Transparency, Protest and Political (In)Stability

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Question

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- **Autocratic Instability** – removal of the ruling clique via revolt or democratization
- **Democratic Instability** – replacement of democracy by autocracy
- **Transparency** – the dissemination of credible aggregate economic data
Broader Project: Transparency

- Measuring Transparency
- Transparency and Protest
- Why Transparency?
- Democratization and Democratic Consolidation
- Diffusion
Findings
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Transparency destabilizes autocracies
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and stabilizes democracies
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- distribution of discontent common knowledge – elections
- transparency improves efficiency of voting mechanism
- elections and unrest substitute mechanisms for leader removal
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- **Model builds on Morris & Shin (2002)**
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- aligns citizen beliefs with type – protests correlate more closely with performance
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- private signal of gov’t type: individual welfare
- public signal – disclosure of economic info. – transparency as variance of signal

Increasing transparency:
- aligns citizen beliefs with type – protests correlate more closely with performance
- increases protest frequency if mobilization sufficiently ‘hard’
Intuitions: Democracy
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Citizens already in high information environment
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- disclosure of vote returns
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Transparency influences voting behavior rather than protest
  - aligns each citizens voting more closely with performance
  - ‘bad’ types more likely to be voted out of office
  - incentive to remove leaders via protest declines
I. Transparency in Autocracy

Political action and regime collapse occurs in low growth, more transparent autocracies

- Theory: Simple game (resembles, but isn’t, a global game)
- Empirics: Hazard rate regressions predicting failure of autocratic regimes (via revolt or democratization)
Actors and Type Space
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- \( L \) chooses public good provision \( G_t \in \{0, 1\} \)
- each \( i \) chooses whether to engage in unrest \( a_i \in \{0, 1\} \)
A continuum of citizens $i \in [0, 1]$
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$L$ is removed if $\int_0^1 a_i \, di \geq T$
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Periods of Play:
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Periods of Play: $t \in \{1, 2\}$
Information

Priors: $Pr(\theta = 1) = p$, $Pr(\theta = 0) = 1 - p$
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$$y_{i,t} = G_t g + \epsilon_{i,t}$$

$$g > 0$$
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\( \sigma_s \) will represent the level of transparency
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1. Nature chooses $L$’s type $\theta \in \{0, 1\}$. The value of $\theta$ is revealed to $L$, but not to any citizen.
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5. If $\int_0^1 a_i di \geq T$, $L$ is replaced and Nature draws the type of its replacement $\theta \in \{0, 1\}$, where $Pr(\theta = 1) = p$. 

HRV (Minnesota, NYU, Georgetown)
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7. Nature chooses $\epsilon_{i,2}$ $\forall$ $i$. $y_{i,2}$ is realized for all citizens and the game ends.
Utilities
Utilities

Leader:
Utilities

**Leader:**

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

\[ u_L = \sum_{t=1}^{2} u_{L,t}(G_t, \theta) \]
Utilities

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Citizens:
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Citizens: \[ u_{i,t}(y_{i,1}, y_{i,2}, a_i; A) = y_{i,t} + a_i[R(A)\beta - \kappa] + y_{i,2} \]
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\[ A = \int_0^1 a_i di \]
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where \( \beta > \kappa > 0 \)

\[ A = \int_0^1 a_i di \]

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

- Game has multiple equilibria
  - Game does not have two-sided limit dominance
- Equilibria in which citizen behavior unconditioned by information
  - All citizens always mobilize
  - No citizen ever mobilizes
  - Implausible
Informative Equilibrium

- We focus on a third equilibrium
  - Pure strategy perfect bayesian
  - Monotone: incentive to protest is (weakly) falling in the signal.
  - Each citizen conditions their action on all available information
    - $a_i$ depends on both $y_i$ and $s$. 
Strategies
Strategies

Perfect Bayesian equilibrium solution concept
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Leaders:
Strategies

Perfect Bayesian equilibrium solution concept

**Leaders:** set $G_t = \theta$
Strategies

Perfect Bayesian equilibrium solution concept

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set $a_i = 1$ iff $y_{i,t}$ is below some threshold
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Perfect Bayesian equilibrium solution concept

Leaders: set $G_t = \theta$

Citizens: cut-point strategies
set $a_i = 1$ iff $y_{i,t}$ is below some threshold
this threshold is a function of $s$ – denote $\bar{y}(s)$
Citizens’ Beliefs

- Recall the prior, \( Pr(\theta = 0) = 1 - p \)
- Citizens receive signals \( s \) and \( y_{i,1} \)
- Using Bayes’ Rule, citizens compute the posterior \( Pr(\theta = 0|y_{i,1}, s) \)
Threshold
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Structure the equilibrium such that:
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- A poor leader generates enough political action to result in ouster
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Structure the equilibrium such that:

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- A good leader generates too little political action to result in ouster
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Then \( i \) will prefer to set \( a_i = 1 \) iff:
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Then \( i \) will prefer to set \( a_i = 1 \) iff:

\[
Pr(\theta = 1|y_{i,1}, s)g + Pr(\theta = 0|y_{i,1}, s)[pg + \beta] - \kappa \geq Pr(\theta = 1|y_{i,1}, s)g + Pr(\theta = 0|y_{i,1}, s)pg + Pr(\theta = 0|y_{i,1}, s)\beta \geq \kappa
\]
Threshold

Structure the equilibrium such that:

- A poor leader generates enough political action to result in ouster
- A good leader generates too little political action to result in ouster

Then $i$ will prefer to set $a_i = 1$ iff:

$$Pr(\theta = 1|y_{i,1}, s)g + Pr(\theta = 0|y_{i,1}, s)[pg + \beta] - \kappa \geq Pr(\theta = 1|y_{i,1}, s)g + Pr(\theta = 0|y_{i,1}, s)pg \beta \geq \kappa$$

Define the value of $y$ such that $Pr(\theta = 0|y_{i,1}, s)\beta = \kappa$ as $\tilde{y}^*(s)$. 
Individual Decision

\[ a_i = 1 \quad \text{or} \quad a_i = 0 \]
Along the Equilibrium Path
Along the Equilibrium Path
Along the Equilibrium Path

