Transparency, Protest and Democratic Stability*

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May 2015

Abstract

Democratic rule is maintained so long as all actors in the political system comply with the institutional rules of the game. Since constitutions cannot be enforced by external actors, democratic institutions must be self-enforcing. In this paper, we examine the role of transparency in supporting a democratic equilibrium. We contend that transparency improves the functioning of elections – in transparent polities, elections more effectively resolve adverse selection problems between the public and their rulers. Consequently, transparency increases popular satisfaction with democracy and inhibits challenges to the democratic order. We illustrate these arguments with a game-theoretic model, and test these claims and find they enjoy empirical support. Transparency stabilizes democratic rule.

*We would like to thank Christina Bodea, José Fernández-Albertos, John Freeman, Erik Gartzke, Michael Laver, Adrienne LeBas, Sebastian Saiegh, David Samuels, David Stasavage and Scott Tyson and participants in the Leitner Political Economy Seminar at Yale University, the 2012 MPSA panel on Transparency, Monitoring and Democracy, the 2012 EPSA panel on Democratization, the 2013 MPSA panel on the Determinants of Transparency and Corruption, the 2013 Mini-IPE Conference at Georgetown University, the 2013 Alexander Hamilton Center Graduate Conference at NYU, the 2013 EPSA panel on Regime Authority, the Stanford University Methods Workshop, the 2013 APSA panel on Known Unknowns: Empirical Approaches to Uncertainty in International Relations, and the 2014 Stanford-Princeton Conference on Policy Uncertainty for helpful comments and suggestions. We also thank Vanessa Hofman for excellent research assistance. All remaining errors are our own.

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When and why do democratic regimes enjoy periods of stable rule, free from the threats of mass anti-regime protest, coup and autogolpe? When, contrastingly, will democracy be prone to instability and autocratic reversions? Recent events in Egypt, the Ukraine, and Thailand render these questions, which have long been at the center of political science, all the more relevant.

Existing work stresses the importance of a consensus in which all political actors agree to comply with the ‘rules of the game’ for the maintenance of democratic rule (Linz, 1978; Schedler, 1998; Schmitter, 1992). Since no external parties can be called upon to enforce this consensus, it must be self-enforcing. When all other actors choose to comply with democratic norms, no one actor can have an incentive to unilaterally deviate. Democracy must be an equilibrium (Przeworski, 1991, 2005; Weingast, 1997).

Recent work in this vein focuses on the compliance of political elites with the democratic equilibrium. Two theoretical perspectives dominate this literature: One emphasizes intertemporal trade-offs faced by political leaders. For democracy to remain stable, elites facing electoral defeat must prefer to accept this (temporary) set-back and await the (uncertain) prospect of future electoral victory, rather than resorting to force to implement their preferred agenda (e.g., Przeworski, 1991, 2005; Przeworski, Rivero and Xi, 2013; Scartascini and Tommasi, 2012; Wantchekon, 2004). The other perspective follows Weingast (1997) in emphasizing the populace’s role in preventing encroachments by the elite on democratic freedoms. For democracy to survive citizens must be willing to act against anti-democratic challengers, increasing the costs associated with coups or autogolpes. Fearon (2011), for instance, finds that elections can play an informational role, enabling the public to mobilize against leaders who fail to comply with electoral rules. Others have built upon these results, characterizing the conditions under which elections may play this role (Hyde and Marinov, 2014; Little, Tucker and LaGatta, 2013).

In this paper, we take a different tack. Here we focus on the public’s satisfaction with the rules of the (democratic) game. For democracy to remain an equilibrium, members of the electorate must prefer to accept election results, rather than turning to undemocratic means of ousting their leaders. Absent this preference, citizens might turn to the streets and directly seek to oust democratically elected leaders through mass protest (Svolik, 2013). More commonly, citizen dissatisfaction and protest might open the door to coups by anti-democratic elites, as events in Egypt and Thailand can attest. A lack of confidence in the efficacy of electoral institutions implies that citizens will be unwilling to check encroachments by anti-democratic elites, as in Weingast (1997), and indeed may support those who would subvert democracy. Citizens, therefore, must be confident of the efficacy of elections in disciplining under-performing politicians. This belief in the efficacy of electoral institutions might be termed the legitimacy of democratic rule.
We emphasize the importance of transparency – which we define as the availability of policy-relevant information on aggregate outcomes – to the development of democratic legitimacy.\footnote{Our definition of transparency used throughout is a narrow one. We provide greater detail, and an explanation of our empirical measure of transparency, below.} High levels of transparency ensure that elections are effective in disciplining democratic leaders. Leaders who have performed poorly are more likely to be removed via the ballot box, and those who perform well are more likely to be retained, as transparency rises. Because elections and extra-constitutional actions act as substitute mechanisms by which the populace might discipline their leaders, when elections perform better, the need to resort to the streets declines.\footnote{This result stands in stark contrast to the role of transparency in autocracies, where transparency increases the likelihood of mass protest (Hollyer, Rosendorff and Vreeland, forthcoming 2015). We discuss this contrast below.} As citizen satisfaction with democratic institutions rises, the tendency to protest against the sitting leadership – as well as the frequency of coups taken in the wake or in anticipation of such protests – declines.

In what follows, we flesh out – and empirically test – this argument. First, we present our (informal) argument in detail. We then relate this argument to the existing literature. We then develop a formal model incorporating elections, mass protest and transparency. Finally, we empirically test the implications of this argument for democratic survival.

**Argument**

**Transparency and the Legitimacy of Elections**

Democracy requires compliance on the part of the citizenry. Of course, democracy may be overthrown by members of the elite. Fairly elected leaders may choose to subvert democratic institutions and secure themselves in power via an autogolpe. Alberto Fujimori’s regime in 1990s Peru is a prominent example. More commonly, those defeated in an electoral contest may attempt to undermine democratic laws and impose their rule through alternative means. These may involve resorting to civil war or coups. However, citizens may also take action against democratically elected leaders. Citizens may be motivated to turn to the streets due to the perception that democratic institutions have proved ineffective in disciplining their leaders.\footnote{For instance, many Egyptians pointed to the Morsi administration’s incompetence and consolidation of power as causes for the protests that ultimately led to his ousting. (See “Egypt’s Tragedy,” *The Economist*, July 6, 2013.) Thai protesters similarly claimed that democracy proved an insufficient means of limiting the claimed abuses of the Shinawatra government. (See, “A Symbolic Exercise,” *The Economist*, February 2, 2014.)}

Such expressions of mass dissatisfaction may be destabilizing for two reasons: First, protesters may directly subvert democratic rule by demanding the dissolution of an elected government.
Second, such protests – or the anticipation of such protests – may embolden anti-democratic elements to stage a coup against the sitting leadership. In either event, citizen dissatisfaction with the rules of the game serves to undermine the democratic equilibrium (Svolik, 2013).

Theorists of democratic consolidation have long noted this possibility and thus stressed the importance of public attitudes toward democracy. Linz (1978), for instance, notes that the breakdown of democracy typically involves some element of mass mobilization, coupled with military support for those who would challenge democracy. Diamond (1994, 15) contends that, “Consolidation is the process by which democracy becomes so broadly and profoundly legitimate among its citizens that it is very unlikely to break down.” Linz (1978, 17) argues that, “Democratic legitimacy ... requires adherence to the rules of the game by both a majority of citizens and those in positions of authority...” (emphasis added). When citizens disregard democratic norms, or hold democratic institutions in low esteem, the democratic order is jeopardized. Svolik (2013, 686) terms this danger the ‘trap of pessimistic expectations,’ and argues that “[w]hen it occurs, it undermines the public’s willingness to defend democracy against attempts to subvert it, thus eliminating a key check on politicians or groups with authoritarian ambitions.”

While the literature on democratic consolidation has devoted substantial attention to the role of public attitudes in sustaining democracy, it has paid less attention to the forces that shape these attitudes. It is our contention that attitudes toward democracy will depend on the ability of elections to serve their most fundamental role: disciplining elected leaders (Przeworski, Stokes and Manin, 1999). Elections serve as a mechanism by which citizens may ‘throw the bums out,’ should their leaders, in fact, prove to be bums. Formally, elections serve to resolve an agency problem between the citizenry and their leaders – a problem of adverse selection. Should politicians prove themselves unwilling, or unable, to govern in the interests of a majority of citizens, elections provide a means through which these leaders might be removed and replaced with more palatable alternatives.

In what follows, we consider a political environment in which the voters, en masse, prefer to reelect competent leaders and evict the incompetent. Each voter has his or her own sources of information about how well the leader is doing – a private signal – and the public at large has

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4 We use the ‘narrow’ definition of democratic consolidation in this paper, as laid out by Schedler (1998). We define consolidation as simply reflecting the stability, or predicted stability, of electoral rule. We do not consider more expansive definitions, which might include the extension of civil rights, or the institutionalization of democracy (O’Donnell, 1996). We thus use the terms ‘democratic stability’ and ‘democratic consolidation’ interchangeably.

5 Alternative models (Barro, 1973; Ferejohn, 1986) emphasize the importance of moral hazard problems in controlling politicians. However, as Fearon (1999) notes, so long as there is any possibility that some elected leaders are ‘better’ than others (from the perspective of the median voter), elections become a problem of adverse selection rather than moral hazard.
information that is commonly known and shared by all – a public signal. At election time, a voter must decide to reelect or evict the incumbent. More transparency means that the public signal is a more reliable, stronger signal, and can be used as a guide for keeping the good guys and evicting the bums.

When the polity is opaque, the public signal is not very helpful, and voters instead rely on their idiosyncratic private information. Some individuals are getting good (private) signals, and others, bad. When the public signal is uninformative, therefore, poor leaders are more likely, through good luck, to be retained and good leaders, through bad luck, to be removed. As public information becomes more available – i.e., as the polity becomes more transparent – citizens’ voting behavior will align more closely with incumbent performance, such that good leaders are more likely to be retained and poor leaders to be removed.

While some individuals will have received good signals, and others bad, in the aggregate, the voters are more likely to receive bad signals when the leader is an underperforming type. Given a large number of voters, in equilibrium, it will be the case that more voters will vote to evict than to retain when the leader is a bad type. Hence once the election results are published, the voter can infer from the vote counts the true type of the leader. If the number of votes to evict is ‘low,’ then few people received bad signals making it more likely the leader is competent. If the number of votes to evict is ‘high,’ then the voters all infer that the leader is most likely underperforming, and should be removed (Fearon, 2011).

It is possible however, that the number of votes to remove an incompetent leader is not enough to require his or her removal. While all voters learn – by observing that a large (but not large enough) number of votes to remove were cast – that the leader is incompetent, the leader has nevertheless survived in office. If a bad type is retained, the voters then have the option of engaging in political action on the street – protest – to remove the leader. Because elections are most effective at removing poorly performing leaders when transparency is highest, this scenario is less likely to arise when transparency rises. Incompetent leaders will tend to be voted out of office, and those leaders that are retained are likely to be competent. High transparency democracies will therefore be associated with little street protest, and the election results are invested with a large degree of legitimacy. Protest grows less likely as the polity grows more transparent.

Elections and mass unrest thus serve as substitute mechanisms for the removal of underperforming leaders. When elections serve this role well – i.e., when transparency is high – the

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6An expansive literature notes the importance of information for improving citizen welfare and resolving agency problems between a populace and its elected representatives (Adserà, Boix and Payne, 2003; Besley and Burgess, 2002; Brunetti and Weder, 2003; Ferraz and Finan, 2008).
need to resort to the streets is low. Consequently, the frequency of mass mobilization – with the attendant risk of autocratic reversion – declines as the level of transparency rises. In essence, democratic legitimacy emerges due to the rational behavior of the electorate.

