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Original Article

Synthesizing Theories of Authoritarian Elections: A Game-Free Analysis

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Bahar Leventoğlu[1], Edmund J. Malesky[1], and Tusi (Ündes) Wen[1]

Abstract
Authoritarian regimes adopt ostensibly democratic institutions for undemocratic purposes. Existing research emphasizes five different functions of elections under authoritarianism, driven by idiosyncratic assumptions about the type of dictator and the structure of information. In this paper, we connect the different functions through a three-actor "game-free" model where all aspects of the regime are determined endogenously, assuming only that elections can reveal new information. Signaling, information acquisition, power-sharing, cooptation, and peaceful exit all emerge as special cases in our model. The framework also integrates the two goals of authoritarian power-sharing with other elites and authoritarian control of citizens. We illustrate the model with examples of elections and non-elections in Brunei, Singapore, USSR, Romania, Mexico, and Benin.

Keywords
authoritarian politics, elections, game theory

Introduction

Authoritarian regimes adopt ostensibly democratic institutions for undemocratic purposes. Since the end of the Cold War, authoritarian regimes have

[1]Duke University, Durham, NC, USA

Corresponding Author:
Bahar Leventoğlu, Duke University, Durham, NC, USA.
Email: bahar.leventoglu@duke.edu

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increasingly used elections – a hallmark of democracy – to serve distinctively authoritarian ends. Over 80% of authoritarian regimes currently hold either legislative or executive elections (Hyde & Marinov, 2012). Two decades of research on authoritarian elections has argued that these elections are not mere window-dressing, but “prolong the political life expectancy of authoritarian rulers” (Morgenbesser, 2016, p. 5).

How exactly do flawed elections contribute to regime longevity? The literature has identified five functions of elections under authoritarianism: signaling, information acquisition, power-sharing, co-optation, and peaceful exit.[1] All five functions help the dictator overcome specific challenges in maintaining power (Geddes et al., 2018). However, work on authoritarian politics is fragmented and lacks a common theoretical framework. Arguments about these functions are largely driven by separate, even mutually exclusive, assumptions and actor pairs that may obscure our understanding of authoritarian politics. The fragmentation of the theoretical literature poses challenges for researchers. Dictators in different countries, or even within the same country at different times, have varying motivations for holding elections based on the political context they face. Predicting their behavior accurately requires a more flexible approach that draws upon all five logics.

In this paper, we develop a framework that synthesizes the different functions of authoritarian elections and explains under what conditions authoritarian regimes will institute elections and for what purposes they will use them. Each of the five functions for leaders to hold elections emerges endogenously as a special case in our model. Following Svolik (2012), in our framework authoritarian dictators worry about two potential threats: a revolt by citizens or a coup by other elites, whom they depend upon to perform regime functions and stay in power. In response to these threats, the dictator can choose to either transfer power to citizens, thereby ending the game through a democratic transition, or attempt to remain in power. If the dictator attempts to remain in power, he must decide whether or not to hold an election, whether or not to engage in fraud over the course of that election, and how much power or resources to share with other elites (power-sharing) or with citizens (cooptation).

These choices are determined by two factors. First, the dictator must consider his strength or infrastructural power - his ability to coerce the citizens and elites into compliance (Slater, 2003), about which he has better information than his interlocutors due to his ability to create parallel military and police forces (Quinlivan, 1999). Second, the dictator must consider his popularity - the citizens’ satisfaction with his rule. This information is dispersed among the citizens and can be revealed through elections (Wintrobe, 1990). Critically, in our framework both strength and popularity are distinguished by the true state of the world (how strong and popular is the dictator in reality?), which we refer to as the political reality, and the common belief held

by all political actors about these factors, which we refer to as the political consensus. The political consensus is probabilistic and reflects how much the dictator *appears* to be feared and loved by citizens. Reality and consensus are the same when political actors have an accurate understanding of a dictator's strength and power, but they may also differ dramatically. The relationship between reality and consensus provides insight into the dictator's behavior regarding elections. Mismatches allow weak and unpopular dictators to behave as strong and popular ones (pooling equilibria) but also provide opportunities for strong dictators to differentiate themselves from weak ones (separating equilibria).

Using these distinctions, we can show the contexts where the five canonical theoretical predictions for authoritarian elections are most likely to apply. When the consensus is that a dictator is likely to be both strong and popular, dictators will use elections to reveal popularity to the public. Dictators will use elections to gather *information* without necessarily making it public when the political consensus is that the dictator is likely to be strong but unpopular. Only weak and unpopular dictators will reveal this information to the public; strong and unpopular dictators will keep the information to themselves and deploy electoral fraud to stay in office. Once elections allow a dictator to learn their popularity, *power-sharing* and *cooptation* can more precisely target elites and citizens. When the political consensus holds that a dictator is weak but popular, while the dictator is actually strong, the dictator will hold an election to *signal* his strength and distinguish himself from a weak dictator. Elections facilitate a peaceful *exit* when a weak dictator's unpopularity is revealed to be so severe that fighting for power is no longer possible.

Critically, our model fills a gap in the literature by also explaining the reasons why 20% of dictators do not hold elections, which occurs under three settings. The first setting occurs when the political consensus holds that a dictator is likely to be both strong and popular, but unrest is sufficiently costly for the perpetrators. In this setting, the dictator prefers withholding elections to disincentivize unrest by increasing uncertainty. Second, when the political consensus holds that a dictator is likely to be weak but popular, but the dictator is actually weak, the dictator will be reluctant to reveal his true popularity. Third, when the political consensus holds that a dictator is likely to be both weak and unpopular, dictators will reveal their strength through power-sharing and co-optation without holding elections, thereby keeping their unpopularity hidden.

To synthesize the discussion of authoritarian elections, we make four methodological advances over existing formal models of authoritarian elections. First, we develop a three-actor model that incorporates the utilities and strategic behavior of a dictator, other elites, and citizens. Dictators face the dual dilemmas of sharing power with other elites to avoid coups and placating or repressing citizens to avoid rebellions (Svolik, 2012), but previous work

has modeled only two of these actors in different dyadic models. Second, rather than relying on regime typologies as explanatory variables, our approach focuses directly on the strategic interactions among political actors. This allows our framework to endogenize regime types and avoid the many pitfalls of using regime types to explain political outcomes (Svolik, 2012). Third, we employ a "game-free" approach that predicts all aspects of the regime without imposing structural assumptions about any specific game form.[2] Previous work has relied on particular game forms (i.e., signaling or bargaining models), which require assumptions about the sequencing of play, rules about acceptance of offers, and other specification choices that have strong implications for the results obtained (Banks, 1990a; Fey & Ramsay, 2009). Fourth, we employ an extremely parsimonious set of assumptions on the information structure: 1) an incumbent dictator's strength is his private information; 2) information about an incumbent dictator's popularity is dispersed among citizens; and 3) elections, however flawed or fraudulent, reveal some information about the popularity of an incumbent dictator. Previous work has relied on widely different and sometimes even contradictory assumptions about dictator strength and knowledge of that strength that have out-sized influence on conclusions about the motivations for holding elections. Although we appeal to parsimony in our selection of assumptions and focus on authoritarian elections, our framework is sufficiently general to permit alternative assumptions, so that future researchers can use our framework to examine the logical consequences of different assumptions or to study other authoritarian institutions, such as assemblies (Gandhi, 2008; Geddes et al., 2018; Wright, 2008), parties (Meng, 2021; Svolik, 2012), and courts (Moustafa, 2014; Wang, 2015).

Methodologically, we combine crisis bargaining and the principal-agent framework of contract theory to systematically study phenomena in the strategic context of authoritarian politics, which is characterized by weak institutions and structural power asymmetry. Weak institutions refer to the absence of binding constraints that prevent political actors from using violence to achieve their political objectives. This implies that violence is the ultimate arbiter of disagreements (Svolik, 2012), which justifies the crisis bargaining framework, wherein failure to reach an agreement leads to open conflict. The structural power asymmetry between the dictator and the rest of the society, in contrast to democracy, refers to the dictator's monopoly on power and coercive capacity, which enables him to control the rest of the population. This justifies the principal-agent framework, where the dictator as the principal has full power to propose his optimal political contract to the elites and citizens. Since the dictator possesses private information about his strength, we develop a principal-agent framework with an informed principal (Leventoğlu, 2023; Maskin & Tirole, 1990, 1992a). The mechanism design approach (Fearon, 1995; Fey & Ramsay, 2011) embedded in the framework

allows us to analyze the strategic interactions among political actors without being restricted by a specific game form, which makes our conclusions agnostic to regime particularities and generalizable to a wide range of scenarios.

Our argument proceeds as follows. First, we review the literature on the five canonical theories of authoritarian elections, highlighting the incompatibility of their core assumptions and conclusions that necessitates a synthetic model. Second, we define key concepts in our theory and describe our methodological approach. Third, we describe our "game-free" formal model along with its key predictions. In the fourth section, we illustrate how the five canonical motivations emerge as special cases and provide real-world examples to illustrate the dictator's strategic behavior. We conclude with a discussion of the implications of our model for future work on authoritarian elections and other institutions.

Literature Review

Two broad categories of challenges delineate the contours of authoritarian politics: the problem of authoritarian power-sharing and authoritarian control (Geddes et al., 2018; Svolik, 2012). On the one hand, the dictator faces challenges from within the ruling coalition, wherein regime elites dissatisfied with the status quo or wishing to take control may stage a coup to replace the dictator. Effective authoritarian power-sharing among the elites helps stabilize the ruling coalition and prevents intra-elite conflicts from spiraling out of control. On the other hand, the dictator faces potential threats from disgruntled citizens if accumulating grievances culminate into a revolt or even revolution to overthrow the regime. Effective authoritarian control serves to detect and diffuse such mass movements, often before they materialize. In both scenarios, elections are a useful addition to the institutional toolkit of a dictator facing these challenges. The existing literature has argued that a dictator can use elections to achieve five distinct objectives.

