Bidding behaviours associated with bid-rigging

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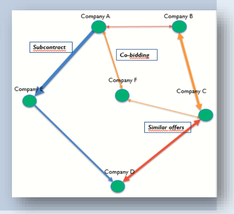
Context

Few studies have examined interactions among bidders to understand the functioning of bid-rigging agreements. Bid-rigging is a corporate crime that occurs when companies decide to cooperate among each other, instead of competing against, in order to rig public tenders. By definition, therefore, this crime has an inherent relational dimension: first, it requires at least two firms to be carried out (i.e., a company alone cannot collude); second, the ways in which cartel members behave in a procurement depend on each other, as they are the result of a secret agreement previously established among them. Surprisingly, few studies focused on this aspect. Examining these interactions and dependencies can provide useful insights into the techniques used by cartels to rig public tenders.

Objective

OBJ: Assess which bidding behaviours are associated with bid-rigging

HP: companies behaving «too similarly» are more likely to collude together



Methodology

Case study: judicial investigation on bid-rigging in the Italian public procurement at the end of the 90s-beginning 2000s. Identification of 8 cartels active in the construction industry.

Data

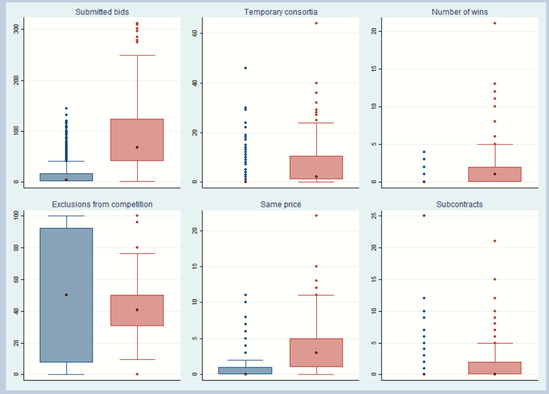
- data on **357 auctions** awarded by the municipality and province of Turin (North-West Italy). Original dataset produced by Conley and Decarolis (2016) integrated with new data gathered from the Court of Turin. Main information: list of bidders (both losers and winners) and offers submitted
- Data on **1242 companies** participating in the tender (9% were colluding).

Method

- Use of Social Network Analysis to calculate predictors at relational level
- Firth logistic regression at firm level to identify bidding behaviours to predict whether a company is colluding or not
  → Firth specification to account for « rare event » (few 1-cases) in the dependent variable

Descriptive statistics

Box-plots comparing cartel (red) and non-cartel (blue) companies



Results

Firth logistic regression – Dependent variable: dummy colluding (1) / non-colluding company (0)

Model A) Predictors at individual level (Wald chi Test: 164.94***)

Predictor	OR
Submitted offers	1.057***
Temporary consortia	1.102***
Same price	1.136**
Winning success	1.021
Exclusions from competition	0.951***
Subcontracts	0.949
Winning success*Subcontracts	1.048**
Constant	0.018***

Model B) Predictors at relational level (Wald chi Test: 156.94***) (controls: submitted offers and number of wins)

Predictor	OR
Cobidding	2.649**
Price difference	0.781***
Frequent exchange subcontracts	0.358
Constant	0.049***

Significant predictors at p<0.01(***), p<0.05(**); colors: green=expected, red=not expected

Results

Individual-level characteristics

- General remark: Low main effects
- Specific remarks:

→ "In line with hypothesis": companies that submit a high number bids, set up temporary associations to compete in a public procurement, submit exactly the same offer as others are more likely to be part of a cartel

→ "In contrast with the hypothesis": the higher the number of times of company is excluded from a competition as a result of excessive discount, the less is the probability of being part of a cartel

→ Interesting interaction effect vs main effects: companies frequently playing as subcontractors are more likely to rig tenders if they have a high winning success (possible rotational bidding)

Relational-level characteristics

- General remark: Higher main effects
- Specific remarks:

→ In line with hypothesis: bidding more than 20 times with the same set of companies greatly increase the likelihood of being a colluding company; submitting offers very similar to the same group of companies increase this probability as well

Conclusions

Many economic behaviours can be interpreted as competitive and collusive at the same time, as it is difficult to distinguish them (Marx and Marshall, 2012, chapt. 4). For example, the submission of exactly the same offer in a procurement is usually seen as typical colluding behaviour, but this may be also due to the fact that companies have similar costs. What makes the difference is whether these behaviours are repeatedly carried out by the same group of individuals in a somehow coordinated way.

The results of this work show that is worth focusing on the relational dimension of bid-rigging to better understand the phenomenon. Examining interactions among bidders participating in a procurement provide a more nuanced picture of potentially cooperative patterns.

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