We stress the relationship between the performance and the legitimacy of electoral institutions. As Diamond notes, “the democratic system must produce sufficiently positive policy outputs to build broad political legitimacy,” (Diamond, 1999, 76). We acknowledge legitimacy may take on a broader definition, encompassing a logic that is not merely instrumental. Our contention here is merely that, ceteris paribus, elections are more likely to prove legitimate when they adequately solve issues of adverse selection.

We illustrate these intuitions in a model of political agency, elections and mass unrest, below. We further empirically test the assertion that rising levels of transparency stabilize democracies, and find that this proposition enjoys empirical support.

**Contrast with Autocracies**

The effect of transparency in democracies (which makes elections more effective, and hence autocratic reversions less likely) stands in stark contrast to its role in autocracies, where higher levels of transparency result in increased mass mobilization and the risk of regime instability. Hollyer, Rosendorff and Vreeland (forthcoming 2015) consider a model similar to the one we present here, but there are no elections. Citizens under autocracy are faced with a poor informational environment; they are uncertain of the distribution of discontent with the sitting leadership. The only possibility for aggregating the diffuse private information is the option of engaging in protest in the street. Since mass mobilization is subject to strategic complementarities – the willingness of any one citizen to mobilize is contingent on the willingness of others to mobilize – this lack of information serves as an impediment to the organization of protests and strikes (Kuran, 1991; Lohmann, 1993). The more protesters there are, the greater the likelihood that the autocratic leader is removed. But for protesters to be willing to risk danger and punishment for protesting, the citizens have to be reasonably sure that enough of their compatriots will protest too. This is where the transparency of the system enters – the more reliable the information that others are suffering in the same way any individual is, the more likely it is that mobilization occurs. Hence, transparency heightens the likelihood of political protest and unrest in autocratic regimes. Transparency helps to offset the scarcity of information and the uncertainty of higher order beliefs, enabling mobilization where it would otherwise prove infeasible.

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7Experimental evidence suggests that elections may confer legitimacy, regardless of their outcomes (Grossman and Baldassarri, 2012; Olken, 2008).
By contrast, democracies are an information rich environment, even when levels of transparency are low. As Fearon (2011) points out, contested elections serve to directly inform citizens of the distribution of discontent with the sitting leadership (see also, Little, Tucker and LaGatta, 2013). Since any one citizen is well-informed of her fellows’ beliefs regardless of the level of transparency, further information plays at best a minor role in the organization of protest. Rather, as we describe above, transparency serves to inform citizens of the government’s performance before they enter the voting booth. Each citizen is consequently better able to align her vote with the government’s performance when transparency is high than when it is low. Election results are thus more responsive to government performance as transparency rises, improving their effectiveness in mitigating adverse selection issues and enhancing democratic legitimacy.

**Existing Literature**

This paper relates to a literature on democratic consolidation that is far too vast to fully survey here. We note, however, that our emphasis on the importance of the legitimacy of elections in the eyes of the citizenry is widely shared in this literature. A consensus holds that democracies become consolidated as political actors come to accept the ‘rule of the [democratic] game’ (Diamond, 1994, 1999; Linz, 1978; O’Donnell, 1996; Schedler, 1998; Schmitter, 1992). Differences emerge, however, as to what factors promote such legitimization. Some emphasize the importance of civil society (Diamond, 1994) or associational groups (Schmitter, 1992), others the extent of participation in electoral processes (Wright, 2008). We share an emphasis on the importance of agency problems (government efficacy) under democracy with Linz (1978) and Diamond (1999). Our contribution is to stress the role transparency and elections play in rewarding competent leadership, and thus in stabilizing democracy.

Our approach perhaps bears the closest resemblance to Svolik (2013), who argues that democracies (particularly young democracies) can fall into a ‘trap’ in which citizens’ low esteem for democratic institutions encourages the entry of corrupt or incompetent politicians into political life, reinforcing citizens’ initially low opinions. Critical to this account is the assumption that monitoring incumbents is costly for citizens, and citizens are unwilling to bear this cost when they believe all politicians are ‘bad’ types. Unlike Svolik, our theoretical model examines variation in

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8For purposes of analytical tractability, we dichotomize regimes as either having contested elections (democratic) or not having contested elections (autocratic). Many, indeed most, autocratic states hold some form of election, though vote rigging and constraints on political contestation imply that these are not fully informative of citizens’ level of discontent. On the informational value of autocratic elections see, for instance, Egorov and Sonin (2012), Little (2012), Little, Tucker and LaGatta (2013), Lust-Okar (2006), and Magaloni (2006).
the availability of information, which is treated as costless in our model. However, transparency may be thought of as decreasing the costs of citizens’ monitoring, thus reducing the vulnerability of democracy to such traps.

Other authors emphasize the importance of structural factors to democratic survival (Huber, Rueschemeyer and Stephens, 1993; Lipset, 1959; Moore, 1966). Most significantly, economic development is strongly (positively) correlated with democratic survival (Przeworski et al., 2000). We abstract away from such concerns in our theoretical account. We do so not because we think structural factors unimportant, but because they are tangential to the mechanisms that are our focus.9

We also draw heavily on a literature that emphasizes the informational problems inherent in mass mobilization, and the role of elections in addressing these problems. Early models of protest noted the coordination issues inherent in mobilization (Kuran, 1991; Lohmann, 1993).10 A growing literature, starting with Fearon (2011), points to the role of elections in resolving these problems. Fearon points out that elections can thus enable citizens to discipline rulers who infringe on the democratic rules of the game (building on the insights of Weingast, 1997). Little, Tucker and LaGatta (2013) further develop this idea, noting that the conditions under which elections are likely to prove self-enforcing are only likely to be consistent with majoritarian electoral outcomes when elections are free from fraud – a point empirically tested by Hyde and Marinov (2014). Egorov and Sonin (2012) note that elections can serve to discipline leaders even under ‘contested authoritarian’ rule. Empirical observations from Tucker (2007) and Bunce and Wolchik (2011) – which find that contested election results often give rise to protest – give weight to these theoretical claims.

We similarly note the importance of elections in coordinating protest. However, in contrast to these papers, our emphasis is on the compliance of the populace with the democratic rules of the game, not on the ability of citizens to discipline leaders. Our model abstracts away from leaders’ compliance with democratic results – we assume leaders who are voted out of office step down. Our focus is on citizens’ behavior – and more generally on citizen satisfaction with democratic institutions.

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9Our empirical specifications, however, all control for levels of economic development and for past experiences of democratic collapse. These are two of the most robust predictors of democratic instability (Gassebner, Lamla and Vreeland, 2013; Przeworski et al., 2000).

10A more recent literature employs a global games (Morris and Shin, 2001) informational structure to model protests. Our approach has much in common with these models. Examples include Bueno de Mesquita (2010), Shadmehr and Bernhardt (2011, N.d.) and Little, Tucker and LaGatta (2013). Shadmehr and Bernhardt (forthcoming) similarly consider informational availability – in their example reflecting state censorship – and its relation to mass mobilization.
Definition of Transparency

Transparency has many facets, and we stress the importance of using a measure of transparency that reflects the aspect employed by our theory. The definition of transparency we use throughout this paper is thus a narrow one. We use the term transparency to mean the disclosure of information, which is relevant to policy outcomes, to the mass public. Information must be pertinent to public policy if it is to enable citizens to update their beliefs regarding government performance, and thus influence their voting behavior. Citizens must be able to access such information. Moreover, it must be common knowledge that such information is disclosed if any individual citizen is to believe that others are similarly able to make informed voting decisions.

We particularly emphasize the importance of the availability of information on aggregate policy outcomes. Previous theoretical work has demonstrated that information on policy outcomes unambiguously improves government accountability – in contrast to information about the policies that are adopted or on details of the policy-making process, the effects of which are ambiguous (Prat, 2005; Stasavage, 2004). Information on aggregate outcomes is most likely to be useful when policies are complex and have consequences for the broad populace – rather than highly targeted groups (Hollyer, Rosendorff and Vreeland, 2013). Since our emphasis is on the broad performance of the government – and we will particularly focus on economic performance – the disclosure of information takes on particular significance.

Our empirical measure of transparency is drawn from the HRV Index (Hollyer, Rosendorff and Vreeland, 2014a). This measure treats transparency as a latent predictor of the reporting/non-reporting of data to the World Bank’s World Development Indicators (WDI) data series, which is extracted using an item response model. It presents a continuous measure of transparency which summarizes the missingness of 240 variables from the WDI. The HRV Index not only matches our theoretical conception of transparency well, it also provides broad temporal and geographic coverage: 125 countries between 1980 and 2010. We provide a more complete discussion of this measure in our discussion of the empirics below.

We acknowledge, however, that our definition of transparency is a narrow one. Broader definitions can pertain to any aspect of information transmission within a given policy. These might include the openness of political institutions (Broz, 2002; Dahl, 1971), freedom of the press or circulation of the press (Adserà, Boix and Payne, 2003; Brunetti and Weder, 2003), or the presence of freedom of information laws (Berliner, 2011; Islam, 2006), or the availability of different subsets of information (Copelovitch, Gandrud and Hallerberg, 2015). We prefer a narrow conception of transparency here for reasons of conformity with our theoretical model. We also note that definitions that incorporate political openness may create a tautological relationship between
our explanatory (transparency) and outcome (democratic collapse) variables.

Model

Model Primitives

Consider an interaction between a democratic leader $L$ and a mass of citizens. Each citizen is denoted $i$ where $i$ is indexed over the unit interval $i \in [0, 1]$.

Citizens seek to infer the leader’s type, which may be either ‘good’ or ‘bad.’ Our model is one of adverse selection in government. A leader’s type may refer to his level of skill, competence, or honesty. ‘Good’ leaders will therefore return better economic performance than ‘bad’ leaders. Citizens seek to remove ‘bad’ leaders from office, while retaining ‘good’ types.

So, $L$ may be of one of two types, $\theta \in \{0, 1\}$. Nature chooses $L$’s type $\theta$ where $\theta = 1$ with probability $p$ and $\theta = 0$ with probability $1 - p$. In each period during which she is in office in office, $L$ chooses whether or not to provide a public good $G_t \in \{0, 1\}$, where $t \in \{1, 2\}$ denotes the period of play. $L$’s utility from doing so is a function of her type, such that in each of two periods:\(^{11}\)

$$u_{L,t}(G_t; \theta) = \begin{cases} 1 & \text{if } G_t = \theta \\ 0 & \text{otherwise} \end{cases}$$

$$u_L = \sum_{t=1}^{2} u_{L,t}(G_t; \theta)$$

$L$’s choice regarding public goods provision $G_t \in \{0, 1\}$ has implications for economic outcomes in the following manner: Each citizen $i$ receives an income $y_{i,t} = G_t \gamma + \epsilon_{i,t}$, where $\epsilon_{i,t} \sim \mathcal{N}(0, \sigma_y^2)$ $\forall i, t$, and $\gamma$ is a strictly positive constant. The standard deviation of individual outcomes, $\sigma_y > 0$, captures all factors exogenous to government policies that may shift a given citizen’s economic welfare. Each citizen observes $y_{i,t}$, but does not observe the value of $G_t$. In observing first period income, $y_{i,1}$, the citizen is also receiving a signal about the type of government it is facing, which informs its decision about how to vote and whether to engage in protest to induce the leader’s potential removal.

