Best bids guaranteed

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Observing microeconomic theory can avoid collusion at government auctions

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Few can have predicted that failure to understand auction theory could be so expensive.

Having watched the UK bag a £22.5bn windfall from the auction of third-generation mobile phone licences earlier this year, the Italian government was shocked by its relatively miserly proceeds. The Italians, along with the Dutch, are investigating companies in the auction, suspecting that they broke the rules by colluding.

But auction theorists have pointed out that such an outcome was entirely predictable – and avoidable without recourse to the law. By supplementing modern auction theory with traditional microeconomic analyses of how companies act together, whether explicitly or tacitly, governments can design auctions that make it impractical to collude.

The advantages to the seller of distributing goods that are in limited supply via auctions are clear. A well-designed auction forces buyers to reveal their private valuations of what the prize is worth. Without this – and especially in a one-off market such as that of phone licences, where the product may be on offer only once every 20 years – the seller has little idea of what to charge. In the UK, the Treasury predicted only a few billion pounds for the licence auction proceeds: left to themselves, they would almost certainly have underpriced the licences.

But Paul Klemperer, the Oxford economist who helped design the UK auction, has pointed out that new-fangled auction theory has much to learn from traditional microeconomics*. Just as a small number of dominant "oligopolistic" companies in one market can collude to restrict output and force up prices, so they can agree to bid low amounts in an auction.

This problem often arises in the classic ascending auction where companies make sequentially higher open bids until the number of prizes equals the number of bidders left. If the number of large bidders to begin with equals the number of licences on sale, there is an incentive for companies to signal to each other at an early stage who should get what, avoiding a costly contest. Prof Klemperer cites a study of a US spectrum auction where dominant companies ingeniously used the final three digits of their multi-million-dollar bids to signal the identification numbers of the licences they wanted. The auction, expected to raise $1.8bn (£1.25bn), pulled in $14m.

There are also lessons for situations in which dominant incumbent companies use their strength in a market to deter potential entrants, thus removing even the threat of competition. A foreign car company may be frightened of going head to head with a domestic producer in its home market, thus giving the incumbent free rein to act as a monopolist. Similarly, a smaller company, or one with less experience in a market, may balk at entering an ascending auction it knows it is unlikely to win.

This means that incumbent companies in an auction may even get the licence for less than the outsider company would have paid – because the outsider company, which would be outbid if it entered, does not do so.

In the Netherlands auction there were five incumbent bidders for five licences. Rather than enter the bidding separately, most bidders that did not already hold a licence formed an alliance with a local incumbent. In the end, Prof Klemperer says, the one outside bidder, Versatel, was forced into a weak position and seems to have been bullied out of the auction at a relatively early stage. A similar thing happened in Italy with the early withdrawal of Blu.

Prof Klemperer's solution is to adopt the (aptly named hybrid "Anglo-Dutch" auction, where an ascending auction is held until there is one more licence on offer than the number of companies still involved. At this point, all companies make a once-and-for-all sealed bid and the prizes go to the highest bidders. The uncertainty this creates means that companies find it hard to make deals with each other to bid low: one company can always renege on the deal and bid higher than agreed in the final sealed-bid stage, without retribution.

Moreover, it discourages bidders from forming formal consortia – as in the Netherlands auction. Again, this is because the final sealed-bid round encourages newcomers to try to bag the prize alone.

In the end, the UK did not find it necessary to use this system. The larger number of licences on offer there – five licences for four incumbents, together with the much larger potential number of entrants – meant that the traditional ascending auction could be used without much fear of collusion.

But Prof Klemperer notes that the design of auctions has to be tailored to the individual circumstances of the country. And he did, after all, predict before the event that both the Netherlands and the Italian auctions ran severe risks of falling to collusion.

Their governments, ruefully contemplating a large black hole where billions of dollars of auction revenues were supposed to be, may now wish they had paid heed.

**What Really Matters in Auction Design; and Why Every Economist should Learn some Auction Theory: P Klemperer, both at www.nuff.ox.ac.uk/economics/people/klemperer.htm*