

Transparency, Protest and Democratic Stability

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Democratic rule is maintained so long as all relevant actors in the political system comply with the institutional rules of the game – democratic institutions must be self-enforcing. We examine the role of transparency in supporting a democratic equilibrium. Transparency improves the functioning of elections: in transparent polities, elections more effectively resolve adverse selection problems between the public and their rulers. Transparency increases popular satisfaction with democracy and inhibits challenges to the democratic order. We provide a game-theoretic model, test these claims, and find they enjoy empirical support. Transparency is associated with a reduction in both the probability of democratic collapse and of the irregular removal of democratic leaders. Transparency stabilizes democratic rule.

Key words: transparency; democratic consolidation; leader removal

When and why do democratic regimes enjoy periods of stable rule? When, contrastingly, will democracy be prone to instability and autocratic reversions? Recent events in Thailand, Egypt and Ukraine render these questions, which have long been at the center of political science, all the more relevant. For democracy to be stable, it must be self-enforcing: all relevant political actors agree to comply with the ‘rules of the game’.¹ When all other actors choose to comply with democratic norms, no one actor can have an incentive to unilaterally deviate.²

Recent work 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.³ The other

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¹ Linz 1978; Schedler 1998; Schmitter 1992.

² Przeworski 1991; Przeworski 2005; Weingast 1997.

³ E.g. Boix 2003; Boix and Stokes 2003; Przeworski 1991; Przeworski 2005; Przeworski, Rivero and Xi 2013; Scartascini and Tommasi 2012; Wantchekon 2004.

perspective follows Weingast in emphasizing the populace's role in preventing elite encroachments on democratic freedoms.⁴ For democracy to survive citizens must be willing to act against anti-democratic challengers.⁵

In this article, 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 remove elected leaders through mass protest.⁶ More commonly, citizen dissatisfaction and protest might open the door to coups by anti-democratic elites, as recent events in Egypt and Thailand can attest.⁷ A lack of confidence in the efficacy of electoral institutions implies that citizens will be unwilling to check encroachments by anti-democratic elites and indeed may support those who would subvert democracy.

We emphasize the importance of transparency – which we define as the availability of policy-relevant information on aggregate economic outcomes – to the stabilization of democracy. 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. 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.

Empirically, we examine the survival of democratic spells, using the coding of Przeworski and Limongi.⁸ The results confirm our theory: more transparent democracies are less likely to revert to autocracy. We additionally demonstrate that leaders in transparent democracies are less likely to be removed through extra-constitutional methods, and more likely to experience constitutional removal, than their counterparts in opaque democracies.

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, via a coup or autogolpe. 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.⁹ Alternatively, citizens who become disaffected with democracy may support anti-democratic factions or elites who challenge democratic institutions, or may fail to rally in support of democracy when such challenges emerge. Indeed, citizen mobilization and elite challenges often go hand-in-hand.¹⁰ Coups that follow protests are a particularly common cause of democratic breakdown.¹¹

⁴ Weingast 1997.

⁵ E.g. Fearon 2011; Hyde and Marinov 2014; Little, LaGatta and Tucker 2015.

⁶ Svobik 2013.

⁷ Meirowitz and Tucker 2013.

⁸ Przeworski and Limongi 1997. See also Boix and Stokes 2003.

⁹ 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*, 6 July 2013). Thai protesters similarly claimed that democracy proved an insufficient means to limit the claimed abuses of the Shinawatra government (see 'A Symbolic Exercise', *The Economist*, 2 February 2014).

¹⁰ Casper and Tyson 2014.

¹¹ Linz 1978.

For these reasons, theorists of democratic consolidation stress the importance of public attitudes toward democracy.¹² Diamond 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’.¹³ Linz 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).¹⁴ When citizens disregard democratic norms, or hold democratic institutions in low esteem, the democratic order is jeopardized. Svobik 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’.¹⁵

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. In this article we argue that these attitudes are a function, in part, of the informational environment in which democracy is situated. Where large amounts of information on the government’s performance is made publicly available – and is known to be publicly available – democratic elections will function relatively well. Elections will enable citizens to throw the bums out, should their leaders, in fact, prove to be bums.¹⁶ In transparent polities, therefore, elections will function well – garnering outcome-legitimacy for the constitutional system.

Moreover, since information is publicly available, citizens will recognize that their fellows will also be acting in an informed manner in the voting booth. Transparency makes it more difficult to castigate portions of the electorate as irrational or ill-informed, enhancing the procedural legitimacy of democratic rule.

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 information that is commonly known and shared by all – a public signal. More transparency means that the public signal is a more reliable, stronger signal.

When the polity is opaque, the public signal is not very helpful. Citizens must necessarily rely on their private experiences (signals) to infer the state of the economy as a whole. These private signals largely dictate their behavior in the voting booth. Poor leaders are therefore likely, through good luck, to be retained and good leaders, through bad luck, to be removed. As public information becomes more available – that is, as the polity becomes more transparent – citizens will increasingly rely on the (increasingly informative) public signal rather than their (idiosyncratic) private signals. Voting behavior will therefore align more closely with incumbent performance, such that good leaders are more likely to be retained and poor leaders to be removed.

Even in the most transparent polities, however, incompetent – or corrupt – incumbents may be retained with positive probability. This probability shrinks as transparency rises, but never falls to zero. Individual citizens may be fooled by bad luck – the realization of their public and private signals may indicate that a bum of an incumbent should be retained.

¹² We use the ‘narrow’ definition of democratic consolidation in this article, as laid out by Schedler (1998). We define consolidation as simply reflecting the stability, or predicted stability, of electoral rule. We thus use the terms ‘democratic stability’ and ‘democratic consolidation’ interchangeably.

¹³ Diamond 1994, 15.

¹⁴ Linz 1978, 17.

¹⁵ Svobik 2013, 686.

¹⁶ Przeworski, Stokes and Manin 1999.

However, citizens gain additional information about incumbent performance by virtue of the election process itself. An individual learns of others' evaluations of the incumbent – directly through election returns, as well as indirectly through campaign rallies and displays of public enthusiasm for candidates. Citizens therefore learn more about the 'type' of incumbent they face by the conclusion of the election process – in our model they learn this type with certainty. Incumbents who perform well in elections, given the information publicly available *ex ante*, can be inferred to be good types; while those who underperform can be inferred to be bad.¹⁷ Each citizen recognizes that the incumbent's over (under) performance in the election must be attributed to the positive (negative) private signals received by her fellows. As the size of the electorate grows, the amount of information conveyed through the election process rises. Elections act as a means of aggregating the private information of all voters.

It is possible, therefore, that at the conclusion of an election, citizens arrive at the realization that they have just reelected a bad leader. In particular, this will occur when leaders win elections by slim margins – smaller than would be expected given the public signal of their prior performance. When this takes place, elections lose outcome-legitimacy and citizens grow disaffected with democracy.

Of course if, at the close of elections, citizens realize they have retained a good leader (or removed a bad one), no such disaffection arises. The electoral system has served its role in screening politicians well. Since the probability that a bad type is retained falls in transparency, so too then does the risk of citizen disaffection.

