RESEARCH SUMMARY

Single Bidders and Tacit Collusion in Highway Procurement Auctions

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BACKGROUND

Detection and deterrence of collusion—illegal cooperation between competitors—are perhaps the primary challenges of antitrust policy. Economists frequently play the role of detective in diagnosing collusion in government procurement auctions. Often such collusion is overt and involves determining a winner and the submission of complementary bids. Alternatively, companies may reciprocally refrain from bidding. When the number of bidders is small and there is an obvious focal point for such coordination, firms may successfully suppress competition without direct communication.

In certain market areas, the asphalt paving industry lends itself to such tacit collusion. Given that asphalt must be laid before it cools, firms have limited feasible service territories. Market areas with few roads and little commercial activity may only be able to support a limited number of suppliers. State highway departments sometimes set up their procurement auctions in a way that creates a market environment that facilitates collusive outcomes.

To determine whether such collusion might occur we collected data on asphalt paving auctions by the Kentucky Transportation Cabinet from 2005 to 2007. We analyzed bidding behavior for the 31 registered asphalt contractors in Kentucky. We analyzed firms' decisions whether to bid on projects within their feasible service territories, taking into account (a) cost factors such as distance from plant to project, capacity constraints and scale of the project and (b) strategic factors such as the number of actual or potential rivals. Similarly, we analyzed how much firms bid on projects, taking into account cost factors and strategic factors as well. We included county identifier variables to see if firms use county boundaries as focal points to coordinate their bidding.

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After estimating these equations for the entire state, we separately analyzed the more competitive regions of Louisville and northern Kentucky and the less competitive regions in the remainder of the state.

FINDINGS

In choosing whether to bid, firms in competitive regions are primarily influenced by distance and are not deterred by the presence of another likely bidder. Firms in less competitive markets are significantly less likely to bid in an adjacent county where a rival firm has a plant and if another firm has indicated its intention to bid by purchasing an official set of project plans.

In choosing how much to bid, the bid pricing decisions of firms in competitive markets are not significantly different when a firm is bidding in its own or an adjacent county, with or without a rival firm present. In non-competitive markets, however, bid pricing behavior differs considerably according to county type. Bids in counties where a rival firm also has a plant are significantly lower. Bids in adjacent counties where there are no rival plants are essentially the same. Bids in adjacent counties where a rival firm has a plant are significantly higher than bids in counties where a firm has the only plant.

That county boundaries in Kentucky are such an obvious focal point for firms to coordinate bidding activity is not surprising, since 72 out of 120 counties have one and only one asphalt plant. The upshot is that 64 percent of asphalt paving contracts attracted only a single bidder from 2005 to 2007. Controlling for other factors, winning bids for single-bid asphalt projects were 9.3% higher than winning bids in auctions with three or more bidders in the competitive regions of the state. In non-competitive regions, the price markup in single-bid auctions was 16.5% greater than in auctions where there were three or more bidders. Given the amount of money Kentucky spends on asphalt paving projects—over $590 million during the sample period—the potential savings from increasing competition are substantial.

Several policy changes suggest themselves. First, social functions for contractors sponsored by the KYTC on the eve of a bid letting may create the wrong atmosphere. Second, requiring bidders to publicly declare their intent to bid by publicizing the list of firms that have purchased official plans allows rivals to adjust their bids downward in response to the threat of entry, and thereby reduces the expected gain, and hence likelihood of entry by a non-cooperating bidder. It would be simple and easy for the KYTC to distribute plans freely to any contractor that could feasibly carry out a given project and to delay revealing the identity and number of bidders until bids are opened. A third change likely to enhance competition in highway procurement auctions would be to remove the focal point that facilitates collusion, namely, the delineation of projects by county lines. The state could even go one step further and structure projects so that they are within the potential service territories of multiple asphalt plants.