Coercive Leadership

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Abstract: We develop a model of leadership in which an informed leader has some degree of coercive influence over her followers (agents). Agents benefit from coordination but face two distinct challenges: dispersed information and heterogeneous preferences. The leader’s coercive power facilitates coordination by weakening the effect presented by both of these challenges through “binding” agents to a strategically chosen policy. The leader’s policy choice becomes more informative to the agents about the leader’s privately held information as her coercive capacity increases. By adjusting her policy choice in response to available private and public information, the coercive leader achieves her preferred average of agents’ actions, and in so doing, neutralizes the possibly deleterious coordinating influence of public information. We develop implications of our analysis for understanding autocratic leadership in different political and organizational contexts.

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From a local or regional bureaucracy to a national party organization or government, leadership is institutionalized with a complex bundle of functions and powers. In liberal democratic societies, such bundles are often framed by quintessentially democratic constraints: leaders compete for support by appealing to rank-and-file members (agents) and are expected to persuade them through argumentation or information sharing rather than coercion (e.g., Beerbohm 2015). In more “authoritarian” settings—most notably in autocracies, but also in hierarchical organizations within democracies—these democratic constraints are either rudimentary or circumscribed. Instead, leadership, and in particular what is sometimes referred to as strong leadership, is often defined in such settings by structural elements more associated with autocratic governance: Leaders have ultimate control over the choice of policy, and they enforce, however imperfectly, agents’ compliance with their choice. These elements lead to a range of disparate social effects, a systematic analysis of which is key to understanding the social consequences of coercive leadership.

As Ahlquist and Levi (2011, 14) argue in a recent review, theories of leadership that seek to build on previous scholarship should bring together the “economics of information framework” and “non-informational tools available to leaders, such as coercion, excommunication, and demotion.” The formal analysis we develop in this article provides such a unified perspective and focuses on understanding the connection between the structural/coercive and informational aspects of the leader-follower relationship in contexts in which leaders value how agents coordinate. Taking a cue from Dewan and Myatt (2008), we consider a strategic setting in which (1) agents value the information that, inter alia, allows them to coordinate better with each other, (2) the leader’s choice shapes the actions of individual agents, and (3) the aggregate of those actions feeds back into leaders’ choices themselves. However, departing from the democratic focus of that work, the leaders we analyze also exercise coercive control over their agents by imposing costs for taking actions that are not compliant with the leader’s policy.

In the model we present, coordination among agents is frustrated by two factors: heterogeneous preferences and dispersed information. We isolate two channels by which the leader influences the effects of these factors. The first, the information channel, operates because the leader’s policy choice can be informative by partially revealing what the leader knows about the state of the world. The second, the coercion channel, manifests the leader’s
noninformational influence: Her coercive power counters the obstacles to coordination among agents, regardless of the source of the coordination friction. In the presence of coercive policy enforcement, an agent weights her idiosyncratic aspects less, making her action easier to anticipate for other agents. Agents are thus pulled toward the leader’s policy, common to them all, as a “focal point” regardless of whether that policy is actually informative about the state of the world.

While these channels are distinct, they interact in important ways. A key thrust of our analysis concerns how a leader’s coercive power affects the extent of information that is ultimately transmitted via the leader’s policy. We show that the leader’s policy communicates more information about the state of the world (i.e., becomes a better signal of the state) the greater the leader’s coercive power. Another set of results concerns what leaders can accomplish with their coercive enforcement power. We show that even with a minimal level of coercion, leaders’ policy choices (via coercive and informational effects) allow them to manipulate agents’ actions so as to achieve their own preferred average action. In so doing, leaders neutralize welfare distortions resulting from previous public information in the presence of coordination incentives (distortions highlighted in Morris and Shin 2002). Yet, even when ignoring the direct disutility of the leaders’ coercion, leadership may not be a welfare-enhancing institution for agents if the policy bias of the leader is sufficiently hard to identify. Finally, we show that the leader strictly prefers increasing her coercive capacity/repression (because she prefers that agents coordinate on her preferred outcome), but does not want to sensor previous public information (because she is able to control its effects through policy choice).

The substantive implications of our theory of coercive leadership are applicable across many different settings, some of which we discuss in the article. One such setting is authoritarian regimes. Our theory provides a novel account of policymaking in such regimes and suggests a distinctive perspective on the rationale for, and relationship between, repression and censorship in such settings. Another setting is organizational politics within democracies, for which our theory provides an account of what may be called the autocratic mode of leadership. A stark example is the “boss” style of governance of “party machines”: by Boss Tweed of Tammany Hall in late nineteenth-century New York, or by Mayor Daley of the Chicago machine in the 1950s–70s, or in present-day major parties in India, Argentina, and Russia, among others.

Importantly, the contrast between democratic and autocratic leadership is not tidy. Leaders may adopt (or perhaps be compelled to adopt) a relatively democratic mode of governance in some contexts but be “autocratic” in others (Ahlquist and Levi 2011). As we detail below, leadership of political parties displays elements suggestive of such multimodalness even in democratic regimes. The mode of leaders’ actions and the relevant analytical frame for understanding leadership may depend critically on which aspect of party activity we seek to understand.

Related Work

An important forerunner of our approach is the earlier scholarship highlighting the leader’s role in providing solutions to coordination problems in politics and law (Calvert 1992; Almendares and Landa 2007). Focusing on the coordinating role of leaders, and in a setting closely related to ours, Dewan and Myatt (2007, 2008, 2012) consider the context of party leadership in which leaders are akin to informative public signals, strategically choosing the clarity of the message they send to party members but lacking enforcement power. They show that leaders may have an incentive to obfuscate their speech to party members when they want to increase the attention they receive (Dewan and Myatt 2008) or when they want to improve party performance (Dewan and Myatt 2012), and that party members will prefer leaders who are clearer communicators, even if this comes at the expense of better knowledge of the state of the world.

In a related environment, Bolton, Brunnermeier, and Veldkamp (2013) study a situation in which a leader sets a mission for an organization, followers take actions, and the leader unilaterally sets the policy of the organization. They show that overconfident leaders may be beneficial because overconfidence makes them less willing to deviate from an initially stated mission, which in turn better coordinates followers. In contrast, we study leaders who use policy to manipulate, coercively, the actions of followers. The role of coercion has been addressed by Acemoglu and Wolitzky (2011), who study the impact of force on participation in labor contracts; Dal Bô, Dal Bô, and Di Tella (2006), who look at how the threat of force can influence policy in weak states; Shadmehr and Bernhardt (2013) study the effect of coercion by an imperfectly informed revolutionary vanguard on the likelihood of successful revolution; and Montagnes and Wolton (2016), who consider the role of purges in motivating party members.

Setting aside concerns with the coordinating role of leaders, recent political economy work that emphasizes leadership examines issues such as pandering to constituents (Canes-Wrone, Herron, and Shotts 2001), precedent setting for successors (Howell and Wolton 2015), cultivation of a following that escalates into revolt
(Shadmehr and Bernhardt 2013), and information sharing within networks (Dewan and Squintani 2012). Scholarship in the economics of organizations focuses on the role of leadership in effective communication (Rotemberg and Saloner 1993) and leading by example (Hermalin 1998; Majumdar and Mukand 2008). Studies of policy delegation have examined when uninformed leaders prefer to grant discretion to privately informed followers in order to benefit from their information (Bueno de Mesquita and Landa 2015; Gailmard and Patty 2012; Gilligan and Krebs 1987). By contrast, a leader in our model is better understood as coordinating decentralized agents rather than delegating tasks.

Finally, our formal environment is a team decision problem with weak complementarities (Angeletos and Pavan 2007a, 2007b; Morris and Shin 2002, 2007) in which a key result is that when players want to coordinate on a particular course of action, they overvalue public information. Angeletos and Pavan (2007b) show that a properly designed decentralized tax scheme can restore an efficient social use of information by calibrating the level of strategic complementarity (reflected in equilibrium) to the social optimal level and, in so doing, dampening the impact of noise without dampening the impact of fundamentals. In our model, leaders are interested parties and who do not directly care about social welfare. Moreover, they cannot tailor policy to each individual but must rely on policies that are applied identically to all individuals—reflecting situations in which neither information nor policy can be effectively decentralized.