First, a dictator can use elections to gather information about popular support and potential opposition (Geddes & Zaller, 1989; Miller, 2015). Elections can show in which parts of the country the leader enjoys popular support or where individuals are dissatisfied (Magaloni, 2006). They can also reveal which lower-level officials or members of the opposition party are popular and therefore targets for promotion or cooptation, or inversely, which lower-level officials in the regime are underperforming and therefore deserving of punishment or replacement (Geddes et al., 2018). In addition, elections may allow the dictator to monitor the competence and loyalty of local agents, thereby mitigating the principle-agent problem of authoritarian rule (Lukinova et al., 2011; Malesky & Schuler, 2011; Trinh, 2022). In sum, elections provide a dictator with valuable information that can be used to

target specific individuals or segments of society to incentivize cooperation through rewards or punishments (Ames, 1970; Brownlee, 2007).

Second, the dictator can use elections to signal his popularity to potential challengers within and outside the ruling coalition. The signaling and information-gathering functions of elections are inextricably linked, because election results favorable to the incumbent necessarily serve as a public signal of the incumbent's popularity (Cox, 2009; Egorov & Sonin, 2014; Gehlbach & Simpser, 2015; Little et al., 2012). By creating super-majorities on election days, either through government performance and transfers (Magaloni, 2006) or through electoral fraud (Simpser, 2004), dictators can demonstrate that challenging the regime is futile, discouraging citizens from voting for the opposition and opposition party members from coalescing to challenge the regime. Such signaling can discourage anti-regime collective action even when the public is aware that fraud has been committed, because perpetrating fraud itself demonstrates ironclad control (Simpser, 2013). Closely related is the argument that dictators can stage elections to brand the regime's legitimacy. Winning elections broadcasts the dictator's popularity among the citizens, thereby justifying his rule. Beyond their symbolic utility, elections further enhance the incumbent's legitimacy through the willing participation of the opposition, which simultaneously discredits the opposition elites and their causes (Anderson, 1999; Schedler, 2002b).

Third, elections serve as a power-sharing mechanism to mitigate intra-elite conflict by providing a platform for elites to resolve disputes, reach compromises, and share the spoils (Acemoglu & Robinson, 2005; Magaloni, 2008; Svolik, 2012). If the dictator does not hold up his end of the bargain with the other regime elites who support him, they can use the institution of elections to oust him, creating a credible commitment mechanism to hold the dictator accountable.

Fourth, the dictator can use elections to co-opt socioeconomic elites, opposition leaders, and even ordinary citizens into the establishment, providing them with resources or limited policy influence and preemptively defusing any anti-regime mobilization by removing potential instigators (Blaydes, 2010; Boix & Svolik, 2013; Gandhi, 2008; Gandhi & Przeworski, 2006; Lust-Okar, 2006). The co-opted individuals then become vulnerable to manipulation by the dictator, who may prevent meaningful political contestation (Lust-Okar, 2005) or create divisions that weaken any opposition within the establishment (Diaz-Cayeros & Magaloni, 2001).

Fifth, a dictator may use elections as an exit option to avoid the fate of being overthrown by a revolution (Acemoglu & Robinson, 2005; Cox, 2009). Elections allow a dictator with declining strength and/or popularity to peacefully exit without the threat of conflict.

Although these arguments may capture different facets of authoritarian elections, they are often derived using separate, even mutually exclusive,

assumptions about the dictator's type and information. For example, when researchers assume that the dictator knows that he is strong relative to the opposition, they tend to argue that the dictator uses elections to signal strength (Magaloni, 2006; Simpser, 2013). When researchers assume that the dictator knows he is weak, they tend to portray elections as mechanisms for power-sharing and/or co-optation (Gandhi & Lust-Okar, 2009; Gandhi & Przeworski, 2007; Magaloni, 2008). When scholars assume that the dictator does not know his strength, they tend to view elections as an information-gathering tool through which the dictator learns about citizens' sentiments (Acemoglu & Robinson, 2005; Cox, 2009; Geddes et al., 2018; Geddes & Zaller, 1989). When researchers assume that a weak dictator faces imminent threats of removal, they tend to rationalize elections as an exit option for the dictator (Cox, 2009). When analysts assume that elections confer legitimacy, they tend to view elections as a means of legitimizing the dictator's rule (Schedler, 2002a).

While these arguments may provide useful insights, they may also be misleading. For example, the information-gathering arguments fail to account for the strategic implications of information, since elections also inform the elites and citizens of the dictator's potential vulnerability to a coup or revolt (Bunce & Wolchik, 2011; Tucker, 2007), which can provide both the public information and the focal point necessary for mass coordination (Little et al., 2012) and help citizens solve collective action problems (Olson, 1971) and information asymmetry (Kuran, 1989; Kuran & Romero, 2019) in coordinating an effective revolt against the regime. Signaling arguments overlook the conceptual distinction between the dictator's strength and popularity. Even if one conceptualizes a dictator's popularity as his strength, it is illogical to argue that the dictator uses elections to signal his popularity, which is dispersed among citizens and not his private information to begin with. Similarly, electoral fraud cannot signal strength when strength equals popularity. A popular dictator will win elections without fraud, making electoral fraud unnecessary, even counterproductive (Magaloni, 2006). When strength equals coercive power, if all it takes for a dictator to signal strength is to commit fraud and declare electoral victory regardless of the actual election results (Simpser, 2013), what prevents a weak and unpopular dictator from strategically committing fraud to win an election? We argue that the information-gathering and signaling functions of elections are complementary, which may partly explain why a dictator chooses to institute elections over other alternative instruments of authoritarian rule (Little, 2013).

In addition, existing arguments emphasize different bilateral relationships. Cooptation focuses on the dictator and citizens, power-sharing examines the dictator and elites, signaling studies the dictator with either elites or citizens, and information acquisition describes the dictator with either elites or citizens. Treating each of these relationships bilaterally, as researchers tend to do, can

lead to overlooking strategic interactions involving more than two political actors. Such tripartite interactions are a critical component in canonical depictions of revolutions (Skocpol, 1979).

Toward a Common Theoretical Framework

In this paper, we propose a conceptual and theoretical framework that simultaneously examines different functions of authoritarian elections that have often been discussed in isolation. Consistent with the broader literature on authoritarian politics, this framework integrates authoritarian power-sharing and authoritarian control by modeling the interactions among the dictator, regime elites, and the citizens. The framework is sufficiently general to permit alternative assumptions, and can be extended to analyze other authoritarian institutions.

We first make the crucial conceptual distinction between a dictator's strength and popularity. The state of the world is jointly determined by these two features. Strength can be thought of as economic, military, or informal coercive capacity over other elites and citizens. Popularity is measured by citizens' satisfaction with the leader. A dictator can gain popularity through many means, including but not limited to redistribution, good governance, and ideological propaganda. Recent work by Mitchell (2023), which predicts authoritarian elections when a dictator has invested heavily in military and police technology and capacity (strength) and garnered citizens' support through public spending (popularity), highlights the importance of distinguishing the two concepts. The dictator's true strength is his private information,[3] but his popularity is dispersed information hidden among the citizens. We take a minimalist approach to modeling elections as a mechanism that reveals the dictator's popularity, in line with previous theoretical treatments of the subject (Little et al., 2015; Miller, 2015). Information about the citizens helps the dictator make subsequent political decisions (Blaydes, 2010; Cox, 2009). Other potential functions of elections, such as signaling incumbent strength to domestic audiences (Egorov & Sonin, 2014; Magaloni, 2006), arise endogenously through strategic interactions. Thus, in our conceptualization, information-gathering is the most fundamental function of authoritarian elections. We show that this parsimonious assumption about the electoral function is sufficient to unify our discussions of authoritarian elections, which are typically treated under separate assumptions in the literature.

Such generalization is made possible by our methodological approach, which combines the crisis-bargaining and principal-agent frameworks to model the strategic choices of political actors. Instead of relying on a specific game form, our framework is completely game-free. It endogenously determines all regime aspects, in other words, the game played by the dictator,

regime elites, and citizens. In the crisis bargaining literature, game-free approaches have been used to study the conditions for peace and war in international relations (Banks, 1990; Fey & Kenkel, 2020; Fey & Ramsay, 2009). The same premise for crisis bargaining also applies to authoritarian politics, where failure to reach an agreement leads to open conflict in the forms of coup or revolt. The principal-agent framework has been applied to diverse contexts in both economics and political science with informed agents. However, we build on another line of work with informed principals (Leventoğlu, 2023; Maskin & Tirole, 1990, 1992b) that can be used to study the dictator's institutional choices.

To conduct the analysis with this game-free framework, we apply the techniques of contract theory and have the dictator propose his optimal contract to the elites and citizens. The contract voluntarily agreed upon by all political actors constitutes a perfect Bayesian equilibrium of a game chosen by the dictator, which we interpret as a stable political contract under authoritarianism. A political contract consists of the dictator's decision on whether to transfer power to the citizens, whether to hold elections, whether to engage in election fraud, how much power to share with the elites and the citizens, the probability of a coup attempt by the elites and the probability of revolt by the citizens. The dictator's decision may reveal information about his strength and a fair election reveals information about his popularity. If the dictator commits electoral fraud, the information is not fully revealed, which we explain in detail later. A political contract is individually rational if it provides each agent with a payoff that is at least as large as what that agent can obtain unilaterally. Therefore, the dictator must guarantee the elites at least their expected payoff from a coup attempt, and citizens their expected payoff from a revolt. These payoffs are determined by how much the players learn from the dictator's actions and from elections, if any. If the optimal political contract prescribes different actions for dictators of different strengths, the contract must also ensure that no dictator has an incentive to take the action prescribed for the other type. This imposes an incentive compatibility constraint on the set of feasible contracts. Among the individually rational and incentive-compatible contracts, the dictator chooses the one that provides him with the highest expected payoff. The optimal contract may fully or partially reveal or completely hide the strength and popularity of the dictator. While popularity is revealed in fair elections, strength may be revealed by the dictator's choice of political contract. The outcome is determined by the dictator's actual strength and popularity and the society's perception of them, which we formalize below as political consensus. This political contract implies the legitimacy of the authoritarian rule, even if it includes a "clause" for possible coups or revolts. This general conceptualization of legitimacy that emerges from our analysis is free of ideological biases and deepens our understanding of the nature of authoritarian rule.[4]

In several ways, our model responds to Przeworski's recent critique of formal models of authoritarian regimes regarding ideological biases and methodological fashions (Przeworski, 2022). First, our model is agnostic about the dictator's governing approach, allowing for the possibility that a dictator who is willing and able to redistribute sufficiently may enjoy popular support. We also consider the scenario in which a dictator voluntarily relinquishes power and initiates a democratic transition; thus, we do not exclude the scenario in which the dictator improves the state of the world. Second, our game-free approach to modeling the strategic interactions of the dictator, elites, and citizens under incomplete information departs from widely used models of authoritarian regimes. The critical information friction in our model concerns both the strength of the dictator and the support of the citizens. By explicitly distinguishing these two concepts, and by assuming uncertainty about the corresponding parameters in the model, we limit the dictator's ability to implement the simplistic recipe of "manipulate and repress," since he knows only his own strength, but is ignorant of the citizens' sentiments. The richer strategic space allows for a more realistic analysis of authoritarian rule.