In the first period of play, all citizens also receive a publicly observable signal of the state of the economy $s$. We assume that $s = G_1 \gamma + \rho$, where $\rho \sim \mathcal{N}(0, \sigma_s^2)$ and $E[\rho \epsilon_{i,t}] = 0$ $\forall i, t$, where $\sigma_s > 0$ is the standard deviation of this publicly observed signal. $s$ is meant to depict

\(^{11}\)Actors do not discount over time. The results would be unchanged by including a discount factor.
the role of publicly disclosed aggregate economic data, which enable citizens to form beliefs about government performance. As more information is made available, citizens are better able to discern the role of government policies in shaping economic outcomes – consequently $\sigma_s$ shrinks.\textsuperscript{12} $\sigma_s$ is thus a measure of the inverse of transparency (i.e., of opacity). As $\sigma_s$ declines, transparency rises.\textsuperscript{13} Since $s$ depicts the public disclosure of aggregate economic data, we further assume that $\sigma_s < \sigma_y$.

After receiving both her signals (public and private), each citizen may cast a vote for or against the incumbent $v_i \in \{0, 1\}$, where $v_i = 1$ denotes a vote for removal. Let the mass of citizens voting for removal be $V \equiv \int_0^1 v_idi$. If $V \geq \frac{1}{2}$, $L$ is removed from office; if $V < \frac{1}{2}$, $L$ is retained. Citizens suffer no direct cost, nor enjoy any direct benefit, from their voting decision. After the election $V$ is revealed to all citizens and to $L$.

If $L$ is retained in office, each citizen $i$ may mobilize in an attempt to bring about her ouster.\textsuperscript{14} Let $a_i \in \{0, 1\}$ denote the decision to mobilize, where $a_i = 1$ indicates mobilization.\textsuperscript{15} Denote the total mass of citizens who engage in unrest as $A \equiv \int_0^1 a_idi$. If $A$ exceeds (weakly) some exogenous threshold $T \in (0, 1)$, the sitting government will be removed and replaced by a new $L$, whose type is drawn with the same distribution as the prior leader. We define an indicator function $R(A)$ to denote removal, such that:

$$R(A) = \begin{cases} 
1 & \text{if } A \geq T \\
0 & \text{otherwise.}
\end{cases}$$

Engaging in mobilization entails a cost of $\kappa > 0$ for each citizen. However, if the collective protest is successful in removing the sitting leader, each citizen that participates in these protests gains a benefit $\beta > \kappa$. These benefits may be thought of as the psychological returns from

\textsuperscript{12}Values of $\sigma_s$ remain strictly positive, however. Citizens are never able to perfectly deduce government competence as economic fluctuations may derive from factors exogenous to government behavior or as a result of decisions made by lower-level officials insulated from direct accountability to the government (Duch and Stevenson, 2008). Our contention is merely that, ceteris paribus, $\sigma_s$ falls as transparency rises.

\textsuperscript{13}Transparency, and hence disclosure is an exogenous parameter in the model, rather than a choice variable for the government. Our focus here is on the role transparency plays in fostering democratic stability. We model government’s decisions to disclose – assuming its implications for leader survival – elsewhere (Hollyer, Rosendorff and Vreeland, 2011, 2014b).

\textsuperscript{14}While we recognize that such mobilization is ‘unthinkable’ in many advanced democracies, we do not restrict the scope of our analysis to ‘new’ democracies. We believe that democratic consolidation is a condition that should be derived from the equilibrium of the model – not a condition to be assumed by restricting the action space of citizens. Thus, citizens in all democracies have the ability to mobilize, even if some choose – in equilibrium – never to exercise this ability. We would like to thank John Freeman for clarifying this point.

\textsuperscript{15}Such mobilization may be thought of as either directly ousting the incumbent or as creating opportunities for third parties to remove the incumbent – e.g., via a coup. Since our focus is on citizen behavior, we collapse both threats to the regime into the decision to protest.
participating in the successful overthrow of the *ancien regime*, or as material benefits, or the likelihood of favors, from any new regime that replaces the old. In either case, $\beta$ represents a 'selective incentive' for mobilization (Olson, 1971). Each citizen's utility function is:

$$u_i(y_{i,1}, y_{i,2}, a_i; A) = y_{i,1} + y_{i,2} + a_i[R(A)\beta - \kappa].$$

The order of play is:

1. Nature chooses $L$'s type, $\theta \in \{0, 1\}$. The value of $\theta$ is revealed to $L$, but not to any citizen.
2. $L$ chooses whether or not to provide the public good $G_1 \in \{0, 1\}$.
3. Nature chooses $\epsilon_{i,1} \forall i$. Nature also chooses $\rho$. $y_{i,1}$ is revealed to each citizen $i$, but not to any other citizen. $s$ is revealed to all citizens.
4. Each citizen chooses $v_i \in \{0, 1\}$. $V = \int_0^1 v_i \, di$ is revealed to all citizens. If $V \geq \frac{1}{2}$, $L$ is removed and replaced by another government, whose type $\theta$ is chosen by Nature.
5. If $V < \frac{1}{2}$ (incumbent, $L$, is retained), each citizen may choose whether or not to engage in collective action $a_i \in \{0, 1\}$. If $A \geq T$, $L$ is removed and replaced by another government, whose type $\theta$ is chosen by Nature.
6. The sitting $L$ chooses the value of $G_2 \in \{0, 1\}$.
7. Nature chooses $\epsilon_{i,2} \forall i$. $y_{i,2}$ is revealed to each citizen and the game ends.

**Equilibrium**

This game gives rise to a multiplicity of perfect Bayesian equilibria (Fudenberg and Tirole, 1991). With a continuum of citizens, voting decisions may be non-strategic. Moreover, coordination problems in the mobilization stage of the game similarly give rise to multiple equilibria.\(^{16}\)

We narrow the set of equilibria to our model by restricting player strategies in the following manner: First, we assume that citizens vote sincerely. That is, a citizen $i$ will vote to remove the incumbent (set $v_i = 1$) if and only if the posterior belief that leader is competent (after both the private and public signal, but before the election) is lower than what the voters might expect if

\[^{16}\text{While the mobilization stage of our game resembles a 'global game,' it lacks the two-sided limit dominance typical of global game models (Morris and Shin, 2001). Thus, as with coordination games, there always exist pure strategy equilibria in which citizens either always mobilize or fail to mobilize irrespective of their signals. This approach most closely resembles that of Bueno de Mesquita (2010), which also deals with unrest.}\]
the leader is replaced. That is $Pr(\theta = 1|y_{i,1}, s) \leq p$. Second, we assume that a citizen $i$ will only mobilize to overthrow the sitting leader if she believes with some positive probability that the leader is a bad type. That is, we require that $a_i = 0$ if $Pr(\theta = 1|V, s) = 1$. This rules out (perverse) equilibria in which all citizens coordinate on removing a leader known – with certainty – to be a good type.

Before we characterize the equilibrium, a definition is necessary.

**Definition 1.** Define $\tilde{y}(s)$ as
\[
\tilde{y}(s) \equiv \frac{\gamma}{2}(\frac{\sigma^2}{\sigma^2_y} + 1) - \frac{s\sigma^2}{\sigma^2_y},
\]
and define
\[
V(s; G_t) = \begin{cases} 
\Phi\left(\frac{\hat{y}(s)}{\sigma_y}\right) & \text{if } G_1 = 0 \\
\Phi\left(\frac{\hat{y}(s) - \gamma}{\sigma_y}\right) & \text{if } G_1 = 1.
\end{cases}
\]

where $\Phi$ is the cdf of the standard normal distribution.

$\hat{y}(s)$ is defined such that $Pr(\theta = 1|\tilde{y}(s), s) = p$. This is the value of the private signal such that any individual having received that private signal $\tilde{y}(s)$, and public signal $s$ is indifferent between reelecting and evicting the incumbent. Since $s$ is the common public signal, this threshold is common to all individuals.

A monotone prefect Bayesian equilibrium will consist of the following: (1) An action pair for each voter $(v_i, a_i)$ mapping their signals into actions from $\mathbb{R} \rightarrow \{0, 1\}$ and $\mathbb{R} \rightarrow \{0, 1\}$. (2) A strategy for $L$ from type- to action-space, $G_t : \{0, 1\} \rightarrow \{0, 1\}$. (3) Posterior beliefs $Pr(\theta = 1|y_{i,1}, s)$ and $Pr(\theta = 1|V, s)$.

Characterizing the equilibrium, we have:

**Proposition 1.** The following strategies and beliefs constitute a perfect Bayesian equilibrium. For the leader, $G_t = \theta$ for $t = 1, 2$. For the citizens, their voting and mobilization strategies are
\[
v_i = \begin{cases} 
1 & \text{if } y_{i,1} \leq \tilde{y}(s) \\
0 & \text{otherwise.}
\end{cases}
\]
\[
a_i = \begin{cases} 
1 & \text{if } V > V(s; 1) \\
0 & \text{otherwise.}
\end{cases}
\]

Posterior beliefs (after both the private and public signals but before the vote) are $Pr(\theta =
\[ 1|y_{i,1}, s) = \frac{p\phi\left(\frac{y_i1 - \gamma}{\sigma_y}\right)\phi\left(\frac{s - \gamma}{\sigma_s}\right)}{p\phi\left(\frac{y_i1 - \gamma}{\sigma_y}\right)\phi\left(\frac{s - \gamma}{\sigma_s}\right)+(1-p)\phi\left(\frac{y_i1}{\sigma_y}\right)\phi\left(\frac{s}{\sigma_s}\right)} \quad \text{and after the vote, but before political action:} \]

\[ Pr(\theta = 1|V, s) = \begin{cases} 0 & \text{if } V > V(s, 1) \\ 1 & \text{otherwise.} \end{cases} \]

All proofs are in the Appendix.

Along the equilibrium path, good types of government provide public goods; bad types do not. Hence, bad types of governments experience a larger number of votes to remove; good types a smaller number: \( V(s; 1) < V(s; 0) \) for all \( s \). Hence after the vote, all voters observe the vote counts, and are then perfectly informed as to the type of the leader. Posterior beliefs are thus either \( Pr(\theta = 1|V, s) = 0 \) or \( Pr(\theta = 1|V, s) = 1 \). If for some \( s, V(s; 1) < \frac{1}{2} < V(s; 0) \) then a good type is reelected and a bad type is removed from office via the electoral process. There is no post-election mobilization or political action, the democratic process has worked to solve the adverse selection problem.

However it is possible in equilibrium that even though there are more votes to remove a bad leader (than a good leader), the threshold to actually remove the (bad) leader from office (half of the votes or more) might not be breached. That is, it is possible that \( V(s; 0) < \frac{1}{2} \). This occurs in the case where the combination of private and public signals happened to be good draws. The election then fails to evict a bad leader from office. All citizens are now fully informed (after the election) that a bad leader has been reelected. Voters are dissatisfied with this outcome and take to the streets to ensure – whether directly or indirectly – the incumbent’s ouster. Political action emerges when the democratic process fails to address the adverse selection problem. By contrast, voters do not mobilize against a good leader should she be reelected.

Finally, it is possible that even good types can be removed by the election when \( V(s; 1) > \frac{1}{2} \). This occurs when a good leader is subject to bad shocks. Again, however, there is no political action, since the leader has been removed by the democratic process.

