


RESEARCH NOTE

Propaganda to persuade

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Abstract

I analyze a model in which an incumbent ruler designs a rule for propaganda disclosure that reveals information about her competence to her allies and opponents. A message that increases beliefs about the incumbent's competence is considered as propaganda. I show that for propaganda to be persuasive, it must be limited in frequency. I also demonstrate how various features of the environment affect the frequency of propaganda. Propaganda increases in frequency as the incumbent's allies become more dependent on her and as her opponents become weaker. Further, there is a non-monotonic relationship between the strength of the conflict of interest between both her allies and her opponents and the frequency of propaganda. As conflict increases, the frequency of propaganda decreases up to a threshold beyond which increased conflict is associated with more frequent propaganda.

Keywords: Formal modeling

Propaganda is a common feature of autocratic regimes. Empirical studies show that propaganda has a large effect on the beliefs and behavior of the target population (Yanagizawa-Drott, 2014; Adena *et al.*, 2015; Cantoni *et al.*, 2017). Yet a propaganda apparatus does not just distribute laudatory news about autocratic leaders. State-controlled newspapers in autocratic regimes have been known to publish unfavorable information. For example, some state-controlled newspapers in the Soviet Union criticized Gorbachev for the political turmoil caused by the reform in 1988 (Gibbs, 1999).

How and when is propaganda persuasive? How often does a propaganda apparatus distribute propaganda as opposed to unfavorable information? To answer these questions, I develop a model that explains the persuasive effect of propaganda as well as the frequency of propaganda. In the model, there is an incumbent ruler and two groups—the incumbent's ally who shares her policy preference and her opponent who has distinct policy preferences. Both groups prefer a competent ruler. Groups decide whether to support the incumbent. As in Kamenica and Gentzkow (2011), the incumbent can influence the decisions of the groups by designing a rule to reveal information about her competence, which is usually referred to as information disclosure rule. Given the context, I refer to this rule as propaganda disclosure rule. A message that increases beliefs about the incumbent's competence is considered as propaganda.

In line with the Bayesian persuasion literature, I show that to persuade any group to support the incumbent, propaganda must be limited in its frequency. More importantly, I study how various features of the environment affect the frequency of propaganda.¹ First, an increase in the political strength of the incumbent's opponent's, defined as the probability that its decision determines the leadership of the regime, reduces the frequency of propaganda. Second, the

¹Conflicts among various kinds of competing groups are used to explain economic and political outcomes in autocracies (Geddes, 1999; De Mesquita *et al.*, 2005; Besley and Kudamatsu, 2007; i Miquel, 2007; Gandhi, 2008).

ally's dependence on the autocrat increases the frequency of propaganda. Third, interest conflict among groups has a non-monotonic effect on the frequency of propaganda. As conflict increases, the frequency of propaganda decreases up to a threshold beyond which increased conflict is associated with increased frequency of propaganda.

This paper contributes to the research on propaganda. Little (2017) and Huang (2015) provide a different rationale for propaganda which is not based on its persuasive effect. More broadly, this paper relates to the literature on information control in autocracies (Egorov *et al.*, 2009; King *et al.*, 2013; Gehlbach and Sonin, 2014; Lorentzen, 2014; Guriev and Treisman, 2015; Hollyer *et al.*, 2015; Shadmehr and Bernhardt, 2015; Luo and Rozenas, 2016). Finally, this paper also contributes to the research on persuasive communication in a symmetric information setting (Kamenica and Gentzkow, 2011). Recent contributions study persuasive communication with a single sender and multiple receivers (Alonso and Câmara, 2016). A key contribution of this paper is to relate the frequency of messages that favor the sender to various features of the environment.

1. The model

1.1. Players

There is an incumbent ruler R and two groups in the society. One group is the incumbent's ally A and the other is her opponent O . The groups have conflicting interests over a policy issue. Each has an ideal point $z_i \in \mathbb{R}$ where $i \in \{A, O\}$. Let $d \in [0, \sqrt{1/2}]$ be the difference between z_A and z_O .² d thus measures the strength of the conflict of interest. A ruler could be competent ($\theta = 1$) or incompetent ($\theta = 0$). Both groups prefer a competent ruler. Let μ be the belief that a ruler is competent. $x \in \mathbb{R}$ is denoted as the ruler's policy choice. z_A is assumed to be the exogenous policy choice of the incumbent ruler. Group i derives an expected payoff $E(u_i(x)) = -(x - z_i)^2 + \mu$. The incumbent cares only about her political survival. She makes a payoff of 1 if she stays in power and 0 otherwise.

