction in the Modern Era.* Oxford University Press.

Gehlbach, Scott, Konstantin Sonin, and Milan W Svolik. 2016. "Formal models of nondemocratic politics." *Annual Review of Political Science*, 19: 565–584.

Gilens, Martin. 2012. *Affluence and Influence: Economic Inequality and Political Power in America.* Princeton University Press.

Groseclose, Tim. 2001. "A model of candidate location when one candidate has a valence advantage." *American Journal of Political Science*, 862–886.

Grossman, Gene M., and Elhanan Helpman. 1999. "Competing for Endorsements." *American Economic Review*, 89(3): 501–524.

Guiso, Luigi, Helios Herrera, Massimo Morelli, and Tommaso Sonno. 2018. "Populism: Demand and Supply." *CEPR Discussion Paper No. DP11871.*

Guriev, Sergei, and Ellias Papaiannou. 2021. "The Political Economy of Populism." *Journal of Economic Literature*, forthcoming.

Harrington, Joseph E. 1992. "The Revelation Of Information Through The Electoral Process: An Exploratory Analysis." *Economics & Politics*, 4(3): 255–276.

Herrera, Helios, and Cesar Martinelli. 2006. "Group formation and voter participation." *Theoretical Economics*, 1(4): 461–487.

Inglehart, Ronald, and Pippa Norris. 2016. "Trump, Brexit, and the Rise of Populism: Economic Have-Nots and Cultural Backlash." *HKS Faculty Research Working Paper Series*, RWP16-026.

Kaneko, Mamoru, and Kenjiro Nakamura. 1979. "The Nash social welfare function." *Econometrica*, 423–435.

Kartik, Navin, and Richard van Weelden. 2019. "Informative Cheap Talk in Elections." *Review of Economic Studies*, 86(2): 755–784.

Kartik, Navin, and R Preston McAfee. 2007. "Signaling character in electoral competition."

American Economic Review, 97(3): 852–870.

Kartik, Navin, Francesco Squintani, and Katrin Tinn. 2015. "Information Revelation and Pandering in Elections." *Working paper.*

Keefer, Philip, Carlos Scartascini, and Razvan Vlaicu. 2019. "Social Trust and Electoral Populism: Explaining the Quality of Government." Inter-American Development Bank IDB Publications (Working Papers) 10031.

Keefer, Philip, Sergio Perilla, and Razvan Vlaicu. 2021. "Trust, Collaboration, and Policy Attitudes in the Public Sector." Inter-American Development Bank IDB Publications (Working Papers) 11252.

Khan, Rahman Shamus. 2012. "The Sociology of Elites." *Annual Review of Sociology*, 38(1): 361–377.

Knack, Stephen, and Philip Keefer. 1997. "Does social capital have an economic payoff? A cross-country investigation." *The Quarterly Journal of Economics*, 112(4): 1251–1288.

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

Mattozzi, Andrea, Massimo Morelli, and Marcos Nakaguma. 2020. "Populism and Wars." *CEPR Discussion Paper No. DP14501.*

Michelman, Valerie, Joseph Price, and Seth D Zimmerman. 2021. "Old Boys' Clubs and Upward Mobility Among the Educational Elite*." *The Quarterly Journal of Economics*, 137(2): 845–909.

Moulin, Hervé. 2004. *Fair division and collective welfare.* MIT press.

Mudde, Cas. 2004. "The Populist Zeitgeist." *Government and Opposition*, 39(4): 541–563.

Mudde, Cas, and Cristóbal Rovira Kaltwasser. 2017. *Populism: A Very Short Introduction. Very short introductions,* Oxford University Press.

Myerson, Roger B. 2008. "The autocrat's credibility problem and foundations of the constitutional state." *American Political Science Review*, 102(1): 125–139.

Panova, Elena. 2017. "Partially Revealing Campaign Promises." *Journal of Public Economic Theory*, 19(2): 312–330.

Pastor, Lubos, and Pietro Veronesi. 2020. "Inequality Aversion, Populism, and the Backlash Against Globalization." *Chicago Booth Research Paper No. 20-11, Fama-Miller Working Paper.*

Piketty, Thomas, and Emmanuel Saez. 2003. "Income inequality in the United States, 1913–1998." *The Quarterly Journal of Economics*, 118(1): 1–41.

Prato, Carlo, and Stephane Wolton. 2016. "The Voters' Curses: Why We Need Goldilocks Voters." *American Journal of Political Science*, 60(3): 726–737.

Prato, Carlo, and Stephane Wolton. 2018. "Rational ignorance, populism, and reform." *European Journal of Political Economy*, 55(C): 119–135.

Ray, Debraj. 2011. *A game-theoretic perspective on coalition formation.* Oxford University Press.

Roberts, Kevin. 2015. "Dynamic voting in clubs." *Research in Economics*, 69(3): 320–335.

Rodrik, Dani. 2017. "Populism and the Economics of Globalization." National Bureau of Economic Research, Inc NBER Working Papers.

Schnakenberg, Keith E. 2016. "Directional Cheap Talk in Electoral Campaigns." *The Journal of Politics*, 78(2): 527–541.

Tiebout, Charles M. 1956. "A pure theory of local expenditures." *Journal of political economy*, 64(5): 416–424.

Zimmerman, Seth D. 2019. "Elite Colleges and Upward Mobility to Top Jobs and Top Incomes." *American Economic Review*, 109(1): 1–47.

Zoega, Gylfi. 2017. "Increase trust to stem the rise of populist movements." *Vox EU.org*.