UK academic happy with phone licence auction

By Paul Bolding

LONDON, April 27 (Reuters) - The academic whose work helped the British government raise 22.5 billion pounds ($35.52 billion) for mobile phone licences appeared modestly content on Thursday with how it went.

The complex auction marathon lasted nearly eight weeks and 150 rounds of bids until only five of the original 13 contenders were left to be declared the winners.

Paul Klemperer, who has worked since late 1997 on the auction, said on Thursday: "Auction design is a question of horses for courses: experience in Germany and the U.S. shows the kinds of pitfalls that can arise and the British auction has not fallen into those pitfalls."

Nuffield College, Oxford-based Klemperer was the theorist behind the University College, London department which worked on the structure and conducted experiments to check that it functioned correctly.

The system allowed the players to keep bidding more, or withdraw at any time.

Even after the end, Klemperer feels restricted in his comments but papers on his website http://www.nuff.ox.ac.uk/economics/people/klemperer.htm give some clues to the complex economics that goes into the subject.

Any entrant could bid for any of the five licences at any time except that one was reserved for new entrants. A bidder not leading in any of the licences was allowed to increase its bid in each round by a set minimum amount.

The complexity meant that all the entrants would have had auction theory experts like Klemperer to plan their strategy. "I know that because some of them approached me before they knew I designed it," he said.

Problems that have arisen with auctions elsewhere include low prices paid as a result of implicit collusion between bidders, potential bidders being deterred from entering and "winner's curse" -- paying too high a price -- which is more likely with sealed bids.

In the British system, all the bidding was public and the risk of collusion reduced by the number of players and the fact that each bidder could win only one licence.

The system was designed to make sure that a new entrant always had something to play for -- Canada's Hong Kong-backed Telesystem International <TIW.TO> <TIWI.O> was a winner in addition to the four established UK players Vodafone <VOD.L>,

Orange, One2One <DTEGn.DE> and BT <BT.L>.

The fact that nine new entrants began the race alongside the established players led to healthy bidding from the start.

The system had the merit of allowing all the players to look at the field at any point and work out where the difference was highest between the value of the spectrum to them and the current bid for that spectrum.

With such high stakes there was more economics than psychology. "I am an economist; that is the dominant discipline," said Klemperer.

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($1=.6335 Pound)

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Italy bungled mobile auction, UK's expert says

LONDON, Oct 23 (Reuters) - Italy's third-generation mobile phone licence auction flopped because the government structured it incorrectly, the academic who designed the British sell-off said on Monday.

Oxford University economics professor Paul Klemperer, whose complicated bidding system raised the UK government 22.5 billion pounds ($32.71 billion), told Reuters that Italy should have run an auction that culminated in sealed bids.

The UK system, which other governments have copied in the hope of emulating the British windfall, is risky to use when the number of bidders only just exceeds the number of licences, he said.

Italy had six bidders for five UMTS licences, and the auction ended after only three days when Anglo-Italian joint venture Blu quit on Monday.

Klemperer said the other bidders knew Blu looked weak before the auction started and did not need to bid aggressively. But if the government had asked for sealed, final offers they would not have taken the risk of underbidding.

He said his system worked in the UK because there were 13 bidders for five licences, but he would have recommended a different scheme had fewer bidders looked likely.

Italy, however, should have realised it would not get many bidders and should have said in advance it would switch to sealed offers when the number of bidders fell to only one more than the number of licences.

With six bidders for five licences, that would have meant it going straight to sealed offers.

Klemperer said the Netherlands made the same mistake of copying the UK auction, and advised other governments to think again.

"They should not just blindly copy the UK method," he said in an interview.



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NEWSMAKER Q&A

# "Auctions Are a Better Way to Raise Revenue than Taxes"

**Oxford's Paul Klemperer, designer of Britain's communications-spectrum auction, weighs in on telecoms' complaints about being forced to pay high prices**

Oxford University game theorist Paul Klemperer became the darling of British taxpayers after he designed the controversial third-generation communications-spectrum auction that raised an incredible $30 billion for the British government last year. That was seven times the revenues expected from the sale.

Since then, however, Klemperer also has become the *bête noire* of many telecom companies. They contend the high prices his auction forced them to pay have sunk their stock prices and will ultimately damage investment and push up the cost of phone services. Recently, Business Week Contributing Correspondent Andy Robinson spoke with Klemperer in Madrid about his spectrum-auction theories. Here are edited excerpts from their conversation:

**Q: Some people in the telecommunications business are very angry with you and your spectrum auctions.**
**A:** Well they would be, wouldn't they? The auctions have hit stock prices. But only because they have actually been a rather efficient way of making firms pay something close to the full value of the licenses, a valuable resource that they thought they would get for free.