Democratic legitimacy – characterized by elections that remove bad leaders and reelect good ones – emerges in equilibrium if elections adequately serve their role in resolving adverse selection problems in representative government. In the next section we consider the role of transparency in reducing the severity of the adverse selection problem. Transparency will reduce the likelihood of reelecting bad types.
Comparative Statics

We would like to explore the effect of transparency on the degree to which the political institutions are able to discriminate between the survival in office of ‘good’ versus ‘bad’ types. Since citizens engage in mobilization if and only if a ‘bad’ incumbent is reelected, the question becomes: Does transparency enhance the likelihood that ‘bad’ types are removed via the electoral process? The answer is yes.

**Definition 2.** Define \( \tilde{s} \) implicitly by \( \Phi\left( \frac{\tilde{y}(\tilde{s})}{\sigma_y} \right) = \frac{1}{2} \) and define \( s \) implicitly by \( \Phi\left( \frac{y(\theta)-\gamma}{\sigma_y} \right) = \frac{1}{2} \).

We show in the appendix that \( \tilde{s} \) and \( s \) are well defined. If \( s \geq \tilde{s} \), governments of all types will be reelected. If \( s \leq \tilde{s} \), governments of all types are voted out of office. If \( s \in (\tilde{s}, \tilde{s}) \), then governments are voted out of office if and only if \( \theta = 0 \). Since \( s \) is distributed normally with mean 0 when the leader is bad (in equilibrium), and is distributed with mean \( \gamma \) when the leader is good in equilibrium (and both have standard deviation \( \sigma_s \)), we can define the probability that a government of type \( \theta = 0 \) is voted out of office as \( \Phi\left( \frac{s}{\sigma_s} \right) \). And we can define the probability that a government of type \( \theta = 1 \) is voted out of office as \( \Phi\left( \frac{s-\gamma}{\sigma_s} \right) \). The extent to which electoral survival is conditioned on policy decisions or, equivalently, a government’s type is thus \( \Phi\left( \frac{s}{\sigma_s} \right) - \Phi\left( \frac{s-\gamma}{\sigma_s} \right) \). We term this quantity the electoral discrimination.

**Proposition 2.** Electoral discrimination is strictly rising in transparency (falling in \( \sigma_s \)).

As transparency rises, the probability that a government of type \( \theta = 0 \) is voted out of office rises; while the probability that a government of type \( \theta = 1 \) is voted out falls. The electoral process is better at solving the problem of adverse selection as transparency rises. Democratic legitimacy is enhanced when the information on which the voters condition their reelection choice is a more reliable indicator of the policy choices of the leader.

In equilibrium, if a low type leader survives in office, the voters mobilize for his ‘non-conventional’ removal. We will use the shorthand ‘democratic collapse’ to describe the instance where a leader is removed by means other than the electoral process. Since democratic collapse takes place when poor leaders are reelected, this probability is given by \( (1 - p)(1 - \Phi\left( \frac{s}{\sigma_s} \right)) \), the ex ante probability that \( L \) is a ‘bad’ type \( \theta = 0 \) multiplied by the probability that such a type survives the electoral process.

Increases in transparency – reductions in \( \sigma_s \) – make elections more effective in selecting good leaders, and make political action in the form of mass mobilization and democratic collapse less likely. Since the probability a ‘bad’ government is retained via an election is falling in transparency, so too is the risk of democratic collapse.
Proposition 3. The probability of democratic collapse is strictly falling in transparency (rising in \( \sigma_s \)).

Transparency improves the role of elections in addressing adverse selection problems in government. And, because protests and elections are substitute mechanisms for addressing such problems, the risk to democracy falls as elections grow more effective.

Model Extension

In our baseline model, the incumbent’s type \( \theta \in \{0, 1\} \) is wholly determinative of her strategy in equilibrium. Here, we relax this assumption and consider circumstances under which bad types may have an incentive to pool with good – to set \( G_1 = 1 \) in order to increase their chances of surviving in office. The comparative statics documented in Proposition 3 hold in this extension. The risk of democratic collapse (weakly) falls for all values of transparency.

Consider an interaction identical to that above, save only for the utility function of the incumbent \( L \). Define \( L \)’s utility in each period \( t \) as:

\[
u_{L,t}(G_t; \theta) = \begin{cases} 
1 + B & \text{if } G_t = \theta \text{ and in office} \\
B & \text{if } G_t \neq \theta \text{ and in office} \\
0 & \text{otherwise.}
\end{cases}
\]

where \( B > 0 \) denotes the rents from office. \( L \) has a primitive preference for matching her action \( G_t \) with her type \( \theta \). But, \( L \) also prefers to retain office, and thus gain access to the rents \( B \). \( L \) may, therefore, deviate from her preferred choice of \( G_1 \) if doing so increases her chance of remaining in office.

The extended model may give rise to both pooling and separating equilibria. In a separating equilibrium, the incumbent sets \( G_1 \) in a manner consistent with her type. In a pooling equilibrium, bad types pool with good in setting \( G_1 = 1 \). In particular, we consider a separating equilibrium identical to that in the model above, in which citizens vote sincerely. We characterize such a separating equilibrium to this extension in the following proposition:

Proposition 4. If \( \Phi(\frac{\xi - 2}{\sigma_s}) \geq \frac{B}{1+B} \), then the following strategies and beliefs constitute a (separating) PBE to the extended model. For the leader \( G_t = \theta \) for \( t = 1, 2 \). For the citizens, their voting
and mobilization strategies are

\[
v_i = \begin{cases} 
1 & \text{if } y_{i,1} \leq \tilde{y}(s) \\
0 & \text{otherwise.}
\end{cases}
\]

\[
a_i = \begin{cases} 
1 & \text{if } V > V(s; 1) \\
0 & \text{otherwise.}
\end{cases}
\]

Posterior beliefs (after both the private and public signals but before the vote) are

\[
Pr(\theta = 1 | y_{i,1}, s) = \frac{p\phi(\frac{y_{i,1}}{\sigma_y} - \frac{s - \gamma}{\sigma_s})}{p\phi(\frac{y_{i,1} - 1}{\sigma_y})\phi(\frac{s - \gamma}{\sigma_s}) + (1-p)\phi(\frac{y_{i,1}}{\sigma_y})\phi(\frac{s}{\sigma_s})}
\]

and after the vote, but before political action:

\[
Pr(\theta = 1 | V, s) = \begin{cases} 
0 & \text{if } V > V(s,1) \\
1 & \text{otherwise.}
\end{cases}
\]

Strategies in this separating equilibrium are exactly analogous to those described in the baseline model. Good incumbents set \( G_t = 1 \), as this both satisfies their primitive preference and maximizes their chance of retention. This is a dominant strategy. Bad types also play according to type, setting \( G_t = 0 \). In the second period, this also constitutes a dominant strategy. In the first, the incumbent could improve her chances of retention (from zero) by providing the public good. However, her risk of removal even after setting \( G_1 = 1 \), defined as \( \Phi(\frac{s - \gamma}{\sigma_s}) \), remains sufficiently high that she prefers to act according to type. Given that \( L \) plays according to type, each citizen is faced with exactly the same voting and mobilization decisions described above. Each \( i \) thus chooses to vote against the incumbent if \( y_i < \tilde{y}(s) \) and to mobilize against a reelected leader if \( V > V(s; 1) \).

However, this separating equilibrium exists only for a subset of parameter values. More precisely, this separating equilibrium exists only if the level of transparency is sufficiently low (\( \sigma_s \) is sufficiently high) relative to the value of holding office \( B \). For a sufficiently high value of holding office, this separating equilibrium will not exist for any value of transparency. We define the value of \( B \) below which a separating equilibrium exists as \( \bar{B} \) and the requisite value of \( \sigma_s \) necessary for a separating equilibrium given \( B \leq \bar{B} \) as \( \bar{\sigma}_s \). We characterize these values as follows:

**Lemma 1.** For any finite \( B \in [0, \bar{B}] \), there exists a \( \bar{\sigma}_s \) such that \( \Phi(\frac{s - \gamma}{\bar{\sigma}_s}) \geq \frac{B}{1+B} \) for all \( \sigma_s \geq \bar{\sigma}_s \), where \( s \) is as defined in Definition 2.

For alternative parameter values, the extended model gives rise to a pooling equilibrium, in which bad types mirror the actions of good in time \( t = 1 \). In such an equilibrium, neither the public nor the private signal is informative as to the incumbent's type. All types of \( L \) adopt the
same actions in equilibrium, hence all realizations of the signals $y_i$ and $s$ are equally likely for both types of leader. Voters cannot update their beliefs and are therefore indifferent between the incumbent and any challenger. Nonetheless, voters must continue to vote to remove incumbents if their signals (both public and private) are too low. Only by adopting such a strategy can the voters induce bad types of leaders to pool in the first period of play. We characterize such an equilibrium, in which voters’ behavior is unchanged relative to the above separating equilibrium, in the following proposition:

**Proposition 5.** If 
$$\Phi\left(\frac{y_i - B}{\sigma_s}\right) < \frac{B}{1+B},$$
then the following strategies and beliefs constitute a (pooling) PBE to the extended model. For the leader $G_1 = 1 \forall \theta$. $G_2 = 1$ if $\theta = 1$ and $G_2 = 0$ if $\theta = 0$. For the citizens, their voting and mobilization strategies are:

$$v_i = \begin{cases} 1 & \text{if } y_i, 1 \leq \bar{y}(s) \\ 0 & \text{otherwise.} \end{cases}$$

$$a_i = \begin{cases} 1 & \text{if } V > V(s; 1) \\ 0 & \text{otherwise.} \end{cases}$$

Posterior beliefs (after both the private and public signals but before the vote) are $Pr(\theta = 1|y_i, 1, s) = p$ and after the vote, but before political action:

$$Pr(\theta = 1|V, s) = \begin{cases} 0 & \text{if } V > V(s, 1) \\ p & \text{otherwise.} \end{cases}$$

In this equilibrium, citizens continue to vote against the incumbent when the realization of their public and private signals is sufficiently poor – i.e., when $y_i, 1 < \bar{y}(s)$. Important, however, this is not because such signals are indicative of a bad type of leader. Both good and bad types of incumbent provide the public good in the first period, hence signals are uninformative of type. Voters are thus no longer behaving sincerely. Rather, they behave in this manner because of the economic damage a leader might cause off the equilibrium path. Voters must continue to vote according to their signals, despite the fact that these signals only reflect noise in equilibrium, because this is their only means of ensuring that leaders of all types have an incentive to behave well.

Analogously, citizens maintain their strategy of resorting to protest should the combination of vote totals and the public signal be sufficiently bad. However, since incumbents of all types set $G_1 = 1$, this combination is never realized in equilibrium. $V(s, G_i) = V(s, 1)$ for both bad and good incumbents and protest never takes place. The risk of autocratic reversion falls to zero in
equilibrium – democracy becomes consolidated.

**Proposition 6.** The probability of democratic collapse is weakly falling for all values of transparency (weakly rising in $\sigma_s$).

Proposition 6 follows directly from the above. Lemma 1 establishes that the separating equilibrium described in Proposition 4 exists for sufficiently low levels of transparency (high values of $\sigma_s$). In this equilibrium, both citizen and incumbent strategies are identical to those in the baseline model, so the conclusions of Proposition 3 continue to hold. Within this separating equilibrium, the risk of democratic collapse strictly falls in transparency. For values of transparency greater than the threshold described in Lemma 1, the pooling equilibrium described in Proposition 5 exists. In this pooling equilibrium, democracy is consolidated. The risk of democratic collapse is constant and equal to zero for all levels of transparency above this value (all values of $\sigma_s < \bar{\sigma}_s$). The risk of democratic collapse is therefore weakly falling everywhere in transparency.

