

# "Detecting Collusion in Procurement Auctions"

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## Abstract

Collusion is a widespread problem in procurement auctions. In this research, we study a class of econometric models, derived from economic theory, that are appropriate for describing both competitive and collusive behavior in many applied settings. The models we consider allow for asymmetries, randomization in the participation decision and non-trivial dynamics. We establish that if only bid data is available, then competition and collusion are observationally equivalent. If cost side information, however, is available, the bid functions in a competitive market will satisfy a criteria we refer to as exchangeability which may allow us to empirically distinguish between competition and collusion. We suggest a simple, reduced form test for exchangeability. As a second stage, we explain how the choice between structural models of competition and structural models of collusion can be posed as a statistical decision problem. As an application, we apply our tests to a unique data set of bidding by firms for construction contracts to do a type of highway repair called "seal coating". Our panel of firms covers 4 years and virtually every bid and contract that was awarded in a three state market.