**Q: Will the cheaper licenses being awarded in Spain and Italy, as compared with Britain and Germany, lead to lower prices for the consumer there?**
**A:** The auction fee is an up-front payment. It's a sunk cost. That won't affect prices [of service]. What worries me most is the politics. If firms win the argument in the U.K. or Germany that they should be allowed higher prices by regulators, then prices will be higher.

But with tough regulation, there's no reason for that to happen. Even more so because, of course, the same companies are operating in different countries. Whether Telefónica spent more in Germany or Spain won't affect the ability of the company to operate in either place.

**Q: Will the collapse of share prices of some telecom companies force them to reduce their investments in improving service?**
**A:** If the collapse in stock prices is simply because the firms are not getting the good deal they expected, it shouldn't affect investment.

**Q: Do you think companies have paid more than they needed to in the auctions?**
**A:** Deutsche Telekom and Mannesmann could have made more efficient bids in the German auction. In the U.K. and Holland, firms played quite cannily. There's no evidence that they have overbid. In fact, there is evidence that they would have been prepared to pay a lot more. In that sense, they got a bargain. Especially the newcomers. In the U.K. auction, Hutchison paid $6 billion for their license and then did a deal with NTT [Nippon Telegraph & Telephone] a few weeks later, which effectively valued that license at $8.4 billion.

[*Postcript:* My response to this question seems garbled:
A corrected answer is: 'Deutsche Telekom and Mannesmann could have made more *intelligent* bids in the German auction. In the U.K. and Holland, firms played quite cannily. There's no evidence that they have overbid, *relative to what they thought the licenses were worth at the time that they bid* . In fact, there is evidence that they would have been prepared to pay a lot more. In that sense, they got a bargain. Especially the *incumbents*. In the U.K. auction, Hutchison paid £4.4 billion for their license and then did a deal with NTT [Nippon Telegraph & Telephone] *DoCoMo and KPN* a few weeks later, which effectively valued that license at £6.0 billion.']

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**Q: So the government should just try to maximize revenue?**
**A:** No. It's perfectly legitimate to take into account other things, like prices or coverage [of different service areas], when designing the auction. But auctions, generally, are a better way to raise revenue than taxes, and I don't think governments should be ashamed about that.

**Q: How can governments avoid collusion between companies bidding in auctions?**
**A:** Regulators have got to step in earlier. They should disallow joint-bidding agreements. The Dutch authorities should never have allowed Hutchison and [Dutch giant] KPN to join up in Holland.

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*Edited by Thane Peterson*

## Mobile-phone licences

# Giddy bidding

**Why is the auction of third-generation mobile-phone licences raising so much money for the Treasury?**

SINCE March 6th, there has been a frequent whirring of fax machines at the Radiocommunications Agency. Listen carefully, and you might also hear the merry ring of cash registers, for the fax messages are steadily rising bids for five licences to operate "third-generation" mobile-phone services in Britain. Consumers of the new services, which are due to start in 2002, will be able to surf the Internet and watch video images on the move. Clearly, telecoms companies think they cannot afford to miss the latest phase of the information age. By April 12th, after 121 rounds of bidding, the auction was sure to raise at least £18.5 billion for the Treasury, several times what the government had expected and far more (for example) than in any privatisation. As *The Economist* went to press, seven of the 13 original hopefuls were still in the auction. The bidding goes on until only five remain.

On the face of it, an auction is a simple, efficient and even obvious way of selling a valuable asset such as radio spectrum: the prize goes to the bidder who values it most, and yields as much as possible for the seller. Yet in the past some auctions run by government agencies, in Britain and elsewhere, have proved disappointing. So why, this time, is the government hauling in so much more than expected?

In large part, the huge sum is simply a reflection of the enormous value that mobile-phone companies place on having a third-generation licence—or of the belief that they will have no business worthy of the name if they miss out. Indeed, some analysts worry that bidders may be unable to make enough from charges to justify the sums now being offered. However, part of the answer also lies in the design of the auction: without a well-designed auction, the companies' sky-high

**The choice of a third generation**

estimates of the licences' worth would not now be being converted into hard cash.

According to Paul Klemperer, an economist at Oxford University (and a designer of the current auction), auctions have to be tailored to the precise circumstances of each sale: his rule is "horses for courses". He is not allowed to comment directly on the current auction, but his published papers (on his website: www.nuff.ox.ac.uk/economics/people/klemperer.htm) point out glitches that have surfaced in previous cases.

In an American auction of telecoms spectrum for mobile phone franchises in 1995, one company, Pacific Telephone, had a greater incentive than others to win the Los Angeles franchise. It was already the main supplier of fixed-line services to the city, and so stood to lose plenty if another company won. It also had the advantage of a big database of subscribers. That seemed to put off potential rivals. PacTel's winning bid was worth a mere $26 per subscriber, less than the $31 per head paid by the two licensees for the Chicago market, which looked much less lucrative. In addition, the auction was complex because companies were allowed to win more than one local franchise. This meant that the value of winning in one city depended on which other licences a bidder secured, and made it theoretically possible for bidders to collude in a carve up of the market, by using their bids as signals.