- Blue region: Fraction of population that mobilizes when in fact $\theta = 0$
  - $\Phi \left( \frac{\bar{y}^*(s)}{\sigma_y} \right)$
  - $\Phi$ is the cdf of the standard normal

- Red region: Fraction of population that mobilizes when in fact $\theta = 1$
  - $\Phi \left( \frac{\bar{y}^*(s) - g}{\sigma_y} \right)$
Along the Equilibrium Path

- Blue region: Fraction of population that mobilizes when in fact $\theta = 0$
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If $\Phi \left( \frac{\bar{y}^*(s)-g}{\sigma_y} \right) \leq T \leq \Phi \left( \frac{\bar{y}^*(s)}{\sigma_y} \right)$
Along the Equilibrium Path

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If $\Phi \left( \frac{\bar{y}^*(s) - g}{\sigma_y} \right) \leq T \leq \Phi \left( \frac{\bar{y}^*(s)}{\sigma_y} \right)$

- then good types are retained and bad types removed, and all citizens are playing a best response.
Along the Equilibrium Path

If instead $T \leq \Phi \left( \frac{\bar{y}^*(s)-g}{\sigma_y} \right)$,
Along the Equilibrium Path

- If instead $T \leq \Phi \left( \frac{\bar{y}^*(s) - g}{\sigma_y} \right)$,
  - the public signal is so extreme (and low) that all citizens ignore their private signal and mobilize to remove the leader irrespective of the leader’s type.
Along the Equilibrium Path

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- leader is removed
Along the Equilibrium Path

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Along the Equilibrium Path

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  ▶ leader is removed

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Along the Equilibrium Path

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  - the public signal is so strong and high that all citizens ignore their private signal and do not mobilize irrespective of the leader’s type.
  - leader survives
Threshold for Unrest

Define $\underline{s}$ by $T = \Phi \left( \frac{\bar{y}^*(s) - g}{\sigma_u} \right)$

Define $\bar{s}$ by $T = \Phi \left( \frac{\bar{y}^*(\bar{s})}{\sigma_u} \right)$
Threshold for Unrest

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$$T = \Phi \left( \frac{\bar{y}^*(\bar{s})}{\sigma_u} \right)$$

$$\bar{y}(s) = \begin{cases} \infty & \text{if } s \geq \bar{s} \end{cases}$$
Threshold for Unrest

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Define $\bar{s}$ by $T = \Phi\left(\frac{\tilde{y}^*(\bar{s})}{\sigma_u}\right)$

$$\tilde{y}(s) = \begin{cases} 
-\infty & \text{if } s \geq \bar{s} \\
\infty & \text{if } s < \underline{s}
\end{cases}$$
Threshold for Unrest

Define $s$ by $T = \Phi \left( \frac{\bar{y}^*(s) - g}{\sigma_u} \right)$

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\bar{y}^*(s) & \text{if } s \in (\underline{s}, \bar{s}] \\
\infty & \text{if } s < \underline{s}
\end{cases}$$

$$\frac{\kappa}{\beta} = Pr(\theta = 0 | \bar{y}^*(s), s)$$
Leader Retention and the Public Signal
Leader Retention and the Public Signal
Leader Retention and the Public Signal
Leader Retention and the Public Signal
Leader Retention and the Public Signal

$s$  $\bar{s}$

Always Retain
Leader Retention and the Public Signal

Always Remove

Always Retain
Leader Retention and the Public Signal

Retain if $\theta = 1$

$s$  \hspace{1cm}  $\bar{s}$

Always Remove  \hspace{1cm}  Always Retain
Leader Retention and the Public Signal

Retain if $\theta = 1$

$s$  $\bar{s}$

Always Remove  Remove if $\theta = 0$  Always Retain
Leader Retention and the Public Signal

Retain if $\theta = 1$

$s$

$s$

Always Remove \hspace{2cm} Remove if $\theta = 0$ \hspace{2cm} Always Retain

$Pr(\text{remove} | \theta = 0)$?
Leader Retention and the Public Signal

<table>
<thead>
<tr>
<th>s</th>
<th>Retain if $\theta = 1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\overline{s}$</td>
<td>$Pr(\text{remove}</td>
</tr>
</tbody>
</table>

Always Remove      Remove if $\theta = 0$      Always Retain
Leader Retention and the Public Signal

\[ Pr(\text{remove} \mid \theta = 0) \quad \text{and} \quad Pr(s < \bar{s} \mid \theta = 0) \]
Leader Retention and the Public Signal

Retain if $\theta = 1$

Always Retain

Remove if $\theta = 0$

Always Remove

$Pr(\text{remove} | \theta = 0)\quad Pr(s < \bar{s} | \theta = 0)\quad \Phi(\bar{s}/\sigma_s)$
Leader Retention and the Public Signal

\[ \text{Retain if } \theta = 1 \]

\[ \bar{s} \]

\[ \text{Always Retain} \quad \text{Always Remove} \quad \text{Remove if } \theta = 0 \]

\[ \Pr(\text{remove}|\theta = 0)? \quad \Pr(s < \bar{s}|\theta = 0) \quad \Phi\left(\frac{\bar{s}}{\sigma_s}\right) \]

\[ \Pr(\text{remove}|\theta = 1)? \]
Leader Retention and the Public Signal

Retain if $\theta = 1$

$\bar{s}$

$\bar{s}$

Always Remove  Remove if $\theta = 0$  Always Retain

$Pr(\text{remove} | \theta = 0) \, ? \, Pr(s < \bar{s} | \theta = 0) \, \Phi(\frac{\bar{s}}{\sigma_s})$

$Pr(\text{remove} | \theta = 1) ?$
Leader Retention and the Public Signal

Retain if $\theta = 1$

$\bar{s}$

Remove if $\theta = 0$

$Pr(\text{remove} | \theta = 0) \quad Pr(s < \bar{s} | \theta = 0) \quad \Phi\left(\frac{\bar{s}}{\sigma_s}\right)$

Always Remove

$Pr(\text{remove} | \theta = 1)$

$Pr(s \leq \bar{s} | \theta = 1)$

Always Retain
Leader Retention and the Public Signal

Retain if $\theta = 1$

$s$

Remove if $\theta = 0$

$\bar{s}$

Always Remove

Remove if $\theta = 0$

Always Retain

$Pr(\text{remove}|\theta = 0)? \quad Pr(s < \bar{s}|\theta = 0) \quad \Phi(\frac{\bar{s}}{\sigma_s})$