The Model

We analyze an environment composed of a leader and a large set of agents, such as members of an organization, administrators, party members, or citizens of a state. Formally, we consider a mass of agents indexed on the unit interval. The leader chooses a policy \( \gamma \in \mathbb{R} \), which directly influences agents’ incentives. Each agent \( i \), after observing the leader’s choice of policy, chooses an action \( a_i \in \mathbb{R} \).

The payoff of each agent depends on several features: the leader’s choice of policy, an agent’s individual action choice, and the degree of coordination with other agents. We capture the leader’s enforcement influence over agents through a coercive cost, \( c > 0 \), that is imposed on an agent for noncompliance of her action choice, \( a_i \), with the leader’s policy \( \gamma \).

Members of a political party and employees of a bureaucratic agency (or of other kinds of organizations), let alone citizens of a state, do not act in a perfectly centralized fashion, but typically exercise some degree of discretion in the actions they take. An agent’s preference over actions, both her own and of all agents in the aggregate, reflects conditions on the ground that are common to her fellow agents as well as conditions that are particular to her. To capture formally conditions common to all agents, we assume that there is a state of the world \( \theta \in \mathbb{R} \) that is directly payoff-relevant to all players (see below). The agents’ aggregate action, denoted by \( A = \int_0^1 a_i \, d_i \), refers to the average over agents’ actions. An individual idiosyncratic aspect of an agent’s preferences is represented by \( h_i \), which is independently drawn for each agent according to a normal distribution with mean \( 0 \) and precision \( \lambda_i \). To keep things simple, we assume that \( h_i \) is commonly known, although this does not matter for the analysis.

We normalize the weight an agent places on her own individual action, \( a_i \), to 1. In addition to caring about her individual action, an agent wants to coordinate with other agents, and the weight of this concern (to an agent) is given by \( \rho > 0 \). We capture the level at which an agent coordinates with others by the mean square error between her action and the actions of other agents, formally denoted by \( L(a) = \int_0^1 (a - a_j)^2 \, d_j \) for an agent who takes action \( a \). We denote the cross-sectional average by \( \overline{L} = \int_0^1 L(a_j) \, d_j \). An agent who takes action \( a \) receives a utility in state \( \theta \) according to the loss function

\[
\begin{align*}
\mu(a, A, h, \gamma, \theta) &= -\rho(\overline{L}(a) - \overline{L}) - (a - \theta - h)^2 \\
&\quad - c(\gamma - a)^2.
\end{align*}
\]

Apart from differences in their individual preferences, agents also differ in how they perceive, or interpret, their common circumstances. We capture this formally as follows. The state of the world \( \theta \) is drawn from an improper uniform prior, where every real number is equally likely. Further, each agent receives a private and a public signal of \( \theta \). An agent’s private signal is given by \( s_i = \theta + \frac{1}{\tau_i} \varepsilon_i \), where each \( \varepsilon_i \) is independently drawn from a standard normal distribution and \( \tau_i \) scales the precision of private information.\(^1\) In addition, all agents observe a public signal, obtained from \( Q = \theta + \frac{1}{\tau_Q} \varepsilon_Q \), where \( \varepsilon_Q \) is independently drawn from a standard normal distribution and \( \tau_Q \) scales the precision of public information.\(^2\)

Just as agents may not be perfect agents of the organization, neither is the leader. Formally, suppose that

\(^1\)For notational clarity regarding the precisions of random variables, note that the use of \( \lambda \) refers to preference parameters while the use of \( \tau \) refers to information parameters.

\(^2\)The public signal is formally equivalent to having a proper prior.
the leader has a preference bias, denoted by $b_L$, which is drawn according to a normal distribution with mean 0 and precision $\lambda_L$. This preference bias is private and determines the difference of opinion between the leader and the average opinion of the agents. The parameter $\lambda_L$ is best thought of as a measure of how well the agents know the leader’s preference bias. The leader wants the aggregate action to comport with her preference and faces the loss function\(^3\)

$$\int_0^1 (\theta + b_L - a_j)^2dj,$$

which captures the leader’s utility loss resulting from departures of agents’ actions from her preferred outcome, $\theta + b_L$.

In contrast to agents, the leader is perfectly informed about the state of the world (i.e., she knows $\theta$). This assumption captures the idea that leaders tend to have a better bird’s-eye view of circumstances common among all agents than do rank-and-file agents. In the example of a local party machine, the state of the world, $\theta$, might represent the common policy preferences of the party members, of which the machine leader (such as Boss Daley of Chicago) would be better informed, whereas the private bias of the leader, $b_L$, may reflect her own ideological position, her primitive interest in maintaining power over the organization as well as her valuing the pecuniary benefits such power brings: kickbacks from the city contractors, lucrative employment for family members and close associates, and so on.

To summarize the timing of the game:

1. The leader, based on her private knowledge of $\theta$, the commonly known public signal $Q$, and her private preference bias $b_L$, chooses a policy $\gamma$.
2. Agents, having commonly observed the leader’s choice of $\gamma$, and also using their private information, $s_i$, choose an individual action $a$.
3. Payoffs are received.

Before moving on, we pause to discuss the role of information and its interpretation in our model. First, the coordination problem between agents we model arises from two distinct sources: agents’ idiosyncratic preference component, $h$, which drives a wedge between them in terms of their action choices, and the lack of a common understanding of the state of the world (formalized through private signals), which is a source of coordination failure even in the absence of idiosyncratic differences in preferences (see, e.g., Casper and Tyson 2014; Tyson and Smith 2017). Although the social inefficiencies that arise just from the interaction of a coordination incentive and incomplete information are important (and present in our model), they have been analyzed in previous work in a context with exogenous information sources (Angeletos and Pavan 2007a; Morris and Shin 2002). In contrast, the information available to agents in our model from the leader is endogenous, and that will be an important component of our analysis.

Second, the public signal in our model represents commonly understood aspects of the strategic environment. Examples include terrorist attacks, economic conditions (e.g., a stock market crash), or the outcome of an important election or referendum (e.g., the Brexit vote). In contrast to the public signal, agents’ private signals represent personal views that vary across individuals. It is important to stress that while all agents observe the public signal, and all agree on what the public signal means regarding the state of the world $\theta$, they do not agree (or share a common belief) about $\theta$ because the presence of private signals creates a difference in how agents view the world around them.

### Strategies of Agents and Leaders

An individual agent takes an action that maximizes her utility subject to her information set, where her information set comprises a private signal, a public signal, and any information that might be conveyed through the leader’s choice of policy. Denote the expectation of agent $i$, conditional on her information set, by $E_i$. Using standard techniques (e.g., Angeletos and Pavan 2007a; Dewan and Myatt 2008; Morris and Shin 2002), it is straightforward to establish that the best response of an individual agent is a linear function of her private signal, $s_i$, her idiosyncratic preference component, $h_i$, as well as the leader’s policy, $\gamma$, and public information, $Q$, if and only if both her expectation of the state, $\theta$, and her expectation of the average action, $A$, are linear as well. Moreover, when all agents follow linear strategies, the average action is also linear.\(^4\) Furthermore, since the Gaussian information structure we employ entails linearity of expectations regarding the state of the world, one is led to conjecture that there will be linear equilibria. This means that agents will employ symmetric strategies that are of the form

$$a_i(s_i, \gamma, Q, h_i) = k_0s_i + k_1\gamma + k_2Q + k_3h_i,$$

\(^3\)The functional forms we present both for agents and the leader are for convenience and are standard (e.g., Dewan and Myatt 2008, 2012).

\(^4\)If the leader were to be assumed to have a nonzero expected bias, it would be incorporated additively into the strategies of individuals since it would be a source of common information.
Lemma 1. Let \( k \) be a symmetric linear strategy.