Why is the current British auction apparently free of such difficulties? One reason is that there are more licences (five) than there are suppliers of second-generation mobile-phone services (four). Because the licences are being sold simultaneously and bidders are limited to one licence each, it is certain that one new entrant is always in the auction. This disposes of the risk that incumbent operators can snap up the licences cheaply, and means that the market cannot be carved up by collusive bidding.

A second feature of the auction is that the licences grant the rights to different amounts of spectrum. The biggest, licence A, is reserved for new entrants such as TIW, a Canadian group, and Spain's Telefonica, which explains why it is likely to be bought for less than the next biggest, B (see table). The three smaller licences are all the same size. This would make one common type of auction—using sealed bids—tricky: a bidder might win licence C, say, only to discover than it would rather have won licence B, even if it had to pay more than the winner of the bigger licence. So, as in the American spectrum case, ascending bids have been used. After each round, any participant that does not lead the bidding for any of the licences can top an existing leading bid.

An ascending auction ought to remove another common problem with auctions, the "winner's curse". This strikes when a successful bidder discovers too late that his prize is not worth what he paid for it. Some critics of the scale of the bids seem to see the curse at work. Yet the winner's curse is much likelier in sealed-bid auctions, where bidders lack an important piece of information about the value of the asset: the valuations of other, perhaps better-informed, bidders. In an ascending auction, however, that information is clearly revealed.

Add to that the fact that the bidding companies have spent huge sums already on working out how much a third-generation licence is worth to them, and the risk that they are overpaying to get one looks smaller again. And if they are getting carried away and are offering too much nonetheless? That's their problem. ■

**Going, going...**

Top bidders for third-generation mobile phone licences
April 13th, after 121 rounds

| Licence | Bidder | £bn |
|---|---|---|
| A | TIW | 3.91 |
| B | Vodafone | 4.55 |
| C | Telephonica | 3.41 |
| D | NTL Mobile | 3.30 |
| E | Orange | 3.35 |
| Total | | 18.51 |

Source: Radiocommunications Agency

## OKONOMOS

Going, going Ouch!

Whenever governments sell something, two major problems arise: how to sell it and for how much. Be it the public sector or the radio spectrum, cricket telecast rights or electricity, the problem remains the same — of method and valuation.

At first, before people wised up to the possibilities which sweetheart deals offered to politicians, the sales were usually of the beauty contest kind. You got it because some politician liked your face.

But soon it became clear that this was really quite the worst way of conducting the sales. Someone then suggested auctions and, since it looked as if these would solve both the above problems, they caught on.

Except that they didn't. For the last 10 years, there have been several instances where auctions, in fact, went dreadfully wrong, and everyone ended up with egg on their faces.

The reason, says Paul Klemperer* of Nuffield College, Oxford University, is that you need to design the auction properly. In a paper that he presented at the Indian Statistical Institute, New Delhi, recently, he tries to show how the devil lies in the details, and if auction designs are copied blindly without adjusting for local conditions, the whole objective can be defeated.

For example, he describes what happened in a 1999 German spectrum auction of 10 licences. There were only two bidders, A and B. A bid a low price for the first five licences and a slightly lower price for the five.

Upon which, the managers of B said, "There were no agreements with Mannesman but the first bid was a clear offer." Clearly, A had signaled something to B, and that signal had been received as intended.

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What was the signal? It being a simultaneous ascending auction in which the new bid had to exceed the previous one by 10 per cent, A bid the precise figure of DM18.18 million. B now had to bid 10 per cent over that, ie, almost DM20 million for the next batch.

And that is precisely what it did, and there were no other bids. Result: A and B neatly divided up the licences at the lowest price. The outcome would not have been more satisfactory from their point of view if they had actually colluded.

There was a similar case in the US where a spectrum auction was expected to raise $1,800 million but yielded only $14 million. This happened because the bidders used final three digits of the multi-million bids to signal the ID numbers of the areas they wanted.

This suggests that the real problem is to eliminate collusion through signaling. This, says Klemperer, can be achieved partially by first price, sealed bid auctions but even there it is necessary to keep the local factors in view while designing the auction.

Of particular interest is the design that makes one bidder the most likely winner. This prevents others from entering the bidding as happened in Glaxo's takeover of Wellcome in 1995.

There is then the problem of the 'winner's curse', wherein the winner finds that although he has been successful, he has bid far more than the object actually worth. This leads to all kinds of rational choices behaviour, with fairly unpredictable consequences.

The moral of the story: every auction has to be customised, and anyone trying to get a design off the shelf is asking for trouble.

*What Really Matters In Auction Design

http://www.nuff.ac.uk/economics/people/klemperer.htm

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