$Pr(\text{remove}|\theta = 1)? \quad Pr(s \leq s|\theta = 1) \quad \Phi(\frac{s-g}{\sigma_s})$
Leader Retention and the Public Signal

Retain if $\theta = 1$

$s$  \hspace{1cm}  $\bar{s}$

Always Remove  \hspace{2cm} Remove if $\theta = 0$  \hspace{2cm} Always Retain

$\Pr(\text{remove}|\theta = 0)$

$\Pr(s < \bar{s}|\theta = 0) \Phi\left(\frac{\bar{s}}{\sigma_s}\right)$

$\Pr(\text{remove}|\theta = 1)$

$\Pr(s \leq \bar{s}|\theta = 1) \Phi\left(\frac{s-g}{\sigma_s}\right)$

Discrimination:
Leader Retention and the Public Signal

Retain if $\theta = 1$

$\bar{s}$

Remove if $\theta = 0$

$s < \bar{s}$

Always Remove

$Pr(\text{remove} | \theta = 0)$?

$Pr(s < \bar{s} | \theta = 0)$

$\Phi\left(\frac{\bar{s}}{\sigma_s}\right)$

$Pr(\text{remove} | \theta = 1)$?

$Pr(s \leq \bar{s} | \theta = 1)$

$\Phi\left(\frac{s - g}{\sigma_s}\right)$

Discrimination: $\Phi\left(\frac{\bar{s}}{\sigma_s}\right) - \Phi\left(\frac{s - g}{\sigma_s}\right)$
Moderating Role of Transparency
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Proposition

The level of discrimination exhibited by the citizens is rising in transparency (falling in $\sigma_s$).
Moderating Role of Transparency

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$$h_i(t) = h_0(t) \exp(\gamma \text{Transparency} + \delta \text{Growth} + \mu \text{Transparency} \times \text{Growth})$$
Moderating Role of Transparency

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Direct Effect of Transparency

\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency} + \delta \text{Growth} + \mu \text{Transparency} \times \text{Growth}) \]
Direct Effect of Transparency

Proposition

If \(-\frac{\sigma_y}{g} \ln \left( \frac{p^\kappa}{(1-p)(\beta-k)} \right) < \Phi^{-1}(T)\), then there exists a level of \(\sigma_s \equiv \bar{\sigma}_s\) such that, the unconditional probability of leader removal is increasing for low levels of transparency \((\sigma_s \geq \bar{\sigma}_s)\).

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Direct Effect of Transparency

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Remark

As \(\beta \to \kappa\) the probability of leader removal is rising in transparency for all \(\sigma_s \in \mathbb{R}_+\) and for all \(T \in (0,1)\).

\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency} + \delta \text{Growth} + \mu \text{Transparency} \times \text{Growth}) \]
Direct Effect of Transparency

**Proposition**

If \(-\frac{\sigma_y}{g} \ln\left(\frac{p\kappa}{(1-p)(\beta-k)}\right) < \Phi^{-1}(T)\), then there exists a level of \(\sigma_s \equiv \bar{\sigma}_s\) such that, the unconditional probability of leader removal is increasing for low levels of transparency \((\sigma_s \geq \bar{\sigma}_s)\).

**Remark**

As \(\beta \rightarrow \kappa\) the probability of leader removal is rising in transparency for all \(\sigma_s \in \mathbb{R}_+\) and for all \(T \in (0,1)\).

\[h_i(t) = h_0(t)\exp(\gamma_{\text{Transparency}} + \delta_{\text{Growth}} + \mu_{\text{Transparency}} \times \text{Growth})\]
II. Transparency in Democracy

Political action and regime collapse occurs when elections return ‘bad’ types to office

‘Bad’ types *voted* out of office when transparency is high

- **Theory:** Game identical to autocracies, but with a voting stage
- **Empirics:** Hazard rate regressions predicting failure of autocratic regimes (via revolt or democratization)
Aactors and Type Space

Actors: a continuum of citizens $i \in [0, 1]$  
a leader $L$

Type Space: $L$ may be of type $\theta \in \{0, 1\}$

Action Space: $L$ chooses public good provision $G_t \in \{0, 1\}$  
each $i$ chooses whether to vote against the incumbent $v_i \in \{0, 1\}$  
each $i$ chooses whether to engage in unrest $a_i \in \{0, 1\}$

Institutions: $L$ is removed if $\int_0^1 v_i \, di \geq \frac{1}{2}$  
$L$ is removed if $\int_0^1 a_i \, di \geq T$

Periods of Play: $t \in \{1, 2\}$
Information

Priors: \( Pr(\theta = 1) = p, \ Pr(\theta = 0) = 1 - p \)

Each citizen will observe:

- her own economic well-being

\[
y_{i,t} = G_t g + \epsilon_{i,t}
\]
\[
g > 0
\]
\[
\epsilon_{i,t} \sim \text{iid } N(0, \sigma_y)
\]

- a publicly observable signal

\[
s = G_1 g + \rho
\]
\[
\rho \sim N(0, \sigma_s)
\]
\[
E[\rho \epsilon_{i,t}] = 0 \ \forall \ i, t
\]
\[
\sigma_s < \sigma_y
\]

- electoral outcomes

\[
V = \int_0^1 v_i \, di
\]

\( \sigma_s \) will represent the level of transparency
Order of Play

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 $\epsilon_{i,1}$ $\forall$ $i$ and $\rho$. $y_{i,1}$ is revealed to each citizen $i$, but not to any other citizen. $s$ is revealed to all citizens.

4. Each citizen chooses $v_i \in \{0, 1\}$. $V = \int_0^1 v_i di$ revealed to all $i$ and $L$. If $V \geq \frac{1}{2}$ $L$ is removed and Nature draws the type of its replacement, where $Pr(\theta = 1) = p$.

5. Each citizen chooses whether or not to engage in collective action $a_i \in \{0, 1\}$.

6. If $\int_0^1 a_i di \geq T$, $L$ is replaced and Nature draws the type of its replacement $\theta \in \{0, 1\}$, where $Pr(\theta = 1) = p$.

