Isolated Capital Cities and Misgovernance: Theory and Evidence

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ESSIM 2013
Motivation

Understanding Governance:
What constraints governments beyond “formal” checks and balances?

Understudied Element: Spatial Distribution of Population
- Where you are matters for your political influence
- Spatial proximity to power increases political influence (Ades and Glaeser, 1995)
- Especially so when it comes to the threat of violence / insurrection
Governance x Isolation of the capital

Governance:
World Governance Indicators (1996-2010, avg.)

• Rule of Law
• Government Effectiveness
• Control of Corruption
• Voice and Accountability
• Regulatory Quality
• Political Stability
Isolation of the capital city: Average log distance of population to the capital (Campante and Do 2010)

Measure satisfies
- Subgroup consistency
- Rank invariance
- Strict monotonicity
- Robust to measurement approximations
- Movements closer to the capital are more important

Our measure:
- We adopt the version normalizing by country size
- Data from *Gridded Population of the World* (1990), 5-km cells
Stylized Fact

Full Sample

WGI First PC

Fitted values
Stylized fact:
Isolated Capital Cities are associated with worse governance.

Road map:
• Facts and motivation
• Theory about how the isolation of the capital city and governance interact under the threat of insurrections
• Empirical test of the predictions generated by the theory
Related Literature

• Political Implications of Spatial Distributions
  – Campante & Do (2012)
  – Isolated Capitals and Corruption across US states

• Endogenous Institutions & (Threat of) Political Violence
  – Guimaraes & Sheedy (2012)
  – Commitment requires sharing power
Motivation

Revolutions and Capital Cities
• As the capital goes, so goes the country...
• Historical example: 18th-19th century France
• Contemporaneous examples: Ukraine, Thailand

Guess who have figured that out? Incumbents!
• Many examples of proposed and undertaken relocations
  – Versailles, Brasilia, Naypyidaw
“Vast and empty, Burma’s new capital will not fall to an urban upheaval easily. It has no city centre, no confined public space where even a crowd of several thousand people could make a visual – let alone political – impression. Naypyitaw, then, is the ultimate insurance against regime change, a masterpiece of urban planning designed to defeat any putative colour revolution – not by tanks and water cannons, but by geometry and cartography. 320 kilometres to the south, Rangoon, with five million people, is home to one-tenth the country’s population. But even if that city were brought to a standstill by public protests and demonstrations, Burma’s military government – situated happily in the middle of paddy fields in the middle of nowhere – would remain unaffected.”

Motivation

Revolutions and Capital Cities

• As the capital goes, so goes the country...
• Historical example: 18th-19th century France
• Contemporaneous examples: Ukraine, Thailand

Guess who have figured that out? Incumbents!

• Many examples of proposed and undertaken relocations
  – Versailles, Brasilia, Naypyidaw
• In general, protection is an (explicit or disguised) goal
• Policies discouraging migration to cities are also common
  – Vietnam, China, Cambodia (under the Khmer Rouge)
Table 1. Changes in Capital Cities since World War I