1. The best response of agent \( i \) is linear in her expectation of the underlying state, her expectation of the average action, the policy choice of the leader, and her idiosyncratic preference component.

2. If agents are responsive to the leader \((k_1 \neq 0)\), then

(a) (policy choice): the leader’s policy choice is a linear function of the state of the world, the public signal, and the leader’s preference bias, taking the form

\[
\gamma^*(b_l, \theta, Q; k) = \left( \frac{1 - k_0}{k_1} \right) \cdot \theta - \frac{k_2}{k_1} Q + \frac{1}{k_1} b_l.
\]

(b) (information): the leader’s policy \( \gamma \) induces the informational content of the policy, \( \hat{\gamma}^{(\gamma^*)} \), which provides an unbiased statistic of the state of the world \( \theta \). The precision of the informational content of the policy is given by

\[
\tau_{\gamma}(k_0) = \lambda_k (1 - k_0)^2,
\]

which is strictly decreasing in \( k_0 \).

3. An agent’s posterior expectation of the state of the world assigns the weights:

\[
\alpha_1(k_0) = \frac{\tau_0}{\tau_0 + \tau_{\gamma}(k_0) + \tau_1} \text{ to her private information},
\]

\[
\alpha_2(k_0) = \frac{\tau_{\gamma}(k_0)}{\tau_0 + \tau_{\gamma}(k_0) + \tau_1} \text{ to the informational content of policy},
\]

and \( \alpha_3(k_0) = 1 - \alpha_1(k_0) - \alpha_2(k_0) \) to public information.

Parts 1 and 3 of Lemma 1 are standard in this class of models and are presented for completeness. Agents’ posterior expectations of \( \theta \) are influenced by the informational content of the leader’s policy choice and the linear strategies agents employ. The functional forms in Part 3 follow from Bayes’ rule, the information structure, and the (symmetric) linear strategies of agents, yet only through the parameter \( k_0 \). In what follows, we can express agents’ posteriors in terms of these weights and the value of the signals agents see.

Part 2 of Lemma 1, describing the leader’s best response, is novel to our model. When the actions of agents are linear in their private signals, the public signal, and the leader’s policy, the leader’s optimal choice of policy is a linear function of the state of the world, \( \theta \), her private bias, \( b_l \), and the public signal, \( Q \). From the perspective of an agent, since the leader’s policy choice is linear in \( \theta \), it is a normally distributed random variable, with the state of the world \( \theta \) determining the exact distribution of the leader’s choice of policy. From this, it is easy to see that when a leader comes from a pool of potential candidates with a large variance in private bias, it hinders the ability of agents to draw inferences from the leader’s policy choice.\(^5\)

There are several features of the informational content of policy, expressed in Equation (2), that are worth noting. First, since the leader’s policy choice is informative about the state of the world, the informational content of policy directly influences the posterior expectations of agents. But although \( \hat{\gamma} \) provides an unbiased statistic of \( \theta \), it does not fully reveal it. This is because for agents who are trying to interpret the state of the world, the (unobserved) preference bias of the leader acts as noise in

\(^5\)In the supporting information, we contrast our model with more traditional models of strategic senders.
their inference problem. In the end, the precision of the informational content of policy depends on the aggregate responsiveness of agents to the state because the leader tailors the policy to agents’ strategic responses (encapsulated in the linear strategy \( k \)).

Second, Lemma 1 shows that the more responsive agents are to private information (higher \( k_0 \)), the more sensitive their aggregate behavior is to the state of the world. With higher \( k_0 \), the leader must adopt a more extreme policy in order to motivate agents, and that means a policy more heavily influenced by elements that are independent of \( \theta \), thus reducing the precision of the informational content of the policy.

Finally, although the leader knows \( \theta \), her policy choice depends on the public signal. The reason follows from the fact that the leader recognizes that agents use the public signal for two purposes: to better infer the value of the state of the world, and also to coordinate their actions with the actions of other agents. Because the leader cares about what agents coordinate on (i.e., she cares about the value of \( A \)), she will tailor her policy choice to account for agents’ response to commonly observed information. The leader thus uses the public signal of \( \theta \) not as information about the state of the world, but rather as information about how agents will coordinate their activity to pull agents toward her own preferred outcome and away from other “focal points.” In sum, the leader ensures that she is the only “focal point” that manifests in the equilibrium average action of agents.

**Coercive Leadership**

We next characterize the equilibria in our model and then analyze important properties of coercive leadership.

**Equilibria and Coordination**

A symmetric linear Bayesian Nash equilibrium in our model is characterized by a vector of weights \( k = (k_0, k_1, k_2, k_3) \). We restrict our analysis to linear equilibria that are stable in the sense of Samuelson (1947) (details are in the appendix), and we will refer to them as equilibria in what follows.

**Proposition 1 (Equilibrium Characterization).** There exists an equilibrium in which the leader’s policy is informative, and all such equilibria are characterized by a symmetric linear strategy \( k^* \) satisfying

\[
\begin{align*}
  k_1^* &= k_1(k_0^*) = \frac{c}{1 + c - \alpha_2(k_0^*) \left( \frac{\alpha_2 k_0^* + 1}{1 - k^*_0} \right)}, \\
  k_2^* &= k_2(k_0^*) = \frac{(\rho k_0^* + 1) \alpha_3(k_0^*)}{1 + c + \alpha_2(k_0^*) \left( \frac{\rho k_0^* + 1}{1 - k^*_0} \right)}, \\
  k_3^* &= \frac{1}{1 + \rho + c}, \\
  k_0^* &= \frac{(\rho k_0^* + 1) \alpha_1(k_0^*)}{1 + \rho + c}.
\end{align*}
\]

Moreover, any equilibrium \( k_0^* \) is strictly decreasing in the leader’s coercive cost \( c \).

There are potentially multiple \( k_0 \) that solve equation (3), and so potentially multiple equilibria. However, all equilibria are characterized by the system detailed in Proposition 1 and share the comparative static properties that we detail below. Because one can uniquely express all values of the linear equilibrium strategies in terms of the parameter \( k_0 \), construction of equilibria reduces to finding the values of \( k_0 \) which solve equation (3).

The substantive points related to Proposition 1 are best brought out by first formulating a benchmark—a model identical to our main model except that it assumes agents are “inattentive” to the fact that the policy chosen by the leader contains information regarding the underlying state of the world \( \theta \). Formally, an inattentive agent is one for whom \( \alpha_2(\cdot) = 0 \) for any \( k_0 \) (in contrast to the agents in our main model who are “attentive” in that they use information consistent with Bayes’ rule). The following lemma describes equilibria in that benchmark game.

**Lemma 2.** If \( \alpha_2(\cdot) = 0 \) for all \( k_0 \), then there is a unique equilibrium characterized by

\[
\tilde{k}_0 = \frac{\tau_A}{(1 + c)\tau_A + (1 + c + \rho)\tau_Q},
\]

with \( \tilde{k}_1 = \frac{c}{1 + \tau}, \tilde{k}_2 = \frac{(\rho \tilde{k}_0 + 1)\tau_Q}{(1 + c)(\tau_A + \tau_Q)}, \) and \( \tilde{k}_3 = \frac{1}{1 + \rho \tau_2} \). Moreover, for any equilibrium \( k^*_0 \), \( k^*_0 < \tilde{k}_0 \), ceteris paribus.

We next use the comparison between the equilibrium characterizations in Proposition 1 and in Lemma 2 to highlight the properties of the equilibria in our main model.

First, Lemma 2 highlights that the multiplicity of equilibria in our main model relies on the information in the leader’s policy choice and agents’ “attentive use” of this information, thus creating a feedback between agents’ action choices and the leader’s choice of policy. The reason for equilibrium multiplicity in our model is that a source
of information for agents extra parenthesis is endogenous to the strategic environment. Because the leader’s policy also depends on how agents react to it, the precision of the information it may reveal depends on the linear strategy $k$, and this feedback, which is absent when information is exogenous, can lead to multiple equilibria. The possibility of multiple equilibria distinguishes our model from other models with weak complementarities (e.g., Angeletos and Pavan 2007a; Morris and Shin 2002).

