Institutions, Volatility and Investment
Conference on Elections, Policymaking, and Uncertainty

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Democracy consists of at least two sets of institutions.
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- Elections determine allocation of executive power.

- Checks and balances govern the extent of this power.

Here we are interested in the effect of executive constraints.

Theory: constraints prevent policy activism.

Can be good or bad for growth but it certainly reduces political risk. If investors dislike political risk then executive constraints make countries more attractive for investors.
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Introduction

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This Talk

- Related Literature
- Executive Constraints
- Investment flows and Executive Constraints
- A Learning Model of Political Risk
Related Literature

- Political risk and investment: Jensen (2008)
- Same size does not fit all: Persson and Tabellini (2008)
Use of institutions as a constraint on power is an old idea.
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Alexis de Tocqueville (1835) writes on the role of the judicative branch: "When the American people allow themselves to be intoxicated by their passions, or abandon themselves to the impetus of their ideas, jurists make them feel an almost invisible brake that moderates and stops them."
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John Stuart Mill (1859) describes a limit to the power of a ruler that can be achieved through "[...] establishment of constitutional checks, by which the consent of the community, or of a body of some sort, supposed to represent its interests, was made a necessary condition to some of the more important acts of the governing power"
Executive Constraints - Definition

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Other options: ruling party in a one-party state, councils of nobles or the military in coup-prone polities.
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Other options: ruling party in a one-party state, councils of nobles or the military in coup-prone polities.

Strong executive constraints ($x_{const} = 7$): “Accountability groups have effective authority equal to or greater than the executive in most areas of activity.”
The diagram shows the executive constraints for Turkey and Thailand over the years from 1980 to 2015. The x-axis represents the year, while the y-axis indicates executive constraints. The data points for Turkey are represented by blue lines, and for Thailand by red lines. The constraints fluctuate over time, with notable changes in 1990 and around 2005.
Our data comes from the Dutch central bank, De Nederlandsche Bank (DNB).
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Quarterly data from 1983 till 2012 at the industry level.
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Positive flows (i.e. we ignore flows back to the Netherlands).
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Quarterly data from 1983 till 2012 at the industry level.
We aggregate to sectors to have less 0s.
Positive flows (i.e. we ignore flows back to the Netherlands).
Robustness: OECD and UNCTAD data
Figure 2: Investment Inflows over Time (Mean Share)

Note: Graph shows average for countries that were always in strong or weak executive constraints.
33 countries changed constraints in our sample
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FDI/trade/gravity literature: run Pseudo Poisson regressions

\[ E\{x_{sct} : \alpha_{cs}, \delta_{ct}, y_{ct}, X_{st}\} = \exp (\alpha_{cs} + \gamma \Omega(\delta_{ct}) + \beta y_{ct} + \log X_{st}) \]
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\[ E \{ \chi_{sct} : \alpha_{cs}, \delta_{ct}, y_{ct}, X_{st} \} = \exp (\alpha_{cs} + \gamma \Omega (\delta_{ct}) + \beta y_{ct} + \log X_{st}) \]

\( \chi_{sct} \) is the inflow of investment in sector s in country c in year t
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- \( \Omega(\delta_{ct}) \) is dummy for strong executive constraints, \( \delta_{ct} \in \{ W, S \} \)
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  - Fixed effects on the country \((c)\) / sector \((s)\) level, \( \theta_{c,s} \)
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- $x_{sct}$ is the inflow of investment in sector $s$ in country $c$ in year $t$
- $\Omega(\delta_{ct})$ is dummy for strong executive constraints, $\delta_{ct} \in \{ W, S \}$
- Fixed effects on the country ($c$) / sector ($s$) level, $\theta_{c,s}$
- Exposure variable $X_{st}$: world flows in the sector $s$ at time $t$
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- Exposure variable \( X_{st} \): world flows in the sector \( s \) at time \( t \)
- Idea: did adopters "join the club"?
Table 1: Executive Constraints and Foreign Investment

Panel A: Sector Level

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6) Number of Industries with Inflows</th>
</tr>
</thead>
<tbody>
<tr>
<td>strong executive constraints</td>
<td>0.881***</td>
<td>0.906***</td>
<td>0.825***</td>
<td>0.681***</td>
<td>1.064***</td>
<td>0.296***</td>
</tr>
<tr>
<td></td>
<td>(0.201)</td>
<td>(0.219)</td>
<td>(0.215)</td>
<td>(0.216)</td>
<td>(0.251)</td>
<td>(0.0472)</td>
</tr>
<tr>
<td>high openness</td>
<td>-0.0854</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.219)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>high competitiveness</td>
<td>0.206</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.219)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>years of schooling</td>
<td></td>
<td></td>
<td></td>
<td>0.0186</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.219)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>country/sector fixed effects</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>exposure: total FDI flow</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>economic controls</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>additional controls</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