7. The sitting $L$ chooses the value of $G_2 \in \{0, 1\}$.

8. Nature chooses $\epsilon_{i,2}$ $\forall$ $i$. $y_{i,2}$ is realized for all citizens and the game ends.
Equilibrium
Equilibrium

Utilities: Exactly as in autocratic game
Equilibrium

Utilities: Exactly as in autocratic game

Profusion of pure strategy perfect Bayesian equilibria
Equilibrium

Utilities: Exactly as in autocratic game

Profusion of pure strategy perfect Bayesian equilibria

Focus on one such equilibrium with desirable properties:
Equilibrium

**Utilities:** Exactly as in autocratic game

Profusion of pure strategy perfect Bayesian equilibria

Focus on one such equilibrium with desirable properties:

- sincere voting
Equilibrium

Utilities: Exactly as in autocratic game

Profusion of pure strategy perfect Bayesian equilibria

Focus on one such equilibrium with desirable properties:

- sincere voting
- mobilization decision $a_i$ conditional on beliefs about gov’t type $\theta$
Strategies

Perfect Bayesian equilibrium solution concept

**Leaders:** set $G_t = \theta$

**Citizens:** $v_i = 1$ if $Pr(\theta = 1 | y_{i,1}, s) \leq p$
$v_i = 0$ otherwise
$a_i = 1$ if $V = \int_0^1 v_i di$ is less than some threshold
Strategies

Perfect Bayesian equilibrium solution concept

**Leaders:** set $G_t = \theta$

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- $v_i = 1$ if $Pr(\theta = 1|y_{i,1}, s) \leq p$
- $v_i = 0$ otherwise
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Beliefs and Voting
Beliefs and Voting

Citizen beliefs defined via Bayes’ Rule $Pr(\theta = 1|y_{i,1}, s)$
Beliefs and Voting

Citizen beliefs defined via Bayes’ Rule $Pr(\theta = 1|y_{i,1}, s)$

- implicitly define $\tilde{y}(s)$ as the value of $y_{i,1}$ s.t. $Pr(\theta = 1|y_{i,1}, s) = p$
Beliefs and Voting

Citizen beliefs defined via Bayes’ Rule \( Pr(\theta = 1|y_{i,1}, s) \)

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We can then define vote totals as follows:
Beliefs and Voting

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We can then define vote totals as follows:

$$V(s; \theta) = \begin{cases} 
\Phi\left(\frac{\tilde{y}(s)}{\sigma_y}\right) & \text{if } \theta = 0 
\end{cases}$$
Beliefs and Voting

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Vote Returns and Information

Vote totals are given by:

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Notice that:
Vote Returns and Information

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\end{cases} \]

Notice that:

- \( V(s; 0) > V(s; 1) \forall s \)
Vote Returns and Information

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Notice that:
- \( V(s; 0) > V(s; 1) \) \( \forall s \)
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Notice that:
- \( V(s; 0) > V(s; 1) \) \( \forall \ s \)
- citizens all observe the value of \( s \)

Vote returns perfectly informative of type!
Mobilization Strategies

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

Mobilization iff a ‘bad’ type \( \theta = 0 \) survives election.
Thresholds of the Public Signal

Implicitly define $\tilde{s}$ s.t. $\Phi\left(\frac{\tilde{y}(\tilde{s})}{\sigma_y}\right) = \frac{1}{2}$
Thresholds of the Public Signal

Implicitly define $\tilde{s}$ s.t. $\Phi\left(\frac{\tilde{y}(\tilde{s})}{\sigma_y}\right) = \frac{1}{2}$

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Thresholds of the Public Signal

Implicitly define \( \tilde{s} \) s.t. \( \Phi\left(\frac{\tilde{y}(\tilde{s})}{\sigma_Y}\right) = \frac{1}{2} \)

- If \( s > \tilde{s} \) then gov’ts of all types (\( \theta \)) will survive election

Implicitly define \( \hat{s} \) s.t. \( \Phi\left(\frac{\tilde{y}(\hat{s})-g}{\sigma_Y}\right) = \frac{1}{2} \)
Thresholds of the Public Signal

Implicitly define $\tilde{s}$ s.t. $\Phi\left(\frac{\tilde{y}(\tilde{s})}{\sigma_y}\right) = \frac{1}{2}$
- If $s > \tilde{s}$ then gov’ts of all types ($\theta$) will survive election

Implicitly define $\bar{s}$ s.t. $\Phi\left(\frac{\bar{y}(\bar{s}) - g}{\sigma_y}\right) = \frac{1}{2}$
- If $s \leq \bar{s}$ then gov’ts of all types ($\theta$) will be voted out of office
Electoral Leader Retention and the Public Signal
Electoral Leader Retention and the Public Signal
Electoral Leader Retention and the Public Signal
Electoral Leader Retention and the Public Signal
Electoral Leader Retention and the Public Signal

Always Retain
Electoral Leader Retention and the Public Signal

Always Remove

Always Retain
Electoral Leader Retention and the Public Signal

\[ \text{Retain if } \theta = 1 \]

Always Remove \quad \text{or} \quad \text{Always Retain}
Electoral Leader Retention and the Public Signal

Retain if $\theta = 1$

$S_1$ \quad $S_2$

Always Remove \quad Remove if $\theta = 0$ \quad Always Retain
Electoral Leader Retention and the Public Signal

Retain if $\theta = 1$

Always Remove \hspace{2cm} Remove if $\theta = 0$ \hspace{2cm} Always Retain

$Pr(\text{remove}|\theta = 0)$?
Electoral Leader Retention and the Public Signal

\[ \begin{align*}
\text{Retain if } \theta &= 1 \\
\text{Always Remove} & \quad \begin{array}{c}
\sim \\
\end{array} \\
\text{Remove if } \theta &= 0 & \text{Always Retain} \\
\text{Pr}(\text{remove}|\theta = 0) & ?
\end{align*} \]
Electoral Leader Retention and the Public Signal

