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Auction prices, market share, and a common agent

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ABSTRACT

The primary pro-competitive justification for multiple principals to hire a common bidding agent is efficiency. The efficiency gained by doing so increases the advantage of the common bidding agent. Almost common value auction theory predicts that an advantaged bidder is able to reduce competition by credibly enhancing the 'winner's curse' of disadvantaged rivals. The credible threat results in disadvantaged rivals exiting the bidding process early, leaving the advantaged bidder to purchase most, if not all, units at lower prices than when rivals have common values. The results of our empirical study of a common bidding agent are consistent with this theory.

1. Introduction

Auction owners and sellers of cattle have long been concerned that multiple principal buyers hiring a common bidding agent has adverse effects on competition and prices (USDA, GIPSA, 2000–2004).[1] Competition is allegedly reduced by the reduction in the number of bidders and collusion among the principals of the common bidding agent. On the other hand, buyers claim they hire common agents to reduce agency costs and others argue that common agency enhances efficiency by reducing transactions costs in order for small to medium sized firms to be able to compete with larger rivals (Inform Economics, 2010; Koch Group, 2005; Telser, 1985).

If common agency results in efficiencies, then the principals gain a competitive advantage over their rivals. The buyers' own defense may result in yet another anticompetitive outcome. Common value auction theory predicts that when one bidding agent is endowed with a cost advantage, the advantaged bidder will win most of the items at lower prices due to decreased competition from disadvantaged rivals (Bikhchandani, 1988; Klemperer, 1998; Rose and Kagel, 2008).[2] However, neither experimental nor empirical results support the reduced competition findings of this theory (Levin and Kagel, 2005; Rose and Levin, 2008; Nelson, 1997).

This paper provides the first empirical analysis of a common agent's impact on auction prices and the distribution of purchases among the remaining rival bidders. Our results indicate that the common bidding agent buys more units and

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[1] In response to seller's concerns, the United Stated Department of Agriculture, Grain Inspection Packers and Stockyards Administration has recently proposed a new regulation intended to prohibit slaughtering firms (processors) from hiring common bidding agents (USDA, GIPSA, 2010).

[2] It has also been shown in the independent private value setting that bidders with 'synergies' or cost complementarities across multiple units sold will bid aggressively (e.g. Jeitschko and Wolfstetter, 2002; De Silva et al., 2005; Leufkens et al., 2010). However, this literature does not predict that aggressive bidding results in reduced competition as in the common value setting.

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pays significantly lower prices than independently represented bidders. These results support both the sellers' concerns and theoretical predictions of an advantaged bidder. At the same time, available data cannot rule out the possibility that some of the observed effects may result from collusion rather than a common agent per se, a question left for future research. Moreover, our results are also consistent with enhanced efficiency as claimed by buyers. Despite such possible efficiencies, indirect evidence suggests that the use of a common agent appears to be accompanied by some loss of sellers' welfare in our sample.

2. Market setting and auction description

Roughly $25 billion of livestock are sold at auction and 3883 professional buying agents, including commissioned order-buyers and dealers, purchased $26.4 billion in livestock (USDA, GIPSA, 2008). Professional buying agents typically represent multiple principals at auction.[3] Livestock auctioneers use an open-outcry English auction format selling live animals either in groups or one at a time.

The setting for our analysis is a local auction where cull cows are sold one at a time. Nearly all bidders have multi-unit demand. Most cull cows are purchased for direct delivery to beef packers. Beef packers routinely establish long-run agreements with their bidding agents, be it employed or contracted. Beef packers disassemble cow carcasses to produce relatively homogenous categories of meat and meat by-products. However, cull cow carcasses are heterogeneous as to their individual contribution of total meat, categories and quality of meat products. Because cull cows are sold live, bidders must rely on a set of imperfect signals of each animal's true aggregate output value via visual appraisal of the animal's observable physiological attributes (O'Mara et al., 1998; Gresham et al., 1986). Each animal's true carcass value is common to symmetric processors, because the components of the carcass within quality specifications are also uniform in value (United States Department of Agriculture, Agricultural Marketing Service). Based on this description, the auction is best characterized as a sequential common value English auction for stochastically independent goods. This description guides the literature we use to develop our conceptual and empirical models.

3. Conceptual model development

We rely primarily on common value auction theory and empirical work to develop our conceptual model in regards to: (i) advantaged bidders; (ii) bidder concentration; (iii) potential endogeneity between winning bids and concentration and (iv) agent learning in repeated auction games. We also use predictions from theory to formulate testable hypotheses in the data.

Valuation asymmetries in common value auctions result in an advantaged bidder and are referred in the literature as *almost-common value auctions* (Klemperer, 1998; Levin and Kagel, 2005). The extra value advantage given any private signal holder may be due to either lower cost of production or an output value advantage or both. Generally, the theories developed by Bikhchandani (1988), Klemperer (1998), and Rose and Kagel (2008) predict that the disadvantaged bidders reduce their bids in order to avoid the heightened winner's curse caused from bidding against an advantaged bidder. Hence, in second-price and English auctions the advantaged bidder is expected to win more often and pay lower prices than when bidders have symmetric common values.

It has been demonstrated that as the number of bidders increases, so shall winning bids (Laffont, 1997). Empirical studies of repeated English auctions have found a positive relationship for used cars (Nelson, 1997) and cattle (Bailey et al., 1993). These studies utilized *ex post* calculations of bidder concentration measured by the total number of winning bidders (Nelson, 1997) or by the Herfindahl–Hirschman Index (HHI) (Bailey et al., 1993). However, the effect of the number of bidders on winning bids is not necessarily positive in the common or affiliated value setting especially when entry is endogenous (Pinske and Tan, 2005; Li and Zeng, 2009; De Silva et al., 2009). Empirical studies in repeated auctions have found a negative correlation in eBay auctions (Bajari and Hortaçsu, 2003). Though the number of bidders necessarily influences winning bids, theory is inconclusive and we leave this relationship as an empirical question.

The number of bidders is characterized as an exogenous factor on winning bids (Laffont, 1997). However, this presupposes that all potential bidders are committed to bidding from the outset (Levin and Smith, 1994). In real-world auctions, bidders freely enter and exit the bidding process where entry by a subset of potential bidders may be endogenously determined by a zero-profit condition (Klemperer, 1999; Levin and Smith, 1994). Levin and Smith (1994) conclude from single unit auction theory that endogenous entry may explain why the number of bidders varies in repeated auctions of similar items. Bajari and Hortaçsu (2003) support the supposition of Levin and Smith (1994) by analyzing eBay auctions based on a common value modeling approach. Experimental tests of endogeneity in common value auctions have shown that, as bidders evaluate their heterogeneous opportunity costs of entry, increasing expected profits in the auction invite entry thus increasing the size of the market (Cox et al., 2001).

In the market setting just described, principal purchasers are not assumed to have homogenous preferences on any given day. For instance, packers typically establish sales agreements prior to purchasing their inputs. Their customers place orders

[3] Since the USDA does not make public detailed purchasing statistics for the commission order-buyers and dealers they regulate, we support this claim from interviews with cattle buyers, packers, auction owners and USDA officials.