Second, the comparison of Proposition 1 with Lemma 2 shows how the leaders facilitate coordination among agents. Recall that their coordination problem arises from two distinct sources. First, each agent’s idiosyncratic preference component drives a wedge between optimal action choices (the importance of this term in equilibrium is captured by $k^*_3$). And second, agents lack a common understanding regarding the state of the world, formalized by decentralized private information (the influence of this source of miscoordination is captured by $k^*_1$). A leader’s influence affects the consequences of these challenges to coordination through two distinct, yet, as will become clear below, closely linked, channels, coercion and information. The leader extends influence via a coercion channel because deviating from her choice of policy is costly, and agents seek to lessen their deviations accordingly. But, as detailed in Lemma 1, the leader’s policy is also informative about the state of the world, and so the leader is able to influence agents by influencing their view of the state of the world (the information channel). By inspection of $k^*_3$ and by the last part of Proposition 1, as $c$ increases, the weights agents place in equilibrium on their idiosyncratic preference component and on their private signals both decrease, leading to the following implication. The leader facilitates coordination via the coercion channel by weakening the impact of both sources of coordination friction, heterogeneities in preferences and in information.

Now consider the leader’s impact on coordination via the information channel. First, observe from Proposition 1 and Lemma 2 that $k^*_3 = \tilde{k}_3$, implying that agents’ weight on their idiosyncratic preference component is independent of whether they are attentive to the informational content of policy. Next, note that the last part of Lemma 2 establishes that $k^*_0 < \tilde{k}_0$, implying that agents weight their private signals less when they are attentive to the informational content of policy, and so better coordinate because of that content. Finally, notice that holding fixed the coercive cost, an increase in the informational content of policy reduces the effect of dispersed information but not the effect of heterogeneous incentives. To summarize, the leader facilitates coordination via the information channel by weakening the impact of coordination frictions that result from decentralized information but not of the frictions due to heterogeneity in preferences.

Our next result describes the relationship between the leader’s coercive influence and the existence of equilibria with informative policy choices.

**Proposition 2.** The leader’s policy is informative in every equilibrium if and only if $c > 0$.

If the leader’s power is coercive ($c > 0$), her equilibrium policy must be informative; if the leader is not coercive, then there exists an equilibrium in which her policy choice has no informational content. Coerciveness of leaders thus ensures that their policy must be informative. We can bring out the intuition for this with the following heuristic argument. Suppose the coercive cost is taken to 0 (thus shutting down the leader’s direct coercive influence), but that the leader’s policy also reveals a fixed level of information about $\theta$. Knowing that the leader wants them to coordinate on something specific (the leader’s preferred outcome), agents will use the information from the leader’s policy and adjust, undermining the leader’s attempts to manipulate the average action. Anticipating this, the leader will want to choose a different policy than the one agents expect. But then agents would consider this new policy strategy and update accordingly. When $c = 0$, this heuristic process would converge because the leader can never be entirely ignored by agents, but when $c > 0$, it diverges because the leader’s best response is not closed. The leader might prefer to commit to revealing some information to agents since such information would reduce the variance among agents’ actions, thus making the leader better off. But if agents were to take her at her word and use the information as prescribed by her strategy, then she would prefer to change her policy so as to manipulate agents’ expectations of the state of the world in her favor. When the leader loses the ability to coerce, she cannot commit not to do this because there is nothing to help her resist the temptation to manipulate agents’ actions.

**Manipulation and Information**

Our next result describes the consequence of the leader’s manipulation for the average action of agents evaluated

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6Note also that when agents are inattentive, the informational content of policy is nonzero (i.e., the leader cannot help; see Supplemental Appendix B in the supporting information).

7This follows by observing the following partial equilibrium effect: From Expression (3), increasing $\alpha_i(\cdot)$ increases $k^*_0$, and increasing $\alpha_i(\cdot)$ decreases $\alpha_i(\cdot)$. 
at equilibrium, that is, for a given equilibrium $k^*$ and a given best response of the leader $\gamma^*$. Holding fixed the policy, the average action among agents depends on several factors: the state of the world, $\theta$, the public signal, $Q$, and the leader’s policy choice, $\gamma$. When choosing her policy, the leader accounts for the relationship between these factors as well as for the average action that results. Taking the leader’s best response, and considering how this translates, through the best response of agents, into the average action gives us the following result.

**Proposition 3 (Equilibrium Average Action).** For a given equilibrium $k^*$ and a leader preference bias $b_L$, the equilibrium average action among agents is

$$A(\theta \mid k^*) = \theta + b_L.$$

Note, importantly, that this result does not depend on the value of the coercive cost $c$—the leader achieves her most preferred average action at any positive level of $c$, even as that level critically affects both the choice of policy the leader ultimately adopts, and how agents use the leader’s policy choice in inferences about the state of the world.

We complete our analysis in this section by analyzing the informational content of policy, noting that the incentives the leader might have to reveal information through policy are both direct, to inform agents, and indirect, to choose a policy that agents will not want to “ignore” too much but that pulls the average action to the leader’s ideal.\(^8\)

**Proposition 4.** The precision of the informational content of the policy, $\tau$, is

1. strictly increasing in the coercive cost $c$;
2. strictly increasing in the precision of the distribution over leader bias $\lambda_L$;
3. strictly decreasing in the incentive to coordinate $\rho$; and
4. strictly decreasing in $\tau_A$ and strictly increasing in $\tau_Q$.

As we described above, the leader affects the overall level of coordination among agents through two different channels: coercion and coordination. An increase in the coercive cost, $c$, facilitates better coordination through the coercion channel, and an increase in the informational content of policy facilitates better coordination through the information channel. Proposition 4 now completes the description of these channels by showing how they interact in equilibrium. An increase in the coercive cost increases the informational content of policy, thus creating complementarity between the two channels in the leader’s manipulation of the agents’ actions.

Because, by Proposition 3, the leader always accomplishes her preferred average action, the only utility loss she suffers is from the variance among agents’ action choices. The precision of information in the leader’s policy choice, which affects that variance, is a consequence of how heavily the leader weights $\theta$ relative to her bias, $b_L$, and the public signal, $Q$, when she chooses her policy. As $c$ decreases, the leader’s reduced ability to change agents’ actions leads her to choose more extreme policies—so much so that when $c$ is arbitrarily close to 0, the leader would like to choose $\gamma$ that is arbitrarily large (approaching infinity), meaning that the weight she assigns to $\theta$ in her linear strategy becomes very small. When $c$ gets higher, the leader does not have to “drag” the policy quite as far to get the average action to hit her ideal $\theta + b_L$—that is, she can weight the state more heavily in her policy choice to achieve the same average action—and consequently, her policy choice becomes more informative. Thus, leaders with higher $c$ can “afford” a policy choice that more heavily reflects the true $\theta$—make a policy choice more informative to agents—because such leaders have more control over agents’ reactions to the information that is revealed through policy.

When the precision of the leader’s preference bias, $\lambda_L$, is high, agents weight the informational content of policy more, and their private signals less, because they believe that policy is largely a result of the state of the world and not of bias on the part of the leader. Similarly, when agents’ desire to coordinate, $\rho$, is high, they weight their private signals less heavily in any equilibrium and instead focus on aspects of the environment that are focal, one of which being the leader’s policy. Greater weight attached to the leader’s policy, in turn, encourages the leader to weight the state more in her policy to compensate for the weakened connection of the average action to the state of the world (through the aggregation of private signals). Consequently, the leader’s policy becomes more informative of the state of the world.

Finally, the last part highlights the difference in the responsiveness of the informational content of policy to distinct sources of agents’ information. If agents receive better (more precise) private information, they will weight their private signals more, thus reducing the leader’s weight on the state $\theta$ and so decreasing the informational content of policy. Alternatively, if agents receive better public information, then the leader chooses to weight the state of the world more in her policy choice, thereby increasing the informational content of policy.