Retain if $\theta = 1$

Always Remove  Remove if $\theta = 0$  Always Retain

$Pr(\text{remove} | \theta = 0)$?  $Pr(s < \tilde{s} | \theta = 0)$
Electoral Leader Retention and the Public Signal

\[ Pr(\text{remove}|\theta = 0) \]
\[ Pr(s < \tilde{s}|\theta = 0) \]
\[ \Phi\left(\frac{\tilde{s}}{\sigma_s}\right) \]
Electoral Leader Retention and the Public Signal

\[ \text{Retain if } \theta = 1 \]
\[ \tilde{s} \]
\[ \text{Always Remove} \]
\[ \text{Remove if } \theta = 0 \]
\[ s < \tilde{s} \mid \theta = 0 \] \[ \Phi \left( \frac{\tilde{s}}{\sigma_s} \right) \]
\[ \text{Always Retain} \]

\[ Pr(\text{remove} \mid \theta = 0)? \]
\[ Pr(s < \tilde{s} \mid \theta = 0) \Phi \left( \frac{\tilde{s}}{\sigma_s} \right) \]
\[ Pr(\text{remove} \mid \theta = 1)? \]
Electoral Leader Retention and the Public Signal

Always Remove  Retain if $\theta = 1$

Always Remove  Remove if $\theta = 0$

Always Retain

$Pr(\text{remove}|\theta = 0)$?   $Pr(s < \tilde{s}|\theta = 0)$   $\Phi(\frac{\tilde{s}}{\sigma_s})$

$Pr(\text{remove}|\theta = 1)$?
Electoral Leader Retention and the Public Signal

- Retain if $\theta = 1$
- Remove if $\theta = 0$
- Always Retain
- Always Remove

$Pr(\text{remove} | \theta = 0)$?
$Pr(s < \tilde{s} | \theta = 0) \cdot \Phi\left(\frac{\tilde{s}}{\sigma_s}\right)$
$Pr(\text{remove} | \theta = 1)$?
$Pr(s \leq s | \theta = 1)$
Electoral Leader Retention and the Public Signal

Retain if $\theta = 1$

\[ \sim \]

Always Remove \hspace{2cm} Remove if $\theta = 0$ \hspace{2cm} Always Retain

\[ Pr(\text{remove} | \theta = 0) \]
\[ Pr(s < \tilde{s} | \theta = 0) \Phi(\frac{\tilde{s}}{\sigma_s}) \]

\[ Pr(\text{remove} | \theta = 1) \]
\[ Pr(s \leq \check{s} | \theta = 1) \Phi(\frac{\check{s} - g}{\sigma_s}) \]
Electoral Leader Retention and the Public Signal

\[ \text{Retain if } \theta = 1 \]
\[ \tilde{s} \]
\[ \text{Remove if } \theta = 0 \]
\[ s \]

Always Remove \quad Remove if \theta = 0 \quad Always Retain

\[ Pr(\text{remove} | \theta = 0)? \quad Pr(s < \tilde{s} | \theta = 0) \quad \Phi(\frac{\tilde{s}}{\sigma_s}) \]
\[ Pr(\text{remove} | \theta = 1)? \quad Pr(s \leq \tilde{s} | \theta = 1) \quad \Phi(\frac{\tilde{s} - g}{\sigma_s}) \]

Electoral Discrimination:
Electoral Leader Retention and the Public Signal

Retain if $\theta = 1$

$\bar{s}$

$\bar{\bar{s}}$

Always Remove 

Remove if $\theta = 0$

Always Retain

$Pr(\text{remove} | \theta = 0)?$ 

$Pr(s < \bar{s} | \theta = 0) \Phi(\frac{\bar{s}}{\sigma_s})$

$Pr(\text{remove} | \theta = 1)?$ 

$Pr(s \leq \bar{s} | \theta = 1) \Phi(\frac{\bar{s} - g}{\sigma_s})$

Electoral Discrimination: $\Phi(\frac{\bar{s}}{\sigma_s}) - \Phi(\frac{\bar{s} - g}{\sigma_s})$
Transparency and Democratic Survival

Proposition

The level of electoral discrimination is strictly rising in transparency (falling in $\sigma_s$).
Transparency and Democratic Survival

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Remember unrest occurs iff a $\theta = 0$ type retained via elections
Transparency and Democratic Survival

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- and the probability of this occurring falls as transparency rises
Proposition

The level of electoral discrimination is strictly rising in transparency (falling in $\sigma_s$).

Remember unrest occurs iff a $\theta = 0$ type retained via elections
- and the probability of this occurring falls as transparency rises

Proposition

The probability of mass unrest is strictly falling in transparency (rising in $\sigma_s$).
Conception of Transparency
Conception of Transparency

In the model, transparency is $\sigma_s$, the std. dev. of the public signal.
Conception of Transparency

In the model, transparency is $\sigma_s$, the stnd. dev. of the public signal

Represents information that is:
Conception of Transparency

In the model, transparency is $\sigma_s$, the stnd. dev. of the public signal.

Represents information that is:

1. Publicly shared, and known to be so.
Conception of Transparency

In the model, transparency is $\sigma_s$, the std. dev. of the public signal

Represents information that is:
1. Publicly shared, and known to be so
2. That allows citizens to make inferences about gov’t economic performance (credible)
Conception of Transparency

In the model, transparency is $\sigma_s$, the stnd. dev. of the public signal

Represents information that is:

1. Publicly shared, and known to be so
2. That allows citizens to make inferences about gov’t economic performance (credible)
3. That allows citizens to update higher order beliefs
Operationalizing Transparency

Transparency as the disclosure of (credible) aggregate economic data
Operationalizing Transparency

Transparency as the disclosure of (credible) aggregate economic data

Such data are:
Operationalizing Transparency

Transparency as the disclosure of (credible) aggregate economic data

Such data are:
- Publicly observable (particularly as translated into nat’l discussion)
Operationalizing Transparency

Transparency as the disclosure of (credible) aggregate economic data

Such data are:
- Publicly observable (particularly as translated into nat’l discussion)
- Informative (better able to judge gov’t performance as more data released)
Operationalizing Transparency

Transparency as the disclosure of (credible) aggregate economic data

Such data are:
- Publicly observable (particularly as translated into nat’l discussion)
- Informative (better able to judge gov’t performance as more data released)
- Credible (survive data review by 3rd parties)
Operationalizing Transparency

Transparency as the disclosure of (credible) aggregate economic data

Such data are:
- Publicly observable (particularly as translated into nat’l discussion)
- Informative (better able to judge gov’t performance as more data released)
- Credible (survive data review by 3rd parties)
- Primarily available from only one source – gov’t (public goods in information)
Transparency and Missing Data

