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What am I bid?

MAKING THE MOST OF INTERNET AUCTIONS

Electronic networks have brought many new opportunities to businesses, but arguably the most important arise in procurement. Experience, however, has been mixed, with some IT firms providing expensive and cumbersome software based on little understanding of the underlying auction theory. The key is to get the economics of the specific markets right; and then back up this understanding with Internet-based IT solutions, bringing smaller and more flexible solutions at a fraction of the cost.

Electronic procurement systems are not new. Electronic Data Interchanges (EDIs) have been around for many years. But the Internet reduces the complexity and cost of such systems and enables more companies to tap into the savings. In addition to simplifying the processes for negotiation and information transfer, the Internet enables companies to use auction-based software to run so-called “reverse auctions” (an auction for buying, rather than selling). The advantages of this are: →

- lower purchase prices – auction-based systems can intensify competition between existing suppliers, and add new suppliers, thus reducing prices;
- lower procurement costs – automated electronic interfaces reduce the need for meetings, telephone calls and paperwork;
- standardised buying procedures – a common format simplifies administration, makes training easier and ensures consistency and transparency with suppliers; and
- access to rich datasets – electronic auctions are easy to save and this provides a valuable source of data with which to assess supplier's bidding behaviour and performance.

And the characteristics of the Internet mean that such exchanges can be used for almost any product or service. Companies can use Internet auctions to buy their main raw materials, their head office supplies (stationery, vehicles, basic professional services, furniture, etc.), or even contract workers.

ECONOMICS RULES

However, few companies have found their experience of auctions entirely satisfactory. Cost savings often fall short of expectations and it can often be difficult to sustain early price discounts. In addition, there have been problems with the integration of software systems and auction models have proved to be inflexible and cumbersome to set up. Commercially focused buyers have been unenthusiastic about new ways of trading based on alien systems.

These problems have arisen mainly from the way in which electronic trading platforms have been designed and sold to companies. The focus has been on the technology rather than on its commercial applications. As a result, the auction process itself has tended to be rudimentary and inefficient, disconnected from the economics of auction dynamics.

This is curious, because it has long been understood how important it is to deploy economic expertise in the design of auctions. The key is to direct suppliers' incentives to work for the benefit of the buyer. Auctions can be run in many different ways, and subtle changes in the rules can lead to dramatic differences in outcome, as the box illustrates. Getting the rules right is far more critical to a successful auction process than the technological challenge. Common protocols, easy integration and universal access mean that the IT side of an auction should be straightforward if designed properly.

The link between auctions and economics has long been recognised by governments. Almost every major telecom spectrum auction in the world has been designed by economists and the bidders tend to have teams of economists advising on strategy. The differences in outcomes have reflected auction design far more than the nature of the technology.

Similarly, electricity, airport slots, rail franchises, national lotteries and treasury bills are all "products" for whose auction economists have played a leading role in the design process. The need for good economic design of auction rules and strategies has perhaps been more evident in these sectors because of the large, one-off nature of the games being played and the complexity of the products being sold.

WALK BEFORE YOU CAN CRAWL

Increasingly, however, companies too are realising that they can reap some of the benefits of better auction design by turning to economists. Most organisations, no matter how small, could undertake some of their procurement via an Internet auction, and should be able to tap into some of the cost savings resulting from lower purchase prices – which Nymec (a specialist developer of procurement auction software) suggests may be somewhere in the region of 10-30%.

The reason so few firms actually do use auctions may be due to a misunderstanding of what is required, and more importantly what is not. Too often companies are offered

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unnecessarily expensive answers: they are told that new IT systems are required; contracts need to be redesigned; security procedures must be upgraded; significant staff training is needed; and large-scale marketing is a must if market liquidity is to be achieved.

Yet the Internet offers low cost, open access technology. An organisation that wants to move some of its procurement online may be able to use an Internet based system to do so in a matter of days. Training may then take hours rather than days, and it is in fact relatively rare for existing contracts to require radical changes.

→ Outcomes are sensitive to rules

Auctions can be characterised by:

- what is being bid – players could be bidding prices, volumes, specific product characteristics, or a mixture and whether the focus is a single product/service or a bundle;
- whether bidding is static (one round) or dynamic (several rounds of descending or ascending bids);
- information rules – bidders change their behaviour depending on how much they know about the evolution of an auction (for example, other bids, time elapsed, number of rivals remaining, etc.);
- access rules – in addition to short-listing the bidders before the auction begins, the auction itself can set rules such as minimum reservation prices, or limits on low activity;
- how the auction finishes – this may be when bidding stops (“going, going, gone”) or after a pre-defined time limit;
- the price paid by the winner – whilst most auctions award the prize to the lead bidder the price paid can be the last price bid or the second-placed bid.