1.2. Selection of the ruler

Groups decide the ruler in society. First, the incumbent's ally chooses whether to retain the incumbent ($\sigma_A = 1$) or replace her with a candidate from its group ($\sigma_A = 0$). z_A is assumed to be the exogenous policy choice of the ally's candidate. All players share a common belief that the ally's candidate is competent with probability $\frac{1}{2}$. Afterward, the ruler's opponent chooses whether to retain the candidate chosen by the incumbent's ally ($\sigma_O = 1$) or replace her with its candidate ($\sigma_O = 0$). z_O is assumed to be the exogenous policy choice of the opponent's candidate. All players share a common belief that the opponent's candidate is competent with probability $\frac{1}{2}$. If the incumbent's ally retains her, the probability that the opponent's decision determines the ruler is $1 - \rho$ where $\rho \in [0, 1]$; otherwise, the probability is $1 - (1 - e)\rho$ where $e \in [0, 1]$. Thus, ρ measures the ally's political strength and $1 - \rho$ measures the opponent's political strength. e measures the degree to which the ally depends on the incumbent.

1.3. Propaganda disclosure rule

The incumbent's competence $\theta \in \{0, 1\}$ is unknown to all players. Let μ^0 be the common prior that the incumbent is competent ($\theta = 1$). Assume that $\mu^0 < -ed^2 + \frac{1}{2}$. Under this assumption, the groups will not support the incumbent given the prior. There might be some turmoil so that the incumbent is not secure. I analyze the case where this assumption does not hold.

²As I will show later when the belief about the incumbent's competence is above a threshold, her opponent will support the incumbent. To ensure the threshold is in a unit interval, I assume that $d \in [0, \sqrt{1/2}]$.

The groups' beliefs about the incumbent's competence θ play a key role in their decisions. To stay in power, the incumbent designs a rule to reveal information about her competence, which is usually referred to as information disclosure rule. Given the context, I refer to this rule as propaganda disclosure rule. Formally, she chooses π which consists of a finite message space S and a family of distributions $\{\pi(\cdot|\theta)\}_{\theta \in \Theta}$ over S . A message that increases beliefs about the incumbent's competence is considered as propaganda.

The incumbent commits to her rule for propaganda disclosure. This assumption captures the key observation that information gathering and reporting is often delegated to a bureaucracy. Once the bureaucracy is structured, bureaucrats make decisions about what information to gather and how to report it. This gives the ruler some commitment power to truthfully communicate the message produced by the bureaucracy.³ In the online Appendix, I build a micro foundation for the commitment assumption and discuss how bureaucracies in Maoist China and the Soviet Union served as commitment devices.

1.4. Timing

The timing of the game is as follows: (1) R chooses a propaganda disclosure rule π . (2) Nature chooses the value of θ . (3) The message is realized and received by all players. (4) A makes a decision σ_A . (5) O makes a decision σ_O .

1.5. Solution concept

The solution concept is perfect Bayesian equilibria in pure strategies: given R 's choice of π and a message realization $s \in S$, A and O form a posterior μ_s using Bayes's rule and take actions σ_A and σ_O sequentially.

2. Analysis

The first result summarizes the decision of the incumbent's opponent and the second summarizes her ally's decision (all proofs are in the online Appendix).

Lemma 1. *The decision of the incumbent's opponent is as follows.*

$$\sigma_O = \begin{cases} 0 & \text{if } \sigma_A = 0 \text{ or } \sigma_A = 1 \text{ and } \mu_s < \mu_O \\ 1 & \text{if } \sigma_A = 1 \text{ and } \mu_s \geq \mu_O \end{cases} \tag{1}$$

where $\mu_O \equiv d^2 + \frac{1}{2}$.

The incumbent's opponent supports the incumbent if the belief about her competence is strong enough to compensate for the conflict of interest. It always ousts the candidate chosen by the incumbent's ally who shares the same expected competence with its candidate but represents different interests.

Lemma 2. *The decision of the incumbent's ally is as follows.*

$$\sigma_A = \begin{cases} 0 & \text{if } \mu_s < \mu_A \\ 1 & \text{otherwise,} \end{cases} \tag{2}$$

where $\mu_A \equiv -ed^2 + \frac{1}{2}$.

³Myerson (2008), Gehlbach and Keefer (2012), and Svobik (2012) examine how institutions in autocracies alleviate the commitment problem.