**Empirics**

**Data Description**

Since the unseating of democratically elected leaders, by definition, entails (for some period of time) the suspension of democracy, we treat democratic collapse as the transition from democratic to autocratic rule.\(^{17}\) Our definition of democracy for this purpose is drawn from the *Democracy and Development Revisited* (DD) dataset compiled by Cheibub, Gandhi and Vreeland (2010). The DD dataset uses the coding scheme pioneered in Alvarez et al. (1996), in which democracy is coded as a binary $\{0, 1\}$ indicator equal to 1 if both the legislative and executive branches are selected via competitive elections between contesting political parties. For a country to be considered a democracy, there must be at least one change in the party in power. All years under the same constitutional regime prior to this transfer of power are retroactively coded as democratic.

In addition to the democracy indicator, we draw several control variables from the DD data. A much contested literature points to differences in the stability of parliamentary and presidential regimes (e.g. Cheibub, 2007; Lijphart, 1992). We therefore control for a binary indicator of whether the government is run via a parliamentary system, and another indicator equal to one if the political regime involves a mixed parliamentary/presidential style system.

\(^{17}\)Linz (1978) also notes that popular mobilization may open the door for other actors to subvert democracy, leading to an autocratic reversion. Egypt provides a recent example.
Transparency enters into our theoretical model as the (inverse of) the standard deviation of the publicly observable signal of government performance witnessed by all citizens $\sigma_s$. Transparency thus pertains to information that is (1) publicly observable – and known to be publicly observable by all actors – and (2) allows citizens to draw accurate inferences regarding government performance. Our empirical measure of this parameter is the HRV Index (Hollyer, Rosendorff and Vreeland, 2014a), which measures the extent to which governments collect and disseminate aggregate economic data. The HRV Index is based on the reporting/non-reporting of information to the World Bank’s World Development Indicators (WDI) data series. These data are made publicly available by the World Bank and the disclosure of economic information to the Bank proxies the public dissemination of such data more generally.\textsuperscript{18} These data allow citizens to make more nuanced inferences about government performance than would be possible in their absence. As more aggregate economic data are made available, citizens will be better able to discern the performance of the economy beyond their given circle of friends, family and acquaintances; to assess the distributional consequences of this performance; and to assess the government’s role relative to that of cyclical fluctuations. While these inferences will always be imperfect ($\sigma_s > 0$), increases in the dissemination of aggregate economic data imply that these inferences will improve ($\sigma_s$ will fall).

The HRV index treats transparency as a latent term that determines whether a given variable (of 240 variables in the model) is reported to the WDI in a given year – measures of this latent term are extracted based on a item response theory (IRT) model. The IRT model provides a continuous measure of transparency (which is unique up to an affine transformation) along this scale – which reflects a given government’s tendency to disclose the type of data predominant in the WDI. Observations of this index are available at the country-year level for 125 countries over the 1980-2010 interval. For a complete description of our transparency variable, see Hollyer, Rosendorff and Vreeland (2014a).

An important concern, when working with these data, is to what extent transparency is distinct from state capacity. As Hollyer, Rosendorff and Vreeland (2014a) argue, these concepts need not be viewed as contrary to one another – regardless of whether opacity results from a government decision not to disclose or from a government’s inability to disclose, citizens remain uninformed. Moreover, they demonstrate that while low-income democracies and autocracies disclose at similarly low rates, high-income democracies disclose much more information than analogous autocracies. Capacity – here proxied by per capita income – is predictive of disclosure

\textsuperscript{18}We do not expect that many members of the public access such data directly. However, we do expect citizens, absent such disclosures, to be relatively uninformed of aggregate economic performance.
in states where political incentives push governments toward transparency, but only correlates weakly with disclosure in states where such incentives are absent. The finding that transparency destabilizes autocracies (Hollyer, Rosendorff and Vreeland, forthcoming 2015) further suggests that the HRV index is picking up information transmission rather than merely state capacity. Presumably, capable autocrats are less prone to mass unrest than incapable ones.

Nonetheless, one must be concerned that our measure of transparency is correlated with state capacity, and capacity – rather than transparency – drives the relationship with regime collapse. This risk is particularly great given existing findings that high-income democracies rarely experience autocratic reversals (Gassebner, Lamla and Vreeland, 2013; Przeworski et al., 2000). To control for this possibility, we control for GDP per capita in all specifications.

We additionally control for a variety of other economic factors. In addition to GDP per capita, we include measures of economic growth (the percentage change in real GDP per capita) in all models as a measure of government’s economic performance. Finally, we include a measure of economic openness \( \left( \frac{\text{Exports} + \text{Imports}}{\text{GDP}} \right) \). This control is valuable given potential linkages between economic and political liberalization, and given that open economies are more likely to be subject to exogenous shocks to economic performance than closed, and thus economic performance may be less valuable a signal of government competence as trade dependence rises (Duch and Stevenson, 2008).

These measures are all drawn from the Penn World Table (PWT) version 6.3 (Heston, Summers and Aten, 2009). The PWT offers several advantages as a measure of economic performance for this study: First, the PWT data are adjusted and interpolated by external researchers with no affiliation to reporting governments (though, the underlying data are still based on national accounts). The PWT can thus be seen as a proxy for true economic performance \( G_t \) in our model rather than as a realization of the public signal \( s \).

Second, country time-series included in the PWT are uninterrupted. This is important when employing a measure of data missingness – such as the HRV index – as an explanatory variable. Were missing data present in the PWT, it is likely that missing values would correlate with transparency levels. Listwise deletion would therefore censor variation in a key explanatory variable, potentially inflating standard errors and understating measures of model fit.

In all estimations, we employ conditional gap time event history models, which flexibly control for past experiences of regime transition (Box-Steffensmeier and Zorn, 2002). We describe our

\[19\] Specifically, the PWT constructs its measures based on subcomponents of the national accounts data of ‘benchmark’ countries, and data from the United Nations International Comparisons Program. Data from non-benchmark countries are imputed, additionally employing information from the US State Department. For details, see Summers and Heston (1991).
empirical modeling approach in detail below. Controlling for past transitions is critically important given that the frequency of past autocratic reversions – along with GDP per capita – is among the most robust predictors of democratic collapse identified in the literature (see, for instance, Gassebner, Lamla and Vreeland, 2013).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Stand. Dev.</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparency</td>
<td>2.50</td>
<td>2.19</td>
<td>-1.37</td>
<td>9.98</td>
</tr>
<tr>
<td>Growth</td>
<td>1.81</td>
<td>4.24</td>
<td>-26.2</td>
<td>31.9</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>12.8</td>
<td>10.4</td>
<td>0.37</td>
<td>46.7</td>
</tr>
<tr>
<td>Ec. Openness</td>
<td>64.6</td>
<td>34.5</td>
<td>10.3</td>
<td>222</td>
</tr>
<tr>
<td>Parliamentary</td>
<td>0.42</td>
<td>0.49</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Mixed System</td>
<td>0.18</td>
<td>0.38</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

**Empirical Model and Results**

Proposition 3 contends that transparency should be associated with the stabilization of democratic regimes. Transparent democracies should face a lower hazard of collapse (and transition to authoritarianism) than opaque democracies. Instability is driven by the perception that electoral rules fail to unseat rent-seeking or incompetent politicians, thus enhancing the effectiveness of elections serves to decrease the likelihood of unrest. We test this claim below.

We examine the relationship between the survival of democratic spells and levels of transparency. Our outcome of interest is a democratic-to-authoritarian transition, which we define using the DD dataset (Cheibub, Gandhi and Vreeland, 2010). The unit of observation is the democratic spell-year, where a democratic spell is defined as one or more continuous years of democratic rule.

We test this relationship using Cox proportional hazards regressions, where the baseline hazard rate is estimated using conditional gap time models. Conditional gap time models stratify the baseline hazard rate based on some (potentially multichotomous) indicator variable. In so-doing, they flexibly control for the manner in which this term may shift the hazard rate – both the shape and the level of the baseline hazard may differ across strata (Box-Steffensmeier and Zorn, 2002).

Specifically, we stratify the baseline hazard rate based on the frequency with which a given country has experienced democratic collapses in the past. Substantial evidence exists that past instability predicts future instability – the transition process between political regimes is non-
Markovian (Gandhi and Przeworski, 2007). We thus estimate models where we stratify the baseline hazard rate based on an indicator for whether there has been a prior transition, or, alternatively, an ordered variable based on the number of prior transitions. As a final robustness test, we drop all cases that had experienced a prior democratic collapse from the model.

Our empirical hypothesis holds that the hazard of democratic collapse should fall in transparency. To test this hypothesis, we estimate models of the following form:

\[
 h_d(t) = h_0(t) e^{X_{d,t}\beta} \\
 X_{d,t}\beta = \beta_0 + \beta_1 \text{Transparency}_{d,t-1} + \beta_2 \text{Growth}_{d,t-1} + \beta_3 \text{Transparency}_{d,t-1} \times \text{Growth}_{d,t-1} + Z_{d,t-1}\psi
\]

where \(d\) denotes democratic-spell \(d\), \(t\) denotes time (measured in years) of continuous democratic rule, and \(Z_{d,t-1}\psi\) is a vector of controls and associated coefficients. \(h_0(t)\) is the baseline hazard rate, which is estimated separately based on the history of past democratic collapses. All standard errors are clustered by democratic-spell, to adjust for inter-temporal correlations. Our hypothesis holds that \(\beta_1 < 0\).

Results from these regressions are presented in Table 2. The first two columns present coefficient estimates from a conditional gap time model in which the baseline hazard rate is stratified by whether or not there was a prior transition, the next two present similar models stratified based on the number of prior transitions, and the final two present estimates from a model run on democracies that did not experience a prior transition to autocracy between 1870 and 2008. Table 2 presents estimates of coefficient values, not hazard ratios.

As can be seen from Table 2, the coefficient on transparency is consistently negative and large. 95% credible intervals are bounded away from zero in all but one specification – the p-value in the exceptional case is 0.052. The point estimates suggest that a one standard deviation increase in transparency serves to reduce the hazard of democratic collapse by between roughly 65 to 95 percent.

Figure 1 presents estimates of the smoothed hazard function from the model in the fifth column of Table 2.\(^{20}\) The figure to the left presents estimates from when transparency is at its 10th percentile in the sample; while, the figure to the right presents the smoothed hazard when transparency is at its 90th percentile. Dashed lines depict the estimated hazard when growth is at its 10th percentile; solid lines depict the same when growth is at its 90th percentile. As can be

\(^{20}\)We present results from the fifth column since a single hazard rate is estimated only when considering cases that have not experienced prior transitions. In other instances there are multiple baseline hazards based on past experiences of democratic collapse.
readily seen, an increase in transparency is associated with a marked decline in the estimated hazard rate.

Smoothed estimates of the hazard rate as derived from the Cox Model in fifth column of Table 2. The figure to the left depicts the change in the hazard rate when growth moves from the 10th percentile to the 90th percentile in the sample when the transparency score is at the 10th percentile. The figure to the right depicts the change in the hazard rate when growth changes from the 10th to the 90th percentile when transparency is at the 90th percentile. All other covariates are held at their mean values – save the Parliamentary and Parliamentary $\times t$ variables, which are held at 0.