<table>
<thead>
<tr>
<th>Country</th>
<th>From</th>
<th>To</th>
<th>Year</th>
<th>Distance (km)</th>
<th>Population (From)</th>
<th>Population (To)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>St. Petersburg</td>
<td>Moscow</td>
<td>1918</td>
<td>633</td>
<td>2.3 million (1917)</td>
<td>1.8 million (1915)</td>
</tr>
<tr>
<td>Turkey</td>
<td>Istanbul</td>
<td>Ankara</td>
<td>1923</td>
<td>351</td>
<td>680K (1927)</td>
<td>75K (1927)</td>
</tr>
<tr>
<td>Australia</td>
<td>Melbourne</td>
<td>Canberra</td>
<td>1927</td>
<td>472</td>
<td>670K (1914)</td>
<td>-</td>
</tr>
<tr>
<td>China</td>
<td>Nanjing</td>
<td>Beijing</td>
<td>1949</td>
<td>1219</td>
<td>2.8 million (1955)</td>
<td>2.8 million (1953)</td>
</tr>
<tr>
<td>Mauritania</td>
<td></td>
<td>Nouakchott</td>
<td>1957</td>
<td>-</td>
<td>-</td>
<td>200 (1957)</td>
</tr>
<tr>
<td>Brazil</td>
<td>Rio de Janeiro</td>
<td>Brasilia</td>
<td>1960</td>
<td>754</td>
<td>3.1 million (1960)</td>
<td>-</td>
</tr>
<tr>
<td>North Yemen</td>
<td>Ta'izz</td>
<td>Sana'a</td>
<td>1962</td>
<td>198</td>
<td>87K (1975)</td>
<td>135K (1975)</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Karachi</td>
<td>Islamabad</td>
<td>1966</td>
<td>1144</td>
<td>1.9 million (1961)</td>
<td>-</td>
</tr>
<tr>
<td>Cote d'Ivoire</td>
<td>Abidjan</td>
<td>Yamoussoukro</td>
<td>1983</td>
<td>228</td>
<td>1.2 million (1978)</td>
<td>200K (2005)</td>
</tr>
<tr>
<td>Nigeria</td>
<td>Lagos</td>
<td>Abuja</td>
<td>1991</td>
<td>541</td>
<td>5.7 million (1991)</td>
<td>-</td>
</tr>
<tr>
<td>Myanmar (Burma)</td>
<td>Yangon</td>
<td>Naypyidaw</td>
<td>2005</td>
<td>330</td>
<td>4.1 million (2007)</td>
<td>-</td>
</tr>
</tbody>
</table>

*Legislative only; **Executive only. Multiple sources (see online appendix). We include designation of capital cities by independent countries; any designation at the time of independence is included only if chosen capital is different from colonial capital. (Mauritania had no colonial capital.) Instances where capital cities were moved within the same metropolitan area (<10km), namely Philippines (1975) and Sri Lanka (1982), are not included. (West) Germany (1990) and Albania (1920) are not included, since in these cases the existing regimes had maintained temporary capitals pending reunification and completion of independence process, respectively. "n.a." stands for "not available". Distance is measured "as the crow flies". All cities are referred to by their current English designations.
We want a model to understand:

- the relationship between *governance* and *isolation of the capital* city

- In the context of *institutional choice* by an *incumbent elite*

- that can *extract rents* from its citizens but is constrained by the *threat of insurrection*

*Key assumption*: those who are closer to the capital present a greater threat
Individuals

- Ex ante identical individuals
- Ex post individuals will be either:
  - Members of the incumbent army (measure $a$)
  - Civil authorities (if they exist, measure $\xi$)
  - Citizens in the capital city
  - Citizens in a “faraway” place
- Utility function:
  $$U = \log(C) - F$$
  where $F$ is fighting effort
Technology

- Optimal fraction of workers in the faraway place: $\ell^*$
- Aggregate production function:

$$Y = A(y^* - \phi(\Delta \ell))$$

- $y^*$: level of production if measure of workers in the faraway place ($\ell$) is $\ell^*$
- $\Delta \ell = \ell - \ell^*$
- $\phi(0) = 0$, $\phi'(0) = 0$, $\phi'' > 0$
Technology

\[ Y = A(y^* - \phi(\Delta \ell)) \]

- \( A = 1 \) if *home technology* is used
- \( A = \beta \) if *market technology* is used
- Output produced with market technology can be expropriated if there are no civil authorities
  - Civil authorities provide checks and balances (assumption)
  - Market technology relies on institutions that protect property rights and enforce contracts
  - It requires a larger \( p \)
The incumbent army chooses:

- **Governance**
  - Will there be civil authorities providing checks and balances?
    - Good governance ($s = G$) vs Bad governance ($s = B$)
  - Constraint: all members of the elite have to get the same payoff
    $\rightarrow$ sharing power requires sharing rents

- **Location of each citizen**
  - At the capital city or at “faraway”.
  - Meant to capture all policies that affect the distribution of population relative to the capital (e.g., location of the capital)

- **Allocation of resources**
  - Transfers might be individual-specific
  - No exogenous restrictions on how citizens can be taxed
Institutional Context

We will consider two different contexts:

- **Democracy**: Incumbents maximize average utility of citizens
  - Think of a probabilistic voting model
  - Incumbent army cannot “tear the Constitution” and set up an autocratic government

- **Autocracy**: Incumbents maximize their own welfare
  - Rebellions constrain their choices

We do not model transitions between the two contexts, and democratic institutions are assumed.
Sequence of events

1. Incumbent army (random set, measure a) choose governance, location of citizens and transfers

2. There are opportunities for rebellions. In case of a successful rebellion, the rebel army takes power and we are back to (1).