The incumbent's ally supports the incumbent if the belief about her competence is above a threshold. As the conflict of interest between the two groups increases and as the incumbent's ally becomes more dependent on her, her ally requires a weaker belief about her competence to support her. Replacing the incumbent increases the chance that the incumbent's opponent's candidate takes over. If the incumbent's opponent's candidate takes over, her ally incurs a policy loss. Supporting the incumbent could avoid such loss. As the conflict of interest increases, this loss increases. When the incumbent's ally becomes more dependent on her, the increase in the chance that the opponent's candidate takes over caused by the replacement of the incumbent is greater. As a result, the incumbent's ally needs a weaker belief about her competence to support her.

Consider the incumbent's design of a propaganda disclosure rule. First, I show that the incumbent either distributes propaganda to persuade her ally or propaganda to persuade her opponent. I then show that the frequency of propaganda that would be chosen has to be limited. Finally, I derive the optimal propaganda disclosure rule and examine how exogenous features of the environment affect the frequency of propaganda.

The incumbent designs the propaganda disclosure rule to affect the groups' decisions. If the incumbent loses the support of her ally, she loses the support of her opponent. Therefore, in terms of the groups' decisions, there are three possibilities: Both groups withdraw support, only the incumbent's ally supports her, or both groups support the incumbent. The incumbent will construct a propaganda disclosure rule π with three messages—each leads to one outcome among the three possibilities. A message s^- leads to no support from both groups. A message s^+ persuades the ally and hence political survival with probability ρ . A message s^{++} persuades both groups and thus political survival with certainty. The groups are Bayesian. s^- must induce a posterior of 0; otherwise, the incumbent would benefit from further disclosing information. By the same token, s^+ must induce a posterior of μ_A and s^{++} a posterior of μ_O . Therefore, s^+ and s^{++} are the possible propaganda that she would distribute in equilibrium.

The incumbent chooses the frequency of s^+ , denoted by α_A and the frequency of s^{++} , denoted by α_O . The groups update their beliefs about the incumbent's competence such that the expectation of the posteriors must equal the prior. This constrains the frequency of s^+ and the frequency of s^{++} . In other words, to persuade any group to support the incumbent, favorable news must be limited in its frequency. Formally, $\alpha_A \times \mu_A + \alpha_O \times \mu_O = \mu^0$.

The incumbent's problem of propaganda disclosure is equivalent to the optimization problem as follows.

$$\max_{\alpha_A, \alpha_O} V(\pi) = \alpha_A \rho + \alpha_O, \text{ s.t. } \alpha_A \times \mu_A + \alpha_O \times \mu_O = \mu^0.$$

Propaganda s^{++} ensures that the incumbent stays in power for certain while propaganda s^+ leads to probabilistic political survival. Moreover, s^{++} induces a higher posterior. If she sends one additional s^{++} , she has to decrease the frequency of s^+ by μ_O/μ_A which is greater than one. Therefore, the incumbent faces trade-off between the frequency of propaganda and the frequency of political survival upon the arrival of propaganda. When the increased frequency of subsequent political survival by sending s^{++} is lower or equal to the reduced frequency of propaganda (i.e., $1/\rho \leq \mu_O/\mu_A$), the incumbent distributes s^+ as propaganda. Otherwise, the incumbent distributes s^{++} as propaganda. The following proposition summarizes optimal rule for propaganda disclosure.

Proposition 1. *If $1/\rho \leq \mu_O/\mu_A$, the optimal rule for propaganda disclosure π_1^+ has support on $\{s^-, s^+\}$, where given realization $s^-, \sigma_A = 0$ and $\sigma_O = 0$ and given realization $s^+, \sigma_A = 1$ and $\sigma_O = 0$. Let $\pi_\theta^+ \equiv \Pr[s^+|\theta]$, then*

$$\pi_\theta^+ = \begin{cases} 1 & \text{if } \theta = 1 \\ \frac{\mu^0}{1 - \mu^0} \frac{1 - \mu_A}{\mu_A} & \text{if } \theta = 0. \end{cases} \tag{3}$$

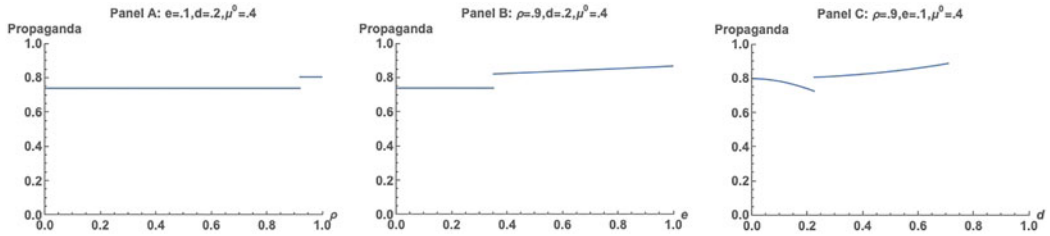


Figure 1. Comparative statistics of propaganda.