Model

Our model integrates a parsimonious set of assumptions and features in the literature essential for our theory. An extensive scholarly work studies the strategic interaction between a dictator and a rival (Cox, 2009; Egorov & Sonin, 2020; Magaloni, 2008; Rozenas, 2016a), between a dictator and citizens (Gandhi & Przeworski, 2006; Little et al., 2015), between a dictator and the elites (Boix & Svolik, 2013), among a dictator, the elites, and non-strategic citizens (Gehlbach & Simpser, 2015) and among a dictator, the elites and strategic citizens (Casper & Tyson, 2014; Dorsch & Maarek, 2018). We follow the last group of scholars and assume three strategic players, the dictator (D), elites (E), and citizens (C).[5]

We model authoritarian rule as the ability to make unilateral decisions about all aspects of the regime. D is in power. We assume that D decides whether to transfer power to C, hold elections in his regime, and engage in electoral fraud. Elections can be held at different levels (Gandhi & Lust-Okar, 2009). We study elections for the head of state at the national level and election-day fraud (Little et al., 2012). We model power sharing and co-optation as sharing the proceeds of the regime with elites and citizens respectively. Unlike earlier work that treats institutions as power-sharing devices with fixed sharing rules (e.g. Boix and Svolik (2013); Magaloni (2008)), we fully endogenize and rationalize these decisions. Because of this, D chooses how much to share with C and E along with other aspects of the regime. For example, if D holds a fair election, his sharing decision depends on election results. Then, the rationality of D will yield that D shares as little as

possible with C and E, resembling the minimal winning coalition argument of Bueno de Mesquita et al. (2003).

As in Svolik (2012) and Egorov and Sonin (2020), we assume that D is vulnerable to social unrest (also see Bueno De Mesquita (2010); Edmond (2013); Schadmehr and Bernhardt (2019)). C may revolt and E may attempt a coup at any time. Both revolts and coup attempts end the game. If a revolt succeeds, C removes the dictator and takes control of the power. If a coup succeeds, E gains full control. D retains power after a failed revolt or coup. After a revolt or coup, the player in power does not need to share the proceeds with other players. We assume that simultaneous revolt and coup attempts are too costly for D so that D avoids a joint revolt and a coup attempt at all costs. Therefore, we do not make any assumptions about how the state is governed after D is removed by a joint revolt or a coup attempt. Our analytical approach can be extended for such a possibility. It also allows for complementarity between a simultaneous revolt and a coup attempt.

We distinguish between D's popularity and strength. Popularity indicates citizens' level of satisfaction with the regime. As in Gehlbach and Simpser (2015); Little et al. (2015); Rozenas (2016a), we assume that this information is distributed among citizens so that D's popularity is unknown by any individual actor. Fair elections reveal this information (Gehlbach & Simpser, 2015). A popular D wins a fair election, and an unpopular D loses it.

D's strength relates to his ability to coerce the citizens and elites into compliance (Slater, 2003), which includes strategies against potential revolt and coup attempts, such as coup-proofing (Quinlivan, 1999; Sudduth, 2017). Dictators often create overlapping authorities and compartmentalize subordinate responsibilities. Particularly, the creation of paramilitary organizations that serve alongside the formal military protects the dictator by dispersing both power and knowledge about the full extent of his coercive capacity. We assume that C and E do not know D's strength (Casper & Tyson, 2014) and that D has better information about his strength.

Formally, D can be strong or weak, and C can be happy or unhappy with the dictator. A happy C indicates a popular D. There are two types of informational friction concerning D's strength and popularity. Nature determines D and C's types at the beginning. D is strong with probability p, weak otherwise. C is happy and more willing to support the regime with probability q and unhappy and less willing to support the regime otherwise. A larger p indicates that D is perceived to be more likely to be strong. A larger q indicates that C is perceived to be more likely to be supportive of the regime. p and q model the political consensus on D's strength and popularity, respectively. The realized types of D and C represent the political reality.

D's type is his private information. He learns his type at the beginning of the game. His actions may reveal his type. This introduces information asymmetry and signaling. After Nature determines C's type, nobody observes it. This

introduces imperfect information. However, if elections are held, D wins the elections if C is happy, D loses the elections otherwise. In other words, a fair election serves only as a public signal about D's popularity, as in a growing literature on authoritarian elections (Chernykh & Svolik, 2015a; Cox, 2009; Egorov & Sonin, 2020; Gehlbach & Simpser, 2015; Little et al., 2012).

D decides whether to hold elections. We assume that D can engage in election-day fraud by declaring victory even when he loses an election (Chernykh & Svolik, 2015a). This decision may be contingent on D's strength. Therefore, an electoral fraud may reveal nothing or only partial information about D's strength and popularity. If there is no electoral fraud, the elections reveal D's popularity to everyone. The regime is autocratic, so D can decide to stay in power whether he wins or loses the elections.

We denote D's type by $\{s, w\}$, where s stands for strong and w stands for weak. C's type is denoted by $\{h, u\}$, where h and u stand for happy and unhappy, respectively. D and C's types affect the success probabilities of a revolt and a coup. α_{dc} is the probability that a revolt succeeds and β_{dc} is the probability that a coup succeeds when $D = d \in \{s, w\}$ and $C = c \in \{h, u\}$. We assume that both revolt and coup succeed with a higher probability when D is weak,

$$\alpha_{wc} > \alpha_{sc} \text{ and } \beta_{wc} > \beta_{sc}$$

for each $c \in \{h, u\}$. They are also higher when C is unhappy,

$$\alpha_{du} > \alpha_{dh} \text{ and } \beta_{du} > \beta_{dh}$$

for each $d \in \{s, w\}$.

Both revolt and coup are costly for the dictator and the initiator of the revolt or coup. The cost of revolt is κ_D for D and κ_C for C. The cost of a coup is η_D for D and η_E for E. We assume that a simultaneous revolt and coup attempt is prohibitively costly for D, so he prefers to eliminate such a possibility at all costs. This implies that D may choose to face either the risk of revolt or the risk of coup attempt, but he prefers transferring power to facing both risks simultaneously. We normalize the payoff from full power control to 1.

Our model incorporates a dictator, elites, and citizens, their endogenous and rational decisions on transferring power, holding elections and engaging in election fraud, sharing with elites and citizens, revolt, and coup attempts. All of these decisions are contingent on the state of the world. D may use elections and election fraud both to uncover his popularity and to signal his strength. We do not know of any other theory that incorporates all of these aspects. For example, Gandhi and Przeworski (2006), Boix and Svolik (2013), Casper and Tyson (2014) and Dorsch and Maarek (2018) do not have elections, Little et al. (2012), Gehlbach and Simpser (2015) and Rozenas (2016a) do not study the dictator's decision to hold elections, Magaloni (2008) studies institutions as power-sharing devices with exogenously given power-

sharing rules, Cox (2009) does not study elections as a strategic device to signal strength, Egorov and Sonin (2020) do not study the information-gathering aspect of elections. On the other hand, we exclude some possibilities from our model. For example, neither C nor E conspire against D by investing in the creation of a subversive organization (Magaloni, 2008), there are no bureaucrats (Gehlbach & Simpser, 2015) and D does not engage in pre-election manipulation of the electoral process (Rozenas, 2016a). Although these possibilities may be relevant in specific cases, we prioritize parsimony and genearality in our attempt to construct a synthetic theoretical framework. Further extensions may consider incorporating these possibilities as appropriate.

The Principal-Agent Framework

Traditionally, the literature studies the strategic interaction among a dictator, regime elites, and citizens in specific game forms. The findings of this approach are sensitive to the assumptions of the specific game, such as the timing of the actors' moves (Fey & Ramsay, 2009). We depart from this tradition. Since D has full control of the regime and can shape C and E's incentives for revolt and coup attempts, we assume that D considers all possible games and chooses the one that works best for him. We propose a principal-agent framework to solve this problem in a game-free way, where D is the principal, and C and E are the agents.

Formally, D engages in crisis bargaining with C and E under the possibility of a revolt and a coup attempt. D has full bargaining power and sets the terms to negotiate with C and E. However, the terms must be agreed on voluntarily by all actors.

D's type is his private information, and it determines all players' payoffs from a revolt and a coup attempt. This is referred to as common values. Since simultaneous revolt and coup attempt are prohibitively costly for D, D either shares enough with E to eliminate any possibility of a coup, or shares enough with C to eliminate any possibility of a revolt, or transfers power to C.

Consider the case in which D shares enough with E so that there is no risk of a coup. Then, D's problem becomes a principal-agent problem with an informed principal and common values (Leventoğlu, 2023; Maskin & Tirole, 1992b) in which D is the principal, C is the agent and D shares with E just enough to avoid a coup attempt. The analysis and the results for the case in which D eliminates risk of a revolt are similar, therefore we do not present them. D's decision between buying out E or C depends on D's expected payoff from each alternative. For example, if a coup attempt is too costly for E, then D needs to share little with E to avoid a coup and he may prefer to buy out E in this case. D needs to share more with E as the cost of attempting a coup decreases. D may prefer to buy out C instead if the cost of a coup attempt becomes sufficiently low for E.