Specifically look at patterns of missing and reported data to World Development Indicators (WDI)
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- Data reported by nat’l statistical agencies to World Bank (or IO intermediaries)
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- Credibility of data vetted by World Bank (or intermediaries)
Transparency and Missing Data

Specifically look at patterns of missing and reported data to World Development Indicators (WDI)

- Data reported by nat’l statistical agencies to World Bank (or IO intermediaries)
- Credibility of data vetted by World Bank (or intermediaries)
- Data pertain to aggregate economic outcomes – necessary to assess gov’t economic performance
Index Inputs

World Development Indicators (Downloaded Dec. 2012)

**Items:**
240 variables from across WDI
recoded into indicator $\{0, 1\}$ equal to 1 if non-missing

**Panels:**
125 countries

**Time:**
Annual obs., 1980-2010

3875 observations
Variable Selection

1,265 variables included in WDI

We exclude those:

- Not reported by at least 1 country in every year from 1980-2010 (consistent temporal meaning)
- Reported only for selected (e.g., highly indebted, or developing) countries
- Compiled from externally conducted surveys (e.g., Doing Business)
- Constructed by combinations of other variables (e.g., male, female and total labor force participation)
- Multiple references in different currencies (preference for constant USD)
Country Selection

WDI only reports on countries currently in existence

- throw out countries that didn’t exist for full period
- throw out results of mergers (Germany, Yemen)
- throw out micro-states (pop. below 500,000 in at least one year)
Country Selection

WDI only reports on countries currently in existence

- throw out countries that didn’t exist for full period
- throw out results of mergers (Germany, Yemen)
- throw out micro-states (pop. below 500,000 in at least one year)

Year selection: balancing loss of countries and variables from above criteria with broader temporal coverage
Measurement Model

Item Response Model

240 equations of the form:

\[
Pr(y_{j,c,t} = 1 | transparency_{c,t}) = \text{logit}(\delta_j + \beta_j transparency_{c,t})
\]

\[j \in \{1, 2, ..., 240\}\]

\[c \in \{1, 2, ..., 124\}\]

\[t \in \{1, 2, ..., 31\}\]

Priors:

\[
\left(\begin{array}{c}
\delta_j \\
\beta_j
\end{array}\right) \sim N\left(\begin{array}{c}
0 \\
0
\end{array}, \begin{array}{cc}
100 & 0 \\
0 & 100
\end{array}\right)
\]

\[
transparency_{c,1} \sim N(0, 1)
\]

\[
transparency_{c,t} \sim N(transparency_{c,t-1}, \frac{1}{\tau_c}) \quad \forall \ t > 1
\]

Cuba constrained to be negative, Sweden positive
Results: Low Scoring Countries in 1980

Transparency Index Values 1980
Low Transparency Countries

Countries: RUS, KHM, GIN, LAO, MNG, GNB, BDI, VNM, LBN, AGO, IRQ, ARE, ZAR, CUB, CHN, HUN, BEL, IDN, TCD, DNK, ROM, ALB, AFG, ETH, LBR, POL

Transparency Index Value
-10, -5, 0, 5, 10
Results: High Scoring Countries in 1980

Transparency Index Values 1980

High Transparency Countries

Country
BOL CHE PHL TUN CYP COL CHL SGP EGY GBR AUS ITA THA CRI PRT NLD CAN FRA USA NOR FIN SWE JPN KOR ESP

Transparency Index Value
Results: Increases in Transparency in Vietnam

Transparency Index Values

Vietnam

Year

Transparency Index Value

1980 1990 2000 2010

HRV (Minnesota, NYU, Georgetown)

Measurement HRV Index: Results

May 20, 2013
Results: Decreases in Transparency in Somalia
Results: Non-Monotonicity in Argentina
Surprises: Strong Performance of Post-Communist New EU Members
Is this Just State Capacity?

HRV Scores v. Log GDP per Capita
In Democracies and Autocracies

- Fitted Democracies
- Fitted Autocracies
- Obs. Democracies
- Obs. Autocracies
Restating Hypotheses

Autocracies

- low growth is associated with collapse (in eq’m $\theta = 0$ removed more frequently)
- transparency conditions (heightens) relationship btw. collapse & growth
- transparency directly predicts collapse
- collapse is regime removal via revolt or dem’ization

Democracies

- transparency is association with reduced risk of collapse
- collapse as conversion to autocracy
Measures
Measures

Transparency:
Measures

Transparency: the HRV Index
Measures

Transparency: the HRV Index

Autocratic Collapse:
Measures

**Transparency:** the HRV Index

**Autocratic Collapse:** Svolik (2012)  
regime removal via revolt dem’ization
Measures

**Transparency:** the HRV Index

**Autocratic Collapse:** Svolik (2012)
regime removal via revolt dem’ization

**Democratic Collapse:**
Measures

**Transparency:** the HRV Index

**Autocratic Collapse:** Svolik (2012)
regime removal via revolt dem’ization

**Democratic Collapse:** the DD dataset (Cheibub et al., 2010)
Measures

**Transparency:** the HRV Index

**Autocratic Collapse:** Svolik (2012)
regime removal via revolt dem’ization

**Democratic Collapse:** the DD dataset (Cheibub et al., 2010)

**Unrest:**
Measures

Transparency: the HRV Index

Autocratic Collapse: Svolik (2012) regime removal via revolt dem’ization

Democratic Collapse: the DD dataset (Cheibub et al., 2010)

Unrest: Banks
Measures

**Transparency:** the HRV Index

**Autocratic Collapse:** Svolik (2012)
regime removal via revolt dem’ization

**Democratic Collapse:** the DD dataset (Cheibub et al., 2010)

**Unrest:** Banks

**Economic Data:**
Measures

**Transparency:** the HRV Index

**Autocratic Collapse:** Svolik (2012)
regime removal via revolt dem’ization

**Democratic Collapse:** the DD dataset (Cheibub et al., 2010)

**Unrest:** Banks

**Economic Data:** PWT 6.3
Autocratic Collapse Empirical Model

Cox Competing Hazards:

\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + \mathbf{X}_{i,t-1} \beta) \]
Empirics  Risk of Autocratic Collapse