Observations: 46,561 (1), 46,561 (2), 41,746 (3, 4, 5), 8,367 (6), 46,561 (6)
Number of country/sectors: 1,778 (1), 1,778 (2), 1,742 (3, 4, 5), 1,457 (6), 1,778 (6)
Solid line shows coefficients on leads and lags around the adoption date (at 0) of strong executive constraints plus the coefficient on the “strong executive constraints” dummy. Dashed lines show 95% confidence intervals using the standard deviation of the lead and lag coefficients.
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- Robustness: robust to controlling for other institutions, human capital, GDP pc, reform index...
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- Sector analysis: politically connected sectors Faccio (2006)
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- Diversification effect: more industries with inflows.
- Robustness: robust to controlling for other institutions, human capital, GDP pc, reform index...
- Sector analysis: politically connected sectors Faccio (2006)
- But can we link this to political volatility?
Lower growth volatility in countries with strong executive constraints.
Executive Constraints and Political Risk

Lower growth volatility in countries with strong executive constraints.
- holds within countries and between countries
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- holds within countries and between countries
- holds controlling for GDP per capita and time fixed effects
Lower growth volatility in countries with strong executive constraints.

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- holds controlling for GDP per capita and time fixed effects

Following graph plots distribution of growth in countries with strong and weak constraints.
Figure 5: Executive Constraints and GDPpc Growth
Model - Set Up

- Model of investors, the economy and politics.
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- Institutions determine the constraints on the executive $\delta \in \{W, S\}$
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Firm profits depend on aggregate productivity growth.
Model of investors, the economy and politics.

- Institutions determine the constraints on the executive $\delta \in \{W, S\}$
- Strong constraints imply that default policies are sometimes imposed.
- This reduces aggregate volatility.
- Firm profits depend on aggregate productivity growth.
- Irreversible investments: investors care about expected productivity growth and volatility.
Investors observe growth history and build beliefs regarding mean productivity growth $\kappa(\delta)$, volatility $\sigma(\delta)^2$, and $\epsilon$. Assumed to be different for every country/regime.

What happens when a country switches institutions, $\delta$? Assumption: investors use history of other countries as prior.
Investors observe growth history and build beliefs regarding
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Core of the Model: Updating I

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Assumption: investors use history of other countries as prior.
Investors take $\kappa(S)$ and $\sigma(S)^2$ from other countries with $\delta = S$. 
Core of the Model: Updating II

- Investors take $\kappa(S)$ and $\sigma(S)^2$ from other countries with $\delta = S$.
- Assume in the first year that the new adopter has the same values.
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Updating depends on the strength of the prior $D$. 
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Assume in the first year that the new adopter has the same values.
In the following years they observe growth and update.
Updating depends on the strength of the prior $D$.
Very high $D$: country growth path plays no role.
Define the data moments

\[ G^1(\delta, t) = \hat{\mu}_g(\delta, t) \quad \text{and} \quad G^2(\delta, t) = \hat{\sigma}^2_g(\delta, t) + \hat{\mu}^2_g(\delta, t), \]

i.e. this are the moments in all countries with institutions \( \delta \) in year \( t \).

Update country-specific mean of growth as

\[
\hat{\mu}_{gct}(\delta, \tau(c), D) = \frac{D \times G^1(\delta, \tau(c)) + \sum_{s=\tau(c)}^t g cs(\delta)}{D + t - \tau(c)}
\]

where \( \tau(c) \) is the year in which the country transitioned to \( \delta \in [S, W] \).

Note how small \( D \) gives more weight to the country experience.

Volatility is updated in a similar way.

\[
\hat{\sigma}^2_{gct}(\delta, \tau(c), D) = \ldots
\]
Panel B: Country Level

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) Updating on World Data Alone</th>
<th>(2) Updating on Country Data (D = 100)</th>
<th>(3) Updating on Country Data (D = 10)</th>
<th>(4) Updating on Country Data (D = 6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>variance of productivity growth</td>
<td>-0.259</td>
<td>-0.604***</td>
<td>-0.627***</td>
<td>-0.601**</td>
</tr>
<tr>
<td>(estimated on world level)</td>
<td>(0.179)</td>
<td>(0.159)</td>
<td>(0.227)</td>
<td>(0.255)</td>
</tr>
<tr>
<td>mean productivity growth</td>
<td>0.0722</td>
<td>0.386***</td>
<td>0.286***</td>
<td>0.321***</td>
</tr>
<tr>
<td>(estimated on world level)</td>
<td></td>
<td>(0.116)</td>
<td>(0.135)</td>
<td>(0.107)</td>
</tr>
<tr>
<td>variance of productivity growth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(estimated on country level)</td>
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<td>country fixed effects</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>control of total FDI flow</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Observations</td>
<td>903</td>
<td>901</td>
<td>901</td>
<td>901</td>
</tr>
<tr>
<td>Number of countries</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All columns report results from a fixed effects poisson regression. Dependant variable is the total investment flows that year (in that sector) that goes into country. All explanatory variables are lagged by one year and weighted by their standard deviations. The sample is restricted to countries that changed level of executive constraints between high and low executive constraints once and excludes the Lebanon. "D=100" means that the prior is given a weight equivalent to 100 country/year observations. This implies that the growth history of the country receives very little weight. "D=6" means that the prior is given a weight equivalent to 6 country/year observation. This gives most weight to the country-specific history. We set beta=0.66 and eta=0.75.
Using the Model

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Use estimated parameters together with growth history to construct the counter-factual.
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Simulate foreign investment flows with the counter-factual.
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Simulate foreign investment flows with the counter-factual.

