3G RACE

Spectrum on the Block

Hong Kong has made the right decision. Auctions treat companies fairly and yield greater benefits for consumers and taxpayers.

BY PAUL KLEMPERER

In choosing an auction over a beauty contest to allocate third-generation mobile services, Hong Kong's Office of the Telecommunications Authority has clearly made the right decision. While the exact details of the auction's design will be crucial to its success (and some parts of the government's consultation paper do give cause for concern), there is no question that auctions are almost always the best way to allocate radio-spectrum licenses.

Why? First and foremost, a well-designed auction is the most likely method of allocating resources to those who can use them most valuably. Rather than rely on government bureaucrats to assess the merits of the business plans of competing firms, an auction forces businessmen to put their "money where their mouths are" when they make their bids. The auction, therefore, extracts and uses information unavailable to government.

Second, even if government did have access to good information (the lamentably poor estimates of governments of the money that spectrum auctions would raise are just one illustration of how little government knows), allocation by bureaucrats leads to the perception—if not the reality—of favoritism and corruption. In fact, some governments have probably chosen beauty contests precisely because they create conditions for favoring "national champions" over foreign competitors. This is unlikely to benefit consumers or taxpayers.

Third, an auction can raise staggering sums of money to support public finances. The United Kingdom's 3G auction yielded $34 billion, about 2.5% of gross national product, or enough money to build 400 new hospitals. A beauty contest, by contrast, can give away valuable assets at a fraction of what they are worth.

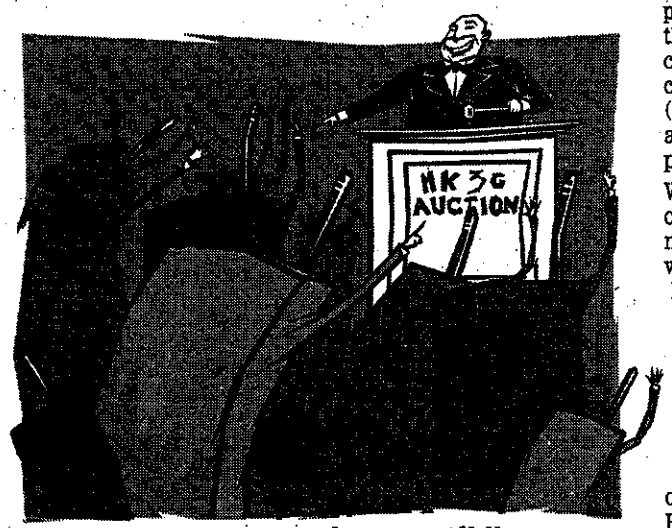
Those who advocate beauty contests should say how they would prefer to fund government. Do they prefer higher income taxes? The distinguished economist Martin Feldstein recently estimated that every extra $1 of income tax raised in the U.S. costs the economy an additional $2 in deadweight losses caused through the disincentives to earn, and the misallocation of resources to avoid taxes. Mr. Feldstein's estimates may be overstated, but charging companies for spectrum incurs none of these additional costs.

Some have argued that costs of an auction will be passed on to consumers from operators in the form of higher prices. This would probably be true, in part, if the auction method were based on royalty payments. But the argument doesn't hold if the auction requires firms make once-and-for-all lump-sum payments.

Like any other businesses, telecom companies will charge prices that maximize their profits, independent of what the spectrum cost them in the first place. Take a more familiar example: housing prices. The price of new housing is no lower when the developer had the good fortune to obtain the land below its current market value (i.e., because it was bought before planning permission was available) than when the developer paid the full market value.

In either case, the housing market determines the price at the time the new housing is sold. There is no more sense in handing out free spectrum to telecom companies than in handing out free land to developers in the belief that this will lead to cheaper houses.

Of course, telecom companies (and land developers) have enormous incentives to argue the opposite, since they obtain large windfall profits if they can obtain a scarce resource for free. And it is true that consumer prices could be affected (even by past lump-sum payments) if, for example, an auction somehow allows firms to tacitly coordinate on higher prices. Or if companies fool politicians and regulators into agreeing that the auction is a reason for allowing artificially high prices (so, for example, permitting collusion). But with intelligent regulation these effects should be small.



ILLUSTRATION/ H. HARRISON

Finally, how practical is a beauty contest? Technology guru Nicholas Negroponte has argued that winners should be chosen according to which would guarantee the lowest costs to consumers, invest the most in infrastructure and stimulate creativity the most.

But how can firms guarantee consumer prices for five to 20 years in the future for products that we may not yet even be able to imagine? Infrastructure investment costs can be determined, but will it all be useful? How can government possibly determine which companies will be most creative? And how could government monitor and enforce any commitments made by those companies? How should government penalize a firm that turns out to be insufficiently creative?

And what should government's response be to a firm that is creative and develops a product with valuable unforeseen features but that is above the previously guaranteed price? It is hard to think of a more serious drag on innovation than pre-specifying future prices for products that don't yet exist.