The terms that D offers to C and E are referred to as a contract in the principal-agent framework. We will refer to them as a political contract. A political contract includes (1) D's decision to retain power or to transfer power to the citizens (democratize); (2) D's decision to hold or withhold elections or to engage in electoral fraud; (3) D's transfer schedule to the citizens in exchange for cooperation, which represents cooptation; (4) D's transfer schedule to the elites in exchange for cooperation, which represents power-sharing; (5) the probability of a revolt by the citizens; and (6) the probability of a coup attempt by the elites.

We refer to a revolt and a coup attempt collectively as unrest. A stable political contract must be voluntarily agreed upon by all rational political actors, ensuring that no one can benefit from unilateral deviation. This implies that such a political contract, though authoritarian in nature and may involve election fraud and unrest, is legitimate by virtue of voluntary agreement. This corresponds to an individual rationality constraint: it implies that C's and E's expected payoffs from the contract are at least as large as their payoffs from revolt and coup attempt, respectively.

A political contract reveals D's strength when a strong D and a weak D offer different contracts. In this case, neither type of D has an incentive to mimic the other type by offering the contract of the other type. This imposes an incentive compatibility constraint on the set of feasible contracts.

We refer to such a contract as an incentive compatible political contract with voluntary agreements.[6] Any Bayesian Nash equilibrium outcome of an arbitrary game among D, C and E can be replicated by an incentive compatible political contract with voluntary agreements (Banks, 1990a; Fey & Ramsay, 2011a). This provides a game-free way to study all equilibria of all possible games. Then the problem turns into solving for the contract that yields the highest expected payoff for D among all incentive compatible political contracts with voluntary agreements. The optimal political contract can be either separating, in which a strong D and a weak D offer different contracts, or a pooling contract, in which both types of D offer the same contract (Leventoğlu, 2023; Maskin & Tirole, 1992b).

To illustrate, we formulate the principal-agent problem when D does not hold elections. Given D's decision about elections, let $v = (\gamma, \rho, \sigma, \tau^C, \tau^E)$ denote the rest of a political contract in the rest of the game, where $\gamma \in \{0, 1\}$ is the decision to hold on to power ($\gamma = 1$) or to step down and transfer power to C ($\gamma = 0$), $\rho \in [0, 1]$ is the probability that C revolts, $\sigma \in [0, 1]$ is the probability that E attempts a coup, τ^C and τ^E are the amounts that D shares with C and E, respectively, when there is no unrest. Let $\tau = (\tau^C, \tau^E)$. A separating political contract depends on D's type. In that case, we denote it as v_s for a strong D and as v_w for a weak D.

In a typical game, C chooses ρ and E chooses σ. In the principal-agent setup, these probabilities are induced by D's choice. For example, if τ^C is less than C's expected payoff from revolting, then $\rho = 1$, if τ^C is greater than C's expected payoff from revolting, then $\rho = 0$, and if τ^C is equal to C's expected payoff from revolting, then ρ can take any value in [0,1].

Since D does not induce simultaneous risk of revolt and coup attempt, consider the case with no risk of coup, $\sigma = 0$. Since D withholds elections, C's type is not revealed to any player. First, consider a separating political contract that reveals D's type. Then the probabilities of success of revolt and coup can be computed as

$$\begin{aligned}\alpha_s &= q\alpha_{sh} + (1-q)\alpha_{su}\\ \alpha_w &= q\alpha_{wh} + (1-q)\alpha_{wu}\\ \beta_s &= q\beta_{sh} + (1-q)\beta_{su}\\ \beta_w &= q\beta_{wh} + (1-q)\beta_{wu}\end{aligned}$$

When D is revealed to be weak, C's expected payoff from a revolt is $\alpha_w - \kappa_C$. If this is less than zero, C does not revolt. So C can achieve a payoff of $\max\{0, \alpha_w - \kappa_C\}$ on its own. Individual rationality implies that a weak D must offer C at least this amount, that is

$$\tau^C \geq \max\{0, \alpha_w - \kappa_C\}$$

E can collect τ^E only when there is no revolt, which happens with probability $1 - \rho$. So the individual rationality constraint for E becomes

$$(1-\rho)\tau^E \geq \max\{0, \beta_w - \eta_E\}$$

Finally, if the players settle on (τ^C, τ^E), D's payoff is $1 - \tau^C - \tau^E$. If this is less than zero, then D is better off by transferring power. In this case, when C does not revolt, D transfers power and E never collects τ^E, so E's expected payoff is zero and E would prefer to attempt a coup. Since D will never induce a simultaneous revolt and coup attempt, this implies that $1 - \tau^C - \tau^E \geq 0$ must hold for any political contract in which D does not transfer power, that is $\gamma = 1$. This can be summarized as $\gamma(1 - \tau^C - \tau^E) \geq 0$.

A strong D does not have any incentives to mimic a weak D. So, the best offer v_w for a weak D can be solved without imposing any incentive compatibility constraint as

$$v_w = \text{argmax}_v d_w(v) = \gamma\big(\rho((1-\alpha_w) - \kappa_D) + (1-\rho)\big(1 - \tau^C - \tau^E\big)\big) \quad (P_w)$$

$$\text{subject to}$$

$$\tau^C \geq \max\{0, \alpha_w - \kappa_C\},$$

$$\tau^E \geq \frac{\max\{0, \beta_w - \eta_E\}}{1-\rho} \text{ and}$$

$$\gamma\big(1 - \tau^C - \tau^E\big) \geq 0$$

where $v = (\gamma, \rho, \sigma, \tau^C, \tau^E)$ denotes an arbitrary political contract that a weak D can choose and $d_w(v)$ represents his expected payoff from v. C and E's individual rationality constraints are determined by α_w and β_w since D is revealed to be weak.

Given the solution of (P_w), the best offer for a strong D can be solved similarly with the addition of an incentive compatibility constraint:

$$v_s = \text{argmax}_v d_s(v) = \gamma\big(\rho((1-\alpha_s) - \kappa_D) + (1-\rho)\big(1 - \tau^C - \tau^E\big)\big) \quad (P_s)$$

$$\text{subject to}$$

$$\tau^C \geq \max\{0, \alpha_s - \kappa_C\},$$

$$\tau^E \geq \frac{\max\{0, \beta_s - \eta_E\}}{1-\rho}$$

$$h\big(1 - \tau^C - \tau^E\big) \geq 0 \text{ and}$$

$$d_w(v_w) \geq d_w(v) = \gamma\big(\rho((1-\alpha_w) - \kappa_D) + (1-\rho)\big(1 - \tau^C - \tau^E\big)\big)$$

where $v = (\gamma, \rho, \sigma, \tau^C, \tau^E)$ denotes an arbitrary political contract that a strong D can choose, $d_s(v)$ represents his expected payoff from v, and the incentive compatibility constraint $d_w(v_w) \geq d_w(v)$ guarantees that a weak D does not have any incentives to offer v instead of v_w. Note that C and E's individual rationality constraints are determined by α_s and β_s since D is revealed to be strong.

The solutions to (P_w) and (P_s) represent the best separating political contract for a strong D. Alternatively, both types may offer the same contract. In this case, D's type is not revealed so the probabilities of success of a revolt and a coup attempt can be computed as

$$\alpha = p\alpha_s + (1-p)\alpha_w \text{ and}$$
$$\beta = p\beta_s + (1-p)\beta_w$$

and the best pooling political contract can be solved as

$$v_p = \text{argmax}_v d(v) = \gamma\big(\rho((1-\alpha) - \kappa_D) + (1-\rho)\big(1 - \tau^C - \tau^E\big)\big)$$

$$\text{subject to}$$

$$\tau^C \geq \max\{0, \alpha - \kappa_C\},$$

$$\tau^E \geq \frac{\max\{0, \beta - \eta_E\}}{1-\rho} \text{ and}$$

$$\gamma\big(1 - \tau^C - \tau^E\big) \geq 0$$

where $v = (\gamma, \rho, \sigma, \tau^C, \tau^E)$ denotes an arbitrary pooling political contract that both types D can choose and $d(v)$ represents their expected payoff from v.

The best political contract without elections is separating if $d_s(v_s) > d(v_p)$ and pooling if $d_s(v_s) < d(v_p)$. In the appendix, we solve for the best political contracts with elections and electoral fraud. Since a strong D does not have to pretend to be weak, the optimal political contract is given by the best among these alternatives for the strong D.

Model Predictions

The full analysis is presented in an Online Appendix. A stable political contract must be voluntarily agreed upon by all rational political actors, ensuring that no one can benefit from unilateral deviation. The political contract of an authoritarian regime is jointly determined by the shared beliefs about the dictator's strength and the citizens' satisfaction. This means that what sustains an authoritarian regime through its political contract is ultimately the common belief, or *political consensus*, held by all political actors regarding the dictator's strength and popularity. This consensus is probabilistic in nature and reflects how much the dictator *appears* to be feared and loved by the citizens, which may or may not deviate from the underlying political reality.[7] The partitioning of the parameter space in Figure 1 illustrates different types of equilibria according to the political consensus. Each of the four partitions represents a specific configuration of political consensus in our model, in the sense that the common belief of the society regarding the dictator's strength and popularity can be one of the four possibilities: likely to be strong and popular (upper-right), likely to be weak and popular (upper-left), likely to be strong and unpopular (lower-right), likely to be weak and unpopular (lower-left).

An important implication of the probabilistic conceptualization of political consensus is that there may be gaps between the political consensus and the underlying political reality in terms of the true state of a dictator's strength and citizens' satisfaction. In other words, under any of the four general political consensuses captured in Figure 1, the dictator can be either strong or weak and the citizens can be either satisfied or dissatisfied in reality. Each of the four general political consensuses designates an equilibrium. In some of these equilibria, known as separating equilibria, the dictator signals his strength. In others, known as pooling equilibria, the dictator's strength is hidden. Similarly, in some of these equilibria, the citizens' satisfaction is revealed through elections, while in others, it is hidden by the absence of elections or the presence of electoral fraud. Whenever a strong dictator signals his strength through his actions, with or without elections, he necessarily bears the risk of unrest, which a weak dictator avoids by sharing more or by transferring power to the citizens.

