

Conflict in global infrastructure projects



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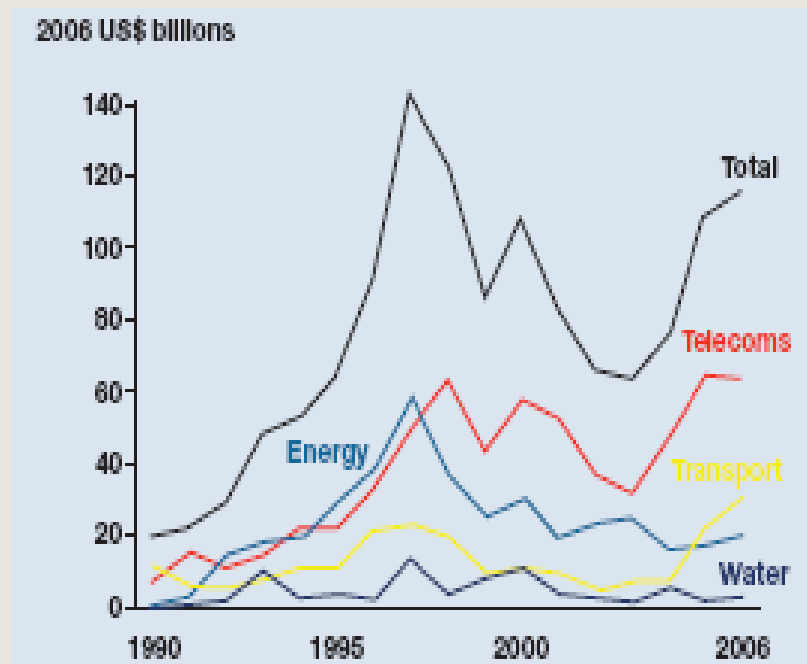
With Ray Levitt, Doug McAdam, Dick Scott,
Ryan Orr, Hilary Schafer, DC Jayasundera,
Stanford research assistants

Context & motivation



- Global infrastructure is big business: \$24-30 trillion to be invested during the period 2008-2030 (CG/LA, Sterne Agee)
- Infrastructure needs are greatest in emerging markets, but
- Social and political risk also comparatively higher in emerging markets

Private-sector investment in developing country infrastructure projects



Source: World Bank and PPLAF, PPI Project Database.

Project objectives



- Characterize legal and political conflict associated with infrastructure investments in water supply and pipelines
- Identify factors that could contribute to the emergence of conflict
- Analyze empirical data to identify “recipes” (combinations of factors) that are associated with conflict in real world cases

Terminology



- *Legal conflicts:*
Grievances about / opposition to infrastructure projects expressed *via* established structures (*e.g.*, lawsuits)
- *Political conflicts:*
Grievances or opposition expressed outside of established structures (*e.g.*, popular protests)

Legal vs. political conflict: Pipeline cases



Factors contributing to conflict



Project features

Project location
features

Stakeholder &
governance
features

Conflict

?



Indicators employed



- Magnitude and type of conflict documented
- Size of project (\$)
- Host country equity stake in project
- Western / Bretton Woods funding
- Degree of environmental impact (pipelines)
- Degree of economic impact on households (water)
- Extent of impacts on indigenous peoples (pipelines)
- Degree of impact on labor (water)
- Project sponsor's prior experience in country
- Extent of prior conflict in host country
- Degree of democracy in host country
- Degree of development in host country (UN HDI)
- Number of international NGO memberships in host country
- Extent of competition for project contract (water)
- Degree of proactive consultation with stakeholders



Analytical approach

Typical strategy:
Regression model that quantifies average effects of independent variables

$$\text{Pr (Conflict)} = \alpha + \beta_1 \text{ Size} + \beta_2 \text{ Equity} + \beta_3 \text{ Western \$} + \beta_4 \text{ Environmental impact} + \dots + \varepsilon$$

β_X = average effect of a 1-unit increase in variable X on the probability of conflict emerging



Analytical approach, cont'd.

Fuzzy set/
Qualitative
Comparative
Analysis (fs/QCA)
approach:

Think about
multiple 'recipes,'
each of which leads
to an outcome of
interest

Investigating causal complexity

$A * B + C * D \rightarrow \text{Outcome (eg., conflict)}$

Each of these conditions is “INUS”:

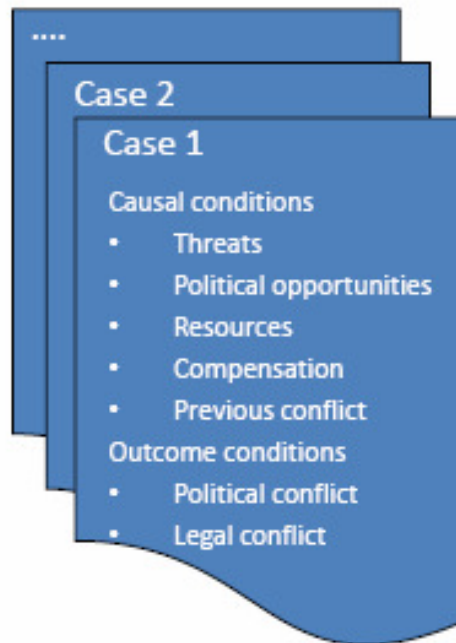
Insufficient by itself, but a
Necessary component of a
combination that is

