

Afghanistan spectrum auction

Insights from the ARTA's multi-band spectrum auction

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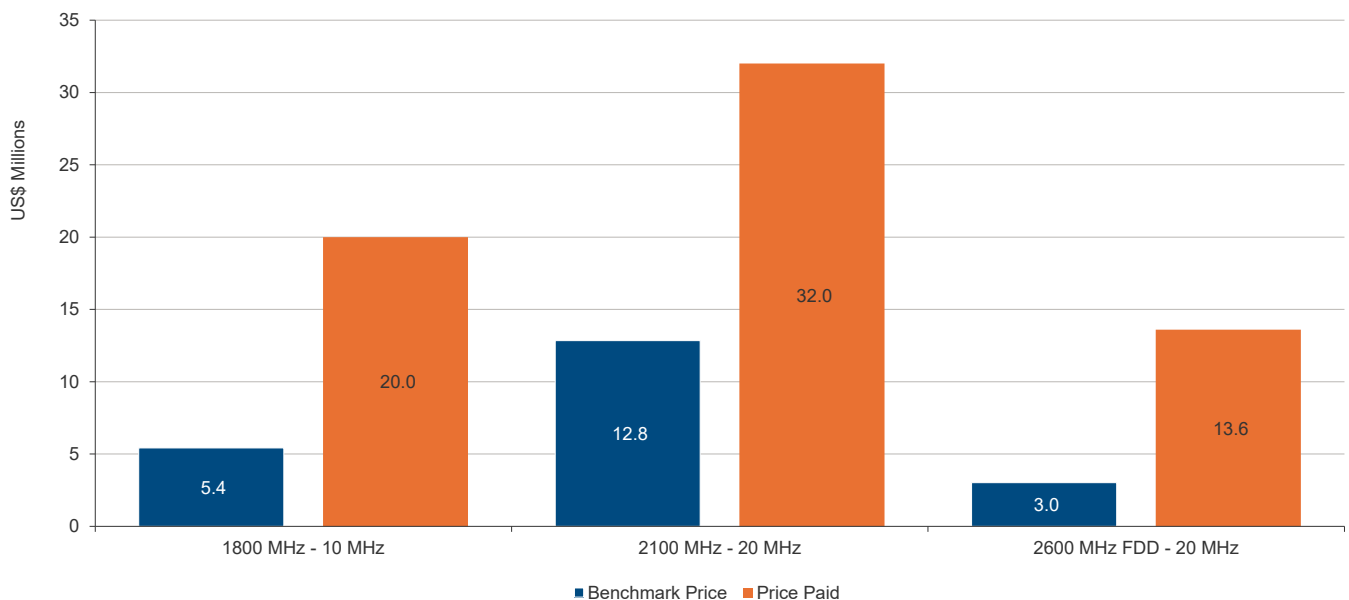
The Afghanistan multi-band spectrum auction

In April 2024 the Afghanistan Telecom Regulatory Authority (ATRA) announced the results of its spectrum auction for frequencies in the 1800, 2100 and 2600 MHz bands.

Etisalat and Roshan each secured 2 x 5 MHz in the 1800 MHz band for circa US\$ 20m and US\$ 19m respectively. MTN walked away with 2 x 10 MHz of 2100 MHz for US\$ 32m and Etisalat and AWCC each acquired 2 x 10 MHz FDD spectrum in the 2.6 GHz band for US\$ 13.6m and US\$ 13.4m respectively.

Coleago has been maintaining a proprietary database of spectrum auction benchmarks since 2000. If we compare the prices paid in Afghanistan with average auction prices after taking account of outliers, competitiveness of the auctions, relative differences in wealth, currency, inflation, etc., the prices paid in Afghanistan look expensive.

Exhibit 1: Afghanistan spectrum auction results



Source: ATRA, Coleago Spectrum Auction Database

The high prices can largely be attributed to high reserve prices, although the final prices for 1800 and 2600 MHz were at premiums in the range of 15% to 25% above the reserve and the 2100 MHz was particularly expensive at 2.7x the reserve price. There is considerable research linking high spectrum prices to reduced investment, lower network performance and higher consumer prices and so the results will be disappointing for the people and businesses of Afghanistan.

A challenging auction format

Perhaps the most interesting feature of the auction was the choice of auction design. The ATRA elected for a sequential series of combinatorial, first price, sealed bid auctions.

Whilst an auction that simply involves writing a number in an envelope and a rule that says the highest bid wins and they pay their bid may appear simple, from a bidding strategy perspective, this is already a challenge. You do not want to bid above your spectrum value because if you win, you have destroyed value. If you bid your value, if you win, you neither make a profit nor a loss, so what is the point? You therefore want to bid less than your valuation - the challenge is, it is really hard to know how much less to bid when you do not know the valuations of your competitors and they are asking themselves the same questions about you and other bidders!