In our theoretical model, we then consider the incentives of citizens to arise, in mass, against the government. We focus on this form of threat in our model because it is likely to pose a 'hard case' for our theory. This is because, while information may improve the functioning of the electoral system, existing work also demonstrates that public information may ease coordination problems among the populace, facilitating popular protest. For instance, in a closely related model, Hollyer, Rosendorff and Vreeland find that transparency *increases* the risk of mass unrest in autocracies.¹⁸ Hence, if transparency unambiguously reduces the threat of mass mobilization, it is likely to also reduce other threats to the democratic order.

Of course, democratic regimes also often collapse as a result of coups or autogolpes.¹⁹ We believe our theory also speaks to these, alternative, threats to the democratic regime. Coups against democratic regimes often take place during or immediately following mass protest – a sequence of events Linz points to as the most common means of democratic collapse.²⁰ Events in recent years in Thailand, Egypt and Ukraine would seem to attest to this correlation. Casper and Tyson provide a theoretical model, based on an informational logic, as to why this is the case: protests help to inform elites of the likely durability of the regime – the value of a coup to these elites rises as protest participation increases.²¹ More generally, a disaffected citizenry is unlikely to buttress the democratic regime against anti-democratic challengers, as argued by Svobik and Weingast.²² So our argument holds that transparency insulates democratic regimes against *both* popular protest and elite coups.

We stress the relationship between the performance and the legitimacy of electoral institutions. As Diamond notes, 'the democratic system must produce sufficiently positive

¹⁷ Fearon 2011.

¹⁸ Hollyer, Rosendorff and Vreeland 2015.

¹⁹ Svobik 2015.

²⁰ Linz 1978.

²¹ Casper and Tyson 2014.

²² Svobik 2013; Weingast 1997. On a related point, see Meirowitz and Tucker (2013).

policy outputs to build broad political legitimacy'.²³ We acknowledge legitimacy may take on a broader definition, encompassing a logic that is not merely instrumental.²⁴ Our contention here is merely that, *ceteris paribus*, elections are more likely to prove legitimate when they adequately solve issues of adverse selection.

EXISTING LITERATURE: DEMOCRATIC CONSOLIDATION

This article 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'.²⁵ Differences emerge, however, as to what factors promote such legitimation. Some emphasize the importance of civil society²⁶ or associational groups,²⁷ others the extent of participation in electoral processes.²⁸ We share an emphasis on the importance of agency problems (government efficacy) under democracy with Linz and Diamond.²⁹ Our contribution is to stress the role transparency plays in stabilizing democracy.

Our approach perhaps bears the closest resemblance to Svobik, who argues that 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.³⁰ Analogously, Meirowitz and Tucker argue that experiences of misrule following democratization may lead citizens to become disenchanted with the quality of the universe of possible elites, and thus unwilling either to protect democratic institutions or to rise up against corrupt leaders.³¹

Other authors emphasize the importance of structural factors to democratic survival.³² Most significantly, economic development is strongly (positively) correlated with democratic survival.³³ Contrastingly, Slater contends that the autonomy of communal elites explains the success or failure of democratization.³⁴ 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.

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.³⁵ A growing literature stresses

²³ Diamond 1999, 76.

²⁴ Experimental evidence suggests that elections may confer legitimacy, regardless of their outcomes (Grossman and Baldassarri 2012; Olken 2008).

²⁵ Diamond 1994; Diamond 1999; Linz 1978; O'Donnell 1996; Schedler 1998; Schmitter 1992.

²⁶ Diamond 1994.

²⁷ Schmitter 1992.

²⁸ Wright 2008.

²⁹ Diamond 1999; Linz 1978.

³⁰ Svobik 2013.

³¹ Meirowitz and Tucker 2013.

³² Huber, Rueschemeyer and Stephens 1993; Lipset 1959; Moore 1966; Slater 2009.

³³ Przeworski et al. 2000.

³⁴ Slater 2009.

³⁵ Kuran 1991; Lohmann 1993. A more recent literature employs a global games (Morris and Shin 2001) informational structure to model protests. Examples include Bueno de Mesquita (2010), Shadmehr and Bernhardt (2011, 2014) and Little, LaGatta and Tucker (2015). Shadmehr and Bernhardt (2015) similarly consider informational availability – in their example reflecting state censorship – and its relation to mass mobilization.

the role of elections in resolving these problems. Fearon³⁶ points out that elections can enable citizens to discipline rulers who infringe on the democratic rules of the game.³⁷

Within this literature on information and protest, we particularly draw on Hollyer, Rosendorff and Vreeland, who examine the relationship between transparency and regime stability in autocracies.³⁸ Here we introduce elections to the game form offered in that earlier work, and empirically, we use the same definition of transparency. The effect is to highlight the fundamental role political institutions play in moderating the relationship between information and unrest. Transparency *stabilizes* democracies, even as it *destabilizes* autocracies.

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. We use the term transparency to mean the disclosure of information, which is relevant to policy outcomes, to the mass public. Information must be credible if it is to cause citizens to update their beliefs – otherwise, it will simply be disregarded. 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*. In many treatments of political accountability – particularly where the informational environment is an exogenous parameter in the model and the distribution of any noise in the outcome observed by the public is additively separable from the quality of government efforts they seek to infer – greater information regarding these outcomes increases government incentives to exert effort on the public's behalf.³⁹ This is in contrast to information about the *policies* that are adopted or on details of the policy-making process, which may distort government decision-making.⁴⁰ Insofar as information pertaining to policy outcomes induces governments to adopt desirable policies, such information improves citizen welfare. Though, in some circumstances, stronger incentives for 'good' government behavior may reduce the ability of citizens to select the best possible representatives, as 'good' types of agents pool with 'bad', implying that the welfare implications of information are more mixed over the long term.⁴¹ 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.⁴² 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.⁴³ 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 estimated using an item response

³⁶ Fearon 2011, building on the insights of Weingast (1997).

³⁷ See also Bunce and Wolchik 2011; Egorov and Sonin 2012; Hyde and Marinov 2014; Little, LaGatta and Tucker 2015; Tucker 2007.

³⁸ Hollyer, Rosendorff and Vreeland 2015.

³⁹ Dewatripont, Jewitt and Tirole 1999; Holmstrom 1982.

⁴⁰ Prat 2005; Stasavage 2004.

⁴¹ Ashworth and Bueno de Mesquita 2014.

⁴² Hollyer, Rosendorff and Vreeland 2013.

⁴³ Hollyer, Rosendorff and Vreeland 2014.

model. Since the World Bank, and the international organizations with which it works, impose standards of reporting on these data, they must pass some minimal threshold of credibility.⁴⁴ Since governments are unlikely to directly disclose information to third-party organizations if attempting to withhold this information from their citizenry, the HRV measure proxies for the public availability of credible information. Given the substantive focus of the WDI on economic aggregates, this information pertains directly to citizen welfare and a variety of common targets for government policy. We thus believe the HRV index captures the three aspects of information emphasized above: it proxies for (1) the public availability of (2) credible information pertaining to (3) policy outcomes impacting broad aggregations of the citizenry.