3. Production takes place, either using home technology or market technology
   - In case of bad governance, agents that used market technology have their output stolen

4. Taxes are implemented, payoffs are received
Rebellions

– A Rebel army is a subset (measure $\mathbf{a}$) of set of citizens.
– A rebellion is successful if:

\[ \int_{\mathbb{R}} S(\tau) \, d\tau > \delta \mathbf{a} \]

where

\[ S(\tau) = \begin{cases} F(\tau) & \text{if } \tau \in \mathbb{C} \\ F(\tau) - T & \text{if } \tau \in \mathbb{F} \end{cases} \]

and

\[ F(\tau) = U_P^e - U(\tau). \]

– In equilibrium, there must be no successful rebellion.
Markovian Equilibrium

- Fighting effort depends on utility of the following incumbent army if the rebels take power
  - That depends on constraints they will face (rebellion threats), which depends on utility of further incumbent armies...
  - At each stage of this (off equilibrium path) process, elites are solving a maximization problem of the same form.

- We focus on Markovian equilibria: decisions depend only on current payoff-relevant variables
  - All elites at this (off equilibrium path) process make the same choices.
Case of Democracy

- Problem of the elite is simply to maximize output
- Optimal output is chosen \( y^* \)
- Isolation of the capital city is pinned down by \( \mu^* \)... 
- ... which is unrelated to the choice of governance

- Governance and isolation of capital city are \textit{uncorrelated}
Case of Autocracy

- Incumbents choose consumption of every worker, isolation of the capital and governance.
- They have to respect the budget constraint and the no-rebellion constraint.

\[
\max_{C_w(\cdot), \Delta \ell, s} C_p \\
\text{s.t. } \int_P C_p \, dt + \int_W C_w(\nu) \, dt = Y, \\
\text{and } \int_{\mathcal{R}} S(\nu) \, dt \leq \delta a \text{ for all } \mathcal{R} \subset \mathcal{W} \text{ such that } P(\mathcal{R}) = a
\]
Payoff equalization

- Payoffs of citizens at each location are equalized
- Citizens at the capital receive a larger payoff for having a lower cost of rebellion

\[ C_{w,C} = C'_{p} e^{-\delta} \quad \quad \quad C_{w,F} = C'_{p} e^{-\delta - T} \]

- Intuition:
  - In equilibrium, a binding rebel army comprises individuals with the largest fighting strength
  - It is optimal to equalize fighting strength across citizens
  - That means keeping those with the same power equally disgruntled and exploiting the weaker ones
Maximization problem

- Payoff equalization and the budget constraint yield:

\[
C_p = \frac{1}{p} \left( A(y^* - \phi(\Delta \ell)) - (1 - p)(1 - [\ell^* + \Delta \ell])C_p e^{-\delta} - (1 - p)[\ell^* + \Delta \ell]C_p' e^{-\delta - T} \right)
\]

- Incumbents take \( C_p' \) as given when making choices
- In equilibrium, \( C_p' = C_p \)
Isolation of the capital

Proposition 2  Comparative statics for the choice of $\Delta \ell$:

(i) For a given $s$, $\Delta \ell$ is increasing in $T$;

(ii) For a given $s$, $\Delta \ell$ is increasing in $\ell^*$;

(iii) For given parameters, $\Delta \ell$ is smaller when $s = \text{G}$.

• Good governance leads the elite to choose a less isolated capital.

