

Collusion and Land Market Auctions

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Introduction

The existence of collusion in the market enhances the monopoly power and damages the consumer surplus. This paper explores two types of collusion:

- collusion between local governments and firms, namely corruption
- collusion among firms, namely cartels

This paper leverages a unique nationwide dataset of China's land market auction and an unprecedented anti-corruption campaign to establish the presence of these two types of collusive behavior.

Motivation – Why China?

In China, local governments are “auctioneers”.

- A real estate project needs approvals from 166 government departments (180 officials). – China Daily, 2013
- Land Transfer and construction are the top two sectors where bribery is most prevalent. – Chen and Kung, 2018

Collusion among firms has been a potential issue.

- Firms communicate about prices and seek cooperation before the auction. – 21Jingji.com, 2020
- More and more illegal collusion cases are found in China's land market. – pkulaw.com

Data

Land Data

- ex-ante land parcel characteristics (i.e., auction format, starting price, security deposit, land address, land area)
- ex-post transaction outcomes (i.e., successful or not, final price, winning bidders)

Firm Data

- firm characteristics (i.e., winning firm's registered capital, address)

City Data

- city characteristics (i.e., anti-corruption campaign results)

Empirical Methods

Corruption – Event Study Design (DID)

- Leveraging the exogenous variation brought by China's anti-corruption campaign, I examine whether the adoption of a certain auction setting changes during the campaign.

$$y_{it} = \theta_0 + \theta_1 \sum_{\tau < -13} D_{it}^{\tau} + \sum_{\tau = -13}^{-2} \theta_{2\tau} D_{it}^{\tau} + \sum_{\tau = 0}^{13} \theta_{3\tau} D_{it}^{\tau} + \theta_4 \sum_{\tau > 13} D_{it}^{\tau} + \delta_c + \delta_m + \delta_y + \varepsilon_{it}$$

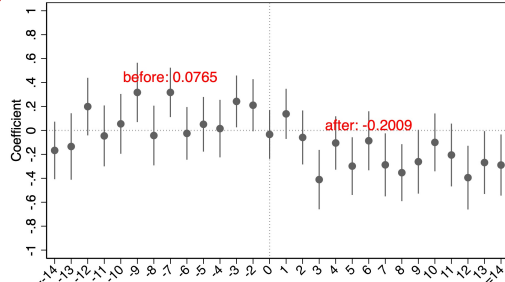
Firm Collusion

- Using a firm pair's location distance to measure their closeness, I check whether the closer they are, the closer the date they won the land.

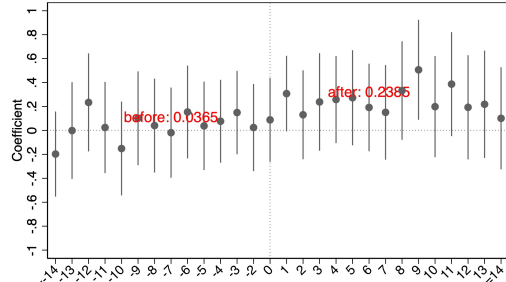
$$TimeDis_{ijct} = \gamma_0 + \gamma_1 GeoDis_{ijct} + \delta_c + \delta_T + \varepsilon_{ijct}$$

Results

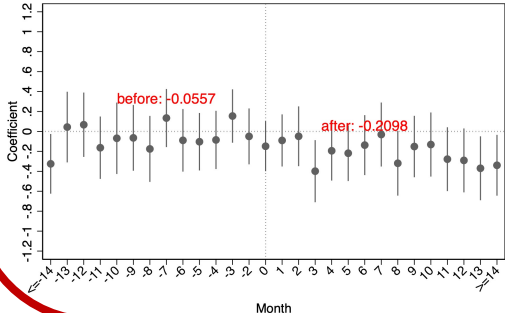
Event Study for Two-stage Auction
Ln Land Size



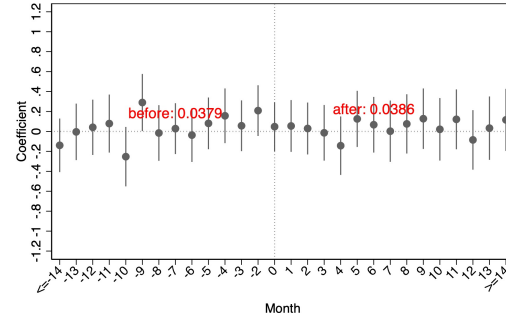
Event Study for English Auction
Ln Land Size



Event Study for High DR (>=0.8)
Ln Land Size



Event Study for Low DR (<0.4)
Ln Land Size



VARIABLES	(1) Local	(2) Non-local
geo_distance_km	0.219*** (0.030)	-0.001 (0.001)
Observations	7,375,270	2,053,268
R-squared	0.023	0.015
City FE	YES	YES
Year FE	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Conclusion

- This paper establishes that corruption and cartel behavior is present in China's land market auction.
- The English auction is superior to the two-stage auction for the authorities – it produces a 12.1% higher price.
- The security deposit rate could be a useful policy instrument – it has the potential to affect the auction price.

Selected References

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- [4] Aoyagi, Masaki. "Efficient Collusion in Repeated Auctions with Communication." Journal of Economic Theory 134, no. 1 (2007): 61-92.
- [5] McAfee, R. Preston, Michael Williams, and Kenneth Hendricks. "Auctions and Bid Rigging." The Oxford Handbook of International Antitrust Economics, Volume 2.