Specifically, there exists a threshold in the probability of the dictator being strong, represented by p in our model, which separates scenarios characterized

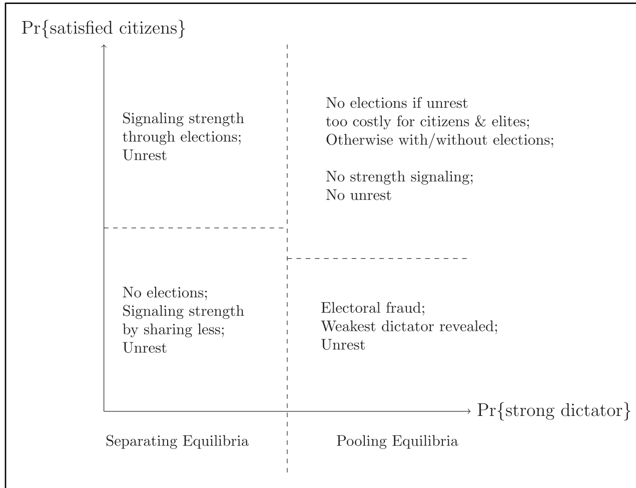

Figure 1. Political consensus parameter space.

by the pooling equilibria and separating equilibria. Below this threshold, the political consensus is such that the dictator is sufficiently likely to be weak, so a strong dictator has incentives to signal his strength despite the risk of triggering a coup or a revolt. Above this threshold, the political consensus is such that the dictator is sufficiently likely to be strong, so a strong dictator is content with transfer schedules that match the lower expected payoffs of coup and revolt to appease elites and citizens. The weak dictator pretends to be strong by offering the same contract. In the pooling equilibria, regardless of the presence of elections, the dictator is able to avert unrest through peaceful power-sharing with the elites and cooptation of citizens, or even through voluntary democratization. In the separating equilibria, regardless of the existence of elections, the strong dictator always faces the risks of coups or revolts, since the willingness to face such risks is what distinguishes a strong dictator from a weak one in any separating equilibrium.

The probability that citizens are satisfied drives the dictator's decision to hold elections. Withholding elections may create risk for the citizens and elites when there is no popular support for unrest. But, elections reveal information about public sentiment and may effectively signal the dictator's strength.

When the probability of the dictator being strong is small and citizens are likely to be satisfied, that is, the dictator is likely to be popular, a strong dictator holds elections in a separating equilibrium to both gather information and signal his strength. The information that he collects via elections helps him divert the unrest to the unlikely state of the world, thereby reducing the ex-ante likelihood of unrest. If citizens are likely to be dissatisfied, that is, the

dictator is likely to be unpopular, the strong dictator prefers to withhold elections and instead signal his strength by sharing less and risking unrest under both states of the world defined by citizen satisfaction.

When the dictator is likely to be strong, the strong dictator has no incentive to signal strength. In this case, when the citizens are likely to be satisfied, both strong and weak dictators are indifferent between holding and withholding elections, unless unrest without popular support is too costly for elites and citizens, in which case both types of dictators prefer to withhold elections. When the citizens are likely to be dissatisfied, both types of dictators hold elections. They commit electoral fraud by declaring victory unless the dictator is weak and loses the elections, in which case he shares more with the citizens and elite or transfers power. Electoral fraud carries the risk of unrest.

Table 1 and Table 2 summarize the equilibria derived from above. We begin with Table 1, which provides a key of icons used to describe the political outcomes predicted in our model: 1) whether or not a dictator has an incentive to hold an election or is indifferent between those options; 2) whether the dictator will hold a clean election or commit fraud; 3) whether the dictator is strong or weak and whether those facts are revealed to the public; 4) whether the dictator is popular or unpopular and whether those attributes are revealed; 5) whether unrest is possible; 6) whether the dictator shares more or less with citizens and other elites; and 7) whether power is transferred and the dictator peacefully exits leadership.

Next, Table 2 categorically summarizes the equilibria in terms of different combinations of political consensus and political reality, using the above icons. Each row represents an equilibrium under a specific political consensus, while each column represents a specific political reality. Each cell of the table corresponds to a possible combination of political consensus and political reality. The diagonal cells of the table correspond to situations where the political consensus matches the underlying political reality. All the other cells correspond to situations where consensus and reality diverge.

The political consensus can be directly observed, and the political reality may or may not be (partially or fully) revealed in equilibria. The political consensus determines the equilibrium, while the (hidden, partially revealed, or fully revealed) political reality may affect the actual political outcome. In the first row, if revolt and coup against a strong and popular D carry sufficiently high risks for C and E, D prefers to withhold elections; otherwise, D is indifferent between holding and withholding elections. Elections are necessary in the second row of the table, only useful for dictators in the first two columns of the third row of the table, and are not used in the fourth row of the table. Except in the first three cells of the second row, where one cannot be sure whether elections reveal the dictator's (un)popularity due to potential fraud, all elections reveal the dictator's (un)popularity.

Table 1. Key of Potential Political Contract Outcomes.

	Yes	No	Dictator indifferent
Dictator holds election?			
Dictator commits electoral fraud?			
Dictator's strength revealed?			
Dictator's weakness revealed?			
Dictator popularity revealed?			
Dictator's unpopularity revealed?			
Unrest possible?			
Dictator shares more?			
Power transferred?			

Table 2. Equilibria Matching Consensus and Reality.

		Political Realality			
		Strong & Popular	Strong & Unpopular	Weak & Popular	Weak & Unpopular
Political Consensus	Strong & Popular Pooling				
	Strong & Unpopular Partially Separating				
	Weak & Popular Separating				
	Weak & Unpopular Separating				

Dynamically, two types of changes can occur within a regime over time. The first is the change of political consensus (row change), which results in changes in equilibrium. The second is the change of political reality (column change), which does not result in new equilibria, but may still produce observable changes in behavior.

Specifically, in the pooling equilibrium from the first row of the table, where the consensus is that the dictator is strong and popular, there may or may not be elections. When the expected payoffs of revolt and coup against a popular dictator are negative, the dictator prefers to withhold elections. When these expected payoffs are non-negative, the dictator is indifferent toward elections. Without elections, all political realities are fully hidden, and thus observationally equivalent. This means that under the political consensus that the dictator is both strong and popular, and the dictator refrains from instituting elections, the actual strength or popularity of the dictator does not affect the political outcome. When elections are instituted, the dictator's popularity becomes known, partially revealing the reality. Either way, the dictator's actual strength is never revealed and he is not threatened by unrest.

In the semi-pooling equilibrium from the second row of the table, the consensus is that the dictator is strong and unpopular, and elections are held regardless of the underlying political reality. When the dictator is strong and unpopular, he engages in electoral fraud when he learns his unpopularity through elections. Therefore, elections do not reveal the dictator's strength or popularity to the public (although they do reveal popularity to the dictator). In other words, only when the dictator is both weak and unpopular (last column) does this reality affect the political outcome, in which case the political reality is fully revealed. The rest of the political realities are observationally indistinguishable from each other except from the perspective of the dictator. When the dictator is both weak and unpopular, he does not engage in fraud but transfers power peacefully through a dictator-led democratization, which fully reveals the underlying political reality.

In the separating equilibrium from the third row of the table, the consensus is that the dictator is weak but popular, and elections are only instituted when the dictator is strong. A strong dictator uses elections to signal strength, separating himself from a weak dictator. Since there is no electoral fraud, elections reveal the dictator's strength and popularity, thereby fully exposing the underlying political reality. A weak dictator does not institute elections, so his weakness is revealed but his (un)popularity remains hidden.

In the separating equilibrium from the fourth row of the table, the consensus is that the dictator is weak and unpopular, and elections are never instituted. The dictator's (un)popularity is not revealed because there are no elections. A strong dictator signals his strength by sharing less but risking unrest, thus distinguishing himself from a weak dictator who shares more to avoid unrest. In other words, the political reality is partially revealed, because

the dictator's strength is always revealed, but his (un)popularity is never revealed. Under this political consensus, a regime-ending revolution may come as a surprise to a strong dictator. Previous work has examined the surprise factor of revolutions under authoritarianism through the lens of preference falsification (Kuran, 1989, 1997). The logic we propose does not depend on preference falsification, although the presence of preference falsification increases the surprise factor. We simply show that under the political consensus of a likely weak and unpopular dictator, an actually strong dictator, blinded by his own strength and uninformed about his unpopularity in the absence of elections, would signal strength by reducing resource transfers to citizens, thereby increasing the incentives for revolt that he cannot readily anticipate.

Discussion

The ultimate question in the authoritarian elections literature is why, given other less risky alternatives, a dictator would institute elections. From a functional perspective, we assume that elections serve the dictator by revealing the citizens' sentiments. We also assume that any regime is a political contract designed by the dictator and voluntarily agreed to by all parties. Using this minimalist conceptualization, we demonstrate that other functions often attributed to authoritarian elections in the literature are actually strategic outcomes that depend on electoral outcomes through interactions among the dictator, regime elites, and citizens. This insight is crucial because it disentangles the various functions previously discussed in isolation to reveal the informational essence of authoritarian elections and the other functions as strategic consequences. Table 3 summarizes how our model can serve as a useful framework for examining the five functions typically attributed to authoritarian elections in the literature.

Distinguishing Strength versus Popularity and Political Consensus versus Reality

We make two crucial conceptual distinctions that are novel in the existing literature. First, we distinguish between the dictator's strength and popularity, two concepts that are often conflated in the literature when describing the dictator's strength. This may be due in part to the perception of political strength familiar to people living in democracies, where popular support translates directly into the relative strength of political candidates in the electoral contests. Under authoritarian rule, however, it is important to distinguish between the two concepts. Popular support does not necessarily imply strength, and vice versa.

Table 3. Functions of Authoritarian Elections.

<table>
<tr><th colspan="2"></th><th colspan="4">Political Reality</th></tr>
<tr><th colspan="2"></th><th>Strong & Popular</th><th>Strong & Unpopular</th><th>Weak & Popular</th><th>Weak & Unpopular</th></tr>
<tr><td rowspan="4">Political Consensus</td><td>Strong & Popular
Pooling</td><td colspan="4">Power-Sharing with Elites/Co-Optation of Citizens</td></tr>
<tr><td>Strong & Unpopular
Partially Separating</td><td colspan="3">Information Acquisition</td><td>Exit</td></tr>
<tr><td>Weak & Popular
Separating</td><td colspan="2">Signaling Strength</td><td colspan="2">No Elections</td></tr>
<tr><td>Weak & Unpopular
Separating</td><td colspan="4">No Elections</td></tr>
</table>

Second, we distinguish between the political consensus and the underlying political reality regarding the dictator's strength and popularity. The political consensus refers to the society's common beliefs about the dictator's strength and popularity, while the political reality refers to the actual strength and popularity of the dictator. This distinction is crucial for understanding the dynamics of authoritarian regimes, since the political reality tends to be hidden or only partially revealed and may affect the outcome, while the observable political consensus directly determines the equilibrium.