• Good governance $\rightarrow$ rents are less concentrated $\rightarrow$ smaller benefit of extra protection for the elite
Governance

For given parameters:

• Good governance is chosen if $T$ is below a threshold
• Good governance is chosen if $\ell^*$ is below a threshold

The proof shows that:

• Larger $T$ (or $\ell^*$) benefits the elite but especially so in case of bad governance

Intuition:

• Isolated capital: elite grabs a larger share of output
• Sharing rents is thus more costly for the elite
Capital city premium

• Capital City Premium depends positively on $T$
  – Payoff ratio: $e^T$
  – Those in faraway places are more exploited
  – Capital city premium is unaffected by $*$
• Isolation of the capital depends positively on $T$
  – So they are positively correlated
Military spending

- Suppose the elite can spend in “guns” \((g)\) to improve their chances in conflict: \(\delta\) is increasing and concave in \(g\)
- Result: Military spending \((g)\) is decreasing in \(\ell^*\) and \(T\)
- Intuition: Military spending and capital isolation are substitutes
- If the capital is isolated, citizens are poorer, returns to increase power to exploit are smaller.
Empirical Evidence

Can the model account for the motivating stylized fact?

• Specific context: no relationship in democracies
• Which aspects of governance?
• Specific mechanism: power sharing
• Correlation with capital city premium
• Correlation with military spending
## Basic Result

### Table 2. Isolated Capital Cities and Misgovernance

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dep. Var.: WGI PC</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Full Sample</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg Log Distance</td>
<td>-0.1513***</td>
<td>-0.1335**</td>
</tr>
<tr>
<td></td>
<td>[0.054]</td>
<td>[0.050]</td>
</tr>
<tr>
<td>Avg Log Distance X Autocracy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Basic Set of Controls: X
- Full Set of Controls: X

- Observations: 127
- R-squared: 0.830

Robust standard errors in brackets. Z-scores (normalized variables) reported.

WGI PC: First Principal Component of Worldwide Governance Indicators measures (Rule of Law, Voice and Accountability, Government Effectiveness, Regulatory Quality, Control of Corruption, Political Stability).

Autocracies: Bottom tercile of Polity (<=0.4); Established Democracies: Polity > 9.

Basic Control variables: Log GDP per capita, Log Population, Urbanization, and Region and Legal Origin dummies. Full Set of Controls adds Majoritarian and Presidential system dummies, and Ethnic Fractionalization. Columns (7)-(8) also include Autocracy dummy as control variable.

*** p<0.01, ** p<0.05, * p<0.1
Democracies vs Non-Democracies

Effect of Avg.Log.Distance on WGI PCI, plotted by Polity

Local linear regression results and 95% confidence intervals

Epanechnikov kernel, bandwidth = .5 range.
Democracies vs Non-Democracies

Full Sample

Avg Log Distance

WGI First PC  Fitted values
Democracies vs Non-Democracies

A. Autocracies (Polity bottom tercile)
Democracies vs Non-Democracies

B. Established Democracies (Polity>9)
### Table 2. Isolated Capital Cities and Misgovernance

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dep. Var.</strong>: WGI PC</td>
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</tr>
<tr>
<td><strong>Avg Log Distance</strong></td>
<td>-0.1513***</td>
<td>-0.1335**</td>
<td>-0.2605***</td>
<td>-0.3056***</td>
<td>-0.0646</td>
<td>-0.0249</td>
<td>-0.0500</td>
<td>-0.0504</td>
</tr>
<tr>
<td></td>
<td>[0.054]</td>
<td>[0.050]</td>
<td>[0.069]</td>
<td>[0.058]</td>
<td>[0.121]</td>
<td>[0.133]</td>
<td>[0.061]</td>
<td>[0.061]</td>
</tr>
<tr>
<td><strong>Avg Log Distance X Autocracy</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.2335***</td>
<td>-0.2380***</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>[0.081]</td>
<td>[0.082]</td>
<td></td>
</tr>
<tr>
<td><strong>Basic Set of Controls</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Full Set of Controls</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>127</td>
<td>127</td>
<td>36</td>
<td>36</td>
<td>31</td>
<td>31</td>
<td>127</td>
<td>127</td>
</tr>
<tr>
<td><strong>R-squared</strong></td>
<td>0.830</td>
<td>0.838</td>
<td>0.848</td>
<td>0.883</td>
<td>0.881</td>
<td>0.896</td>
<td>0.873</td>
<td>0.874</td>
</tr>
</tbody>
</table>

Robust standard errors in brackets. Z-scores (normalized variables) reported.
WGI PC: First Principal Component of Worldwide Governance Indicators measures (Rule of Law, Voice and Accountability, Government Effectiveness, Regulatory Quality, Control of Corruption, Political Stability).