To be more precise about the HRV measure: it is constructed based on an item response model fit to a binary measure of whether a given variable j is reported by a given country c in a particular year t . This model summarizes reporting of 240 variables by 125 countries over thirty-one years (1980–2010). Hollyer, Rosendorff and Vreeland⁴⁵ select the 240 variables included in the model (out of some 1,265 in the WDI as a whole) to (1) ensure that definitions are consistent over time (to be included in the index, a variable must be reported by at least one country in every year from 1980–2010), (2) eliminate variables that are clearly constructed by the World Bank or partner organizations without government input (e.g. results of the Doing Business Surveys) or are reported for only a subset of countries (e.g. measures of receipts of Official Development Aid) and (3) to avoid multiple measures of the same underlying data (e.g. measures reported in different currencies). They then estimate the value of transparency using a system of 240 equations (one for each variable j), where reporting in a given country year is treated as a function of a latent transparency value, a coefficient on this transparency term and an intercept coefficient. The measurement model thus adjusts for the fact that some data are easier to collect than others, and for the fact that the reporting of some items is more reflective of a country-year's general tendency to disclose. In effect, the reporting of a variable that is highly predictive of disclosing other data is given greater weight than the reporting of data that is not predictive of a general tendency to disclose.⁴⁶

The HRV index thus provides a continuous measure, based on objective information, with a consistent definition over time of a government's tendency to report credible information on aggregate policy-relevant outcomes – and proxies for the availability of such information to the public. We therefore believe it maps closely into our parameter of theoretical interest, the precision of a shared public signal on the state of the economy, which we introduce in our model below. It also provides superior temporal and geographic coverage relative to commonly used measures of alternative aspects of the informational environment.

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,⁴⁷ freedom of the press or circulation

⁴⁴ We do not expect citizens to directly access this information, though the domestic press and researchers may do so. Rather, the HRV index treats disclosure to the Bank as a proxy for the availability of credible economic information. Governments may release false information to the public, but if they do so regularly, citizens will disregard government disclosures.

⁴⁵ Hollyer, Rosendorff and Vreeland 2014.

⁴⁶ Notice that, if the World Bank relies on sources other than national governments as the originating source for information – as may be true for trade data, which may be collected from either the importing or exporting country – this variable will be down-weighted in the HRV index so long as most other data originate with national governments. Since, presumably, the reporting of such variables will be largely orthogonal to the reporting of other data for which national governments are the only source, the algorithm places less weight on this information.

⁴⁷ Broz 2002; Dahl 1971.

of the press,⁴⁸ the presence of freedom of information laws,⁴⁹ or the availability of different subsets of information.⁵⁰ 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

In what follows, we present a model of transparency, voting and irregular leader removal. This model is an extension of Hollyer, Rosendorff and Vreeland, who consider the influence of transparency on the stability of autocratic governments – this model is distinct in that we introduce elections to the game form.⁵¹ The presence of free and fair elections dramatically alters the results of Hollyer, Rosendorff and Vreeland, who find that transparency reduces regime stability in autocracies. This is because of the informational role of elections: The voting process serves to aggregate the private signals of all citizens, such that all citizens – after elections have concluded – are fully informed of the government’s type, regardless of the level of transparency. The informational environment then only influences the electoral process and does not influence the ability to mobilize. Since transparency improves the functioning of the electoral process, the reliance on irregular leader removal falls as transparency rises.

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’. A leader’s type may refer to her level of skill, competence or honesty. ‘Good’ leaders will 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 θ where $\theta = 1$ with probability p and $\theta = 0$ with probability $1 - p$. In each period during which she is 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 periods⁵²:

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

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

L ’s choice regarding public goods provision $G_t \in \{0,1\}$ has implications for economic outcomes: Each citizen i receives an income $y_{i,t} = G_t \gamma + \varepsilon_{i,t}$, where $\varepsilon_{i,t} \underset{\text{iid}}{\sim} N(0, \sigma_y^2) \forall i, t$, and γ is a strictly

⁴⁸ Adserà, Boix and Payne 2003; Brunetti and Weder 2003.

⁴⁹ Berliner 2011; Islam 2006.

⁵⁰ Copelovitch, Gandrud and Hallerberg 2015.

⁵¹ Hollyer, Rosendorff and Vreeland 2015.

⁵² Actors do not discount over time. The results would be unchanged by including a discount factor.

positive constant. The standard deviation of individual outcomes, $\sigma_y > 0$, captures 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 she is facing.

In the first period of play, all citizens *also* receive a public signal of the state of the economy s . We assume that $s = G_1\gamma + \rho$, where $\rho \sim N(0, \sigma_s^2)$ and $E[\rho\epsilon_{i,t}] = 0 \forall i,t$, where $\sigma_s > 0$ is the standard deviation of this publicly observed signal. The signal s is meant to depict 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 σ_s shrinks; σ_s is thus a measure of the inverse of transparency (i.e. of opacity). 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 $V \equiv \int_0^1 v_i di$. 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 actors.

If L is retained in office, each citizen i may mobilize in an attempt to bring about her ouster.⁵³ Let $a_i \in \{0,1\}$ denote the decision to mobilize, where $a_i = 1$ indicates mobilization. Mobilization may be thought of as either directly ousting the incumbent or as creating opportunities for third parties to remove the incumbent – for example, via a coup. Since our focus is on citizen behavior, we collapse both threats to the regime into the decision to protest. Denote the total mass of citizens who engage in unrest as $A \equiv \int_0^1 a_i di$. 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 who participates in these protests gains a benefit $\beta > \kappa$. These benefits may be thought of as the psychological returns from participating in the successful overthrow of the *ancien régime*, or as the likelihood of favors from any new government.⁵⁴ 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 θ 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 ρ . $y_{i,1}$ is revealed to each citizen i , but not to any other citizen. s is revealed to all actors.
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 θ is chosen by Nature.

⁵³ 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. We would like to thank John Freeman for clarifying this point.

⁵⁴ Olson 1971.

5. If $V < \frac{1}{2}$, the incumbent, L , is retained in the election. 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 θ is chosen by Nature. If $A < T$, L remains in office.
6. The sitting L chooses the value of $G_2 \in \{0,1\}$.
7. Nature chooses $\varepsilon_{i,2} \forall i$. $y_{i,2}$ is revealed to each citizen and the game ends.

Equilibrium

This game gives rise to a multiplicity of perfect Bayesian equilibria.⁵⁵ With a continuum of citizens, voting decisions may be non-strategic. Coordination problems in the mobilization stage of the game similarly give rise to multiple equilibria.