Compared with the efficiency and transparency of an auction, the difficulties of specifying and evaluating criteria make the beauty contest a time-consuming and opaque process. So even a well-run beauty contest is likely to generate a legal challenge after the fact.

Of course, the companies are taking huge risks, just as others do, for example, that invest in developing new aircraft. They might become huge croppers or make huge fortunes. Only time will tell. But in both the U.K. and Germany some licenses were won by companies who had no previous presence in those respective markets, proving that companies who were under no pressure to compete saw the risks as worth taking. (Indeed, in the U.K., one winner has already sold a share of its license at a profit.)

Whether the large license costs will speed or slow investment is ambiguous; arguments can be made in both directions. But what is clear is that the companies that have invested in licenses have done so because they believe it is in their own business interests to do so.

Certainly an auction needs careful design to work well. Occasionally—for example, when there are too few potential bidders, or large costs supplying necessary information to them—a form of structured negotiations may be better. But the general rule is that auctions treat firms fairly and transparently, and yield the greatest possible benefits for consumers and taxpayers.

Since the full details of Hong Kong's procedures have yet to be established, it's difficult to speculate how successful its auction will be. Lump-sum bidding should yield lower consumer prices and less economic distortion than royalty bidding, although royalty bidding might encourage entry into the auction. Incorporating a sealed-bid element into the design would also encourage entries and reduce scope for collusion. But the devil is in the details.

We will need to see OFTA's final package before making a definite judgment. In the meantime, however, it is to be congratulated on a very big step in the right direction.

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REVIEW & OUTLOOK

Designing Asia's Auctions

Selling spectrum is a tricky business.

Hong Kong's decision to reverse course and auction off licenses for third-generation mobile phone systems is symbolically important for Asia. The arguments that bureaucrats were better able to decide which companies would best serve customers' needs ultimately didn't hold water. Governments everywhere are now under pressure to abandon "beauty contests" and capture revenue from the sale of radio frequencies. This would be good for Asia's taxpayers and its consumers—the treasuries would take more of the value for the use of a common resource, and licenses would go to those firms which value them most highly and so are likely to put them to best use.

However, Hong Kong's consultation paper shows it is leaning toward a complex system that would require network operators to open up part of their capacity to other companies. It's hard to see the point of this, since it disadvantages the bidders. They are taking the risk of plunking down the money for the right to build out a new, unproven technology, and then if things go well they will have to allow in competitors who didn't take that risk. That seems a recipe for depressing the value of the franchises on offer.

Even if Hong Kong goes for a more straightforward auction, there are plenty of pitfalls ahead. Auction expert Paul Klemperer, who writes nearby on this issue, often says that the devil is in the details. He helped design the United Kingdom's spectrum auction back in the spring, the one that brought in $34 billion. After deciding on such a process, the characteristics of the individual market must be taken into account. The U.K. set three goals for its auction, in descending order of priority: efficiency, competition and revenue. Those seem like a worthy starting point for any government. But how to achieve them?

The first step is to recognize some corresponding problems: predation, entry deterrence and collusion. Where there is a small number of licenses available, incumbent firms may try to intimidate new entrants from bidding aggressively by signalling their intention to top all bids. Firms may band together into coalitions to match the number of licenses available, or use other signalling methods, all in order to divide up the spoils and spend less.

Problems often arise because auctions are "asymmetric," meaning the participants are not all created equal. Since an incumbent has certain advantages, like the ability to sell the new technology more quickly to its existing customer base, it's accepted that it can afford to bid higher. Knowing this, new entrants may assume that if they outbid the incumbent they are overpaying, and so may choose not to participate at all.

Thus in some cases it may be best to use a sealed-bid auction, since challengers must come to their own calculation of the value of a franchise. As a result they have a chance of winning and may be more aggressive, which in turn raises more revenue. This compromises efficiency, however, since it is more likely that the winning bidders will overpay. Mr. Klemperer has suggested one solution is to use a hybrid "Anglo-Dutch" auction, in which participants typically bid in the open until two are left, and they then submit sealed bids for the final prize.

If governments do decide on ascending auctions, it's generally a good idea to offer more licenses than the number of incumbents. This means that challengers know they have a chance, and so are more willing to participate. Competition among the new entrants reduces the power of the incumbents to dominate the field.

It's important to remember that auctions are actually information-gathering exercises—when they work, they allow governments to discover how much something is worth, and to charge that fair price. The object is not to gouge companies and consumers, as proponents of beauty contests like to charge. A properly run auction will not drive companies into bankruptcy, because it will encourage them to behave rationally, but neither will it allow them to rig the result and pocket windfall profits. That's why it's advisable that as Hong Kong and other Asian countries sell 3G licenses—yes, others will likely follow the trend—they pay close attention to the mechanics of the process.

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The Bishop and Beijing

China moves to restrict Catholicism in Hong Kong.