Key point: model helps to understand country heterogeneity.
<table>
<thead>
<tr>
<th>Country</th>
<th>Mean Yearly Investment Inflows</th>
<th>Fitted Value of Investment Inflows</th>
<th>Simulated Fitted Value of Investment Inflows</th>
<th>Effect of Change in Mean on Inflow</th>
<th>Adoption of Strong Constraints Without Change in Variance of Productivity Growth</th>
<th>Effect of Change in Variance on Inflow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>82980</td>
<td>70194</td>
<td>22326</td>
<td>115%</td>
<td>40398</td>
<td>55%</td>
</tr>
<tr>
<td>Argentina</td>
<td>278610</td>
<td>219075</td>
<td>183519</td>
<td>18%</td>
<td>201927</td>
<td>8%</td>
</tr>
<tr>
<td>Bolivia</td>
<td>90527</td>
<td>68162</td>
<td>103717</td>
<td>-42%</td>
<td>50993</td>
<td>29%</td>
</tr>
<tr>
<td>Botswana</td>
<td>11054</td>
<td>11792</td>
<td>24258</td>
<td>-72%</td>
<td>4468</td>
<td>97%</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>331913</td>
<td>309047</td>
<td>695098</td>
<td>-81%</td>
<td>402013</td>
<td>-26%</td>
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<tr>
<td>Chile</td>
<td>595607</td>
<td>590753</td>
<td>264022</td>
<td>81%</td>
<td>175873</td>
<td>121%</td>
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<td>Colombia</td>
<td>240063</td>
<td>110872</td>
<td>90783</td>
<td>20%</td>
<td>111224</td>
<td>0%</td>
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<tr>
<td>Croatia</td>
<td>586638</td>
<td>794048</td>
<td>295659</td>
<td>99%</td>
<td>99709</td>
<td>207%</td>
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<tr>
<td>Ecuador</td>
<td>70398</td>
<td>64752</td>
<td>144718</td>
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<td>47661</td>
<td>31%</td>
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<td>Greece</td>
<td>1028152</td>
<td>971909</td>
<td>1171262</td>
<td>-19%</td>
<td>551579</td>
<td>57%</td>
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<tr>
<td>Haiti</td>
<td>2494</td>
<td>2376</td>
<td>2289</td>
<td>4%</td>
<td>2008</td>
<td>17%</td>
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<tr>
<td>Hungary</td>
<td>2286080</td>
<td>2300512</td>
<td>3402512</td>
<td>-39%</td>
<td>2114636</td>
<td>8%</td>
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<tr>
<td>Kenya</td>
<td>129095</td>
<td>121624</td>
<td>100259</td>
<td>19%</td>
<td>116183</td>
<td>5%</td>
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<tr>
<td>Lesotho</td>
<td>1432</td>
<td>1416</td>
<td>1214</td>
<td>15%</td>
<td>254</td>
<td>172%</td>
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<tr>
<td>Madagascar</td>
<td>13450</td>
<td>2939</td>
<td>2549</td>
<td>14%</td>
<td>2534</td>
<td>15%</td>
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<tr>
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<td>33159</td>
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<td>34067</td>
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<td>12178</td>
<td>10521</td>
<td>15%</td>
<td>855</td>
<td>266%</td>
</tr>
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<td>47</td>
<td>17590</td>
<td>15243</td>
<td>14%</td>
<td>8874</td>
<td>68%</td>
</tr>
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<td>Input 2</td>
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<td>Nicaragua</td>
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<td>266%</td>
</tr>
<tr>
<td>Niger</td>
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<td>15243</td>
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<td>3580309</td>
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<td>3359373</td>
<td>2153250</td>
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<td>60%</td>
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<td>1199907</td>
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<tr>
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<td>1642251</td>
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<tr>
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<td>195401</td>
<td>134207</td>
<td>38%</td>
<td>110281</td>
<td>57%</td>
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</table>

**AVERAGE:** 8%  **AVERAGE:** 62%

Notes: All inflows are average yearly inflows during strong executive constraints (in 1000 EUR). "mean yearly inflows" is the actually average yearly inflow of investment into the country. "fitted value of investment inflows" is the fitted value from Table 5, Column (4), Panel B. "simulated fitted value of investment inflows" replaces the mean (in (ii)) and the variance (in (iii)) in the episode with strong executive constraints with the average mean and variance in the episode with weak executive constraints. The difference between (i) and (ii) ((iii)) respectively captures the effect of changes in the expected mean (variance) on investment inflows in the model. Values are not calculated for Nigeria as the country only has one year under strong executive constraints.
Strong executive constraints are a good predictor of FDI inflows.
We find some evidence that the adoption of strong executive constraints attracts FDI.
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Our model allows us to understand country heterogeneity.