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 the leader is replaced. That is $Pr(\theta = 1 | y_{i,1}, s) \leq p$. Second, we assume that a citizen i will never mobilize to overthrow the leader if she believes, with certainty, that L is a good 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 $\tilde{y}(s)$ implicitly by $Pr(\theta = 1 | \tilde{y}(s), s) = p$ and define

$$V(s; G_1) = \begin{cases} \Phi\left(\frac{\tilde{y}(s)}{\sigma_y}\right) & \text{if } G_1 = 0 \\ \Phi\left(\frac{\tilde{y}(s) - \gamma}{\sigma_y}\right) & \text{if } G_1 = 1. \end{cases}$$

where Φ is the cdf of the standard normal distribution.

Lemma 1 (in the Appendix) establishes that $\tilde{y}(s) = \frac{\gamma}{2} \left(\frac{\sigma_v^2}{\sigma_y^2} + 1 \right) - \frac{s\sigma_v^2}{\sigma_y^2}$. 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.

A monotone perfect Bayesian equilibrium will consist of the following: (1) An action pair for each voter mapping their signals into actions, $v_i : \mathbb{R} \times \mathbb{R} \rightarrow \{0, 1\}$ and $a_i : \mathbb{R} \times \mathbb{R} \times [0, 1] \rightarrow \{0, 1\}$. (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 of type θ , $G_t = \theta$ for $t = 1, 2$. For the citizens, their voting and mobilization strategies are*

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

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

⁵⁵ Fudenberg and Tirole 1991.

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

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

and after the vote, but before political action:

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

All proofs are in the Appendix.

Along the equilibrium path, good types of government provide public goods; bad types do not. Hence, bad types experience a larger number of votes to remove; good types a smaller number: $V(s; 1) < V(s; 0)$ for all s . After the vote, all voters observe the vote counts. With a continuum of voters, the public signal and type of leader provide a map into a unique vote total $\mathbb{R} \times \{0, 1\} \rightarrow \mathbb{R}$ – implying that, if a voter knows the vote total for a given leader and the public signal, she can invert this mapping to deduce the leader’s type. Informally, if a leader receives relatively weak (strong) electoral support, given the public signal, then it must be the case that voters’ private signals were predominantly bad (good). Since these private signals are unbiased, and the number of voters is large, it must then be the case that the leader is bad (good).

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 might not be breached. This occurs in the case where the public signal happened to be a good draw. As described above, all citizens are 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. 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.

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 $\Phi(\frac{\tilde{y}(\tilde{s})}{\sigma_y}) = \frac{1}{2}$ and define \underline{s} implicitly by $\Phi(\frac{\tilde{y}(\underline{s})-\gamma}{\sigma_y}) = \frac{1}{2}$.

We show in Lemma 2 in the Appendix that \tilde{s} and \underline{s} are well defined. If $s \geq \tilde{s}$, governments of all types will be reelected. If $s \leq \underline{s}$, governments of all types are voted out of office. If $s \in (\underline{s}, \tilde{s})$, then governments are voted out of office if and only if $\theta = 0$. The probability that a government of type $\theta = 0$ is voted out of office is $\Phi(\frac{\tilde{s}}{\sigma_s})$, and the probability that a government of type $\theta = 1$ is voted out of office is $\Phi(\frac{\tilde{s}-\gamma}{\sigma_s})$. The extent to which electoral survival is conditioned on policy decisions or, equivalently, a government’s type is what we call the *electoral discrimination* = $\Phi(\frac{\tilde{s}}{\sigma_s}) - \Phi(\frac{\tilde{s}-\gamma}{\sigma_s})$.

Proposition 2 *Electoral discrimination is strictly rising in transparency (falling in σ_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.

Low-type $\theta=0$ governments return unambiguously worse performance – that is, $G_1=0$. Empirically, one might regard L 's choice of $G_1 \in \{0, 1\}$ as reflected in rate of economic growth. In equilibrium, leaders will be voted out of office more frequently when this rate is low than when it is high. Proposition 2 indicates that transparency moderates this tendency – the sensitivity of election outcomes to performance rises in transparency.

In equilibrium, if a low type leader survives in office, the voters mobilize for her 'irregular' removal. Since democratic collapse takes place when poor leaders are reelected, this probability is given by $(1-p)[1 - \Phi(\frac{\bar{s}}{\sigma_s})]$, the *ex ante* probability that L is a 'bad' type $\theta=0$ multiplied by the probability that such a type survives the electoral process. Recall that our empirical proxy for G_1 (or, equivalently, θ) is the growth rate – leaders are only ousted through undemocratic methods when the growth rate is poor.

Increased transparency makes elections more effective in ousting bad leaders. Since irregular removal takes place only when a bad leader is retained, the risk of democratic collapse is falling in transparency.

Proposition 3 *The probability of democratic collapse is strictly falling in transparency (rising in σ_s).*

Put another way, Proposition 3 holds that the relationship between leader performance and regime stability is moderated by transparency. Leaders who achieve strong economic growth never inspire instability; those who return low growth face a high probability of irregular ouster in opaque environments, and a high probability of electoral defeat in transparent.⁵⁶ We clarify this claim in the following remark:

Remark 1 *The difference in the probability of democratic collapse between when $G_1=1$ and when $G_1=0$ is strictly falling in transparency (rising in σ_s).*

⁵⁶ In our model, all uncertainty for citizens is resolved once voting takes place, given a continuum of citizens and the perfect reporting of vote totals. Intuitively, our comparative static claims should continue to hold if voters held some residual uncertainty, as would take place, for instance, if vote returns were reported with error. Proposition 2 – electoral discrimination rises with transparency – is likely to be unaffected by error in the vote count, since in expectation, good types receive fewer votes to remove than bad types. So if the error is unbiased we could restate the finding such that observed vote totals are a probabilistic, rather than deterministic, mapping from the realization of the public signal s . The claim that protest removes a leader if, and only if, a bad type is reelected – which helps to drive Proposition 3 – may be more subtly affected by error in the vote counts. If the error is unbiased, in expectation 'good' leaders will attract more votes than 'bad'. Hence, voters may still condition their decision to protest on the reported vote total, such that victories that are closer than anticipated given the value of the public signal s draw greater protest than those that are more lopsided in favor of the incumbent. Protest may now sometimes occur when a good type is reelected; though this should occur less frequently than protest to remove a low type incumbent who was reelected. Now as transparency rises, electoral victory is an increasingly precise signal that the leader is a good type. This effect would tend to reduce the probability of mobilization following an election, as is consistent with Proposition 3. Notice further that the discrepancy in vote totals across types of leader, for any given value of the public signal, tends to fall in transparency $\lim_{\sigma_s \rightarrow 0} V(s, 0) - V(s, 1) = 0 \forall s$. Were vote totals reported with an additive unbiased error, this implies that citizens will be less able to determine the type of a reelected incumbent, based on his vote share, as transparency rises. Voters must increasingly rely on the public signal s – which must be positive if an incumbent is to survive the election – and the fact of reelection itself to update their beliefs; their posterior on seeing an incumbent reelected should increasingly be that the leader is a good type for any realized vote total. Again, adding residual uncertainty would, we expect, leave the comparative static predictions in Proposition 3 unchanged.

