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

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Introduction

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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.
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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de Toquevile (1835) writes on the role of the judicature 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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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"
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"executive constraints": the extent of institutionalized constraints on the decision making powers of chief executives.
Executive Constraints - Definition

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- "executive constraints": the extent of institutionalized constraints on the decision making powers of chief executives.
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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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Western democracies: legislatures or an independent judiciary.

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.”
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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 zeros.

• 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

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

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- \( x_{sct} \) is the inflow of investment in sector s in country c in year t
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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, \( \delta_{ct} \in \{W, S\} \)
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- Fixed effects on the country (\( c \)) / sector (\( s \)) level, \( \theta_{c,s} \)
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- 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)</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></td>
<td>0.0186</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.0665)</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>
<tr>
<td>Observations</td>
<td>46,561</td>
<td>46,561</td>
<td>41,746</td>
<td>41,746</td>
<td>8,367</td>
<td>46,561</td>
</tr>
<tr>
<td>Number of country/sectors</td>
<td>1,778</td>
<td>1,778</td>
<td>1,742</td>
<td>1,742</td>
<td>1,457</td>
<td>1,778</td>
</tr>
</tbody>
</table>
Figure 3: Adoption of Strong Executive Constraints

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.
Exploiting Changes in Executive Constraints

- Boost to investment of about 80 percent on average.
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Diversification effect: more industries with inflows.
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- Sector analysis: politically connected sectors Faccio (2006)
Exploiting Changes in Executive Constraints

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

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  - holds within countries and between countries
  - 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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Strong constraints imply that default policies are sometimes imposed.
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- Strong constraints imply that default policies are sometimes imposed.
- This reduces aggregate volatility.
- 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.
Core of the Model: Updating I

- Investors observe growth history and build beliefs regarding

\[ \kappa(\delta) \]

volatility \( \sigma(\delta) \)^2 \( \varepsilon \).

Assumed to be different for every country/regime.

Learning model: Bayesian updating of expected mean and variance

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
  • mean productivity growth $\kappa(\delta)$
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Assume in the first year that the new adopter has the same values.
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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.

\[ \hat{\sigma}_{gct}^2 (\delta, \tau (c), D) = ... \]
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 (estimated on world level)</td>
<td>-0.259 (0.179)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean productivity growth (estimated on world level)</td>
<td>0.0722 (0.116)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>variance of productivity growth (estimated on country level)</td>
<td>-0.604*** (0.159)</td>
<td>-0.627*** (0.227)</td>
<td>-0.601** (0.255)</td>
<td></td>
</tr>
<tr>
<td>mean productivity growth (estimated on country level)</td>
<td>0.386*** (0.135)</td>
<td>0.286*** (0.107)</td>
<td>0.321*** (0.118)</td>
<td></td>
</tr>
<tr>
<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.
The learning model leads to some gains in terms of fit to the investment data.
Using the Model

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- It is also in line with separate measures of political (credit) risk from ONDD.
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- It is also in line with separate measures of political (credit) risk from ONDD.
- We can use the model to construct a counter-factual.
- Use estimated parameters together with growth history to construct the counter-factual.
The learning model leads to some gains in terms of fit to the investment data.

It is also in line with separate measures of political (credit) risk from ONDD.

We can use the model to construct a counter-factual.

Use estimated parameters together with growth history to construct the counter-factual.

Simulate foreign investment flows with the counter-factual.
The learning model leads to some gains in terms of fit to the investment data. It is also in line with separate measures of political (credit) risk from ONDD. We can use the model to construct a counter-factual. Use estimated parameters together with growth history to construct the counter-factual. Simulate foreign investment flows with the counter-factual. Key point: model helps to understand country heterogeneity.
Table 7: Counterfactual FDI Flows