Autocracies: Bottom tercile of Polity (<=0.4); Established Democracies: Polity > 9.
Basic Control variables: Log GDP per capita, Log Population, Urbanization, and Region and Legal Origin dummies. Full Set of Controls adds Majoritarian and Presidential system dummies, and Ethnic Fractionalization. Columns (7)-(8) also include Autocracy dummy as control variable.

*** p<0.01, ** p<0.05, * p<0.1

**Quantitatively:** going from Nairobi (average isolation) to Khartoum (one s.d. above) explains about 40% of the difference in governance between Kenya (average governance among autocracies) and Sudan (one of the worst in the world)**
Robustness

<table>
<thead>
<tr>
<th>Dep. Var.:</th>
<th>(1) WGI PC</th>
<th>(2) WGI PC</th>
<th>(3) WGI PC</th>
<th>(4) WGI PC</th>
<th>(5) WGI PC</th>
<th>(6) WGI PC</th>
<th>(7) FH</th>
<th>(8) FH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average Log Distance (unadj.)</strong></td>
<td>Autocracies: -0.4358*** [0.128]</td>
<td>Democracies: 0.0667 [0.317]</td>
<td>Autocracies: -0.2145*** [0.071]</td>
<td>Democracies: 0.0220 [0.082]</td>
<td>Autocracies: 0.1323* [0.071]</td>
<td>Democracies: -0.2012** [0.090]</td>
<td>Autocracies:</td>
<td>Democracies:</td>
</tr>
<tr>
<td>Distance Min. Isolation</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Capital Primacy</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Average Log Distance</strong></td>
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<td></td>
</tr>
<tr>
<td><strong>Average Log Distance X Autocracy</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>36</td>
<td>31</td>
<td>36</td>
<td>31</td>
<td>32</td>
<td>31</td>
<td>35</td>
<td>29</td>
</tr>
<tr>
<td><strong>R-squared</strong></td>
<td>0.855</td>
<td>0.898</td>
<td>0.852</td>
<td>0.896</td>
<td>0.863</td>
<td>0.915</td>
<td>0.611</td>
<td>0.891</td>
</tr>
</tbody>
</table>

Robust standard errors in brackets. Z-scores (normalized variables) reported. WGI PC (Columns (1)-(6) and (8)): First Principal Component of Worldwide Governance Indicators measures (Rule of Law, Voice and Accountability, Government Effectiveness, Regulatory Quality, Control of Corruption, Political Stability). FH (Columns (7)-(8)): Freedom House Rule of Law Index. Autocracies: Bottom tercile of Polity (<=0.4), except for Column (5) where the threshold is the median (<=6). Established Democracies: Polity > 9. Control variables: Log GDP per capita, Log Population, Urbanization, and Region and Legal Origin dummies, Majoritarian and Presidential system dummies, and Ethnic Fractionalization; and Log Land Area, for Columns (1)-(2) only; and Maximum Distance in the Country (Log of maximum distance (in km) between capital city and any point in the country), for Columns (3)-(4) only. Column (9) also includes Autocracy dummy as control variable.

*** p<0.01, ** p<0.05, * p<0.1
Power Sharing

Data: “Polity” score components (Polity IV), avg. 1975-2010

• Related to power sharing:
  • “independence of executive authority” (ExecutiveConstraints): “the extent of institutionalized constraints on the decision making powers of chief executives”, ranging from “unlimited authority” to “executive parity or subordination”
  • “political competition and opposition” (ParticipationCompetitiveness): “the extent to which alternative preferences for policy and leadership can be pursued in the political arena”, ranging from “repressed” to “competitive”

• Not so related:
  • “executive recruitment” (RecruitmentCompetitiveness and RecruitmentOpenness): whether there is access to executive positions through a regularized process.
    • Ex.: USSR had perfect score in Openness, simply because succession was not hereditary.
## Power Sharing

### Table 5. Isolated Capital Cities and Power Sharing in Autocracies (Polity below Median)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg Log Distance</td>
<td>-0.1831*</td>
<td>-0.2123***</td>
<td>-0.3249***</td>
<td>-0.0554</td>
<td>0.1715</td>
</tr>
<tr>
<td>[0.109]</td>
<td>[0.073]</td>
<td>[0.084]</td>
<td>[0.097]</td>
<td>[0.225]</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>63</td>
<td>63</td>
<td>63</td>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.450</td>
<td>0.622</td>
<td>0.533</td>
<td>0.541</td>
<td>0.288</td>
</tr>
</tbody>
</table>

Robust standard errors in brackets. Z-scores (normalized variables) reported.