If $1/\rho > \mu_O/\mu_A$, the optimal rule for propaganda disclosure π_1^{++} has support on $\{s^-, s^{++}\}$, where given realization $s^-, \sigma_A = 0$ and $\sigma_O = 0$ and given realization $s^{++}, \sigma_A = 1$ and $\sigma_O = 1$. Let $\pi_\theta^{++} \equiv \Pr[s^{++}|\theta]$, then

$$\pi_\theta^{++} = \begin{cases} 1 & \text{if } \theta = 1 \\ \frac{\mu^0}{1 - \mu^0} \frac{1 - \mu_O}{\mu_O} & \text{if } \theta = 0. \end{cases} \tag{4}$$

$$\mu_A = -ed^2 + \frac{1}{2} \text{ and } \mu_O = d^2 + \frac{1}{2}.$$

When the incumbent’s ally’s dependence on her is strong, the ally requires a weak belief to support her. The incumbent thus could distribute s^+ at a high frequency. When the degree of the conflict of interest between the groups is large, the difference in the strength of the beliefs required by two groups to support the incumbent is large. The frequency of propaganda when she sends s^+ could be much higher than that of propaganda when she sends s^{++} . When the opponent is weak, the likelihood of political survival upon the arrival of s^+ is high. Under the above conditions, the incumbent distributes propaganda to persuade only her ally. Otherwise, the incumbent uses propaganda to persuade both groups.

In the equilibrium, the incumbent sends either s^+ or s^{++} as propaganda. I summarize the frequency of propaganda as follows.

Proposition 2. *The frequency of propaganda is μ^0/μ_A if $1/\rho \leq \mu_O/\mu_A$ and μ^0/μ_O otherwise, where $\mu_A \equiv -ed^2 + \frac{1}{2}$ and $\mu_O \equiv d^2 + \frac{1}{2}$.*

Figure 1 shows the comparative statics of propaganda. Panel A illustrates that when the incumbent’s opponent is weak, she distributes propaganda more often. When her opponent is weak, the incumbent expects to stay in power with a high probability with only the support from her ally. As a result, she uses propaganda to persuade only her ally, which implies more frequent propaganda. Panel B shows that when ally’s dependence on her is strong, propaganda is more frequent. When ally’s dependence on her is strong, it requires a weak belief about her competence to support her. She thus uses propaganda to persuade only the ally. As ally’s dependence on her increases, she distributes propaganda more frequently. Panel C demonstrates the effect of conflict of interest on propaganda. When the conflict is below a threshold, the opponent requires a slightly stronger belief than the ally to support her. As the conflict increases, her opponent needs a much stronger belief than her ally. To persuade her opponent, she has to distribute propaganda less often. Eventually, the incumbent finds it no longer optimal to persuade her opponent when the conflict is above a threshold. She thus uses propaganda only to persuade her ally. As the conflict increases, the frequency of such propaganda increases.

3. Conclusion

This paper aims to understand how propaganda is persuasive and why the frequency of favorable news is limited. It shows that to persuade any group to support an incumbent, propaganda must be limited in its frequency. It also shows that the frequency of propaganda is affected by various features of the environment, including the dependence of the incumbent's allies on the incumbent, the power of her opponents and the conflict of interest between the allies and the opponents. These ideas are most relevant in institutionalized autocracies where autocrats can commit to limiting propaganda. In democracies, incumbents can also commit to limiting propaganda. Yet, unlike citizens in the model, voters in a democracy have access to information other than what is tightly controlled by the government. They might not necessarily consume information distributed by the government.⁴ In future work, it would be interesting to develop a model of propaganda where citizens can decide whether to listen to the government's message.

Supplementary material. To view supplementary material for this article, please visit <https://doi.org/10.1017/psrm.2019.41>

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⁴Mullainathan and Shleifer (2005) and Gentzkow and Shapiro (2006) study environments where the audience could choose media outlets that are not interested in propaganda.

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