\(^8\)For a detailed discussion of the relationship between our model and standard models of information provision, see Supplemental Appendix B in the supporting information.
Assessing Coercive Leadership

We have thus far highlighted two conflicting factors relevant to assessing coercive leaders. On the one hand, such leaders impose coercive costs on agents, but on the other hand, they provide information and facilitate coordination. Naturally, when the magnitude of coercive costs is very high, agents will prefer to be left to their own devices rather than endure a coercive leader. However, a leader whose coercive cost is not overly onerous could be beneficial.

In this section, we highlight an important consideration determining the net benefit of such leadership even absent the direct welfare consequences of coercion. To do this, we compare the indirect welfare consequences of coercive leadership, understood as aggregate welfare without the utility effects of direct coercive costs, at any equilibrium in our model, to the aggregate equilibrium without the leader’s policy heavily reflecting the state of the world, and the leader’s policy is more likely to be close to $\theta$ (the benefit from the coercion channel). Further, a larger $\lambda_L$ means greater precision of the informational content of policy (Proposition 4), and so the leader’s policy is more informative to agents (the benefit from the information channel). These two channels reinforce each other, and together they imply that as $\lambda_L$ increases, leadership is more likely to become valuable. In contrast, when $\lambda_L$ is small, that is, when the leader’s preference could depart dramatically from $\theta$ and her bias is hard to predict, agents will not trust that the leader’s policy heavily reflects the state of the world, and the leader will be more likely to force large departures from $\theta$, decreasing her net value to agents. The manipulating effect of coercive leaders thus could undermine any welfare benefits one might obtain, even without the direct disutility of coercion.

Lemma 3. In the benchmark model with no leadership, that is, when $k_1 = c = 0$, there is a unique equilibrium, characterized by $k^i_0 \equiv \frac{\tau_x + (1+p)\tau_o}{\tau_x + (1+p)\tau_o}, k^i_1 \equiv \frac{(1+p)\tau_o}{\tau_x + (1+p)\tau_o} = 1 - k^i_0$, and $k^i_3 = \frac{1}{1+p}$, and where the average action among agents is

$$A(\theta \mid k^i) = k^i_0 \theta + k^i_2 Q.$$  \hspace{1cm} (4)

Lemma 3 points to two contrasting differences between the equilibria of our main model and the equilibrium of the no-leader baseline. First, in the absence of the leader, there is a unique equilibrium because all information is now exogenous.\textsuperscript{9} Second, and more interestingly, Lemma 3 shows that in the absence of the leader, the average action of agents depends on the state of the world and the public signal. This stands in contrast to the model with a coercive leader, where the average action is independent of the public signal, and highlights the fact that the leader removes the dependence of aggregate activity on public information. Although the public signal serves as a “focal point” to agents, the leader ensures that the public signal has no effect on the average action. This implies that the leader corrects for whatever distortionary impact common information might bring, by binding agents to a policy that is distinct from her preferred average action. We can now state our welfare comparison between the two settings.

\textsuperscript{9}See above discussion following Lemma 2.

Proposition 5. There exists a $\lambda_L$ such that for any $\lambda_L < \lambda^*_L$, the indirect welfare of agents is strictly lower with a coercive leader than without.

Proposition 5 makes a stark point: Even absent direct coercive costs, leadership may not be desirable to agents. As highlighted above, coercive leaders provide information as well as better coordinating agents, but they also manipulate agents in service of their own interests. An increase in $\lambda_L$ increases agents’ indirect welfare through both channels of leaders’ influence we described above. A larger $\lambda_L$ means that $|b_L|$ is more likely to be small, and consequently, by Proposition 3, agents’ aggregate action is more likely to be close to $\theta$ (the benefit from the coercion channel). Further, a larger $\lambda_L$ means greater precision of the informational content of policy (Proposition 4), and so the leader’s policy is more informative to agents (the benefit from the information channel). These two channels reinforce each other, and together they imply that as $\lambda_L$ increases, leadership is more likely to become valuable. In contrast, when $\lambda_L$ is small, that is, when the leader’s preference could depart dramatically from $\theta$ and her bias is hard to predict, agents will not trust that the leader’s policy heavily reflects the state of the world, and the leader will be more likely to force large departures from $\theta$, decreasing her net value to agents. The manipulating effect of coercive leaders thus could undermine any welfare benefits one might obtain, even without the direct disutility of coercion.

Information and Repression in Autocracies

Although the coercive dimension of leadership is not alien to democratic institutions, it is a dimension more readily associated with an autocratic form of government. Taking that perspective, our analysis yields interesting insights into the relationship between defining governance practices of autocracies: repression and censorship.

Existing formal accounts of censorship highlight the incentive for an autocrat to censor public information in an attempt to undermine the ability of protesters and regime opponents to coordinate in rebellion (see, in particular, Edmond 2013; Little 2017; Shadmehr and Bernhardt 2015). In these accounts, the relationship between autocratic leaders and their subjects is defined by a fundamental conflict: If the leader succeeds, the citizenry (conceptualized as opponents) is worse off, and consequently, leaders want to use repression and censorship together as complementary tools of maintaining their hold on
power. While the leader in our model also has private interests that may be different from those of citizens (and that we have conceptualized as the leader’s preference bias), the leader’s preferences share two key components with citizens’ preferences. Both the leader and the citizens care about the proximity of actions relative to the underlying state and, moreover, prefer coordinated individual actions, which induces the leader and the citizens to value the revelation of information. This leads to a fundamentally different relationship between censorship and repression, best shown by considering the leader’s equilibrium payoff.

**Proposition 6.** The leader’s equilibrium payoff is strictly increasing in the coercive cost, $c$, and the precision of public information, $\tau_Q$.

Leaders in our model always value more coercive capacity, meaning they would prefer to impose the highest possible level of repression. The reason is that as the coercive cost goes up, the leader is able to reduce the variance of agents’ actions around her preferred outcome, namely, $0 + b_L$. If the practice of repression creates a cost to leaders, it is, thus, not for reasons that can be traced to elements in our model. At the same time, a coercive leader in our model does not, even in a partial equilibrium sense, have a preference for censorship of public signals. The leader’s equilibrium payoff is strictly increasing in the precision of the public signal because it leads agents to put lower weights on their private signals, thus decreasing the variance in their actions. Given her own equilibrium action, then, better public information is, for the leader in our setting, “all upside”; the leader effectively manipulates the consequences of increases in the precision of public information to her benefit without needing to resort to censorship.

This account of the leader’s use of repression and of her ability to manipulate public information points to the presence of incentives not previously recognized in the analysis of authoritarian governance. While admittedly focusing on a class of autocratic leaders whose benefits to citizens may outweigh their costs, it suggests that the way self-interested autocratic leaders may advance their own state-dependent interests may, at least on the margin, run counter to the incentives to censor identified in previous work.

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Supplemental Appendix D in the supporting information shows that a leader who can increase her coercive capacity at a cost will increase repression up to the point of indifference between the cost of increasing repression and the reduction of variance among agents’ actions.

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The Autocratic Mode in Party Leadership

In this section, we interpret our model of coercive leadership in the substantive setting of important work by Dewan and Myatt (2008, 2012), the comparison to which is instructive both for comprehending the nature of our results and how they contribute to understanding party leadership.

Our model of leadership is distinguished from the setting they analyze along two important dimensions. First, our leader is exclusively concerned with the actions of agents and does not face competition from other leaders; consequently, she does not face the same kind of trade-offs that a leader faces in their models. Second, and more fundamentally, our leader does not communicate “messages” but sets a binding policy that directly affects agents’ incentives. In a key contrast between our results, the leader’s informational influence in our model depends critically on her coercive influence, whereas the leaders wield a purely informational influence in Dewan and Myatt (2008, 2012).