Model Extension

In our baseline model, the incumbent's type $\theta \in \{0, 1\}$ is wholly determinative of her strategy in equilibrium. In the Appendix, we present an extension to the baseline model in which 'bad' types of leaders may have an incentive to mimic good types. Leaders attach a value to holding office, implying that they may deviate from their primitive preferences over policy in order to retain power. We show that the comparative static conclusions documented above continue (weakly) to hold in the extended model. We say weakly because for sufficiently high values of transparency, leaders pool on 'good' behavior and no leader faces irregular removal in equilibrium.⁵⁷ The probability of irregular removal is invariant in transparency, and equal to zero, above this threshold.

EMPIRICS

Data Description

The unseating of democratically elected leaders via extra-constitutional means increases the risk of autocratic reversion. At the very least, such actions entail the temporary suspension of democracy and, often, lead to the accession of leaders or movements with anti-democratic aspirations. This claim is given weight by Goemans, Gleditsch and Chiozza, who, using a different definition of reversion than that used here, demonstrate that autocratic reversions are roughly four times more likely in years with irregular leader removals than those without – a difference that a simple test of proportions indicates is highly significant.⁵⁸ We therefore first examine the relationship between transparency and the hazard of autocratic reversion.

Our definition of democracy for this purpose is drawn from the *Democracy and Development Revisited* (DD) dataset compiled by Cheibub, Gandhi and Vreeland.⁵⁹ The DD dataset uses the coding scheme pioneered in Alvarez et al., 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.⁶⁰ 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.

The DD indicator applies a particularly restrictive definition of democracy. For this reason, democratic transitions are rare events in our sample, and there are no more than nineteen such transitions in our dataset. While this restriction limits our statistical power, we prefer the DD definition given the crisp manner with which it identifies regime-type transitions. Moreover, the relatively restrictive criteria for inclusion help to ensure that only states that hold informative elections – as assumed in our model – enter the sample. We fit our model using a relaxed definition of democracy in the Appendix.

In addition to the democracy indicator, we draw several control variables from the DD data. A contested literature points to differences in the stability of parliamentary and presidential regimes.⁶¹ 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.

We also examine the relationship between transparency and the hazard of *leader* removal. Here our observation is the democratic leader-year, where democracy is defined according to the *DD*

⁵⁷ For a similar result, see Ashworth and Bueno de Mesquita 2014.

⁵⁸ Goemans, Gleditsch and Chiozza 2009.

⁵⁹ Cheibub, Gandhi and Vreeland 2010.

⁶⁰ Alvarez et al. 1996.

⁶¹ E.g. Cheibub 2007; Lijphart 1992.

dataset described above. Our data on leader exits are drawn from the Archigos dataset, which codes exits as regular (leaders voted out of office, subject to term limits or retired), irregular (leaders ousted via extra-constitutional methods), due to death by natural causes or suicide, or due to foreign interventions. We are particularly interested in regular and irregular leader exit.

Our empirical measure of transparency (the inverse of σ_s in our model) is the HRV Index,⁶² which measures the extent to which governments collect and disseminate aggregate economic data. As discussed above, this measure captures the disclosure of credible aggregate economic information.

An important concern, when working with these data, is to what extent *transparency* is distinct from *state capacity*. As Hollyer, Rosendorff and Vreeland 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.⁶³ The finding that transparency destabilizes autocracies⁶⁴ 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.⁶⁵ To allow for this possibility, we control for GDP *per capita* in all specifications. We also control for a history of past autocratic reversions, which may also correlate with capacity.

We additionally control for a variety of other economic factors. These include measures of economic growth (the percentage change in real GDP *per capita*), which we treat as a measure of government's economic performance. We also include a measure of economic openness ($\frac{Exports + Imports}{GDP}$). 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 as a signal of government competence as trade dependence rises.⁶⁶

These measures are all drawn from the Penn World Table (PWT) version 6.3.⁶⁷ 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_t .⁶⁸ (See Table 1 for a summary of statistics used.)

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.

These empirical covariates map into our theoretical parameters in the following manner: Transparency reflects the inverse of the standard deviation of the public signal ($\frac{1}{\sigma_s}$). We contend that, as governments release more credible economic data to the World Bank, more information

⁶² Hollyer, Rosendorff and Vreeland 2014.

⁶³ Hollyer, Rosendorff and Vreeland 2014.

⁶⁴ Hollyer, Rosendorff and Vreeland 2015.

⁶⁵ Gassebner, Lamla and Vreeland 2013; Przeworski et al. 2000.

⁶⁶ Duch and Stevenson 2008.

⁶⁷ Heston, Summers and Aten 2009.

⁶⁸ For details, see Summers and Heston 1991.

TABLE 1 Summary Statistics

Variable	Mean	Stand. Dev.	Min.	Max.
Transparency	2.50	2.19	-1.37	9.98
Growth (pct. GDP)	1.81	4.24	-26.2	31.9
GDP <i>per capita</i> (thousands 2005 PPP USD)	12.8	10.4	0.37	46.7
Ec. Openness (pct. GDP)	64.6	34.5	10.3	222
Parliamentary	0.42	0.49	0	1
Mixed System	0.18	0.38	0	1

on the state of the economy is likely to be available to domestic citizens. The greater the range of data disclosed, the more likely it is that citizens are able to attribute changes in economic performance government policies. Critically, they are also aware that *other* citizens are likely to be able to do the same.

We treat economic growth as reported by the PWT as a reflection of the government’s public goods decision $G_t \in \{0,1\}$. In the model, better government performance ($G_t = 1$) is reflected in higher incomes for all citizens. We interpret growth as reflecting the government’s true performance (G) and *not* the realization of the public signal regarding this performance (s). Notice that, in our model, transparency affects leader survival through the realization of s – if we condition on s , transparency exerts no additional role.⁶⁹ We conceive of s as capturing contemporaneous statements by the government regarding the state of the economy. In our empirical model, s is not observed.

Finally, we map the realization of $R(A) \in \{0,1\}$, the indicator function for the overthrow of an elected leader, into both the collapse of democracy (as defined by the DD dataset) and (alternatively) into the irregular removal of a democratic leader (from Archigos).

Proposition 3 tells us that the probability of either democratic collapse or irregular leader removal should fall in transparency, as defined by the HRV index. The equilibrium described in Proposition 1 documents that collapse/irregular removal takes place only if $G_1 = 0$ – that is, if economic performance is poor. Empirically we interpret this proposition to mean that the probability of collapse/irregular removal falls in economic growth, as defined by the PWT. Finally, Remark 1 holds that the difference between the probability of collapse when $G_1 = 1$ (which is equal to zero) and that probability when $G_1 = 0$ (which is strictly greater than zero) falls in transparency. Taken together, we interpret these propositions as indicating that the correct empirical model should regress our indicators of collapse on transparency, economic growth, and their interaction. The coefficients on the transparency and economic growth terms should both be negative, while the coefficient on the interaction term should be positive.