Bad habits are hard to break, but Beijing seems intent on intensifying its worst traits. It has stepped up its attack on the Roman Catholic Church in China since Pope John Paul II canonized 120 Chinese martyrs on Sunday. Now it has emerged that China is even throwing its anti-religious weight around in Hong Kong.

state-sponsored Patriotic Association. The clerics have been sent to "study camps" for brainwashing exercises where they are quizzed on the proper way to behave and speak in China.

The renewed crackdown also manifests itself in the resurrection of hyperbolic communist rhetoric. Beijing responded to the canonization

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Efficient, equitable and highly lucrative

Critics of government auctions of third generation mobile telephone licences have got it wrong



MARTIN WOLF

The auction of so-called "third generation" mobile telephone licences has turned into a treasure trove. In the UK, the Treasury won £22.5bn from its auction of five such licences. The German government is expected to raise up to DM120bn ($59bn) from its auction of six licences. But some complain that these governments have made a terrible mistake. These critics are wrong: selling the spectrum is exactly what governments should do.

Nobody has been more forceful than Nicholas Negroponte, director of the Media Laboratory at the Massachusetts Institute of Technology. He has attacked the British government for imposing what he calls an "economically unsustainable" tax on internet technology and urged other countries not to follow this example. The core of his complaint is that the sums raised will be just a tax on consumers and on innovation. He would have preferred a beauty contest in which bureaucrats reward companies for their promises to offer the lowest prices, install the most infrastructure and put the most telephones in schools and public places.

Prof Negroponte is mistaken. A well-designed auction is both the most efficient and fairest method of allocating a scarce resource, such as radio spectrum. It is the most efficient, because licences will go to those who value them most. It is the fairest, because it ensures that the economic value goes to the community, while eliminating the favouritism and corruption inherent in bureaucratic discretion.

In the UK, there were five third-generation licences, four incumbent operators and a limit of one licence per operator. The designers of the auction reasoned that, with one new entrant bound to succeed, there would be several aspirant entrants – in the event there were nine. They also concluded that there would be little opportunity for collusion.* In the event, 150 rounds of bidding ended up delivering roughly 10 times as much money as the government had expected.

In setting their limits, bidders had to work out the profit-maximising use of a licence, while taking into account the impact of not possessing one on an existing business. The maximum sum worth paying for a licence is the present value of the expected net cash flow to be derived from it, discounted at the company's own cost of capital (with the cost of the licence itself omitted).

As the government said: "Bidders will be paying a cost determined by the auction . . . instead of a licence fee fixed by the government. This allows the market to determine the commercial value of scarce radio spectrum. The amount that operators will bid is determined by their overall business plans and the expected prices for third generation services and not the other way round."**

When critics complain about such auctions, they have to be saying one (or more) of four things: that the government should have made a present of the excess profits – or, more exactly, of the scarcity value of the spectrum – to the likes of Vodafone AirTouch and British Telecommunications; that the managers and owners of these companies are incapable of working out what a licence is worth to them; that taxpayers should protect shareholders against their own irrational exuberance; or that the interests of taxpayers should be sacrificed to those of relatively well-off consumers. These propositions are ridiculous, outrageous, or both.

It is perfectly possible that the victors have been over-optimistic and will suffer from the "winner's curse". But this should be of little concern, since the licences are "sunk costs" and are unlikely to have any long-term effect on pricing.

A company maximises profits by trying to equate incremental costs to incremental revenue. But a licence can have no impact on incremental costs, because its price is invariant, once obtained.

Even if the cost of licences had been zero, the prices companies would charge would be the same. They would then merely be able to earn vast excess profits from the scarcity of the spectrum. Similarly, if it turns out that they have overbid for the licences, these unhappy winners will make negative excess profits – good old-fashioned losses, in other words. But again the prices they charge will be determined by the intersection of incremental costs and revenue. They will be unaffected by something that they are no longer in a position to change.

Since bygones are bygones, companies will be unable to save themselves from any prospective losses on the cost of the licences, unless – heaven forbid – the government gives them their money back. In this case, the size, diversification and value of these companies make bankruptcy almost inconceivable, not that that would matter much either. Instead, shareholders will not receive the spectacular returns that underpin current market valuations.

If the companies have overbid, then, as John Kay has argued (FT, May 1) "the government will, with exquisite luck and timing, have raised £22.5bn of revenue, from frenzied buyers of technology stocks". This is wonderful: £22.5bn is close to £400 for every British citizen; used to lower debt, it will save the government some £750m a year in today's prices, in perpetuity.

Imagine the outrage if the government had suggested giving £22.5bn outright to the five winners of the auction. Not to have held this auction would have been the exact equivalent of that giveaway. The government has done exactly the right thing. It deserves the highest praise.

* *Paul Klemperer, What Really Matters in Auction Design, www.nuff.ox.ac.uk/economics/people/klemperer.htm.*

** *Auction of Third Generation Mobile Telecommunications Licences in the UK: Frequently Asked Questions, www.spectrumauctions.gov.uk/index.htm.*

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