Unnecessary (because of multiple
paths), but

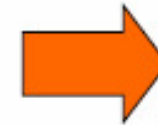
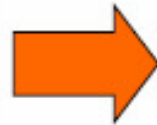
Sufficient to produce the outcome

Data analysis with fs/QCA

Pipelines: 11 cases / 16 countries
Water: 15 cases / countries



- Code each case individually across both causal and outcome conditions



- Enter all cases and scores in fs/QCA software


- Analyze for key "recipes" that explain outcomes of the cases

Thanks to Hilary Schafer for graphic

Fuzzy set coding




Political Conflict	
0	No evidence
0.2	Evidence of opposition groups
0.4	Few peaceful strikes/rallies/demonstrations (<5)
0.6	Moderate number of peaceful strikes/rallies/demonstrations (5-14) and/or a few arrests, injuries (<5)
0.8	Moderate number of strikes/rallies/demonstrations (5-14) with more arrests, injuries (>5) and damage to project OR Many peaceful strikes/rallies/demonstrations (>15) with significant attendance
1.0	Deaths as a result of activities



Selected
results for
pipeline
analysis,
continued

Legal conflict:
Necessary (but not sufficient) conditions

- Limited provision of gas/oil to host country, OR
- Significant amount of proactive consultation in project, OR
- Western funding



Selected
results for
pipeline
analysis

Political conflict:
Necessary (but not sufficient) conditions

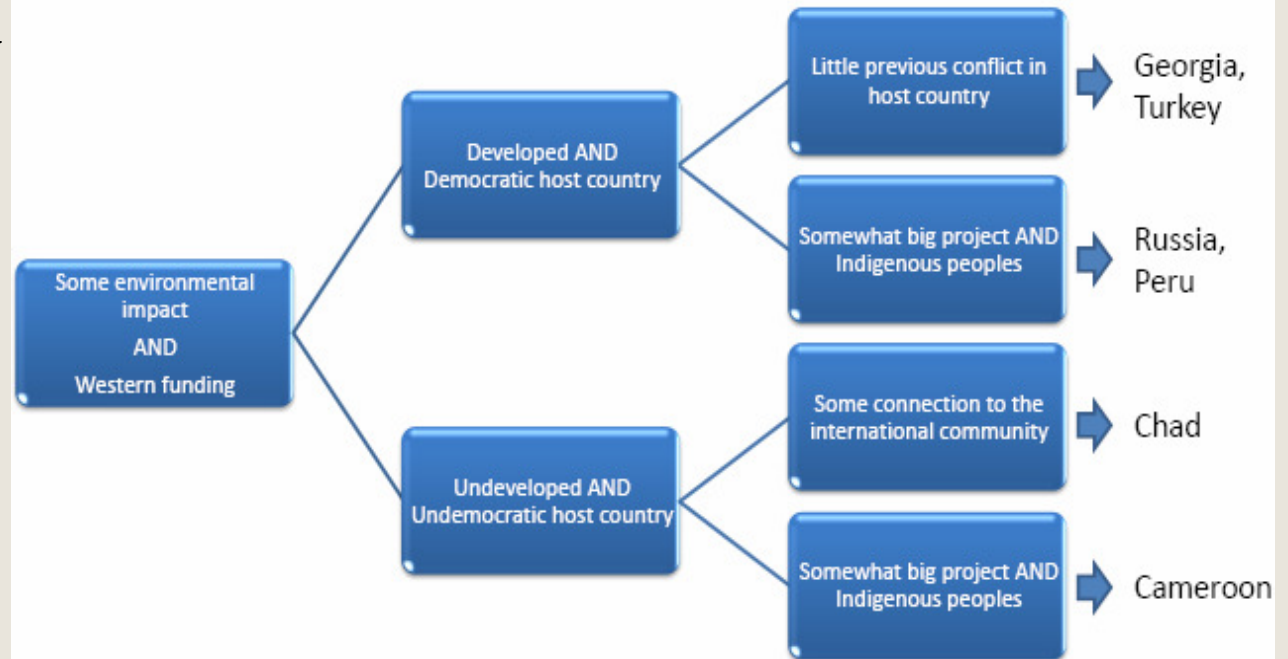
- Limited provision of gas/oil to host country, OR
- Significant amount of proactive consultation in project, OR
- Host country holds limited equity stake in project

“Recipes” for political conflict: Pipeline cases



At least 1 necessary condition
(↓ compensation,
↓ equity stake, or
↑ consultation),
plus:

Political conflict – sufficient conditions



Notes:
Solution coverage = 0.65
Solution consistency = 0.88
Azerbaijan not explained by these recipes



Summary

- Risk of legal and political conflict are arguably as important as other, more routinely considered types of risk in global infrastructure projects
- Our project seeks to identify patterns in the factors associated with the emergence of legal and political conflict (and perhaps eventually to aid in the prediction / avoidance of conflict)
- Future work might also include analysis of strategies to manage conflict once it emerges, i.e., to include consideration of eventual project fate