Notice further that Proposition 2 holds that ‘electoral discrimination’ should be rising in transparency. Electoral discrimination, in this instance, refers to the difference in the incumbent’s vote share conditional on $G_1 = 1$ as compared to a counterfactual in which $G_1 = 0$. While we do not have data with wide coverage reporting incumbent vote shares, we can map this term into the *regular* removal of democratic leaders – the probability of regular leader removal must rise as the incumbent’s vote share falls. The equilibrium described in Proposition 1 holds that the incumbent’s vote share is strictly lower when $G_1 = 0$ than when $G_1 = 1$ – that is,

⁶⁹ Formally, the equilibrium strategies of all citizens are conditioned on the realization of s and the vote total $V(s, G_1)$. Collapse takes place only in the instance where $G_1 = 0$ and s is a ‘good’ draw. Transparency influences the likelihood of collapse insofar as a ‘good’ draw of s grows increasingly unlikely when $G_1 = 0$ as transparency rises.

the probability of regular leader removal is falling in economic growth. Proposition 2 indicates that this marginal effect should rise in transparency. Hence, any empirical model should include regular leader removal regressed on economic growth, transparency, and their interaction. The coefficient on both economic growth and on the interaction term should be negative. Our model does not provide a clear prediction with regard to the coefficient on transparency in this model. However, given that all democratic leaders must eventually be ousted from office through some means, and that transparency is anticipated to reduce the probability of irregular removal, it stands to reason that it must also increase (slightly) the likelihood of regular leader removal.

Democratic Survival

We begin our analysis by focusing on democratic-to-autocratic transitions. The unit of observation is the democratic spell-year, where a democratic spell is defined as one or more continuous years of democratic rule.

Of course, governments are not randomly assigned a level of transparency, raising the risk of potential bias. We attempt to control for major threats to inference by controlling for alternative factors that have been linked to democratic consolidation and which are likely to correlate with the HRV index – GDP *per capita*, past histories of collapse, institutional features (parliamentarism), and a general tendency toward economic openness. However, we acknowledge that threats to inference cannot be entirely ruled out and some bias is likely to remain. We attempt to buttress our findings by examining a variety of outcomes – regime transition, irregular and regular leader removal. We further note that, when using the DD definition of transition, very few terms robustly correlate with autocratic reversion once GDP *per capita* and histories of democratic collapse have been controlled for.⁷⁰ While our empirical results cannot be taken as definitive evidence of a causal effect of transparency on democratic stability, they are supportive of our theoretical account which holds that transparency bolsters democratic legitimacy.

To test the relationship between transparency and autocratic reversions, we use 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.⁷¹

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.⁷² 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 simply include a control for a {0,1} indicator for past reversions.

We estimate models of the following form:

$$\begin{aligned}
 h_d(t, p_d) &= h_0(t, p_d) e^{\mathbf{X}_{d,t}\beta} \\
 \mathbf{X}_{d,t}\beta &= \beta_0 + \beta_1 \text{Transparency}_{d,t-1} + \beta_2 \text{Growth}_{d,t-1} \\
 &\quad + \beta_3 \text{Transparency}_{d,t-1} \times \text{Growth}_{d,t-1} + \mathbf{Z}_{d,t-1}\psi
 \end{aligned} \tag{1}$$

⁷⁰ Gassebner, Lamla and Vreeland 2013.

⁷¹ Box-Steffensmeier and Zorn 2002.

⁷² Gandhi and Przeworski 2007; Meirowitz and Tucker 2013.

where d denotes democratic-spell, t denotes years of continuous democratic rule, and $\mathbf{Z}_{d,t-1}\psi$ is a vector of controls and associated coefficients. $h_0(t,p_d)$ is the baseline hazard rate, where p_d is an indicator for past reversions. All standard errors are clustered by democratic spell. Our primary hypothesis, as outlined in Proposition 3 holds that $\beta_1 < 0$. Our model further posits that collapse should take place only in the event that $G_1 = 0$. Here, we proxy for G_t by using economic growth – hence, we hypothesize that $\beta_2 < 0$. Finally, Remark 1 suggests that the importance of growth to regime stability should be falling in transparency, that is, $\beta_3 > 0$. Given potential modeling issues with such interaction terms,⁷³ we also present models without this interaction in the Appendix.

Results from these regressions are presented in Table 2. The first three 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 three present similar models stratified based on the number of prior transitions, and the final three present estimates with a control for an indicator of prior transitions. Table 2 presents estimates of coefficient values, not hazard ratios. In all cases, we initially present results with a full set of controls. We then drop controls that are not included based on the theoretical model, to ensure these are not inducing over-fitting or post-treatment bias. Finally, we present the binary relationship between transparency and regime collapse.

As can be seen from Table 2, the coefficient on transparency is consistently negative and large. 95 per cent confidence intervals are bounded away from zero in all but two specifications – the p-value in one 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 45 and 85 per cent, when economic growth is at its mean level in the sample.

Figure 1 presents estimates of the smoothed hazard function from the model in the eighth column of Table 2. The figure to the left presents estimates from when transparency is one standard deviation below its sample mean; while, the figure to the right presents the smoothed hazard when transparency is one standard deviation above this mean. Dashed lines depict the estimated hazard when growth is one standard deviation above its mean; solid lines depict the same when growth is one standard deviation below. As can be readily seen, an increase in transparency is associated with a marked decline in the estimated hazard rate.

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

Consistent with our theory, economic growth is consistently negatively associated with the hazard of autocratic reversion. This result is significant at the 95 per cent level in all specifications. Consistent with Remark 1, 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 in some specifications, however. 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. 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.⁷⁴

⁷³ Berry, DeMeritt and Esarey 2010; Hainmueller, Mummolo and Xu 2016.

⁷⁴ Boix 2003; Boix and Stokes 2003; Przeworski and Limongi 1997; Przeworski et al. 2000.

TABLE 2 *Transparency and the Hazard of Democratic Collapse*

	Cond. Prior Transition			Cond. Num. Transitions			Prior Transition Control		
Transparency	-0.642 [-1.227, -0.057]	-0.697 [-1.121, -0.273]	-0.703 [-1.114, -0.291]	-0.545 [-1.095, 0.006]	-0.634 [-1.028, -0.241]	-0.621 [-1.036, -0.206]	-0.335 [-0.796, 0.127]	-0.586 [-0.965, -0.207]	-0.611 [-0.967, -0.255]
Growth	-0.141 [-0.208, -0.073]	-0.109 [-0.165, -0.054]		-0.127 [-0.193, -0.060]	-0.103 [-0.158, -0.048]		-0.123 [-0.185, -0.062]	-0.117 [-0.176, -0.058]	
Transparency × Growth	0.031 [-0.047, 0.109]	0.037 [-0.059, 0.132]		0.060 [0.015, 0.105]	0.055 [0.003, 0.107]		0.027 [-0.051, 0.106]	0.033 [-0.053, 0.119]	
GDP <i>per capita</i>	-0.209 [-0.432, 0.015]			-0.156 [-0.396, 0.083]			-0.207 [-0.422, 0.009]		
Ec. Openness	-0.001 [-0.021, 0.019]			-0.004 [-0.025, 0.016]			-0.003 [-0.023, 0.017]		
Parliamentary	2.103 [0.842, 3.364]			1.959 [0.846, 3.072]			1.158 [0.042, 2.274]		
Mixed System	0.691 [-0.585, 1.967]			0.628 [-0.697, 1.953]			0.447 [-0.882, 1.777]		
Prior Transition							1.531 [0.372, 2.691]	1.094 [0.135, 2.054]	0.907 [-0.061, 1.875]
# of Subjects	88	88	88	88	88	88	88	88	88
# of Failures	19	19	19	19	19	19	19	19	19

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 prior 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% confidence intervals presented in brackets. All standard errors have been clustered by democratic spell.