These conceptual distinctions are necessary for understanding authoritarian regimes. Operating in this more nuanced conceptual space, our model sheds light on how political consensus and political reality affect regime stability and evolution. Next, we discuss the implications of our model for understanding the functions of authoritarian elections in the literature.

Election versus No Election

Before discussing the functions of authoritarian elections, we first consider the dictator's decision not to hold elections, an option that is rarely considered in the existing literature, which often jumps directly to the question of whether or not holding elections achieves a desirable outcome. However, in some cases, a dictator may be better off avoiding plebiscites. Our model suggests that the dictator's decision to hold elections is jointly determined by the political consensus and the political reality about his strength and popularity. As shown in Table 3, under three political consensuses, the dictator may refrain from holding elections, while under one political consensus (the second row of Table 3), the dictator always holds elections. Crucially, our model shows that

just as elections can serve different functions in different contexts, the dictator's decision to withhold elections can also have different implications and be motivated by different strategic considerations.

Consider the situations where the dictator may refrain from holding elections. First, when the political consensus is that the dictator is likely to be weak and unpopular (bottom row of Table 3), the dictator refrains from holding elections to avoid revealing his likely unpopularity. In this situation, the dictator must make power-sharing and cooptation decisions without knowing the citizens' sentiments. As a result, a strong dictator shares less with the citizens and elites to signal his strength, but doing so risks unrest. A weak dictator shares more to avoid unrest. In both cases, the dictator's actual strength is revealed, but his popularity remains hidden.

Second, when the political consensus is that the dictator is likely to be weak but popular (third row of Table 3), elections become an instrument for the dictator to signal his strength. In this situation, by holding elections, a strong dictator signals his strength, revealing citizens' sentiments and risking unrest. A weak dictator refrains from holding elections, revealing his weakness but keeping citizens' sentiments hidden. Under this political consensus, the dictator's decision to hold elections is solely determined by his actual strength, and the revelation of his popularity is a by-product of the signaling function of elections. Elections also help a strong D divert social unrest to the less costly state. By refraining from holding elections, the weak dictator reveals his weakness, but keeps citizens' sentiments hidden and avoids unrest.

Third, when the political consensus is that the dictator is likely to be strong and popular (first row of Table 3), if the expected value of unrest is negative for C and E when the dictator turns out to be popular, the dictator would refrain from holding elections regardless of his actual strength and popularity. This may happen if the probability of successful unrest is very low or if the cost of unrest is high under a popular dictator. In this situation, withholding elections creates uncertainty about the dictator's popularity, which can be used to deter unrest and reduce resource transfers. In other words, the dictator withholds elections to withhold information, which creates the risk of negative payoffs for elites and/or citizens. By doing so, the dictator can share less with the citizens and elites, a novel insight that has not been discussed in the existing literature.

Clearly, the absence of elections has different implications depending on the prevailing political consensus. Without interpreting the dictator's decision to withhold elections in the specific political context, distinct scenarios can be misinterpreted as equivalent. Our model provides a framework to disentangle these otherwise observationally equivalent scenarios and to understand the strategic considerations behind the dictator's decision to withhold elections. When the political consensus is that the dictator is likely to be weak and unpopular, the dictator withholds elections to avoid revealing his likely unpopularity. When the political consensus is that the dictator is likely to be

weak but popular, a strong dictator holds elections to signal his strength, revealing citizens' sentiments and risking unrest, while a weak dictator refrains from holding elections. When the political consensus is that the dictator is likely to be strong and popular, the dictator withholds elections to withhold information, creating the risk of negative payoffs for elites and/or citizens. In all cases, the dictator's decision to withhold elections is a strategic choice that reflects the political consensus and political reality about his strength and popularity.

Consider the case of Brunei Darussalam, a regime best represented by the top row of our table. The oil-rich country is an absolute monarchy where citizens report high levels of satisfaction with housing, public services, economic welfare, and even the natural environment. Life expectancy is 75 for males and nearly 80 for females (Ananta et al., 2023; Gweshengwe et al., 2020). The country boasts the second highest Human Development Index in South East Asia, after Singapore, and is ranked the 55th globally.[8] The Sultan of Brunei controls the police and military, and has ruled under a "state of emergency" that has been renewed every two years since the failed 1962 revolt. Since then, there has been no known opposition or even small-scale efforts against the government (Saunders, 2002). At the same time, neither the Sultan nor the appointed legislature has ever faced elections. The political consensus in Brunei has been that the Sultan is likely to be strong and popular, while the underlying political reality has been hidden (Croissant, 2022; Talib, 2002).

Our model suggests that under such circumstances, strong and weak dictators behave exactly the same, rendering different types of dictators indistinguishable. The dictator's actual strength and popularity do not affect the political outcome, and the regime remains stable as long as the political consensus is maintained. The fluctuation of the underlying political reality simply cannot penetrate the facade of the political consensus. This implies that as long as the political consensus in Brunei does not change, there is unlikely to be an observable change in the political equilibrium, even if the dictator becomes weak and unpopular over time. Only if the consensus shifts and it becomes widely believed that the dictator is likely to be weak, would his true type be revealed. In this situation, depending on the consensus about the dictator's popularity, we may either observe the introduction of elections by a strong dictator when the dictator is likely to be popular, or a reduction of resource transfers to the citizens by a strong dictator when the dictator is likely to be weak. In both scenarios, unrest becomes a possibility against the demonstrably strong dictator.

Gathering Information versus Signaling Strength

Our model highlights the role of elections as a mechanism for information revelation in authoritarian regimes. Elections can serve as a tool for the

dictator to gauge popular support and signal strength, as well as a mechanism for the citizens to learn about the dictator's popularity and/or strength. Importantly, elections do not always serve specific functions. Our model shows that the political consensus and the underlying political reality jointly determine the specific functions of elections in authoritarian regimes. This explains the difficulty of the existing literature in reconciling the contradictory findings about the functions of authoritarian elections: they do not account for the contextual factors in terms of the political consensus and the political reality about the dictator's strength and popularity, which shape the motivations and outcomes of elections.

Regarding information revelation, our model suggests that while elections always reveal the dictator's (un)popularity to the dictator, they do not necessarily reveal it to the citizens. This is because the dictator can manipulate the election results through fraud, which distorts the information revealed to the citizens.

Specifically, when the political consensus is that the dictator is strong but unpopular (second row in Table 3), the dictator will use elections to gauge his popularity. However, elections do not provide citizens with information about the dictator's popularity unless the dictator is actually weak and unpopular. Because a strong but unpopular dictator will engage in electoral fraud to maintain power if he learns about his unpopularity through elections, he is indistinguishable from an actually popular (weak or strong) dictator. In contrast, a weak and unpopular dictator fully reveals the political reality by transferring power to the citizens.

In contrast, when the political consensus is that the dictator is weak but popular (third row of Table 3), a strong dictator will hold elections and reveal his popularity, and by doing so, also signal his strength. A weak dictator will refrain from holding elections, thereby revealing his weakness but hiding his unpopularity from everyone, including himself.

Thus, although we assume that elections always reveal the dictator's (un) popularity to the dictator, the citizens may not always learn this information, due to the potential interference of electoral fraud. Furthermore, only under very specific conditions, that is, when the dictator is commonly perceived to be weak and popular, while being strong in reality, do elections serve to signal the dictator's strength.[9] Intuitively, in this situation, only a strong dictator has incentives to reveal his (un)popularity through elections in order to disprove the consensus that he is weak and unpopular.

For an example of elections serving both information-revelation and signaling functions, which occur under the political consensus that the dictator is weak but popular (third row of Table 3), consider the Soviet Union under Gorbachev. When Gorbachev came to power in 1985 as the old elites were aging away (Kotkin, 2001, pp. 50–57), the consensus was that he was weak and had unproven popularity. As Gorbachev's reforms gained momentum, his

popularity among the citizens seemingly grew. In the context of our model, the absence of elections revealed Gorbachev's weakness but kept his (un)popularity hidden. Throughout the reforms, Gorbachev faced opposition from the hardliners, but his strength likely grew over time as the reforms deepened despite these obstacles (Taubman, 2017). In 1989, Gorbachev introduced elections to the Congress of People's Deputies, which not only revealed a significant level of popular support for his reformist agenda, but also signaled his strength as a leader (Kotkin, 2001, pp. 75–77). However, as our model suggests, a strong dictator under the consensus of being weak and popular necessarily faces the risk of unrest, which eventually manifested in the August Coup in 1991. Despite the failed coup attempt, the Soviet Union was dissolved later that year, marking the end of Gorbachev's rule and the collapse of the Soviet regime (Gill, 1994).

Information and Electoral Fraud

In our model, dictators use post-election fraud to win elections when the political consensus and political reality agree that a dictator is both strong and unpopular. This occurs at the intersection of the second row and second column in Table 2. Although it only represents one out of the 16 blocks in our matrix, we believe that this is where the bulk of electoral authoritarian regimes would be placed, representing far more than 1/16 of the population of dictatorships. In this setting, dictators use elections to gauge their popularity, but are strong enough vis-a-vis other elites and citizens to avoid revealing the true results. Electoral fraud ensures victory while allowing information gathering. For instance, dictators may carefully study electoral results while reporting manipulated results. They can stuff ballot boxes in districts they are losing, but keep track of how many fraudulent ballots they have added.[10] To maximize its informational utility, effective electoral fraud should be invisible to the public, a principle reflected in the secrecy of such maneuvers.