Autocratic Collapse Empirical Model

Cox Competing Hazards:

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Unit: Autocratic Regime-Year
Autocratic Collapse Empirical Model

Cox Competing Hazards:

\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + X_{i,t-1}\beta) \]

**Unit:** Autocratic Regime-Year

**t:** Number of Regime Years
Autocratic Collapse Empirical Model

Cox Competing Hazards:
\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + X_{i,t-1} \beta) \]

**Unit:** Autocratic Regime-Year
**t:** Number of Regime Years

Conditional Gap Time Models:
Autocratic Collapse Empirical Model

Cox Competing Hazards:
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Unit: Autocratic Regime-Year
\( t \): Number of Regime Years

Conditional Gap Time Models:
- whether there was a prior replacement of regime
Autocratic Collapse Empirical Model

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**Unit:** Autocratic Regime-Year

**t:** Number of Regime Years

**Conditional Gap Time Models:**

- whether there was a prior replacement of regime
- function of number of prior regime replacements
Autocratic Collapse Empirical Model

Cox Competing Hazards:
\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + X_{i,t-1} \beta) \]

**Unit:** Autocratic Regime-Year
**t:** Number of Regime Years

Conditional Gap Time Models:
- whether there was a prior replacement of regime
- function of number of prior regime replacements
- control for prior regime replacements (no stratification)
Autocratic Collapse Empirical Model

**Cox Competing Hazards:**
\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + X_{i,t-1} \beta) \]

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**Unit:** Autocratic Regime-Year

**t:** Number of Regime Years

Conditional Gap Time Models:
- whether there was a prior replacement of regime
- function of number of prior regime replacements
- control for prior regime replacements (no stratification)
**Autocratic Collapse Empirical Model**

**Cox Competing Hazards:**

\[ h_i(t) = h_0(t) \exp(\gamma Transparency_{i,t-1} + \delta Growth_{i,t-1} + \mu Transparency_{i,t-1} \times Growth_{i,t-1} + X_{i,t-1} \beta) \]

**Unit:** Autocratic Regime-Year

**t:** Number of Regime Years

**Conditional Gap Time Models:**

- whether there was a prior replacement of regime
- function of number of prior regime replacements
- control for prior regime replacements (no stratification)
Hazard of Autocratic Collapse

Cox Hazard Estimates

Low Transparency

High Transparency

[Graphs showing hazard rate over spell length for low and high transparency, with lines indicating low and high growth scenarios.]
Transparency and Unrest
Transparency and Unrest

We predict that transparency should boost mass unrest in autocracies
Transparency and Unrest

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- i.e., demonstrations and strikes
Transparency and Unrest

We predict that transparency should boost mass unrest in autocracies

- i.e., demonstrations and strikes
- but, no reason to expect it to operate on other forms of instability
Transparency and Unrest

We predict that transparency should boost mass unrest in autocracies

- i.e., demonstrations and strikes
- but, no reason to expect it to operate on other forms of instability

Look at relationship with all forms of instability in Banks dataset
Mobilization Empirical Model

Fixed-Effects Negative Binomial Model:

\[ \text{unrest}_{i,t} = \text{FENegBin}(\rho \text{unrest}_{i,t-1} + \eta \text{Transparency}_{i,t-1} + \zeta \text{Growth}_{i,t-1} + \xi \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + \mathbf{X}_{i,t-1}\nu + T\nu) \]
Mobilization Empirical Model

Fixed-Effects Negative Binomial Model:

\[ unrest_{i,t} = \text{FENegBin}(\rho_{unrest_{i,t-1}} + \eta_{\text{Transparency}_{i,t-1}} + \zeta_{\text{Growth}_{i,t-1}} + \xi_{\text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1}} + X_{i,t-1} + T_t) \]

Unit: Autocratic Country-Year
Mobilization Empirical Model

Fixed-Effects Negative Binomial Model:

\[
unrest_{i,t} = FENegBin(\rho unrest_{i,t-1} + \eta Transparency_{i,t-1} + \zeta Growth_{i,t-1} + \xi Transparency_{i,t-1} \times Growth_{i,t-1} + X_{i,t-1} \nu + T \nu)
\]

**Unit:** Autocratic Country-Year

\[
unrest_{i,t}
\]
Mobilization Empirical Model

Fixed-Effects Negative Binomial Model:

\[ \text{unrest}_{i,t} = \text{FENegBin}(\rho \text{unrest}_{i,t-1} + \eta \text{Transparency}_{i,t-1} + \zeta \text{Growth}_{i,t-1} + \xi \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + \mathbf{X}_{i,t-1} \nu + \mathbf{T}_t) \]

**Unit:** Autocratic Country-Year

**unrest}_{i,t**

- strikes, anti-gov’t demos
Mobilization Empirical Model

Fixed-Effects Negative Binomial Model:

\[ \text{unrest}_{i,t} = \text{FENegBin}(\rho \text{unrest}_{i,t-1} + \eta \text{Transparency}_{i,t-1} + \zeta \text{Growth}_{i,t-1} + \xi \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + \mathbf{X}_{i,t-1} \nu + \mathbf{T}_t) \]

**Unit:** Autocratic Country-Year

**unrest}_{i,t**

- strikes, anti-gov’t demos
- revolutions, guerrilla movements, coups, assassinations
Mobilization Empirical Model

Fixed-Effects Negative Binomial Model:

\[ \text{unrest}_{i,t} = \text{FENegBin}(\rho \text{unrest}_{i,t-1} + \eta \text{Transparency}_{i,t-1} + \zeta \text{Growth}_{i,t-1} + \xi \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + \mathbf{X}_{i,t-1} \nu + \mathbf{T}_\nu) \]

**Unit:** Autocratic Country-Year

**unrest}_{i,t**
- strikes, anti-gov’t demos
- revolutions, guerrilla movements, coups, assassinations
- riots?
Expected Number of Strikes