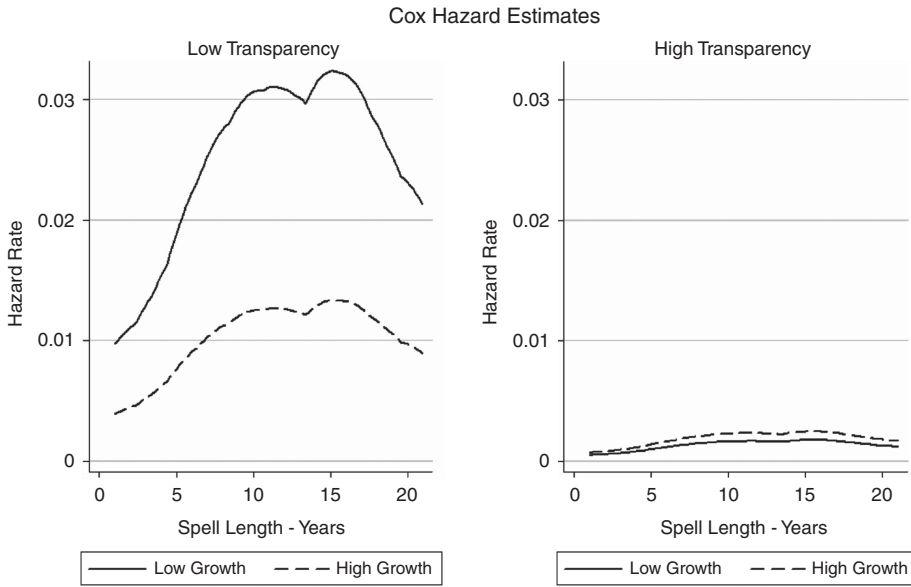


Fig. 1. Democracy hazard rates as a function of transparency and growth

Democratic Survival Robustness

We additionally conduct a series of robustness checks of our baseline specifications as reported in Table 2, which we present in the Appendix. Several of these robustness checks pertain specifically to the models examining democratic survival: we employ an alternative definition of democracy and test several alternative estimating equations. Other robustness checks involve the introduction of further controls. We also assess the robustness of our results regarding leader survival (below) to the inclusion of the controls.

To be more precise, we assess the robustness of our results above to the inclusion of five additional controls. These include: a measure the leader’s relation to the military, operationalized as a binary indicator of whether a given leader has had a military career drawn from Cheibub, Gandhi and Vreeland⁷⁵; measures of whether a given country was the location of (1) a war or (2) a lesser military conflict or war drawn from the UCDP/PRIOD database on armed conflict, version 4-2015⁷⁶; measures of the frequency of natural disasters in a given year, and the number of deaths caused by natural disasters in a given year from Quiroz Flores and Smith, who – in turn – obtain their data from the Emergency Events Database of the Centre for Research on the Epidemiology of Disasters.⁷⁷

Adding these controls does not substantively affect our results. Point estimates are similar in direction and magnitude to the baseline, as are levels of precision. Our estimates are robust to these potential confounds. Results are presented and discussed in detail in the Appendix.

⁷⁵ Cheibub, Gandhi and Vreeland 2010. We acknowledge that this term is somewhat limited in capturing civil–military relations, however, it is, to our knowledge, one of the only such measures available for democracies.

⁷⁶ Gleditsch et al. 2002; Pettersson and Wallensteen 2015.

⁷⁷ Quiroz Flores and Smith 2013.

Leader Survival

In this section of the article, we concentrate on the removal of democratic *leaders* – through regular (constitutional) and irregular (extra-constitutional) methods – rather than the survival of democratic *regimes*.

To do this, we rely on the Archigos dataset, which codes leaders' times in office and the manner of their removal.⁷⁸ Hence, our unit of observation is the democratic leader-year, where democracy is coded based on the DD dataset used in the regressions above, and our sample runs from 1980 to 2004. Our theory indicates that transparency should be negatively correlated with the hazard of irregular removal and – insofar as 'bad' leaders are more likely to be voted out of office when transparency is high – positively correlated with the hazard of regular removal.

We assess these claims through Cox competing hazards regressions, using specifications identical to those employed to assess the hazard of democratic collapse above. Competing hazards regressions assess the hazard of one type of leader removal among many such threats. All democratic leader years in our sample enter both of our regressions. Leaders who are removed, for instance, via irregular methods are coded as having 'failed' in the year of their removal. Leaders who are removed via other methods are censored following their ouster. The competing hazards model operates under the assumption that various forms of removal are independent, conditional on covariates.⁷⁹

We present results from such competing hazards regressions on irregular and regular democratic leader removal in Tables 3 and 4, respectively. Consistent with our theory, transparency is associated with a fall in the hazard of irregular removal and a rise in the hazard of regular removal. Point estimates indicate that a one standard deviation increase in transparency is associated with a reduction in the hazard democratic leaders face of irregular removal of between 50 and 82 per cent, when economic growth is at its mean level in the sample. This result is significant at the 90 per cent level or above in every specification. Since leaders in transparent democracies are less likely to be removed via extra-constitutional means, they are at increased hazard of being replaced according to constitutional procedures. This translates into a marginally increased hazard of regular removal in each year of their tenure. This effect is significant at the 90 per cent level or above in seven of nine specifications.

Remark 1 further holds that, in opaque democracies, underperforming leaders are likely to be ousted through non-democratic means; while in transparent democracies, these leaders are ousted via the ballot box. Our empirical results in this section offer suggestive support for this contention. The coefficient on economic growth is negative in all specifications examining the hazard of irregular removal. However, interpreting this coefficient requires attention to the interaction effect, which is positively signed. When this interaction is taken into account, the model indicates that, in opaque democracies, low growth is associated with an increased hazard of irregular removal. This effect is attenuated as transparency rises. We present Monte Carlo simulations of the effect of an increase in growth, at various levels of transparency, in Table 5.

The results on regular leader removal are somewhat less well-suited to test this aspect of our theory. We contend that leader performance should be more strongly correlated with electoral returns in transparent than opaque democracies. However, our measure of regular leader removal may encompass instances in which leaders retire or face term limits, in addition to instances when leaders are voted out of office. This imprecision in our measure tends to bias against the discovery of any relationship. Nonetheless, the point estimates in Table 4 are

⁷⁸ Goemans 2006.

⁷⁹ Gordon 2002. For an applied example of the competing hazards approach, see Goemans 2008.