This focus on post-election fraud and informational provision to the incumbent is consistent with previous work on authoritarian elections (Chernykh & Svolik, 2015; Egorov & Sonin, 2014; Little, 2013; Little et al., 2012). For example, Egorov and Sonin (2021, p. 1682) write, "He might choose to run in a competitive election, which, even if not perfectly fair and fraudless, is informative about his relative popularity…" Scholars who focus on pre-election fraud contend that voter intimidation, restrictive voting measures, and gerrymandering do impact the quality of information delivered (Gehlbach & Simpser, 2015; Rozenas, 2016), but still consider information transmission to be "weakened" rather than fully distorted. These scholars are also generally more concerned with the quality of information derived by citizens, not by the dictator, which is our primary interest.

Our treatment of fraud differs from scholars who argue that the ability to win elections through fraud with impunity could signal the dictator's invincibility and deter potential challengers (Simpser, 2013). Our model suggests that electoral fraud should not be considered primarily as a device for signaling strength. While it is true that only a strong dictator engages in electoral fraud, this only occurs after the dictator learns about his unpopularity through an election. Furthermore, a strong dictator, whether he is popular or not, is indistinguishable from a weak and popular dictator.

The confusion about the signaling function of electoral fraud in the literature may stem from the conceptual conflation of the dictator's strength and popularity. When the dictator's strength is equated with his popularity, then winning elections through fraud superficially suggests the dictator's strength. However, this argument suffers from a strategic contradiction. If the dictator is actually popular, he does not need to engage in fraud to win elections. If the dictator is actually unpopular, then winning elections through fraud does not signal popularity, but rather the lack of it. For instance, Higashijima (2022) shows that dictators who are capable of winning elections through economic mobilization do not need to resort to electoral fraud. Furthermore, fraud is typically conducted in secret, so suggesting that the dictator uses fraudulent elections to signal strength runs counter to the dictator's efforts to keep such machinations hidden from public scrutiny.

If we distinguish between the dictator's strength and popularity, a more nuanced understanding becomes possible: a strong dictator, whether popular or not, is indistinguishable from a weak and popular dictator, as they all appear to win elections. This is because a strong and popular dictator does not need fraud to win elections, nor does a weak but popular dictator, and a strong but unpopular dictator can win fraudulent elections. A weak and unpopular dictator does not engage in fraud, and by transferring power peacefully after losing an election, he fully reveals his weakness and unpopularity. Since a strong dictator does not necessarily engage in electoral fraud, we cannot say that a strong dictator uses electoral fraud to signal strength.

Additionally, the distinction between political consensus and political reality is also crucial for understanding the strategic logic of electoral fraud. Electoral fraud occurs when the political consensus converges on the dictator being strong but unpopular. In this situation, an actually strong dictator has incentives to use elections to learn about public sentiments and to use fraud to ensure electoral victory if he turns out to be unpopular. However, by adopting such a strategy, a strong dictator necessarily faces the possibility of unrest. A weak dictator, in contrast, cannot bear the risk of unrest without popular support, so he will refrain from committing electoral fraud if elections reveal him to be unpopular.

Consider the case of Mexico under the Institutional Revolutionary Party (PRI). Initially, the consensus was that the PRI was strong and popular, which

probably reflected the underlying political reality (Magaloni, 2008). Elections revealed the PRI's popularity, but not its strength. The PRI used the information from elections to calibrate power-sharing and cooptation, creating a corporatist system that maintained the party's dominance (Greene, 2011). As the PRI saw its waning public support in reality, which was revealed through elections, the political consensus shifted to the belief that the PRI was strong but potentially unpopular. It was at this point that the PRI likely began to engage in electoral fraud in order to create a facade of popularity (Cantú, 2014). The potential occurrence of electoral fraud indicated that the PRI remained strong, but may have actually been unpopular. Eventually, as the PRI became further weakened, it stopped engaging in fraud to stay in power and transferred power to the opposition, fully exposing its weakness and unpopularity (Magaloni, 2006). Therefore, in the Mexican case, electoral fraud helps the PRI win elections in the short run. In the long run, however, the fraud became unsustainable as the PRI was further weakened, leading to a peaceful power transition.

Power-Sharing and Cooptation

In our model, power-sharing and cooptation are always possible and do not require elections. Contrary to the arguments that elections serve as an arena for the dictator to share power with other elites, or that elections serve to hold elites accountable through credible commitment mechanisms, our model simply shows that elections help the dictator to more accurately gauge popular support and to make more informed decisions about power-sharing arrangements with other regime elites based on election results. This makes sense because there are more secretive and less risky institutional options to facilitate intra-elite bargaining behind the scene (Schuler, 2021). As a forum for power-sharing, elections unnecessarily publicize information about regime insiders that is better kept behind closed doors and reveal information about citizens that may not benefit the dictator or the ruling coalition.

We conceptualize cooptation as a form of clientelism (Lust-Okar, 2006). This more general conceptualization is agnostic regarding whom the dictator targets for cooptation. It assumes that the targets of cooptation lie outside the ruling elites and within the broader citizenry. Therefore, our definition of cooptation encompasses the scenarios in which the dictator coopts the opposition elites (Gandhi & Przeworski, 2006) as well as those in which the dictator coopts the most ideologically agreeable segments of the populace (Svolik, 2012).

With respect to the argument that elections serve as an instrument to coopt potential challengers in order to defuse opposition capable of mounting political challenges, our model suggests that elections help the dictator gauge popular support and make more informed cooptation offers to citizens in order

to avoid revolt. When used to signal strength under the political consensus that the dictator is weak but popular, elections also enable a strong dictator to limit the demands of citizens at the cost of potential unrest. Conversely, the absence of elections reveals the dictator's weakness in this situation, which motivates the dictator to increase cooptation efforts to avoid unrest.

When the political consensus is that the dictator is likely to be strong and popular (the first row of Table 3), the dictator is indifferent between holding elections or not when the expected payoffs of unrest for elites or citizens against a popular dictator are non-negative. In this situation, if the dictator decides to hold elections, they reveal his popularity, information that the dictator can factor into his power-sharing or cooptation decisions.

For an example of elections serving to gather information for power-sharing and cooptation, consider Singapore under the People's Action Party (PAP). Since gaining independence in 1965, Singapore has been governed by the PAP, which has won every general election. Under PAP rule, Singapore's economy has experienced sustained growth and has become one of the richest countries on a per capita basis.[11] The country has the highest Human Development Index in Southeast Asia, and ranks ninth globally.[12] In the context of our model, the political consensus in Singapore, like Brunei above, has been that the PAP is strong and popular (Chang, 1968; Mauzy & Milne, 2002). Despite the PAP's electoral dominance, Singapore's elections allow for political pluralism and have been conducted without widespread fraud.[13] Elections reveal the PAP's popularity to the public, but are not used to signal its strength. The PAP's success has been attributed to its ability to deliver economic growth, maintain political stability, and effectively manage the city-state (Huff, 1997; Morgenbesser, 2017; Tan, 2007; Wong & Huang, 2010; Yew, 2012). Over the years, the PAP's share of the popular vote has fluctuated, reflecting changes in public sentiment. The PAP has used elections to gauge popular support and calibrate its policies and strategies accordingly (Ong, 2018). In the 2011 general election, the PAP's vote share dropped to 60%, the lowest since independence.[14] This decline in popularity was seen as a signal of growing public discontent with the PAP's policies. In response, the PAP undertook a series of reforms to address public concerns and regain popular support. The PAP's vote share rebounded to 69.9% in the subsequent election of 2015, reflecting the effectiveness of its policy adjustments (Tan, 2016).

In our model, the dictator can also engage in power-sharing and cooptation without holding elections. In fact, when the political consensus is that the dictator is likely to be weak and unpopular (the fourth row of Table 3), power-sharing and cooptation are the primary mechanisms through which a strong dictator signals his strength in the absence of elections. An example of such a scenario is Romania under Ceauşescu. When Ceauşescu came to power in 1965 as a compromise candidate amidst the power struggles of the old elites, the consensus was that he was weak and unpopular. During the early period of

his rule, Ceauşescu treaded carefully, sharing more with elites and citizens to prevent unrest without holding elections, which revealed his weakness but kept his (un)popularity hidden. As Ceauşescu gained popularity among the Romanian people and consolidated his power within the party in the 1970s, the political consensus shifted to the perception that Ceauşescu was strong and popular (Gilberg, 2019). During this period, Ceauşescu's rule became more assertive, possibly reflecting his ascending political strength, although his actual strength and popularity remained hidden (Deletant, 2016). When Romania was struck by an economic crisis in the 1980s, the consensus shifted, and Ceauşescu was again perceived as weak and unpopular. In response, an actually strong Ceauşescu signaled his strength by sharing less with citizens through austerity measures, shifting the economic burden to the citizens and risking unrest (Tismăneanu, 2003). Despite the strength manifested through such costly signaling, his actual (un)popularity was never revealed until the Romanian Revolution of December 1989 surprised him and abruptly ended his rule (Siani-Davies, 2005). Therefore, at the beginning and toward the end of Ceauşescu's rule, power-sharing and cooptation were the primary mechanisms through which Ceauşescu revealed his weakness or signaled his strength in the absence of elections, under the political consensus that he was weak and unpopular.

Exit Option

Rather than conceptualizing elections as a direct exit option for the dictator, we argue that the choice of peacefully relinquishing power and stepping down does not depend on the provision of electoral institutions, but is always available to the dictator as an option. However, elections do reveal information that may motivate the dictator to voluntarily relinquish power if he deems it politically disadvantageous to cling onto power. In particular, if a weak dictator finds out about his unpopularity through an election, he is most likely to voluntarily step down. This correlation between electoral defeat and voluntary exit may have led to the perception that elections serve as an exit option for the dictator. However, the causal logic in this context is that the dictator voluntarily exits from power because he learns about his unpopularity through elections, not because elections provide an exit option. Without examining the causal logic of authoritarian elections, this indirect, informational mechanism may be obscured by the observationally equivalent claim that the dictator uses elections as an exit option.

When Ernesto Zedillo conceded defeat in the 2000 Mexican presidential election, he ended the 71-year reign of the PRI, Mexico's hegemonic party. Zedillo's decision to respect the election results and allow for a peaceful transfer of power to Vicente Fox of the opposition National Action Party (PAN) marked Mexico's first democratic transfer of power in seven decades.

