



# AUCTIONS: SUCCESS OR FAILURE?

**CHARLEY LEWIS** presents part 2 of his discussion of spectrum allocation and auctions, including what lies ahead for South Africa

**F**rom the country summaries I set out in part 1 (*Intermedia*, October 2018), a number of issues have emerged as key factors affecting the success or failure of spectrum auctions. It is to a discussion of these issues that I now turn.

## REVENUE MAXIMISATION

Much of the emphasis in auction design, reporting and evaluation has been placed on the revenue raised. The prospect of substantial inflows into treasury and the consequent fiscal impact on borrowing may be very attractive (Morocco's GSM auction, for example, generated the equivalent of 5% of foreign debt), but is both short term and short-sighted in the view of many commentators.

For example, Bill Melody critiqued the early 3G auctions in the EU as having been designed simply to "extract maximum monopoly rents".<sup>1</sup> Thomas Hazlett too has noted how "revenue became a standard metric in scholarly articles assessing the first generation of wireless licence sales [where] auctions producing high receipts were 'successful' while countries with low prices were 'fiascoes'".<sup>2</sup>

Going up: on the phone at a shopping mall in Pretoria, South Africa

The country cases I noted in part 1 are replete with examples where the hunger for revenue maximisation effectively killed off the auction, with excessive reserve prices leading to a limited number of bidders as in Nigeria's auctions in 2013 and 2017, or no bidders at all as in the case of Senegal in 2016 and Nigeria in 2007.

The warning of Rod Sims, head of the Australian Competition and Consumer Commission (ACCC), is apposite: "I've said it before as we've seen the evidence: when governments downplay competition to sell monopoly assets for the highest price the economy loses out."<sup>3</sup>

Making revenue maximisation the primary objective of any spectrum auction, at the expense of ensuring proper allocative efficiency and of realising broader economic and social benefit, is clearly counterproductive.

## ECONOMIC IMPACT

There is extensive international research demonstrating the positive impact of ICT rollout on economic growth. Most widely cited in this

◀ regard is the seminal World Bank report linking broadband uptake to increased economic growth.<sup>4</sup> Sometimes overlooked is the report's extensive review of the literature, which makes much the same point, and its more statistically reliable finding that mobile diffusion too is strongly positively correlated with economic growth. (Also overlooked is that the report is a historical regression analysis and therefore unable to make national forecasts that ignore the country context. For mobile, it suggests that a 10% increase in mobile teledensity is associated with an increase in GDP of between 0.6% and 0.8%, with the effect more pronounced in low- and middle-income countries.)

A number of subsequent studies have confirmed the positive impact of both mobile telecoms<sup>5</sup> and broadband<sup>6</sup> on economic growth. To that growing body of increasingly incontrovertible evidence is an ITU report co-authored by Raul Katz and Fernando Callorda.<sup>7</sup> Taken together, this underlines the importance of sector development in promoting socioeconomic development, and hence the value of making the necessary spectrum available. Indeed, a cross-country study of Latin American countries demonstrates the "very large social benefits" – specifically a substantial "consumer surplus" of the order of "\$50 per capita" – that are "available to countries that make more spectrum available for mobile phone markets".<sup>8</sup>

The focus of spectrum policy, therefore, should be on its impacts on the economy and on socioeconomic development. In the words of one spectrum analyst, "The government's interest should be in the total level of investment, innovation, service delivery, job creation, and other social welfare benefits that arise from the [spectrum] licence, not in maximising the upfront payment."<sup>9</sup> This view is echoed by the ACCC's Sims: "The value of spectrum lies in the economic and social benefits it can provide to citizens and consumers, not in financial returns to the budget."<sup>3</sup>

### COMPETITION AND MARKET STRUCTURE

A number of commentators have pointed to the vested interests of incumbent licensees in the face of spectrum auctions, namely to keep spectrum out of the hands of rivals and new entrants, who might cut into market share and dent profitability. Sims, for example, has noted that "companies also put a high value on preventing their competitors or potential competitors getting access to spectrum".<sup>3</sup> Likewise, a report by a group of US auction experts points out that "part of the willingness to pay [by] the incumbent in the auction comes from the value of deterring new entry".<sup>10</sup> This market imperative has been manipulated in auction design to maximise revenues, where "economists [have] recommended auction rules to restrict competition in order to goose auction receipts".<sup>2</sup>

Turkey provides a telling illustration of the point, albeit unintentional on the part of the auction designers. In the early 2000s, one of the operators was able to game the two-stage design of the 3G auction in order to secure a monopoly, by bidding so high in the first round as to ensure no-one else

could afford to bid in the second (where the reserve price had been pegged to the value of the winning bid in the first round).<sup>11</sup>

It is for reasons like this that the UK's National Audit Office has called for a study into the "competitive operation" of markets as a pre-requisite to spectrum auctions.<sup>12</sup> Peter Cramton and his fellow researchers have identified a number of measures that regulators can deploy to strengthen the competitive outcome of auctions.<sup>10</sup> These include spectrum caps and spectrum set-asides, but also cover careful auction design, which might



**There have been attempts to couple the auction of spectrum with rural coverage.**



include "bidding credits". Longer term measures, such as careful band plan design and "antitrust" regulatory interventions are also recommended. Together these may well reduce auction revenue (for example, the set-aside that brought Three into the UK market was about \$240 million), but such revenue should not be a primary regulatory concern.