<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 (II)</th>
<th>Effect of Change in Mean on Inflow (III)</th>
<th>Simulated Fitted Value of Investment Inflows (IV)</th>
<th>Effect of Change in Variance on Inflow (V)</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>
</tr>
<tr>
<td>Chile</td>
<td>595607</td>
<td>590753</td>
<td>264022</td>
<td>81%</td>
<td>175873</td>
<td>121%</td>
</tr>
<tr>
<td>Colombia</td>
<td>240063</td>
<td>110872</td>
<td>90783</td>
<td>20%</td>
<td>111224</td>
<td>0%</td>
</tr>
<tr>
<td>Croatia</td>
<td>586638</td>
<td>794048</td>
<td>295659</td>
<td>99%</td>
<td>99709</td>
<td>207%</td>
</tr>
<tr>
<td>Ecuador</td>
<td>70398</td>
<td>64752</td>
<td>144718</td>
<td>-80%</td>
<td>47661</td>
<td>31%</td>
</tr>
<tr>
<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>
</tr>
<tr>
<td>Kenya</td>
<td>129095</td>
<td>121624</td>
<td>100259</td>
<td>19%</td>
<td>116183</td>
<td>5%</td>
</tr>
<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>
</tr>
<tr>
<td>Mongolia</td>
<td>461</td>
<td>33159</td>
<td>50152</td>
<td>-41%</td>
<td>34067</td>
<td>-3%</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>11384</td>
<td>12178</td>
<td>10521</td>
<td>15%</td>
<td>855</td>
<td>266%</td>
</tr>
<tr>
<td>Niger</td>
<td>47</td>
<td>17590</td>
<td>15243</td>
<td>14%</td>
<td>8874</td>
<td>68%</td>
</tr>
<tr>
<td>Country</td>
<td>Year 1</td>
<td>Year 2</td>
<td>Year 3</td>
<td>Year 4</td>
<td>Year 5</td>
<td>Year 6</td>
</tr>
<tr>
<td>------------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Kenya</td>
<td>129090</td>
<td>121684</td>
<td>100259</td>
<td>19%</td>
<td>110188</td>
<td>9%</td>
</tr>
<tr>
<td>Lesotho</td>
<td>1432</td>
<td>1416</td>
<td>1214</td>
<td>15%</td>
<td>254</td>
<td>172%</td>
</tr>
<tr>
<td>Madagascar</td>
<td>13450</td>
<td>2939</td>
<td>2549</td>
<td>14%</td>
<td>2534</td>
<td>15%</td>
</tr>
<tr>
<td>Mongolia</td>
<td>461</td>
<td>33159</td>
<td>50152</td>
<td>-41%</td>
<td>34067</td>
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</tr>
<tr>
<td>Nicaragua</td>
<td>11384</td>
<td>12178</td>
<td>10521</td>
<td>15%</td>
<td>855</td>
<td>266%</td>
</tr>
<tr>
<td>Niger</td>
<td>47</td>
<td>17590</td>
<td>15243</td>
<td>14%</td>
<td>8874</td>
<td>68%</td>
</tr>
<tr>
<td>Pakistan</td>
<td>24821</td>
<td>24221</td>
<td>23220</td>
<td>4%</td>
<td>19235</td>
<td>23%</td>
</tr>
<tr>
<td>Paraguay</td>
<td>25073</td>
<td>24501</td>
<td>51263</td>
<td>-74%</td>
<td>17280</td>
<td>35%</td>
</tr>
<tr>
<td>Peru</td>
<td>147877</td>
<td>245512</td>
<td>165428</td>
<td>39%</td>
<td>142501</td>
<td>54%</td>
</tr>
<tr>
<td>Philippines</td>
<td>15319</td>
<td>166603</td>
<td>124728</td>
<td>29%</td>
<td>134960</td>
<td>21%</td>
</tr>
<tr>
<td>Poland</td>
<td>3718198</td>
<td>3580309</td>
<td>2181726</td>
<td>50%</td>
<td>1918672</td>
<td>62%</td>
</tr>
<tr>
<td>Romania</td>
<td>3310134</td>
<td>3359373</td>
<td>2153250</td>
<td>44%</td>
<td>1851184</td>
<td>60%</td>
</tr>
<tr>
<td>Serbia and Monternegro</td>
<td>40006</td>
<td>73057</td>
<td>21810</td>
<td>121%</td>
<td>5430</td>
<td>260%</td>
</tr>
<tr>
<td>Slovakia</td>
<td>1189883</td>
<td>1199907</td>
<td>1451524</td>
<td>-19%</td>
<td>511662</td>
<td>85%</td>
</tr>
<tr>
<td>South Africa</td>
<td>1263382</td>
<td>1260362</td>
<td>1638702</td>
<td>-26%</td>
<td>418897</td>
<td>110%</td>
</tr>
<tr>
<td>Sudan</td>
<td>77</td>
<td>11276</td>
<td>6406</td>
<td>57%</td>
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</tr>
<tr>
<td>Taiwan</td>
<td>1503860</td>
<td>1642251</td>
<td>1802947</td>
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<td>12%</td>
</tr>
<tr>
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<td>457597</td>
<td>558816</td>
<td>-20%</td>
<td>448550</td>
<td>2%</td>
</tr>
<tr>
<td>Turkey</td>
<td>1411081</td>
<td>1381493</td>
<td>1561382</td>
<td>-12%</td>
<td>1087599</td>
<td>24%</td>
</tr>
<tr>
<td>Uruguay</td>
<td>195777</td>
<td>195401</td>
<td>134207</td>
<td>38%</td>
<td>110281</td>
<td>57%</td>
</tr>
</tbody>
</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.
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Our model allows us to understand country heterogeneity.