Under the political consensus that the PRI was strong and popular, Zedillo's decision to transfer power to the opposition revealed the political reality that he was actually weak and unpopular (Camp, 2006). Although the exit option was also available to his predecessors, the party was able to maintain political dominance through electoral fraud (Greene, 2007; Magaloni, 2006). Our model suggests that Zedillo's relative weakness in the face of his unpopularity, as revealed by the election results, motivated the democratic transition in Mexico.

The People's Republic of Benin (PRB) under Mathieu Kérékou (1975–1990) exemplifies another case of dictator-led democratization. Kérékou seized power in 1972 through a military coup and ruled Benin as a one-party state under the People's Revolutionary Party of Benin (PRPB) (Barkan et al., 2004). The political consensus at the time was that Kérékou was strong and popular. Although Kérékou instituted elections, they were uncontested and used by Kérékou to gauge public support without revealing his true strength. Through the latter half of the 1970s, Kérékou pursued a socialist economic program based on nationalization and collectivization. By the early 1980s, it had become apparent that the socialist economy had failed, and Kérékou began to pursue a more liberal economic course in the hope of growing the economy and attracting foreign investments. However, the partial reform failed to revive the economy, and the political consensus shifted to viewing Kérékou as weak and unpopular (Clark, 2018). In 1989, Kérékou renounced the Marxist doctrine and initiated a democratic regime change. In the 1991 election, Kérékou lost to Nicéphore Soglo and became the first leader on the African mainland to peacefully transfer power through an election (Decalo, 1990).

Conclusion

Rather than mere window dressing, authoritarian leaders introduce elections to address challenges endemic to authoritarian regimes. To understand authoritarian elections, we need to view elections through the lens of a dictator facing the twin challenges of authoritarian power-sharing and authoritarian control. This requires a theoretical framework that incorporates strategic interactions among the dictator, elites, and citizens in an environment of structural power asymmetry and weak institutions. We develop a synthetic theory by combining the crisis bargaining and principal-agent frameworks and conduct a game-free analysis of the strategic interactions among the dictator, elites, and citizens.

In contrast to the existing literature, which makes separate assumptions about different functions of elections that directly lead to conclusions about those very functions, we simply assume that elections reveal information about citizens' sentiments toward the regime that is otherwise hidden. With

this minimalist assumption, we show that authoritarian elections can still manifest their other functions indirectly through strategic interactions.

Conceptually, distinguishing between the dictator's strength and popularity is crucial to developing a proper understanding of the institutional choices under authoritarianism. The conflation of these two concepts is at the root of some notable shortcomings in the literature. Moreover, our methodological approach allows us to conceptualize outcomes as political contracts. Viewing authoritarian rule through the lens of political contracts offers new insights that are free from the ideological presumptions that authoritarian rule is inherently manipulative, repressive, and grabbing (Przeworski, 2022). We make no such assumptions and argue that authoritarian rule can also constitute a legitimate political order based on a self-enforcing political contract, with the dictator serving as the principal who designs the terms of the contract to maximize his own interests. This contrasts sharply with a democracy, where citizens serve as the principal and can design a constitution that constrains the elected officials as their agents. Using the principal-agent framework to analyze these distinct types of political order allows us to develop deeper insights into the inner workings of each, as well as the transitions from one to the other.

The equilibrium outcomes of our model correspond to different political contracts. We show that the prevailing political contract is jointly determined by the common beliefs about the dictator's strength and popularity, which we interpret as the political consensus within the regime. We thus show how the political consensus can shape the political contract that sustains an authoritarian regime. Specifically, the common belief about the dictator's strength influences the strong dictator's incentive to signal his strength at the risk of unrest, and the weak dictator's incentive to mimic the strong dictator. The common belief about the dictator's popularity influences the dictator's risk-benefit calculus for holding elections.

This paper is only the first step in developing a standard theoretical framework for the study of authoritarian elections. In its current form, our model does not address other relevant issues concerning authoritarian elections. For example, we do not consider the argument that elections enable the dictator to monitor the loyalty and competence of local agents by alleviating the principle-agent problem that dictators face in center-local relations. Nevertheless, we consider it a worthwhile trade-off to develop our model by prioritizing the most general considerations regarding authoritarian elections at the cost of omitting some phenomena. Moreover, given the minimalist assumptions and parsimonious set-up, this framework can be extended to study other phenomena related to authoritarian institutions.

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ORCID iD

Edmund J. Malesky https://orcid.org/0000-0001-5737-9195

Data Availability Statement

This project does not involve data collection. All relevant materials are included in the main text and the online appendix.

Supplemental Material

Supplemental material for this article is available online.

Notes

1. There is a sixth argument about elections conveying domestic and international legitimacy to authoritarian regimes. However, this hypothesis is closely linked to signaling, has been challenged theoretically, and lacks demonstrable empirical support (Gerschewski, 2018; Przeworski, 2022). Similarly, we do not consider elections imposed by the coercion of powerful countries or international organizations, which are outside the scope of our model.
2. To be precise, we assume that the players can take the following actions unilaterally in any game they may be playing. The dictator can transfer power, the citizens can revolt, and the elite can attempt a coup. We also specify the payoffs the players receive from all possible outcomes. That is, we do not impose any restrictions on the games they may be playing. So, we search for the dictator's optimal equilibrium outcome among all possible games that involve these unilateral actions.
3. While different individuals within the ruling elites and even among the citizenry may freely assess the dictator's strength, no one knows for sure. In fact, most

dictators go to great lengths to conceal this information, as they all try to project an image of unquestioned strength, while employing various coup-proof strategies to compartmentalize information within the elites and hinder coordination. Because of the dictator's active efforts to prevent the revelation of his weakness, the fragmented information about the dictator's strength is very rarely effectively synthesized to form a consensus among the regime elites and/or citizens. Indeed, one of the contributions of our model is that it sheds light on the political contexts in which the dictator has incentives to voluntarily disclose his weakness to the public, with or without elections, which we highlight in the discussion section.

4. We recognize that voluntary agreement is a low bar for a regime to claim legitimacy, but this is precisely the intention. In theorizing, we need a lower bound to define a viable regime, especially one of an authoritarian nature. Admittedly, a regime can have much more legitimacy in terms of citizen satisfaction, or however the concept of legitimacy is defined, than merely surviving. However, for the sake of a theoretical exercise with the widest applicability, we decide to define legitimacy as a voluntary agreement among all political actors, a minimalist definition that can be modified as needed. For example, one might impose additional legitimacy constraints as certain levels of satisfaction for the elites and citizens necessary for their support. However, for our purpose of developing a common theoretical framework, we want the definition of legitimacy to be as minimal as possible, leaving maximum room for imposing additional constraints to meet whatever legitimacy standard one may want to impose on the regime.
5. Each player is a unitary actor. Citizens can be modeled as a continuum of players as in Leventoğlu and Metternich (2018). The unitary actor assumption simplifies the exposition with a homogeneous population.
6. These contracts are referred to as mechanism by Banks (1990a) and Fey and Ramsay (2011a).
7. Substantively, the political consensus corresponds to the prevailing opinions about the dictator's strength and popularity that saturate the public sphere and do not necessarily reflect the underlying political reality. The political consensus can be measured empirically through censuses or polls, or, in the absence of both, inferred from public media using text analysis. More often than not, the political consensus deviates from political reality, a tendency reflecting the distorting force on public opinions under authoritarian rule. For example, Kuran (1997, 1991, 1989) uses the concept of preference falsification to explain the persistent divergence between private opinions and public opinions, as well as the potential for their unexpected, sudden convergence. In our model, the notion of political consensus corresponds to the game-theoretic concept of "common knowledge," which reflects the commonly *expressed* assessment of the dictator's strength and popularity within a regime. Such an assessment may also influence the perceptions of outside observers about the regime, although outside perceptions are not included as part of the political consensus within a regime. Thus, even if a dictator appears weak and unpopular to outside observers, he may continue to be perceived as strong and

popular domestically. Political reality, on the other hand, corresponds to the "ground truth" of the dictator's strength and popularity, which may or may not match the political consensus or be revealed in equilibrium.

8. 2023 UNDP Human Development Report, accessed at https://hdr.undp.org/data-center/country-insights\#/ranks
9. In our model, elections never only signal strength without revealing information. This departs from the literature that emphasizes the signaling function of fraudulent elections in authoritarian regimes. In contrast, our model suggests that when there is electoral fraud, neither popularity nor strength of the dictator is revealed to the citizens, although the dictator may learn about his own popularity.
10. In our model, fraud is assumed to be ex post, that is, it manipulates the electoral results after the completion of voting procedures to ensure the dictator's electoral victory.
11. GDP per capita data from the World Bank, accessed through https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?most_recent_value_desc=true.
12. UNDP Human Development Reports, accessed through https://hdr.undp.org/data-center/specific-country-data\#/countries/SGP.
13. Freedom in the World 2024, accessed through https://freedomhouse.org/country/singapore/freedom-world/2024.
14. *Singapore Opposition make 'landmark' election gains*. May 9, 2011. Retrieved from https://www.bbc.com/news/world-asia-pacific-13313695.

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Author Biographies

Bahar Leventoğlu (PhD, University of Rochester) is an Associate Professor of Political Science and Economics at Duke University. She uses frontier game-theoretic modeling to address substantive questions in international relations and political economy. Her work has appeared in American Political Science Review, American Journal of Political Science, Journal of Conflict Resolution, International Studies Quarterly, Economic Theory, and other peer-reviewed outlets.

Edmund J. Malesky (PhD, Duke University) is a Professor of Political Science, Director of the Duke Center for International Development, and Chair of the Executive Council of Southeast Asian Research Group (SEAREG). He has been the lead researcher of USAID's Vietnam Provincial Competitiveness Index project since 2005, for which he was awarded a state medal in 2014. His research focuses on the political economy of development, governance, and authoritarian institutions. He has published two books, including *Incentives to Pander: How Politicians Use Corporate Welfare for Political Gain* and *China's Governance Puzzle: Enabling Transparency and Participation in an Authoritarian State.*

Tusi (Ündes) Wen is a Lecturing Fellow and Research Associate at the Duke Center for International Development. His research focuses on the political economy of authoritarian regimes, including domestic politics, international relations, and the linkage between the two.