Markups and Public Procurement

Evidence from Czech Construction Tenders

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Motivation

- Public procurement comprises around 12% of GDP in OECD countries, representing significant government expenditure.
- Market power, as reflected in firm-level markups, impacts procurement efficiency, potentially leading to higher government costs.
- Evidence suggests that firms in public procurement may charge higher markups, possibly due to reduced competition or procurement discretion.
- **Research Question**: How does public procurement affect markups in the Czech construction sector?

This Paper

- Analyzes markup trends in the Czech construction sector (2006-2021) using firm-level financial data.
- Examines the link between public procurement and markups, comparing public and private market participants.
- Applies De Loecker and Warzynski (2012) markup estimation framework.
- **Key Finding**: The casual effect estimates of firms entering public procurement are both statistically and economically significant, with implications for policy.

Background

Public Procurement and Market Power

- Public Procurement: Government contracts with private firms, particularly relevant in sectors like construction.
- Market Power and Markups: Markups (price-to-marginal-cost ratios) reveal market power and gauge competition levels.
- Relevant Literature:
  - Studies link discretion and political favoritism to inefficient procurement allocation (e.g., Palguta and Pertold, 2017; Szucs, 2024).
  - Procurement efficiency relates to transparency, competitive bidding, and oversight in Europe (Titl, 2023; Decarolis et al., 2020).

Data

Data Overview

- Data Sources:
  - Financial data on Czech construction firms (2006-2021).
  - Public procurement data from Czech government records.
- Sample:
  - Includes 1,297 firms with at least two consecutive years of data.
  - Focus on firms with public and private sector contracts.
- Key Variables:
  - **Markup** (μ_{it})
    Ratio of sales ($P_{it}Q_{it}$) to costs of goods sold ($P_{it}^{V}X_{it}^{V}$), adjusted by output elasticity $\hat{\theta}_{it}^{V}$.
  - **Public Procurement** (W_{it}):
    Binary indicator for firm participation in public procurement.

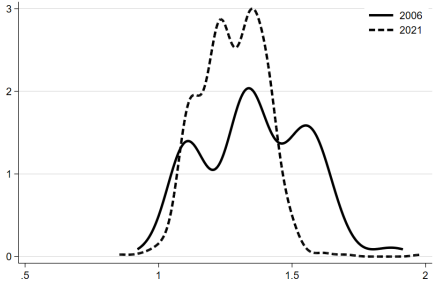
Results

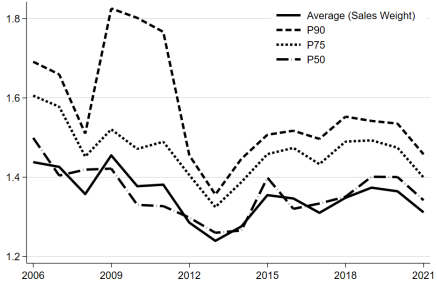
Main Findings

- Evolution of Markups:
  - Aggregate markups declined from 40% above marginal cost in 2006 to 30% in 2021. Decline mainly driven by firms with higher markups.
- Impact of Public Procurement:
  - Firms engaged in public procurement show significantly higher markups, suggesting increased pricing power.
  - Analysis using unconfoundedness-based and causal panel methods.
- Implications:
  - Findings suggest inefficient government spending on construction projects due to increased firm market power in public procurement relative to the private sector.

Evolution of Markups

Figure 1: The Distribution of Markups $\hat{\mu}_{it}$





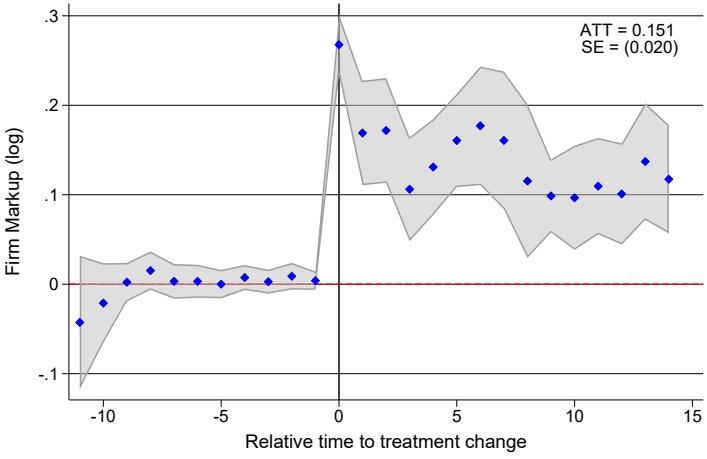
Unconfoundedness

Table 1: ATT Given Unconfoundedness and Placebo Estimates

Effect on Markups	**Contract**	**Pre-Contract Average**
Difference-in-Means	0.12 (0.02)	0.03 (0.02)
Regression	0.16 (0.01)	-0.00 (0.01)
Oaxaca Blinder	0.15 (0.01)	0.00 (0.02)
GRF	0.13 (0.01)	0.03 (0.01)
NN Matching	0.15 (0.01)	0.01 (0.01)
PS Matching	0.13 (0.01)	-0.00 (0.01)
IPW	0.14 (0.02)	0.01 (0.02)
CBPS	0.15 (0.02)	0.00 (0.02)
Entropy Balancing	0.15 (0.03)	-0.00 (0.02)
DML-ElasticNet	0.16 (0.01)	-0.01 (0.01)
AIPW-GRF	0.15 (0.01)	0.00 (0.01)

Causal Panel 1

Figure 2: Synthetic Difference in Differences: Event Study



Causal Panel 2

Table 2: Synthetic Difference in Differences: Disaggregated ATTs - Cohort level

Cohort	2007	2008	2009	2011	2013	2014	2015	2016	2017	2018
$\hat{\tau}_a^{sdid}$	0.215	0.172	0.177	0.118	0.090	0.082	0.050	0.128	-0.012	0.042
SE	(0.027)	(0.012)	(0.017)	(0.015)	(0.031)	(0.019)	(0.026)	(0.023)	(0.018)	(0.012)

Conclusion

Conclusion

- Summary:
  - Czech construction firms involved in public procurement display greater market power and higher markups.
  - Decline in markup premium suggests an improved institutional environment and aligns with studies on competition, discretion, and favoritism.
- Policy Implications:
  - Increasing competitive bidding and transparency may reduce markup disparities.
  - Oversight is essential to prevent inefficiencies from discretion and favoritism.
- Future Research:
  - Extend analysis to other sectors and cross-country comparisons.
  - Explore procurement policy reforms to limit market power effects.
  - Develop a microeconomic model of public procurement for underlying mechanisms.