Low Versus High Transparency
Predicted Num. of Strikes

Low Transparency

High Transparency

Pred. Num. Strikes

Growth Rate (percent)
Expected Number of Anti-Gov’t Demos

Low Versus High Transparency
Predicted Num. of Demonstrations

Low Transparency

High Transparency

Predicted Num. Demonstrations

Growth Rate (percent)
Expected Number of Assassinations

Low Versus High Transparency
Predicted Num. of Assassinations

Low Transparency

High Transparency

HRV (Minnesota, NYU, Georgetown)  Transparency and (In)Stability  May 20, 2013
Democratic Collapse Empirical Model

Cox Proportional Hazards:
\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_i,t-1 + \delta \text{Growth}_i,t-1 + \mu \text{Transparency}_i,t-1 \times \text{Growth}_i,t-1 + X_{i,t-1} \beta) \]
Democratic Collapse Empirical Model

Cox Proportional Hazards:

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**Unit:** Democratic-Spell Year
Democratic Collapse Empirical Model

Cox Proportional Hazards:

\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + X_{i,t-1} \beta) \]

**Unit:** Democratic-Spell Year

**t:** Number of Democratic Years
Democratic Collapse Empirical Model

Cox Proportional Hazards:
\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + \mathbf{X}_{i,t-1} \beta) \]

**Unit:** Democratic-Spell Year

**t:** Number of Democratic Years

Conditional Gap Time Models:
Democratic Collapse Empirical Model

Cox Proportional Hazards:
\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + X_{i,t-1}\beta) \]

**Unit:** Democratic-Spell Year
**t:** Number of Democratic Years

Conditional Gap Time Models:
- whether there was a prior transition
Democratic Collapse Empirical Model

**Cox Proportional Hazards:**

\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + X_{i,t-1} \beta) \]

**Unit:** Democratic-Spell Year

**t:** Number of Democratic Years

**Conditional Gap Time Models:**

- whether there was a prior transition
- number of prior transitions
Democratic Collapse Empirical Model

Cox Proportional Hazards:
\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + X_{i,t-1}\beta) \]

**Unit:** Democratic-Spell Year  
**t:** Number of Democratic Years

Conditional Gap Time Models:
- whether there was a prior transition  
- number of prior transitions  
- drop spells with prior transitions
Democratic Collapse Empirical Model

Cox Proportional Hazards:

\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + \mathbf{X}_{i,t-1} \beta) \]

**Unit:** Democratic-Spell Year

**t:** Number of Democratic Years

Conditional Gap Time Models:
- whether there was a prior transition
- number of prior transitions
- drop spells with prior transitions
Hazard of Democratic Collapse

Cox Hazard Estimates

Low Transparency

High Transparency

- Hazard Rate
- Spell Length - Years
- Low Growth
- High Growth

HRV (Minnesota, NYU, Georgetown)
Conclusion
Conclusion

Transparency:
Conclusion

Transparency:

1. Destabilizes autocratic regimes
Conclusion

Transparency:

1. Destabilizes autocratic regimes

2. Even as it stabilizes democracies
Conclusion

Transparency:

1. Destabilizes autocratic regimes
   - Particularly when economic outcomes are poor

2. Even as it stabilizes democracies
Conclusion

Transparency:

1. Destabilizes autocratic regimes
   a. Particularly when economic outcomes are poor
   b. This mechanism operates via mass unrest

2. Even as it stabilizes democracies
Autocratic Transition Empirical Model

Cox Proportional Hazards:
\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + \text{X}_{i,t-1} \beta) \]
Autocratic Transition Empirical Model

Cox Proportional Hazards:
\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + X_{i,t-1} \beta) \]

Unit: Autocratic-Spell Year
Autocratic Transition Empirical Model

Cox Proportional Hazards:

\[ h_i(t) = h_0(t) \exp(\gamma Transparency_{i,t-1} + \delta Growth_{i,t-1} + \mu Transparency_{i,t-1} \times Growth_{i,t-1} + X_{i,t-1} \beta) \]

Unit: Autocratic-Spell Year

\( t \): Number of Autocratic Years
Autocratic Transition Empirical Model

**Cox Proportional Hazards:**

\[ h_i(t) = h_0(t) \exp(\gamma Transparency_{i,t-1} + \delta Growth_{i,t-1} + \mu Transparency_{i,t-1} \times Growth_{i,t-1} + X_{i,t-1} \beta) \]

**Unit:** Autocratic-Spell Year  
**t:** Number of Autocratic Years

**Conditional Gap Time Models:**
Autocratic Transition Empirical Model

Cox Proportional Hazards:
\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + X_{i,t-1} \beta) \]

**Unit:** Autocratic-Spell Year  
**t:** Number of Autocratic Years

Conditional Gap Time Models:
- whether there was a prior transition
Autocratic Transition Empirical Model

Cox Proportional Hazards:
\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + \mathbf{X}_{i,t-1} \beta) \]

**Unit:** Autocratic-Spell Year

**t:** Number of Autocratic Years

Conditional Gap Time Models:
- whether there was a prior transition
- number of prior transitions
Autocratic Transition Empirical Model

**Cox Proportional Hazards:**

\[ h_i(t) = h_0(t) \exp(\gamma \text{Transparency}_{i,t-1} + \delta \text{Growth}_{i,t-1} + \mu \text{Transparency}_{i,t-1} \times \text{Growth}_{i,t-1} + \mathbf{X}_{i,t-1} \beta) \]

**Unit:** Autocratic-Spell Year  
**t:** Number of Autocratic Years

**Conditional Gap Time Models:**

- whether there was a prior transition  
- number of prior transitions  
- drop spells with prior transitions

HRV (Minnesota, NYU, Georgetown)  
Transparency and (In)Stability  
May 20, 2013
Autocratic Transition Empirical Model

Cox Proportional Hazards:

\[ h_i(t) = h_0(t) \exp(\gamma Transparency_{i,t-1} + \delta Growth_{i,t-1} + \mu Transparency_{i,t-1} \times Growth_{i,t-1} + X_{i,t-1} \beta) \]

**Unit:** Autocratic-Spell Year  
**t:** Number of Autocratic Years

Conditional Gap Time Models:
- whether there was a prior transition
- number of prior transitions
- drop spells with prior transitions
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Conditional Gap Time Models:

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- drop spells with prior transitions
Hazard of Autocratic Transition

Cox Hazard Estimates

Low Transparency

High Transparency

Hazard Rate

Spell Length - Years

Low Growth -- High Growth

Low Growth -- High Growth