TABLE 3 *Transparency and Irregular Leader Removal*

	Cond. Prior Transition			Cond. Num. Transitions			Prior Transition Control		
Transparency	-0.407 [-0.815, 0.001]	-0.666 [-0.997, -0.336]	-0.614 [-0.893, -0.336]	-0.404 [-0.846, 0.038]	-0.654 [-1.011, -0.297]	-0.626 [-0.931, -0.322]	-0.409 [-0.823, 0.004]	-0.673 [-1.012, -0.334]	-0.624 [-0.911, -0.337]
Growth	-0.069 [-0.121, -0.016]	-0.064 [-0.119, -0.008]		-0.064 [-0.123, -0.006]	-0.058 [-0.121, 0.006]		-0.062 [-0.121, -0.003]	-0.059 [-0.118, 0.000]	
Transparency × Growth	0.045 [-0.019, 0.109]	0.051 [-0.009, 0.112]		0.042 [-0.029, 0.113]	0.049 [-0.018, 0.117]		0.042 [-0.026, 0.110]	0.048 [-0.017, 0.112]	
GDP per capita	-0.133 [-0.271, 0.006]			-0.115 [-0.246, 0.015]			-0.131 [-0.266, 0.004]		
Ec. Openness	-0.003 [-0.012, 0.007]			-0.005 [-0.016, 0.006]			-0.003 [-0.013, 0.007]		
Parliamentary	1.244 [0.252, 2.235]			1.174 [0.201, 2.148]			1.208 [0.180, 2.237]		
Mixed System	0.610 [-0.455, 1.675]			0.732 [-0.417, 1.881]			0.695 [-0.428, 1.818]		
Prior Transition							1.343 [0.423, 2.262]	1.066 [0.320, 1.813]	1.032 [0.264, 1.800]
# of Subjects	442	442	442	442	442	442	442	442	442
# of Failures	27	27	27	27	27	27	27	27	27

Cox competing hazards regressions of the hazard of irregular leader removal in democratic regimes: 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 prior 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% confidence intervals presented in brackets. All standard errors have been clustered by leader.

TABLE 4 *Transparency and Regular Leader Removal*

	Cond. Prior Transition			Cond. Num. Transitions			Prior Transition Control		
Transparency	0.073 [-0.004, 0.151]	0.068 [0.007, 0.129]	0.044 [-0.009, 0.097]	0.064 [-0.015, 0.143]	0.066 [0.004, 0.127]	0.047 [-0.007, 0.100]	0.071 [-0.006, 0.149]	0.070 [0.008, 0.131]	0.046 [-0.009, 0.101]
Growth	-0.004 [-0.031, 0.024]	-0.002 [-0.031, 0.026]		-0.007 [-0.035, 0.021]	-0.004 [-0.032, 0.025]		-0.003 [-0.033, 0.026]	-0.001 [-0.031, 0.028]	
Transparency × Growth	-0.008 [-0.022, 0.005]	-0.009 [-0.022, 0.004]		-0.005 [-0.019, 0.008]	-0.007 [-0.020, 0.006]		-0.008 [-0.021, 0.004]	-0.009 [-0.022, 0.003]	
GDP <i>per capita</i>	-0.005 [-0.021, 0.010]			-0.003 [-0.019, 0.012]			-0.004 [-0.019, 0.012]		
Ec. Openness	-0.003 [-0.006, -0.000]			-0.005 [-0.008, -0.001]			-0.003 [-0.006, -0.000]		
Parliamentary	0.186 [-0.095, 0.467]			0.184 [-0.099, 0.468]			0.182 [-0.086, 0.450]		
Mixed System	-0.285 [-0.691, 0.121]			-0.278 [-0.689, 0.133]			-0.291 [-0.701, 0.120]		
Prior Transition							-0.054 [-0.322, 0.214]	-0.024 [-0.241, 0.193]	-0.004 [-0.220, 0.212]
# of Subjects	442	442	442	442	442	442	442	442	442
# of Failures	322	322	322	322	322	322	322	322	322

Cox competing hazards regressions of the hazard of regular leader removal in democratic regimes: 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 prior 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% confidence intervals presented in brackets. All standard errors have been clustered by leader.

TABLE 5 *Estimates Marginal Effects of a One Standard Deviation Increase in Growth*

	Transparent	Not Transparent	Difference
Irregular Removal	0.09 (0.11)	-0.14 (0.09)	0.23 (0.10)
Regular Removal	-0.22 (0.13)	-0.02 (0.06)	-0.20 (0.14)

Estimated marginal effects of a one standard deviation increase in the growth rate, reported as percentage changes in the hazard (divided by 100). Estimates are based on Monte Carlo simulations from the models in the second columns of Table 3 and 4. Transparency levels are set one standard deviation above and below the sample mean. Growth rates are set at their mean and one standard deviation plus the mean, to assess the marginal effect. Standard errors from simulations are reported in parentheses.

consistent with our theory. Again, we present Monte Carlo simulations of the marginal effect of growth, at varying levels of transparency, in Table 5.

Leader Removal Robustness

We examine the robustness of our results pertaining to democratic leader-removal, both irregular and regular, to the inclusion of the same battery of additional controls described in the section on autocratic reversions, above.

Our substantive results pertaining to irregular leader removal are unaffected by including these controls. The magnitude of the estimated coefficient on transparency is largely unchanged relative to our baseline specification in all models. In some instances, the precision of our estimates falls slightly in our most exhaustive specifications. However, these controls do not demonstrate a substantively strong nor statistically significant correlation with irregular leader removal. The coefficient on transparency remains statistically significant at the 90 per cent level or above in thirty-four of forty-five specifications.

As with our specifications examining irregular leader removal, adding these controls to specifications examining the hazard of regular removal does little to change the magnitude of the estimated coefficient on our transparency term. However, our baseline estimates are smaller in magnitude and less precisely estimated than in the other two sets of regressions presented thus far. So, unsurprisingly, these results are less robust. In nineteen of forty-five specifications, the coefficient on transparency remains significant at conventional levels.

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. Irregular leader removals do indeed fall in transparency, while regular removals rise.

Our emphasis on the *popular* legitimacy of elections shifts the focus of much recent work on democratic stability and consolidation from the behavior of elites to popular legitimation. We introduce a novel mechanism through which democracy achieves 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.

Together with related work on transparency and mass mobilization in autocracies,⁸⁰ this article contributes to a growing literature on the coordination of protest. Fearon; Hyde and Marinov; Little, LaGatta and Tucker focus on the role of election returns, and Bueno de Mesquita; Shadmehr and Bernhardt on revolutionary entrepreneurs as solutions to the informational difficulties in coordinating mass unrest.⁸¹ We find that the role of free flows of information in coordinating protests is moderated by the institutional environment. Transparency facilitates mass unrest in autocracies, while it inhibits threats to democratic rule.

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⁸⁰ Hollyer, Rosendorff and Vreeland 2015.

⁸¹ Bueno de Mesquita 2010; Fearon 2011; Hyde and Marinov 2014; Little, LaGatta and Tucker 2015; Shadmehr and Bernhardt 2014.

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