**Figure 1:** Democracy Hazard Rates as a Function of Transparency and Growth

These results thus offer support for Proposition 3 – as levels of transparency rise, the risk of democratic collapse sharply declines. Transparency reinforces democracy.

Coefficients on the interaction between transparency and economic growth are consistently positive, indicating that variations in growth rates have a diminished impact on the survival of highly transparent regimes. These coefficients are imprecisely estimated however, and never rise to levels of statistical significance. As we discuss below, we fit robustness checks excluding this interaction term, which produce substantively similar findings regarding the unconditional effect of transparency.
Interestingly, the coefficients on GDP *per capita* are imprecisely estimated in these regressions, and the coefficients on this term are relatively small. A one standard deviation shift in GDP *per capita* is estimated to lead to an approximately 50% decline in the hazard rate in Model 1, which returns the largest coefficient on this term. This is perhaps unsurprising, given the correlation between GDP *per capita* and our transparency measure. However, it does suggest, that transparency is *part* of the mechanism underlying existing findings that high-income democracies are less susceptible to collapse.

Robustness Checks

We additionally conduct a series of robustness checks of our baseline specifications as reported in Table 2. Our results are robust to the use of alternative definitions of instances of democratic collapse, to variations in the specification of our empirical model, and to the inclusion of alternative controls.

One potential concern with our baseline specification may arise from our definition of instances of democratic collapse. Our definition draws upon the DD measure of democracy. Controversially, the DD dataset codes countries in which free elections take place, but in which there has never been a transfer of power between political parties, as non-democracies. This coding scheme, which Cheibub, Gandhi and Vreeland (2010) (following Alvarez et al., 1996) term the Type 2 rule, is intended to avoid misclassifying instances in which ruling parties hold and win elections, but which would not have complied with election results had they lost, as democracies. But, it also has the effect of coding countries widely regarded as democratic (e.g., Botswana) as non-democracies – there exists an inherent trade-off between type 1 and type 2 errors. Given that we observe relatively few instances of democratic collapse in our data, a reasonable concern might be raised that our results may be influenced by the inclusiveness of our definition of democracy.

To address this concern, we recode the DD democracy indicator such that country-years that only fail the Type 2 rule, but otherwise qualify as democratic, are treated as democracies. We rely on the Type2 indicator in the DD dataset for this reclassification. We then fit the model defined in Equation 1 to the reclassified data. We report the results of this robustness check in Table 3. Our only departure from the specification above is that we omit the indicator for parliamentary regimes for all specifications run only on states that had never before experienced a democratic collapse. In the reduced sample, no parliamentary system experiences a failure (as redefined for the robustness check), hence the coefficient on this term is not properly identified.

As in our baseline specifications, the coefficient on the transparency term is consistently neg-
ative and 95 percent confidence intervals are bounded away from zero in all but one specification. Our results appear robust to the redefinition of democracy.

We additionally explore the robustness of our results to alternative specifications of the empirical model. One might be concerned that the interaction between transparency and growth induces sensitivity to outliers (the two terms are positively correlated, though only slightly, with a correlation coefficient of 0.16). One might also worry that transparency should enter the Cox link function in a non-linear manner, inducing model misspecification. In the appendix, we demonstrate that our results are robust to the omission of the interaction term and to the inclusion of a quadratic of transparency in Tables 4 and 5, respectively. Moreover, the coefficient on the quadratic of transparency is substantively small and insignificant across all but one specification.

Finally, we explore the robustness of our results to an alternative set of controls. In particular, we test the robustness of our specifications to alternative forms of economic openness. Several works (e.g., Boix, 2003; Freeman and Quinn, 2012) suggest that democracies are more stable when their economies are relatively open. One might also expect that such economies have particularly strong incentives to disclose information, to appease mobile investors (Hollyer, Rosendorff and Vreeland, 2014b). Hence, one might expect economic openness to confound the relationship between transparency and democratic stability.

In our baseline specifications, we attempt to adjust for this possibility using a measure of $\frac{Export + Imports}{GDP}$. However, this measure is heavily influenced by the size of the economy and may be relatively insensitive to government policy. In the appendix, we our results employing two alternatives: the economic restrictions component of the KOF Index of Globalization (Dreher, 2006) and an updated variant of the Sachs-Warner measure of economic openness (Sachs and Warner, 1995) composed by Wacziarg and Welch (2008).

Results from these robustness checks are presented in Table 6. All results are substantively similar to those in our baseline specifications. The coefficient on transparency is negative in all specifications and is approximately equal to the results in the baseline models. This coefficient is typically somewhat less precisely estimated than in the baseline specification, though estimates typically remain significant at 90 percent levels or above.

**Conclusion**

Transparency facilitates the consolidation of democratic rule. It does this through a particular mechanism: Increased transparency enhances the popular legitimacy of elections. As transparency rises, elections become more effective means of resolving adverse selection problems
in representative government. Citizens, when confident that elections serve to hold their leaders to account, have a diminished incentive to resort to extra-constitutional means of disciplining their leaders.

This paper contributes to two literatures. First, and most clearly, it contributes the literature on democratic stability and consolidation. Our emphasis on the popular legitimacy of elections shifts the focus of much recent work, which concentrates on the behavior of elites (for an exception, see Svolik, 2013). In essence, this constitutes a return to an earlier literature on democratic consolidation, which stressed the importance of both popular and elite legitimation if democracy is to survive. In contrast to this earlier literature, however, we introduce a novel mechanism through which democracy might achieve mass legitimation, and thus introduce a novel predictor of democratic stability – namely transparency. Moreover, legitimacy in this context arises from the rational equilibrium strategies of citizens as deduced from a formal model – it is not merely a description of behavioral responses or of (possibly irrational) attitudes.

This paper, in combination with related work on transparency and mass mobilization in autocracies (Hollyer, Rosendorff and Vreeland, forthcoming 2015), also contributes to a growing literature on the coordination of protest. Like much of this literature, we are centrally concerned with the informational difficulties inherent in coordinating mass unrest. Others have focused on the role that election returns (Fearon, 2011; Hyde and Marinov, 2014; Little, Tucker and LaGatta, 2013) or revolutionary entrepreneurs (Bueno de Mesquita, 2010; Shadmehr and Bernhardt, N.d.) might play in resolving these difficulties. We focus on the role of transparency. Our results demonstrate that the role of information in coordinating protests is moderated by the institutional environment. Whereas transparency facilitates mass unrest in autocracies, it inhibits threats to democratic rule.

References


Shadmehr, Mehdi and Dan Bernhardt. N.d. “Vanguards in Revolution: Sacrifice, Radicalism and Coercion.”.


Proofs of Theoretical Propositions

Lemma 2. \( \bar{y}(s) = \frac{\gamma}{2} \left( \frac{\sigma_y^2}{\sigma_s^2} + 1 \right) - \frac{s \sigma_y^2}{\sigma_s^2} \).

Proof. Recall \( Pr(\theta = 1 | \bar{y}(s), s) = p \). From Bayes’ rule,

\[
Pr(\theta = 1 | \bar{y}(s), s) = \frac{p \phi \left( \frac{\bar{y}(s) - \gamma}{\sigma_y} \right) \phi \left( \frac{s - \gamma}{\sigma_s} \right)}{p \phi \left( \frac{\bar{y}(s) - \gamma}{\sigma_y} \right) \phi \left( \frac{s - \gamma}{\sigma_s} \right) + (1 - p) \phi \left( \frac{\bar{y}(s)}{\sigma_y} \right) \phi \left( \frac{s}{\sigma_s} \right)}.
\]

Then \( \bar{y}(s) = \frac{\gamma}{2} \left( \frac{\sigma_y^2}{\sigma_s^2} + 1 \right) - \frac{s \sigma_y^2}{\sigma_s^2} \).

Proof of Equilibrium Existence

Proof of Proposition 1. The leader has a dominant strategy to match her type: \( L \)’s best response is to set \( G_t = \theta \) in \( t \in \{1, 2\} \). In the voting stage, given the equilibrium strategies of the leader and the other voters, voter \( i \) votes against the incumbent (set \( v_i = 1 \)) if and only if \( Pr(\theta = 1 | y_{i,1}, s) \leq p \). Substituting the equilibrium interim beliefs and simplifying yields the condition that \( v_i = 1 \) iff \( y_{i,1} < \bar{y}(s) \). So the voter is playing a best response which is consistent with beliefs. After the voting is complete, and given these strategies by the voters, the number of votes to remove \( L \) is given by \( V(s; G_1) \), as defined in Definition 1. Notice that, for any value of \( s \), \( V(s; 1) < V(s; 0) \) – the vote share of the incumbent is strictly lower if she fails to provide the public good than if she provides the public good. This then implies that – given the public signal – each citizen \( i \) can deduce \( L \)’s type with certainty based on her vote share. More precisely, each citizen \( i \)’s posterior beliefs will be given by:

\[
Pr(\theta = 1 | V, s) = \begin{cases} 
0 \text{ if } V > V(s; 1) \\
1 \text{ otherwise.}
\end{cases}
\]

Given these posterior beliefs, it is an equilibrium response if all voters mobilize if the actual vote count is larger than the expected vote count in the instance that the leader is good, i.e. if \( V > \)
If all other voters are mobilizing it is optimal for the $i$’th voter to mobilize too in order to benefit from participating in a successful uprising; if the other voters are not mobilizing (which happens when $V \leq V(s; 1)$), then there is no benefit to protesting. Hence for voter $i$ a best response is $a_i = 1$ if $V > V(s; 1)$ and 0 otherwise. Finally both interim and posterior beliefs follow Bayes’ rule.

**Democratic Discrimination and Transparency**

**Lemma 3.** $\tilde{s}$ and $\tilde{s}$ are well-defined

**Proof.** $\Phi(\tilde{\gamma}) = \frac{1}{2}$ and $\tilde{y}(s) = \frac{\gamma}{2} \left( \frac{\sigma_y^2}{\sigma_s^2} + 1 \right) - \frac{\sigma_y^2}{2 \sigma_s^2}$ from Lemma 2. Substituting and solving yields $\frac{\gamma}{2} \left( 1 + \frac{\sigma_y^2}{\sigma_s^2} \right) = \tilde{s}$. Similarly, $\Phi(\tilde{\gamma} - \gamma) = \frac{1}{2}$. Substituting and solving yields $\frac{\gamma}{2} \left( 1 - \frac{\sigma_s^2}{\sigma_y^2} \right) = \tilde{s}$. □

**Discrimination Rises with Transparency**

**Proof of Proposition 2.** Electoral discrimination $= \Phi(\tilde{\gamma}) - \Phi(\tilde{\gamma} - \gamma)$. Now the first term $\frac{\gamma}{2} \left( \frac{\sigma_y^2}{\sigma_s^2} + 1 \right) - \frac{\sigma_y^2}{2 \sigma_s^2} < 0$ since $\sigma_s < \sigma_y$. The second term $\frac{\gamma}{2} \left( \frac{\sigma_y^2}{\sigma_s^2} + 1 \right) - \frac{\sigma_y^2}{2 \sigma_s^2} > 0$ again since $\sigma_s < \sigma_y$. Hence $\frac{\gamma}{2} \left( \frac{\sigma_y^2}{\sigma_s^2} + 1 \right) - \frac{\sigma_y^2}{2 \sigma_s^2} < 0$. □

