The Puzzling Politics of R&D: Political Connections and Innovation in Russia

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Introduction

- Technological progress can threaten governments, if it primarily benefits its potential challengers (Mokyr 1990, 1992; Acemoglu et al, 2006).
- Politicians face a trade-off between stifling economic growth and facing a threat of technological displacement of their supporters.
- Governments can foster private investment in Research and Development (R&D), while giving politically connected companies greater incentives to exert extra effort in their R&D projects by conditioning of additional funding on the success of their research and development (R&D) project.

Hypotheses

The mechanism described above has three testable implications:

- Governments will distribute cost-reducing grants to both politically connected and unconnected companies;
- Connected companies will show a larger effect of RD grant support on economic performance;
- During the assessment period of RD projects, government contracts will preferentially support connected companies.

Background

I test these hypotheses using a case of ongoing Russian program of R&D support, called Decree 218 (Postanovlenie 218). In 2010, the Russian government issued Decree 218, starting an annual competition for government R&D grants. The grants were distributed to the pairs of a firm and a university. A typical grant equaled 210 million rubles in 2010 (7 million USD).

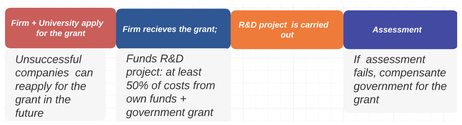


Figure 1:Timing of Decree 218 Grants

Data

The following data was collected:

- Units of observation: 1325 companies (178 winners and 1147 losers) that participated in the program from 2010 to 2016; (Decree 218 Website)
- Economic indicators: gross profit, non-tangible assets, ROA and ROE over 2008(2 years before the onset of the program) - 2016; (Spark)
- Political connections: social ties {0;1} are measured as co-occurrence of members of predefined populations in the news. The populations of interest are owners of companies applying for Decree 218 government grants and members of Vladimir Putin's inner circle.
- Volume of government contracts, awarded to the companies in each year (ClearSpending.RU)

Important Results

Both connected and unconnected companies receive "218 R&D grants"; Connected companies benefit more from the grant as measured by profits and ROA. At the time of official assessment of "218 grant", connected winners of the grant receive more government contracts.

Method: Matching on Trajectory

Kernel-based trajectory balancing (Xu & Hazlett, 2018): weighting the control units to make their averaged pretreatment trend match that of the treated units. With these weights on the control units, the time-varying confounders are differenced out.

$$\frac{1}{N_{tr}} \sum_{G_i=1} \phi(Y_{i,pre}) = \sum_{G_i=0} \phi(Y_{i,pre}), \qquad (1)$$

and $\sum_{G_i=0} w_i = 1, w_i > 0$ for all i in the control group. The choice of ϕ is achieved through a similarity measure: a Gaussian kernel $k(Y_i, Y_j) = exp(-||Y_i - Y_j||^2/h)$. Then ATT_t is calculated as follows:

$$\widehat{ATT}_t^k = \frac{1}{N_{tr}} \sum_{G_i=1} Y_{it} - \sum_{G_i=0} w_i Y_{it} \qquad (2)$$

Testing Hypotheses 1-3

- Both connected and unconnected companies win "218 R&D grants": Unconditional probability for connected companies is 15.1%, for unconnectd - 18%. Controlling for gross profit, ROA, ROE and non-tangible assets in 2008 and 2009 (before the onset of the program), and authorized capital and the age of the firm, connected companies are 2% less likely to receive a government grant.
- Heterogeneous Effects of "218 R&D Grants" on connected and unconnected companies. I apply Kernel-based trajectory balancing approach to measure the effect of "218 R&D grants" on gross profits (logs), Fixed assets, ROA and ROE among connected and unconnected companies. I find that connected companies benefit from the grant more (as measured by profits and ROA, compared to unconnected companies)

	Log (Gross Profit)	Fixed Assets	ROA	ROE
Connected	0.53 (0.16); N=522	0.69 (0.66); N=567	0.17 (0.06); N=1071	-0.07 (0.09); N=1035
Unconnected	-0.74 (0.27); N=1908	0.15 (0.48); N=2016	0.01 (0.02); N=3897	-0.3 (0.2); N=3825
Difference	1.27 (0.31)	0.54 (0.82)	0.16 (0.06)	0.23 (0.21)

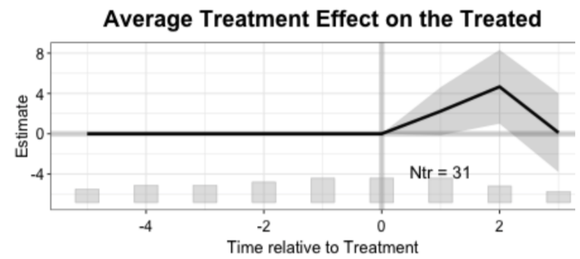
Figure 2:TJBAL: Effects of "218 Grant" for connected and unconnected companies

- Connected winners of "218 R&D Grant" receive 50% larger volume of government contracts, but only during the phase of official assessment of the R&D project. Unconnected winners of "218 Grant" never receive abnormally large volume of contracts.

Conclusion

Connected companies gain from government R&D grants more than unconnected ones, but not because they are the primary recipients of such grants. Instead, long-term improvements in ROA and profits that connected winners of such grants enjoy could be due to additional incentives to invest effort in R&D project. Indeed, such companies see a one-time boost of the volume of government contracts awarded to them, but only during the official examination of the R&D project. It is possible to reconcile these observations with the model of "politically safe technological progress", where the government co-sponsors the costs of R&D for all promising projects, but provides additional incentives to connected companies (available upon request).

Government Contracts of Connected Companies



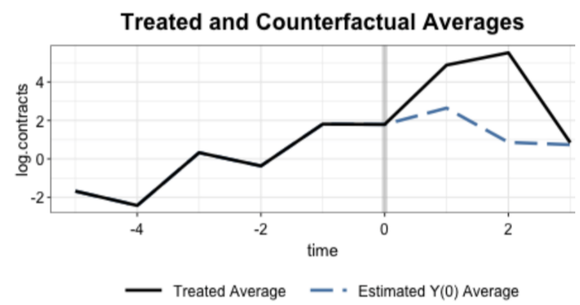


Figure 3:Effect of "218 R&D Grant" on Government Contracts of Connected Companies (trajectory balancing approach)