These different rules, and the way in which they interact, define a particular auction and no two auctions will generate the same bidding incentives. The biggest danger is that bidders learn how to exploit the rules to their advantage. Collusion in an auction is generally illegal but there are other ways in which bidders can learn about rivals’ bids, or reach tacit agreements on how to soften competitive pressures.

For example, in a dynamic auction, bidders can threaten to retaliate if rivals bid too aggressively. Such a threat can benefit all bidders if it results in acceptable prices and volumes. This was the outcome in a famous US spectrum auction when bidders used the final three digits of multi-million dollar bids to signal the telephone codes of the areas they really wanted – implying they would not push on other lots if rivals behaved accordingly. This auction was expected to raise \$1,800 million but actually raised just \$14 million.

Another example relates to how the auction ends. If the auction is dynamic within a fixed time limit there is little incentive for firms to bid early – most will try to put in a winning bid, just slightly above the leading bid, in the last few seconds – which can lead to unstable and inefficient outcomes. Extension periods can undermine this strategy, as can the use of second-rounds.

The objective should be to make a simple (and low risk) transition from existing methods of negotiation to an Internet auction.

There are five golden rules:

- The auction process should be based on economic *principles*. Fancy software is no substitute for creating the right incentives.
- The rules of the auction should be *flexible*. The rules need to accommodate the basic classic auction mechanisms (descending, sealed bid, 2-stage hybrids, blind periods, extension periods, reserve prices, etc.), but they should also be easy (and cheap) to change.

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- The auction needs to be *quick and simple to set up and use* – buyers and sellers will be soon put off if they require specialist software knowledge or equipment. The buyer, not the IT department, should be able to run the auction.
- It should be easy to change the features and presentation of the auction process *to the buyer's (or sellers') preference*. People new to Internet auctions need to be made comfortable about how it will work for them.
- The bidding process needs to be simple and *to mimic a commercial negotiation* – both buyers and sellers are more likely to take to the new system if it feels familiar.

If all of these conditions are met, an auction will probably work well; while organisations should be wary of breaching more than two of these golden rules. To make an auction work really well, and to capture some of the wider benefits, more thought is however required.

SWORDS AND SHIELDS

Tailoring the auction to the specific circumstances of the market can deliver large rewards. Key questions relate to the type of incentives the buyer wants to relate, and the bargaining power of different suppliers. The answers will determine issues such as whether it is necessary to build in “stop criteria”, including time-outs, zero activity, threshold price levels or other forms of hurdle. Similarly, designers may want to think hard about the degree of information they want to make available to the suppliers. They could be allowed to see the current market price, all sellers’ prices or just their own ranking, and there are pros and cons to each approach). Again, the choice should depend on the incentives the buyer wants to create.

In other markets, buyers may need to tailor the auction to take account of seasonal effects, capacity surpluses or shortfalls, partial quantities and demand stacking.

Repeat auctions present a particular set of problems. While the outcome of an auction is sensitive to the rules, experience also suggests that players in a repeat auction quickly learn how to “game” the system - reducing the competitive pressures on their bidding. Such behaviour has been observed in many different markets and can significantly reduce the value achieved by the auctioneer.

Buyers can respond to this threat in several ways. Obviously, they can continually change the rules of the auction. This makes it difficult to game but also reduces the likelihood that the best set of rules is being applied at any one time. An alternative approach depends on storing the bids from previous auctions (a simple task on most auction software). The data can be used to develop early warning signals of gaming on the part of sellers.

The analysis of previous bids can provide a valuable source of other information for buyers: helping them to improve rules, training buyers, and evaluate the performance of existing contracts (benchmarking long-term contracts against auction-clearing price, for example).

BRINGING THE HORSE TO WATER

A good Internet auction should not be based on a one-size-fits-all strategy. Neither should it be expensive. Savings will be most effectively realised when buyers run the show, rather than IT departments or consultants. Buyers need to appreciate the Internet as a trading mechanism, to understand how their market knowledge can be translated into proper rules and to be involved in post-auction analysis. Only this way can the potential savings offered by the Internet really become available to all.

CONTACT	Simon Gaysford simon.gaysford@frontier-economics.com
	Frontier Economics, 150 Holborn, London, EC1N 2NS UK
	BOSTON LONDON MELBOURNE
	www.frontier-economics.com