**Unrest Falls with Transparency**

**Proof of Proposition 3.** Mass unrest takes place in equilibrium if and only if an incumbent of type $\theta = 0$ survives the electoral stage of the game. From the proof of Proposition 2, this probability is $1 - \Phi(\tilde{\gamma})$. Then $\frac{\partial}{\partial \sigma_s} \left[ 1 - \Phi(\tilde{\gamma}) \right] = -\phi(\tilde{\gamma}) \frac{1}{\sigma_s^2} < 0$. Since $\phi$ is the pdf of the standard normal (and hence positive), $\frac{\partial}{\partial \sigma_s} \left[ 1 - \Phi(\tilde{\gamma}) \right] > 0$. The probability of unrest under democracy is falling in transparency. □

**Model Extension**

**Proof of Existence of a Separating Equilibrium**

**Proof of Proposition 4.** When $\theta = 1$, $L$ has a dominant strategy of setting $G_t = 1 \forall t$. For this to be a separating equilibrium, when $\theta = 0$ $L$ must set $G_t = 0 \forall t$. When $L$ sets $G_1 = 0$, she is removed from office with certainty – either via elections or following unrest. When $L$ sets $G_1 = 1$
she is removed with probability \( \Phi\left(\frac{s - \gamma}{\sigma_s}\right) \). Hence, types \( \theta = 0 \) prefer to set \( G_1 = 0 \) iff:

\[
1 + B \geq B + [1 - \Phi\left(\frac{s - \gamma}{\sigma_s}\right)](1 + B)
\]

\[
\Phi\left(\frac{s - \gamma}{\sigma_s}\right) \geq \frac{B}{1 + B}.
\]

Given \( \Phi\left(\frac{s - \gamma}{\sigma_s}\right) \geq \frac{B}{1 + B} \), \( L \)'s strategy of \( G_t(\theta) = \theta \) \( \forall t \), and the equilibrium strategies of all other voters, voter \( i \) votes against the incumbent if and only if \( Pr(\theta = 1|y_{i,1}, s) \leq p \). Hence, \( v_i = 1 \) iff \( y_{i,1} \leq \tilde{y}(s) \), where \( \tilde{y}(s) \) is as defined in Definition 1. Given this strategy by each voter \( i \), the number of voters voting to remove \( L \) is as given by \( V(s; G_1) \), again as defined in Definition 1. As in the baseline model, for any realization of \( s \), a strictly greater number of citizens vote to remove when \( G_1 = 0 \) than when \( G_1 = 1 \). Hence, each citizen \( i \)'s beliefs at the conclusion of the voting stage will be given by:

\[
Pr(\theta = 1|V, s) = \begin{cases} 
0 & \text{if } V > V(s; 1) \\
1 & \text{otherwise.}
\end{cases}
\]

Given these posterior beliefs, is an equilibrium response for all voters to mobilize iff \( V > V(s; 1) \).

Proof of Equilibrium Threshold in Transparency and Benefits to Office

Proof of Lemma 1. The threshold \( \bar{\sigma}_s \) is defined such that for all \( \sigma_s \geq \bar{\sigma}_s \), \( \Phi\left(\frac{s - \gamma}{\sigma_s}\right) \geq \frac{B}{1 + B} \). To prove the existence of \( \bar{\sigma}_s \), note that:

\[
\frac{\gamma}{2}(1 - \frac{\sigma_s^2}{\sigma_y^2}) = \frac{s - \gamma}{\sigma_s} \Leftrightarrow \frac{s - \gamma}{\sigma_s} = -\frac{\gamma}{2\sigma_s} - \frac{\gamma\sigma_s}{\sigma_y}
\]

Taking the limits:

\[
\lim_{\sigma_s \rightarrow \sigma_y} \Phi\left(\frac{s - \gamma}{\sigma_s}\right) = \Phi\left(-\frac{\gamma}{\sigma_y}\right)
\]

\[
\lim_{\sigma_s \rightarrow 0} \Phi\left(\frac{s - \gamma}{\sigma_s}\right) = 0
\]

Moreover, as established in Proposition 2, \( \Phi\left(\frac{s - \gamma}{\sigma_s}\right) \) is monotonic and increasing in \( \sigma_s \).
\[ \frac{B}{1+B} \] is similarly monotonic and increasing in \( B \), with \( \lim_{B \to 0} \frac{B}{1+B} = 0 \) and \( \lim_{B \to \infty} \frac{B}{1+B} = 1 \).

Hence, for any \( \gamma, \sigma_y \), we can define a value of \( B \equiv \bar{B} \) s.t. \( \frac{B}{1+B} = \Phi\left(-\frac{\gamma}{\sigma_y}\right) \).

Given the monotonicity of \( \Phi\left(\frac{s-\gamma}{\sigma_s}\right) \), and the limits described above, for any \( B < \bar{B} \) there must exist a corresponding \( \bar{\sigma}_s \) s.t. for all \( \sigma_s \geq \bar{\sigma}_s \), \( \Phi\left(\frac{s-\gamma}{\sigma_s}\right) \geq \frac{B}{1+B} \).

**Proof of Existence of a Pooling Equilibrium**

**Proof of Proposition 5.** When \( \theta = 1 \), \( L \) has a dominant strategy of setting \( G_t = 1 \) \( \forall t \). When \( \theta = 0 \), \( L \) has a dominant strategy of setting \( G_2 = 0 \). For this to be a pooling equilibrium, \( L \) must prefer to set \( G_1 = 1 \) when \( \theta = 0 \), which is possible if an only if the gains in the probability of survival are sufficiently high.

In a pooling equilibrium, all types of \( L \) set \( G_1 = 1 \), hence all realizations of \( y_{i,1} \) and \( s \) are equally likely regardless of type. \( Pr(\theta = 1|y_{i,1},s) = p \) \( \forall y_{i,1},s \). Voters are thus indifferent between setting \( v_i = 0 \) and \( v_i = 1 \). It thus remains a best response for all \( i \) to set \( v_i = 1 \) iff \( y_{i,1} \leq \bar{y}(s) \), where \( \bar{y}(s) \) is as defined in Definition 1. Given this voting strategy, vote returns will always be given by \( V(s;1) \) as defined in Definition 1, and voter posterior beliefs are given by \( Pr(\theta = 1|V,s) = p \) \( \forall s \). Posterior beliefs for \( V > V(s;1) \) are not defined by Bayes’ Rule, and may be set such that \( Pr(\theta = 1|V > V(s;1),s) = 0 \) \( \forall s \). Given these beliefs, it is a best response for all \( i \) to set \( a_i = 1 \) iff \( V > V(s;1) \) and to set \( a_i = 0 \) otherwise.

Given these equilibrium strategies by all citizens \( i \), \( L \) faces certain removal should she deviate and set \( G_1 = 0 \) and will be retained with probability \( \Phi\left(\frac{s-\gamma}{\sigma_s}\right) \) if she sets \( G_1 = 1 \). Hence, types \( \theta = 0 \) strictly prefer to set \( G_1 = 1 \) iff:

\[
1 + B < B + [1 - \Phi\left(\frac{s-\gamma}{\sigma_s}\right)](1+B) \\
\Phi\left(\frac{s-\gamma}{\sigma_s}\right) < \frac{B}{1+B}.
\]

Thus, if \( \Phi\left(\frac{s-\gamma}{\sigma_s}\right) < \frac{B}{1+B} \), the above strategies and beliefs constitute a pooling PBE to the game. □

**Comparative Statics to the Extended Model**

**Proof of Proposition 6.** The strategies of all players in the separating equilibrium to the extended model are identical to those of the baseline model. Hence, for any \( B \leq \bar{B} \) and \( \sigma_s \geq \bar{\sigma}_s \), the conclusion of Proposition 3 still holds. The probability of collapse is strictly falling in transparency (rising in \( \sigma_s \)).
For any $B > \bar{B}$ or $\sigma_s < \bar{\sigma}_s$, the pooling equilibrium holds. Along the equilibrium path, $V = V(s; 1)$ regardless of $L$’s type, hence $a_i = 0 \ \forall \ i$. The probability of collapse is invariant and equal to zero for all values of transparency.

Taken together, these results indicate that the probability of democratic collapse is weakly falling for all values of transparency (weakly rising for all values of $\sigma_s$). \qed
Table 2: Transparency and the Hazard of Democratic Collapse

<table>
<thead>
<tr>
<th></th>
<th>Cond. Prior Transition</th>
<th>Cond. Num. Transitions</th>
<th>No Prior Transition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparency</td>
<td>-0.642 [-1.227,-0.057]</td>
<td>-0.545 [-1.095,0.006]</td>
<td>-1.564 [-2.608,-0.520]</td>
</tr>
<tr>
<td></td>
<td>-0.697 [-1.121,-0.273]</td>
<td>-0.634 [-1.028,-0.241]</td>
<td>-1.533 [-2.475,-0.591]</td>
</tr>
<tr>
<td>Growth</td>
<td>-0.141 [-0.208,-0.073]</td>
<td>-0.127 [-0.193,-0.060]</td>
<td>0.021 0.029</td>
</tr>
<tr>
<td></td>
<td>-0.109 [-0.165,-0.054]</td>
<td>-0.103 [-0.158,-0.048]</td>
<td></td>
</tr>
<tr>
<td>Transparency × Growth</td>
<td>0.031 [-0.047,0.109]</td>
<td>0.060 [0.015,0.105]</td>
<td>0.172 0.177</td>
</tr>
<tr>
<td></td>
<td>0.037 [-0.059,0.132]</td>
<td>0.055 [0.003,0.107]</td>
<td></td>
</tr>
<tr>
<td>GDP per capita</td>
<td>-0.209 [-0.432,0.015]</td>
<td>-0.156 [-0.396,0.083]</td>
<td>-0.096 [-0.769,0.577]</td>
</tr>
<tr>
<td>Ec. Openness</td>
<td>-0.001 [-0.021,0.019]</td>
<td>-0.004 [-0.025,0.016]</td>
<td>-0.022 [-0.076,0.032]</td>
</tr>
<tr>
<td>Parliamentary</td>
<td>2.103 [0.842,3.364]</td>
<td>1.959 [0.846,3.072]</td>
<td>0.946</td>
</tr>
<tr>
<td>Mixed System</td>
<td>0.691 [-0.585,1.967]</td>
<td>0.628 [-0.697,1.953]</td>
<td>0.102 [-1.397,1.601]</td>
</tr>
</tbody>
</table>

Cox proportional hazards regressions of the hazard of democratic collapse. The models depicted in the first two columns, the middle two columns, and the last two columns differ in the manner in which they deal with countries that experience multiple autocratic spells. Those in the first two columns report a conditional gap time model wherein the baseline hazard is separately estimated for regimes that experience a prior transition and for those that did not. Those in the next two columns estimate separate baseline hazards based on the number of prior transitions. Those in the final two columns examine only autocratic spells that did not experience a prior transition. We present estimates of coefficient values, not hazard ratios, with 95 percent confidence intervals are presented in brackets. All standard errors have been clustered by democratic spell.
Table 3: Expanded Definition of Democracy