As we noted in the introduction, those autocratic elements describe the nature of leadership in a classic autocratic party organization—a “party machine.” The most famous examples of party machines in the United States—Tammany Hall in New York and the Democratic Party machine in Chicago—were run by leaders who maintained their power with a mix of coercion and superior information. The knowledge, or at least the strong suspicion, that these organizations were often operating outside the law was widespread. But they were tolerated, in part, because going against the will of the boss meant incurring the costs that would likely mean the end of one’s political career or the loss of a valuable contract with the city (Royko 1988). But no less than the threats, it was also the benefits that the bosses offered that gave them such a strong hold on power: to local, state, and national politicians—a certainty of coordinated support for the candidate slate approved by the boss and the policy agenda endorsed by him, and to members of the machine and local citizens—patronage and a prospect of enjoying more than a fair share of the federal and state budgets as a reward for support. The powerful conjunction of coercive enforcement from the party boss and coordination

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Dewan and Myatt (2008, 2012) also assume that citizens receive idiosyncratic signals about the leader’s pronouncement, whereas we assume that everyone sees the same policy promulgated by the leader. Introducing idiosyncratic noise in a leader’s policy has no qualitative effect on our results. The details are in the supporting information.
incentives for the machine members and voters is at the core of the party machine formula replicated, despite the differences in underlying formal institutions and political culture, in the Peronist party in Argentina, the United Russia Party in Russia, the Indian Congress Party in India, and many other places.

Textbook party machines, however, are not the only exemplars of party governance in which the autocratic elements of leadership we analyzed play a role. One can usefully interpret our model together with the insights from Dewan and Myatt (2008, 2012) as highlighting the incentives in two distinct stages in the governance of modern “democratic” parties: a competition between leaders to determine an officeholder and governance after a leader takes office. With this view in mind, we can interpret the public signal in our model as the legacy of an earlier competitive leadership campaign in which, consistent with Dewan and Myatt’s analysis, candidates’ campaign messages lacked precision, owing to the candidates’ lack of clarity and issues with their sense of direction, as well as the strategic incentive to obfuscate. But once the leader is selected and assumes office, the strategic scenario changes: The relationship between party members and the leader is now characterized by her ability to compel compliance with how that leader wants to shape the party and her incentives to use that ability to remove the aggregate impact of campaign legacy on party members.

This account is consistent with what we observe in the party leadership dynamic in a number of contemporary democracies. Thus, for example, opposing and criticizing fellow candidates during the presidential primaries in the United States or the party leadership campaign in the United Kingdom is standard. But once that contest is settled, opponents/critics may be asked to join the formal leadership team, the criticism of the leader within the party is suppressed, and if it should come from within the leadership, it is typically understood to lead to a dismissal. The two-stage theory of leadership dynamics also accounts for the evolution of leadership style of perhaps the paramount exemplar of a strong Senate leader, Lyndon B. Johnson, who, as a leader, came to use his famous “Johnson treatment”—a persuasive mix of calibrated information revelation and veiled threatening—to advance a policy agenda with clarity of purpose that, in style and substance, surprised his colleagues from his early Senate years (Caro 2002, 393).

12 Assuming, for convenience, that party members behave myopically in the first stage relative to the second stage.

Conclusion

This article presents a model of the “autocratic mode” of leadership that complements existing theories of leadership in its “democratic mode” (Ahlquist and Levi 2011; Dewan and Myatt 2008). We analyze two channels by which a leader with coercive capacity influences agents, an informational channel and a coercive channel, and provide four main results. First, we show that when her policy choice is unconstrained, a leader always achieves her most preferred average action among her followers. Second, we find that a leader’s policy is informative in every equilibrium if and only if she is coercive, and further, her policy becomes more informative as her coercive power increases. Third, although we identify benefits of leadership for coordination and informative choice by the citizens, we also show when leaders are not beneficial even absent the direct disutility of coercion. Fourth, we show that leaders (whose preferred policies are, in our model, correlated with those of the citizens through the state of the world) strictly prefer to increase their coercive capacity, but they never want to reduce the precision of public information. The strategic dynamic we highlight sheds new light on settings that exhibit an autocratic mode of leadership, including leading a party and governance in authoritarian regimes, and underscores the importance of considering the interaction of the informational and structural aspects of leadership.

Appendix

Proof of Lemma 1. For the first part, an agent solves the optimization problem:

\[
\max_{a_i} \mathbb{E} \left[ -p \left( L(a_i) - \bar{L} \right) - (a_i - \theta - h_i)^2 \right. \\
\left. - c(\gamma - a_i)^2 \mid s_i, \gamma, Q \right], \tag{5}
\]

where expectations are over \( \theta \) and \( A \). The first-order condition associated with Expression (5) is

\[
\mathbb{E}_i [p (A - a_i) - (a_i - \theta - h_i) + c(\gamma - a_i)] = 0,
\]

where \( \mathbb{E}_i \) represents the expectation given \( i \)'s information set. Carrying through expectations, rearranging, and solving for the agent’s optimal action yields

\[
a_i^*(s_i, h_i, \gamma, Q) = \frac{p}{1 + p + c} \mathbb{E}_i [A] + \frac{1}{1 + p + c} \mathbb{E}_i [\theta] \\
+ \frac{c}{1 + p + c} \gamma + \frac{1}{1 + p + c} h_i. \tag{6}
\]

This establishes the first part.
The leader’s sequentially rational optimization problem can be written as

$$\max_{\gamma} - \int_{0}^{1} (\theta + b_L - a^*_d(s_i, h_i, \gamma, Q))^2 \, di.$$ 

When agent strategies are linear, characterized by vector $k = (k_0, k_1, k_2, k_3)$, then, by substitution, the leader’s problem becomes

$$\max_{\gamma} - \int_{0}^{1} (\theta + b_L - (k_0 s_i + k_1 \gamma + k_2 Q + k_3 h_i))^2 \, di.$$ 

The first-order condition associated with the leader’s problem is given by

$$\int_{0}^{1} (\theta + b_L - k_0 \theta - k_1 \gamma - k_2 Q - k_3 h_i) \cdot k_i \, di = 0.$$ 

Carrying through the integral,

$$(\theta + b_L - k_0 \theta - k_1 \gamma - k_2 Q) \cdot k_1 = 0.$$  

To establish the first part, consider two cases. First, if $k_1 = 0$, then any $\gamma$ is a best response. Second, if $k_1 \neq 0$, then simplifying and solving Equation (7) for $k_1$ yields

$$\gamma^*(b_L, \theta, Q; k) = \frac{k_1}{k_1} \cdot b_L + \frac{1 - k_0}{k_1} \cdot 0 - \frac{k_2}{k_1} \cdot Q.$$  

which is a linear function of $\theta$, $Q$, and $b_L$.

From $\gamma^*$, we obtain the following expression for $\theta$:

$$\theta + \frac{1}{1 - k_0} b_L = \frac{k_1}{1 - k_0} \gamma^* + \frac{k_2}{1 - k_0} Q.$$  

where things observable to agents are on the right-hand side and things not observable to agents are on the left-hand side. From Equation (9), the expression

$$\gamma = \frac{k_1}{1 - k_0} \gamma^* + \frac{k_2}{1 - k_0} Q$$

constitutes a normally distributed, commonly observed, and additive signal of $\theta$. From inspection, it is clear that the variance of $\gamma$ is $(\frac{1}{1 - k_0})^2 \cdot \frac{\lambda}{\lambda}$, and thus the precision is obtained by taking the reciprocal of the variance:

$$\tau_{\gamma}(k_0) = (1 - k_0)^2 \lambda_L.$$  

That $\tau_{\gamma}(k_0)$ is strictly decreasing in $k_0$ follows by inspection.

The last part then follows by DeGroot (1970, Theorem 1, 167).

**Proof of Proposition 1.** Our proof proceeds in two steps: (1) We establish the equation that characterizes the equilibrium response of the aggregate action to the state $\theta$, which is captured by $k^*_d$; and (2) we establish that all linear equilibrium coefficients $k^*$ can be derived from $k^*_d$.