Whilst a standard first price, sealed bid auction is hard enough, adding a combinatorial element, which allows you to bid for different combinations of spectrum, makes the bidding decision even more complex. In a combinatorial auction, the winning combination will be the one that maximises overall auction revenues. The problem here is that when placing a combination of bids, a bidder will effectively be bidding against itself as well as the other bidders. So, a bidder might be better off simply bidding aggressively for their preferred package in an all-or-nothing strategy, but then if they do lose, they may end up regretting not having bid for, say, a smaller package and increasing the chances of winning something. The simple, first price sealed bid auction just became a whole lot more complicated.

Where it gets even more difficult is when you plan to hold a sequential series of combinatorial, first price, sealed bid auctions for spectrum frequencies which can largely be seen as substitutes for each other. This means that if you win one frequency band, your valuations for the other bands decline.

In a sequential series of auctions, the bidder has to think about what price they might pay in the last auction when bidding in the first auction. If they win in the first auction at a high price and then later realise they could have won similar spectrum at a lower price in the final auction, they will suffer regret and will have to have a difficult conversation with their shareholders. Conversely, if they bid low in the first auction and lose and then bid high in the final auction and win but realise they could have won in the first auction with a bid that was lower than their winning bid in the final auction, well then that is another difficult conversation. In this brief analysis I have only scratched the surface of the complexities and challenges presented by this auction design. Bidders will have faced an unenviable challenge in deciding what to bid.

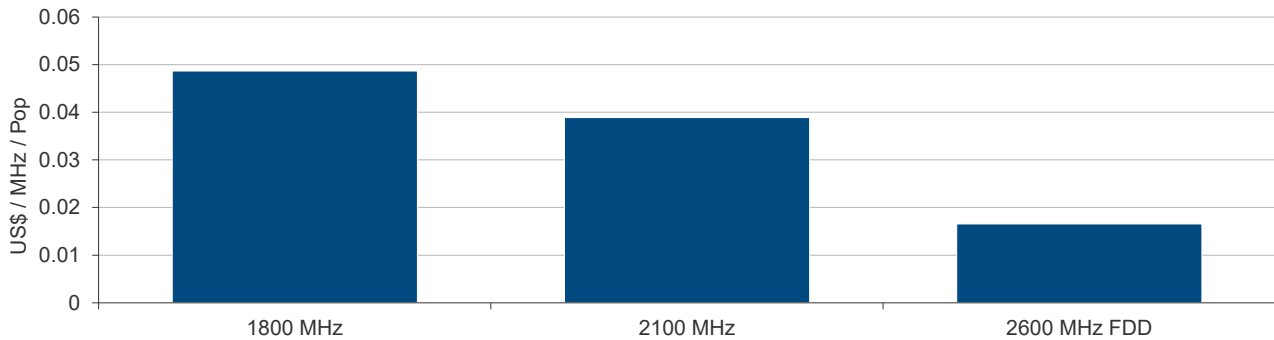
Differences in spectrum prices

Another feature of first price, sealed bid auctions which is worthy of note is that different bidders can end up paying very different prices for similar spectrum. In theory, a CEO should not care if they paid the highest price, provided the price was lower than their valuation, but they always do care, a lot!

Spectrum holdings in the 1800 and 2100 MHz bands are increasingly being seen as close to perfect substitutes for each other in terms of device ecosystems and propagation. This is reflected in the mean spectrum auction benchmark prices, expressed in terms of US\$ / MHz / Pop, being identical – the market sees little difference between the two bands.

As the chart below shows, the actual prices paid in Afghanistan show significant variation. This is to be expected in the case of a comparison with 2600 MHz, but we would not have expected to see the 25% variation between the 1800 and 2100 MHz bands which was the case in the Afghanistan auction.

Exhibit 2: US\$ / MHz / Pop



Source: ATRA

This highlights the additional challenge of first price, sealed bid auctions – bidders can end up paying materially different prices for identical spectrum. On the positive side however, what this also demonstrates is that operators did not collude to try and collectively pay lower prices. One of the advantages of a sealed bid auction format is that it is much harder for bidders to coordinate their bidding.

Summary

In many ways the auction was a success. All the spectrum was assigned which is good for efficiency and the process appears to have been transparent and fair. Furthermore, a significant amount of revenue was raised which we must hope will be put to good use. The key message however is that what regulators might believe is a simple auction design is often far from simple and can result in significant forms of auction failure. It would appear that in the case of Afghanistan, the regulator managed to avoid a potential disaster.

About Coleago Consulting Ltd

Graham Friend, M.A., M.Phil., (Cantab), ACA, is an economist, an award-winning author and the Managing Director and Co-Founder of Coleago Consulting. Coleago is a specialist telecoms strategy consulting firm and advises regulators and operators on issues relating to spectrum, regulation and network strategy. If you would like to discuss any of the issues raised in this paper or learn more about the benefits of conducting a Strategic Spectrum Review, then please contact Graham.



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