Autocracies: Below median Polity(<=6).

Control variables: Log GDP per capita, Log Population, Urbanization, Region and Legal Origin dummies, Majoritarian and Presidential system dummies, and Ethnic Fractionalization.

*** p<0.01, ** p<0.05, * p<0.1
# Power Sharing

## Table 4. Changes in Capital Cities and Power Sharing

<table>
<thead>
<tr>
<th>Country</th>
<th>From</th>
<th>To</th>
<th>Year</th>
<th>Δ Exec. Constr.</th>
<th>Δ Part. Comp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>St. Petersburg</td>
<td>Moscow</td>
<td>1918</td>
<td>1</td>
<td>-2</td>
</tr>
<tr>
<td>Turkey</td>
<td>Istanbul</td>
<td>Ankara</td>
<td>1923</td>
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<td>-2</td>
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<td>-</td>
<td>Nouakchott</td>
<td>1957</td>
<td>-2</td>
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<td>Brasilia</td>
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<td>-4</td>
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<td>Butare</td>
<td>Kigali</td>
<td>1962</td>
<td>0</td>
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<tr>
<td>North Yemen</td>
<td>Ta'izz</td>
<td>Sana'a</td>
<td>1962</td>
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<td>Karachi</td>
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<td>Malawi</td>
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<td>Lilongwe</td>
<td>1974</td>
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<td>Abidjan</td>
<td>Yamoussoukro</td>
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<td>Almaty</td>
<td>Astana</td>
<td>1997</td>
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<td>-1</td>
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<td>Myanmar (Burma)</td>
<td>Yangon</td>
<td>Naypyidaw</td>
<td>2005</td>
<td>-1</td>
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**Average**

- Δ Exec. Constr.: -0.50
- Δ Part. Comp.: -0.79

**p-value**

- 0.266
- 0.021

Excluding partial changes. For sources and notes, see Table 1. Changes in Polity IV variables ("Executive Constraints" and "Participation Competitiveness") are between 10 years after and 10 years before change of capital, with the exception of Mauritania, Rwanda, and Kazakhstan ("pre" measure for first year of independence) and Myanmar (Burma) ("post" measure for 2010, latest available). P-values for two-sided t-test of null hypothesis of Average equal to zero, with 13 degrees of freedom.
### Table 6. Isolated Capital Cities, Capital Premium, and Military Expenditures

<table>
<thead>
<tr>
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<tbody>
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<td>Autocracies</td>
<td>Democracies</td>
<td>Full Sample</td>
<td>Autocracies</td>
<td>Democracies</td>
<td>Full Sample</td>
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<tr>
<td>Avg Log Distance</td>
<td>0.4158***</td>
<td>-0.1040</td>
<td>-0.0287</td>
<td>-0.3393***</td>
<td>-0.0150</td>
<td>0.0986</td>
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<td>[0.209]</td>
<td>[0.148]</td>
<td>[0.124]</td>
<td>[0.133]</td>
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<tr>
<td>Avg Log Distance X Autocracy</td>
<td>0.4096**</td>
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<td>-0.3912**</td>
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<tr>
<td>Interstate War</td>
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<td>0.4441*</td>
<td>0.6072**</td>
<td></td>
<td>0.5975***</td>
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<td>[0.247]</td>
<td>[0.235]</td>
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<td>[0.192]</td>
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</tbody>
</table>

Observations: 32 32 64 55 51 106
R-squared: 0.398 0.436 0.409 0.382 0.477 0.418

Robust standard errors in brackets. Z-scores (normalized variables) reported.
Interstate War: dummy for involvement in interstate war between 1975 and 2007 (Correlates of War).

*** p<0.01, ** p<0.05, * p<0.1
In Sum

• Isolated capitals are associated with misgovernance
  • Result does not hold in democracies.
• A model where those in power choose governance, location of citizens and taxes subject to the threat of rebellion is consistent with the evidence
• Spatial distribution is relevant for understanding institutions and governance