Step 1: Returning to the optimal action of agents, given a linear strategy $k = (k_0, k_1, k_2, k_3)$, the average action is also linear:

$$A(\theta \mid k) = \int_{0}^{1} k_0 s_i + k_1 \gamma + k_2 Q + k_3 b_i \, di = k_0 \theta + k_1 \gamma + k_2 Q.$$  

Using this and Lemma 1, an agent’s optimal action can be expressed as

$$a^*_i = \frac{\rho}{1 + \rho + c} E_i[\theta] + \frac{c}{1 + \rho + c} \gamma + \frac{1}{1 + \rho + c} h_i.$$  

$$= \frac{\rho k_0}{1 + \rho + c} E_i(\theta) + \frac{\rho k_1 + c}{1 + \rho + c} \gamma + \frac{\rho k_2}{1 + \rho + c} Q + \frac{1}{1 + \rho + c} h_i.$$  

which by substitution from Lemma 1 is

$$a^*_i = \frac{\rho k_0 + 1}{1 + \rho + c} \left[ a_1(k_0) s_i + a_2(k_0) \left( \frac{k_1}{1 - k_0} \gamma + \frac{k_2}{1 - k_0} Q \right) \right] + \frac{k_1}{1 + \rho + c} \gamma + \frac{k_2}{1 + \rho + c} Q + \frac{1}{1 + \rho + c} h_i.$$  

A linear equilibrium is obtained by solving the system:

$$k_0(k_0) = \frac{(\rho k_0 + 1) \alpha_1(k_0)}{1 + \rho + c};$$  

$$k_1(k_0, k_1) = \frac{(\rho k_0 + 1) \alpha_2(k_0) \frac{k_1}{1 - k_0} + \rho k_1 + c}{1 + \rho + c};$$  

$$k_2(k_0, k_3) = \frac{(\rho k_0 + 1) \alpha_3(k_0) \frac{k_2}{1 - k_0} + \rho k_2}{1 + \rho + c};$$  

$$k_3(k_0) = \frac{1}{1 + \rho + c}.$$  

Collecting terms in Equation (12) establishes that an equilibrium $k_0$ solves

$$k^*_0 = \frac{(\rho k^*_0 + 1) \alpha_1(k^*_0)}{1 + \rho + c}.$$  

Substitution from Equation (2) into \( \alpha_1(k_0) \) gives
\[
\alpha_1(k_0) = \tau_A \left( \tau_A + (1 - k_0^a)^2 \lambda_L + \tau_Q \right)^{-1},
\]
and then substituting into Equation (16) and rearranging, we have
\[
(1 + \rho + c) \left( \frac{k_0^a}{\rho k_0^a + 1} \right) - \frac{\tau_A}{\tau_A + (1 - k_0^a)^2 \lambda_L + \tau_Q} = 0.
\]
Take \( k_0 \rightarrow 1 \); then the left-hand side becomes
\[
\frac{1 + \rho + c}{1 + \rho} - \frac{\tau_A}{\tau_A + \lambda_L + \tau_Q} > 0.
\]
Now consider \( k_0 \rightarrow 0 \); then the left-hand side becomes
\[
- \frac{\tau_A}{\tau_A + \lambda_L + \tau_Q} < 0.
\]

By continuity, the Intermediate Value Theorem establishes that there exists at least one \( k_0^a \) that satisfies Equation (18). Rearranging Equation (16), we can succinctly write the fixed point condition as
\[
\frac{\alpha_1(k_0)}{1 + c + \rho (1 - \alpha_1(k_0))} \equiv \Omega \left( \alpha_1(k_0^a) \right) = k_0^a.
\]
First, observe that \( 0 < k_0^a < 1 \). That \( k_0^a \) is positive is obvious. Now to show that \( k_0^a < 1 \). Suppose not, so \( k_0^a = \alpha_1(k_0) > 1 \). Then
\[
\frac{\alpha_1(k_0)}{1 + c + \rho (1 - \alpha_1(k_0))} > 1,
\]
which is a contradiction since \( 0 < \alpha_1(k_0) < 1 \) for all \( k_0 \).

Following Samuelson (1947) and Fey (1997), a stable \( k_0^a \) is a solution of Equation (19) for which
\[
\Omega^\prime(k_0^a) \cdot \frac{d \alpha_1(k_0^a)}{dk_0} = \frac{2(1 + \rho + c)(1 - k_0^a) \tau_A}{(1 + \rho + \rho (1 - \alpha_1(k_0^a))^2(\tau_A + (1 - k_0^a)^2 \lambda_L + \tau_Q)^2} < 1.
\]

Step 2: For the remainder of the symmetric strategy profile, recall Equation (13):
\[
k_1 = \frac{(\rho k_0 + 1) \alpha_2(k_0) - k_1}{1 - k_0} = \frac{\rho k_1 + c}{1 + \rho + c}
\]
Rearranging shows
\[
(1 + c)k_1 = (\rho k_0 + 1) \alpha_2(k_0) - k_1 = k_1 + c,
\]
and rearranging,
\[
\left(1 + c - (\rho k_0 + 1) \alpha_2(k_0) \left( \frac{1}{1 - k_0} \right) \right) k_1 = c.
\]
Collecting terms, and rearranging, yields
\[
k_1(k_0) = \frac{c}{1 + c - \alpha_2(k_0) \left( \frac{\rho k_0 + 1}{1 - k_0} \right)},
\]
which is a function of \( k_0 \) only. Continuing, from Equation (14)
\[
k_2 = \frac{(p k_0 + 1) \left( 1 - \alpha_1(k_0) - \alpha_2(k_0) + \alpha_2(k_0) \frac{k_2}{1 - k_0} \right) + p k_2}{1 + \rho + c}
\]
Rearranging,
\[
(1 + c)k_2 = \frac{(p k_0 + 1) \alpha_2(k_0)}{1 + c + \alpha_2(k_0) \left( \frac{p k_0 + 1}{1 - k_0} \right)},
\]
and simplifying,
\[
k_2(k_0) = \frac{(p k_0 + 1) \alpha_3(k_0)}{1 + c + \alpha_2(k_0) \left( \frac{p k_0 + 1}{1 - k_0} \right)},
\]
which is a function of \( k_0 \) only. Putting things together, a linear Bayesian Nash equilibrium to the agent subgame is characterized by \( k_0^a = k_1(k_0^a) \), \( k_2^a = k_2(k_0^a) \), and \( k_3^a = \frac{1}{1 + \rho + c} \). Stability is ensured by Equation (20).

From total differentiation in Expression (19), we have
\[
\frac{dk_0^a}{dc} = -\left( \frac{-\alpha_1(k_0^a)}{(1 + c + \rho (1 - \alpha_1(k_0^a))^2} \right) \times \left( \frac{\Omega^\prime(k_0^a) \cdot \frac{d \alpha_1(k_0^a)}{dk_0}}{\Omega^\prime(k_0^a) \cdot \frac{d \alpha_1(k_0^a)}{dk_0} - 1} \right)
\]
\[
= \frac{-\alpha_1(k_0^a)}{(1 + c + \rho (1 - \alpha_1(k_0^a))^2} \left( \frac{d \alpha_1(k_0^a)}{dk_0} \right) \frac{-\alpha_1(k_0^a)}{(1 + c + \rho (1 - \alpha_1(k_0^a))^2} \left( \frac{d \alpha_1(k_0^a)}{dk_0} \right) - 1).
\]

By the restriction to stable equilibria, Equation (20), the denominator is strictly negative, and so \( \frac{dk_0^a}{dc} < 0 \).

**Proof of Lemma 2.** The first part follows by setting \( \alpha_2(\cdot) = 0 \) in Equations (12), (13), (14), and (15) and solving (see the supporting information for details). Recall Expression (19):
\[
k_1(k_0) = \frac{\alpha_1(k_0)}{1 + c + \rho (1 - \alpha_1(k_0))},
\]
which is strictly increasing in \( \alpha_1(\cdot) \). Observe that when \( \alpha_2(k_0) = 0 \), then
\[
\alpha_1 = \frac{\tau_A}{\tau_A + \tau_Q} > \frac{\tau_A}{\tau_A + \tau_Q(k_0) + \tau_Q} = \alpha_1(k_0),
\]
implying that \( k_0 > k_0^a \) for any equilibrium \( k_0^a \).