<table>
<thead>
<tr>
<th></th>
<th>Cond. Prior Transition</th>
<th>Cond. Num. Transitions</th>
<th>No Prior Transition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparency</td>
<td>-0.966</td>
<td>-1.007</td>
<td>-1.670</td>
</tr>
<tr>
<td></td>
<td>[-1.493, -0.439]</td>
<td>[-1.613, -0.402]</td>
<td>[-3.512, 0.171]</td>
</tr>
<tr>
<td>Growth</td>
<td>-0.152</td>
<td>-0.205</td>
<td>-0.212</td>
</tr>
<tr>
<td></td>
<td>[-0.233, -0.071]</td>
<td>[-0.307, -0.103]</td>
<td>[-0.511, 0.087]</td>
</tr>
<tr>
<td>Transparency × Growth</td>
<td>-0.053</td>
<td>-0.079</td>
<td>-0.102</td>
</tr>
<tr>
<td></td>
<td>[-0.092, -0.015]</td>
<td>[-0.127, -0.030]</td>
<td>[-0.290, 0.086]</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>-0.303</td>
<td>-0.303</td>
<td>-0.442*</td>
</tr>
<tr>
<td></td>
<td>[-0.678, 0.072]</td>
<td>[-0.600, -0.007]</td>
<td>[-0.960, 0.076]</td>
</tr>
<tr>
<td>Ec. Openness</td>
<td>-0.003</td>
<td>-0.007</td>
<td>-0.021</td>
</tr>
<tr>
<td></td>
<td>[-0.017, 0.012]</td>
<td>[-0.024, 0.009]</td>
<td>[-0.048, 0.005]</td>
</tr>
<tr>
<td>Parliamentary</td>
<td>1.347</td>
<td>1.224</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[-0.230, 2.924]</td>
<td>[-0.099, 2.546]</td>
<td></td>
</tr>
<tr>
<td>Mixed System</td>
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<td>0.011</td>
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<td>100</td>
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</tr>
<tr>
<td># of Failures</td>
<td>17</td>
<td>17</td>
<td>8</td>
</tr>
</tbody>
</table>

Cox proportional hazards regressions of the hazard of democratic collapse. Here we include regimes that fail to pass the ‘type 2’ criterion of the DD coding scheme as democracies. The models depicted in the first two columns, the middle two columns, and the last two columns differ in the manner in which they deal with countries that experience multiple autocratic spells. Those in the first two columns report a conditional gap time model wherein the baseline hazard is separately estimated for regimes that experience a prior transition and for those that did not. Those in the next two columns estimate separate baseline hazards based on the number of prior transitions. Those in the final two columns examine only autocratic spells that did not experience a prior transition. We present estimates of coefficient values, not hazard ratios, with 95 percent confidence intervals are presented in brackets. All standard errors have been clustered by democratic spell.
Empirical Appendix

Alternative Specifications


Table 4: Omitting Interaction Term

<table>
<thead>
<tr>
<th></th>
<th>Cond. Prior Transition</th>
<th>Cond. Num. Transitions</th>
<th>No Prior Transition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparency</td>
<td>-0.600</td>
<td>-0.472</td>
<td>-1.117</td>
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<tr>
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<td>[-1.185,-0.016]</td>
<td>[-1.022,0.077]</td>
<td>[-2.399,0.164]</td>
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<tr>
<td></td>
<td>-0.134</td>
<td>-0.108</td>
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</tr>
<tr>
<td></td>
<td>[-0.202,-0.066]</td>
<td>[-0.179,-0.036]</td>
<td>[-1.149,0.053]</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>-0.215</td>
<td>-0.020</td>
<td>-0.152</td>
</tr>
<tr>
<td></td>
<td>[-0.431,0.001]</td>
<td>[-0.436,0.073]</td>
<td>[-1.008,0.704]</td>
</tr>
<tr>
<td>Ec. Openness</td>
<td>0.001</td>
<td>0.002</td>
<td>-0.023</td>
</tr>
<tr>
<td></td>
<td>[-0.019,0.020]</td>
<td>[-0.016,0.020]</td>
<td>[-0.076,0.030]</td>
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<tr>
<td>Parliamentary</td>
<td>2.122</td>
<td>1.859</td>
<td>0.979</td>
</tr>
<tr>
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<td>[0.859,3.384]</td>
<td>[0.728,2.990]</td>
<td>[-0.059,2.017]</td>
</tr>
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<td>0.131</td>
</tr>
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<td>[-1.442,1.703]</td>
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<td># of Subjects</td>
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<tr>
<td># of Failures</td>
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<td>19</td>
<td>8</td>
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</tbody>
</table>

Cox proportional hazards regressions of the hazard of democratic collapse. In these models, we omit the interaction between transparency and economic growth included in our baseline specifications. The models depicted in the first two columns, the middle two columns, and the last two columns differ in the manner in which they deal with countries that experience multiple autocratic spells. Those in the first two columns report a conditional gap time model wherein the baseline hazard is separately estimated for regimes that experience a prior transition and for those that did not. Those in the next two columns estimate separate baseline hazards based on the number of prior transitions. Those in the final two columns examine only autocratic spells that did not experience a prior transition. We present estimates of coefficient values, not hazard ratios, with 95 percent confidence intervals are presented in brackets. All standard errors have been clustered by democratic spell.
Table 5: Including Quadratic Term

<table>
<thead>
<tr>
<th></th>
<th>Cond. Prior Transition</th>
<th>Cond. Num. Transitions</th>
<th>No Prior Transition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparency</td>
<td>-0.818 [-1.639,0.004]</td>
<td>-0.812 [-1.535,0.089]</td>
<td>-1.565 [-2.607,0.524]</td>
</tr>
<tr>
<td>Transparency$^2$</td>
<td>0.065 [-0.078,0.209]</td>
<td>0.078 [0.000,0.155]</td>
<td>0.006 [-0.227,0.239]</td>
</tr>
<tr>
<td>Growth</td>
<td>-0.139 [-0.205,0.073]</td>
<td>-0.123 [-0.190,0.056]</td>
<td>-0.020 [-0.104,0.144]</td>
</tr>
<tr>
<td>Transparency × Growth</td>
<td>-0.052,0.107 [-0.163,0.056]</td>
<td>0.027 [0.000,0.155]</td>
<td>0.014,0.329 [-0.472,0.207]</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>-0.209 [-0.429,0.010]</td>
<td>-0.170 [-0.417,0.077]</td>
<td>-0.098 [-0.771,0.575]</td>
</tr>
<tr>
<td>Ec. Openness</td>
<td>-0.001 [-0.021,0.018]</td>
<td>-0.005 [-0.026,0.016]</td>
<td>-0.022 [-0.076,0.032]</td>
</tr>
<tr>
<td>Parliamentary</td>
<td>2.037 [0.821,3.253]</td>
<td>2.003 [0.879,3.127]</td>
<td>0.950 [-0.213,2.113]</td>
</tr>
<tr>
<td>Mixed System</td>
<td>0.588 [-0.705,1.882]</td>
<td>0.525 [-0.791,1.840]</td>
<td>0.098 [-1.442,1.638]</td>
</tr>
<tr>
<td># of Subjects</td>
<td>88 88</td>
<td>88 88</td>
<td>53 53</td>
</tr>
<tr>
<td># of Failures</td>
<td>19 19</td>
<td>19 19</td>
<td>8 8</td>
</tr>
</tbody>
</table>

Cox proportional hazards regressions of the hazard of democratic collapse. In these models, we include a quadratic term for transparency in our baseline specifications. The models depicted in the first two columns, the middle two columns, and the last two columns differ in the manner in which they deal with countries that experience multiple autocratic spells. Those in the first two columns report a conditional gap time model wherein the baseline hazard is separately estimated for regimes that experience a prior transition and for those that did not. Those in the next two columns estimate separate baseline hazards based on the number of prior transitions. Those in the final two columns examine only autocratic spells that did not experience a prior transition. We present estimates of coefficient values, not hazard ratios, with 95 percent confidence intervals are presented in brackets. All standard errors have been clustered by democratic spell.
Alternative Controls
Table 6: Alternative Controls for Economic Openness

<table>
<thead>
<tr>
<th></th>
<th>Cond. Prior Transition</th>
<th>Cond. Num. Transitions</th>
<th>No Prior Transition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparency</td>
<td>-0.682</td>
<td>-0.502</td>
<td>-1.324</td>
</tr>
<tr>
<td></td>
<td>[-1.499,-0.136]</td>
<td>[-1.297,0.293]</td>
<td>[-2.723,0.076]</td>
</tr>
<tr>
<td></td>
<td>(0.102)</td>
<td>(0.216)</td>
<td>(0.064)</td>
</tr>
<tr>
<td>Growth</td>
<td>-0.140</td>
<td>-0.108</td>
<td>0.033</td>
</tr>
<tr>
<td></td>
<td>[-0.244,-0.037]</td>
<td>[-0.192,-0.024]</td>
<td>[-0.095,0.160]</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.011)</td>
<td>(0.063)</td>
</tr>
<tr>
<td>Transparency × Growth</td>
<td>0.036</td>
<td>0.062**</td>
<td>0.182**</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>[-0.310,-0.034]</td>
<td>[-0.360,0.471]</td>
<td>[-0.798,0.714]</td>
</tr>
<tr>
<td></td>
<td>(0.983)</td>
<td>(0.793)</td>
<td>(0.913)</td>
</tr>
<tr>
<td>Parliamentary</td>
<td>2.277</td>
<td>1.804</td>
<td>0.373</td>
</tr>
<tr>
<td></td>
<td>[0.404,4.149]</td>
<td>[0.237,3.371]</td>
<td>[-0.353,1.680]</td>
</tr>
<tr>
<td></td>
<td>(0.017)</td>
<td>(0.024)</td>
<td>(0.057)</td>
</tr>
<tr>
<td>Mixed System</td>
<td>1.076</td>
<td>0.579</td>
<td>-0.548</td>
</tr>
<tr>
<td></td>
<td>[0.661,2.813]</td>
<td>[-1.077,2.235]</td>
<td>[-2.485,1.389]</td>
</tr>
<tr>
<td></td>
<td>(0.225)</td>
<td>(0.493)</td>
<td>(0.579)</td>
</tr>
<tr>
<td>KOF Index</td>
<td>-0.090</td>
<td>-0.079</td>
<td>-0.053</td>
</tr>
<tr>
<td></td>
<td>[-0.145,-0.034]</td>
<td>[-0.137,-0.022]</td>
<td>[-0.158,0.052]</td>
</tr>
<tr>
<td>Wacziarg-Welch</td>
<td>-1.098</td>
<td>-1.031</td>
<td>0.564</td>
</tr>
<tr>
<td></td>
<td>[-2.289,0.092]</td>
<td>[-2.144,0.082]</td>
<td>[-0.536,1.663]</td>
</tr>
<tr>
<td></td>
<td>(0.071)</td>
<td>(0.069)</td>
<td>(0.315)</td>
</tr>
<tr>
<td># of Subjects</td>
<td>84</td>
<td>84</td>
<td>51</td>
</tr>
<tr>
<td># of Failures</td>
<td>17</td>
<td>17</td>
<td>7</td>
</tr>
</tbody>
</table>

Cox proportional hazards regressions of the hazard of democratic collapse. The models depicted in the first two columns, the middle two columns, and the last two columns differ in the manner in which they deal with countries that experience multiple autocratic spells. Those in the first two columns report a conditional gap time model wherein the baseline hazard is separately estimated for regimes that experience a prior transition and for those that did not. Those in the next two columns estimate separate baseline hazards based on the number of prior transitions. Those in the final two columns examine only autocratic spells that did not experience a prior transition. We present estimates of coefficient values, not hazard ratios, with 95 percent confidence intervals are presented in brackets. All standard errors have been clustered by democratic spell.