**Proof of Proposition 2.** For sufficiency, we proceed by contradiction. Suppose there exists an equilibrium in which the leader’s policy is uninformative and \( c > 0 \). For the leader’s
policy to be uninformative, the leader must put weight 0 on \( \theta \) in her policy choice. From Equation (7), a strategy in which the leader places a weight of 0 on \( \theta \) solves the first-order condition of the leader if and only if \( k_1 = 0 \). In addition, if the leader’s policy choice is uninformative, then \( \alpha_2(k_0) = 0 \). From Equation (6), if \( \alpha_2(k_0) = 0 \), then the policy choice of the leader will influence the actions of agents by \( \frac{c}{1 + \alpha_1(k_0^*)} \), and thus \( k_1 = \frac{c}{1 + \alpha_1(k_0^*)} > 0 \), which contradicts that \( k_1 = 0 \).

For necessity, we need to show that when \( c = 0 \) there exists an equilibrium in which the leader’s policy is uninformative. Recall from Equation (13) that when \( c = 0 \),

\[
\dd{s}{(k^*)} = \frac{(\rho k_0 + 1)\alpha_2(k_0)\frac{k_1}{1 - k_0} + \rho k_1}{1 + \rho},
\]

which implies that

\[
(1 + \rho)k_1 = (\rho k_0 + 1)\alpha_2(k_0)\frac{k_1}{1 - k_0} + \rho k_1,
\]

which further implies that

\[
[1 - k_0 - (\rho k_0 + 1)\alpha_2(k_0)]k_1 = 0,
\]

which holds if \( 1 = k_0 + (\rho k_0 + 1)\alpha_2(k_0) \) or if \( k_1 = 0 \). Let \( k_1 = 0; \) then an equilibrium follows by Equations (12), (14), and (15) where \( c = 0 \). By Lemma A.2 in the supporting information, any choice by the leader that puts zero weight on \( \theta \) constitutes a best response when \( k_1 = 0 \), which completes the equilibrium characterization.

**Proof of Proposition 3.** Consider the average action for a given \( k \),

\[
A(\theta | k) = \int_0^1 a_i^*(\gamma, b_i) \, di = k_0\theta + k_1\gamma + k_2Q.
\]

Substituting the leader’s policy choice, from Equation (8), into the average action gives

\[
A(\theta | k) = k_0^*\theta + k_1^*\gamma + k_2^*Q = k_0^*\theta + k_1^*\left(\frac{b_L}{k_2^*} + \frac{1 - k_0^*}{k_1^*}\theta - \frac{k_2^*}{k_1^*}Q\right) + k_2^*Q = k_0^*\theta + (1 - k_0^*)\theta + b_L = \theta + b_L.
\]

**Proof of Proposition 4.** The first part follows by combining Lemma 1, that the informational content of policy is strictly decreasing in \( k_0^* \), and Proposition 1, that \( k_0^* \) is strictly decreasing in \( c \).

Next, observe that for any parameter \( x \), total differentiation in Equation (19) gives

\[
\frac{dk_0^*}{dx} = -\frac{d\Omega(k_0^*) - k_0^*}{\Omega'(k_0^*)} \cdot \frac{dk_0^*}{dx}.
\]

By Condition (20), the denominator is strictly negative, and hence, at any stable equilibrium, the sign of \( \frac{dk_0^*}{dx} \) is the same as the sign of \( \frac{d\Omega(k_0^*) - k_0^*}{\Omega'(k_0^*)} \). From this observation, consider

\[
\frac{d\Omega(k_0^*) - k_0^*}{\Omega'(k_0^*)} = \frac{d\Omega(k_0^*)}{\Omega'(k_0^*)} \cdot \frac{dk_0^*}{dx} = \left(\frac{1 + \rho}{1 + \rho}(1 - \alpha_1(k_0^*))\right) \cdot \frac{\alpha_1(k_0^*)(1 - \alpha_1(k_0^*))}{(1 + \rho)\alpha_1(k_0^*)} > 0,
\]

and

\[
\frac{d\Omega(k_0^*) - k_0^*}{\Omega'(k_0^*)} = \frac{d\Omega(k_0^*)}{\Omega'(k_0^*)} \cdot \frac{dk_0^*}{dx} = \left(\frac{1 + \rho}{1 + \rho}(1 - \alpha_1(k_0^*))\right) \cdot \frac{\alpha_1(k_0^*)(1 - \alpha_1(k_0^*))}{(1 + \rho)\alpha_1(k_0^*)} > 0.
\]

The result follows by combining these with Lemma 1, which shows that the informational content of policy is strictly decreasing in \( k_0^* \).

**Proof of Lemma 3.** Observe that if \( k_1 = c = 0 \), then \( \alpha_1(k_0^*) = \frac{\tau_A}{\tau_A + \tau_Q} \). Substitution into Equation (16) and rearranging yields the expressions in the text.

**Proof of Proposition 5.** Consider the utility of agent \( i \) with a leader, \( u(a_i, A, h_i, \gamma; \theta | \gamma = \gamma^*) \), and without a leader, \( u_0(a_i, A, h_i) \). Consider the utilitarian aggregator without a leader:

\[
U_0 = \int_0^1 u_0(a_i, A, h_i) \, di = \int_0^1 -\rho(L(a) - \bar{L}) - (a - \theta - h)^2 \, di
\]
\[ \Delta(\lambda_L; k^*_L) = -\frac{(k^*_L)^2}{\tau_A} - 1 - \frac{1}{\lambda_L} \left( \frac{p + c}{1 + p + c} \right)^2 \]

\[ + \frac{\tau_A}{(\tau_A + (1 + p)\tau_Q)^2} \left( (1 + p)\tau_Q \right)^2 + \frac{1}{\lambda_A(1 + p)^2}. \]

Notice that when \( \Delta(\lambda_L; k^*_L) > 0 \) then indirect welfare is higher with a leader, and when \( \Delta(\lambda_L; k^*_L) < 0 \), indirect welfare is higher without a leader. Notice that

\[ \frac{\partial \Delta(\lambda_L; k^*_L)}{\partial \lambda_L} = -\frac{2k^*_L}{\tau_A} \cdot \frac{\partial k^*_L}{\partial \lambda_L} + \frac{1}{\lambda_L^2}, \]

which, since \( \frac{\partial k^*_L}{\partial \lambda_L} < 0 \) from Expression (25), is strictly positive. As \( \lambda_L \to 0, \Delta < 0, \) and as \( \lambda_L \to \infty, \) the precision of the leader’s policy, \( \tau_Q(k_0) = \lambda_L(1 - k_0)^2 \to \infty \) for any \( k^*_L, \) and consequently, \( \alpha_L(k_0^*) = \alpha_L(k_0) = \tau_A(\tau_A + (1 - k_0)^2\lambda_L + \tau_Q)^{-1} \to 0. \) Since \( k^*_L \) is determined by solving

\[ k^*_L = \frac{\alpha_L(k_0)}{1 + c + p(1 - \alpha_L(k_0))}, \]

this implies that as \( \lambda_L \to \infty, k^*_L \to 0. \) Thus, as \( \lambda_L \to \infty, \Delta > 0. \) By the Intermediate Value Theorem, there exists a unique \( \lambda_L^* \) such that Equation (27) is 0, and for any \( \lambda_L \geq \lambda_L^*, \Delta \geq 0 \) and \( \Delta < 0 \) otherwise.

**Proof of Proposition 6.** By Lemma A.1 in Supplemental Appendix A in the supporting information, the leader’s equilibrium payoff is

\[ -\frac{(k^*_L)^2}{\tau_A} - \frac{(k^*_L)^2}{\lambda_A}. \]

That Condition (29) is strictly increasing in \( c \) follows by Proposition 1 and inspection in Equation (15). That Condition (29) is strictly increasing in \( \tau_A \) follows by Expression (26) and observing that \( k^*_L \) is constant in \( \tau_Q. \)
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Supporting Information

Additional Supporting Information may be found in the online
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A: Supplemental Results
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