### UNIVERSAL ACCESS AND SERVICE

As we saw in the case of the 450 MHz spectrum auction in Brazil, there have been attempts to couple the auction of spectrum with the social goal of rural coverage. This effectively places a trade-off between the price of spectrum and the promotion of universal access and service under the auctioneer's hammer. For example, recent spectrum auctions in Denmark,<sup>13</sup> Germany<sup>14</sup> and Sweden<sup>15</sup> have sought to impose rural service provision obligations on successful spectrum auction bidders. A slightly different approach in the US proposes to redirect auction income towards universal access and service, requiring "10% of [spectrum auction] proceeds [to] be directed toward wireless infrastructure projects in rural areas".<sup>16</sup>

The notion of including universal service obligations in the auction of spectrum was first advanced by some years ago.<sup>17</sup> It aligns with the argument that links "high levels of broadband adoption in rural areas positively (and potentially causally)" with "income growth" and reduced unemployment.<sup>18</sup> A recent assessment of this now "commonplace" model concludes that, although "there have been some difficulties in enforcement... operators have generally been forced either to comply or return the licence", and hence that the "approach does seem to be a workable and competitive means of 'buying' the attainment of equity objectives".<sup>19</sup>

Rural coverage obligations have recently been attached to spectrum auctions by the French regulator, Arcep,<sup>20</sup> and by the UK's Ofcom.<sup>21</sup>

### CONSUMER WELFARE

There has been considerable speculation that high prices paid by licensees are passed on to consumers by way of high prices.<sup>22</sup> The GSMA, for example, argues that "high spectrum fees might be passed on to consumers in the form of higher retail prices

and/or reduced investment in infrastructure and services”.<sup>23</sup> Others are rather more equivocal, suggesting that consumer auction prices are treated by licensees as “sunk costs” and not passed on to consumers. They claim that empirical evidence suggests that the cost of a spectrum licence does not increase consumer pricing for wireless services.<sup>24</sup> Others, however, argue that the theory “stands in stark contrast with evidence that pricing decisions of real world firms display a sunk cost bias... [with most firms pricing] their products based on costing methodologies that treat fixed and sunk costs as relevant for pricing decisions”.<sup>25</sup> The regulatory imposition of long-run incremental cost (LRIC) and similar costing models explicitly sets out to counter such pricing methodologies.

It has further been suggested that consumer price impacts may be more affected by other factors, such as scarcity of spectrum and degree of market concentration. Research into the impact of spectrum auctions on consumer welfare seems, therefore, to be rather equivocal, and in need of further investigation to inform auction decision and design.<sup>26</sup>

## AUCTION DESIGN

It is clear from the preceding discussion that auction design is critical for the success or failure of any spectrum auction. Those auctions that have gone spectacularly wrong, as in the case of Turkey, have done so because of failure to plan properly, inability to anticipate unintended outcomes, and neglecting to consider opportunities for gaming the rules on the part of the bidders. Those auctions widely held to be successful, such as the 2001 GSM auction in Nigeria, reveal carefully considered planning and design. Poorly crafted auction rules may simply create perverse incentives in the marketplace, resulting in outcomes far removed from those intended. It is for this reason that auction expert Paul Klemperer stresses that “auction design is a matter of ‘horses for courses’... [since] each economic environment requires an auction design that is tailored to its special circumstances”.<sup>11</sup>

## WHAT ABOUT SOUTH AFRICA?

Considering the benchmark examination of countries in Africa and the BRICS countries I discussed in part 1, together with the discussion of the issues and challenges associated with spectrum auctions, what, then, are the implications for policymakers and regulators, and for South Africa in particular? What considerations are needed to inform and shape any engagement with the auctioning of spectrum?

Any venture into auctioning off spectrum in South Africa needs to take account of the policy context and the strictures of legislation. Under current legislation, although the regulator “controls, plans, administers and manages the use and licensing of the radio frequency spectrum” (except when it comes to representing South Africa at the ITU), and is authorised to “prescribe procedures and criteria” for the licensing of

spectrum,<sup>27</sup> there is no direct consideration given to auctions as a possible means for such licensing of spectrum.

Further, the regulation of spectrum is explicitly subject to ministerial policy. Indeed, spectrum is the first of nine specific issues on which the policymaking role of the communications minister is explicitly recognised.<sup>27</sup> The current spectrum policy, however, dates back nearly 10 years,<sup>28</sup> despite repeated promises to have it updated. It too gives no consideration to the possible auction of spectrum.

The country’s 2013 broadband policy, SA Connect,<sup>29</sup> recognises the critical role of spectrum in achieving its vision of universally accessible, affordable broadband for all by 2020. However, nowhere does it specify anything other than administrative procedure to assign spectrum. The policy is rather more equivocal in relation to high-demand spectrum, which appears to imply an auction model where it states that “the minister will issue a policy directive to ensure that high demand broadband spectrum is assigned on a fair value, competitive basis”.

Subsequently, the ICT Policy Review Panel went on to consider the question of auctioning spectrum. But it recommended that South Africa approach spectrum auctions with “discretion”, despite the attraction of the revenue, because they could “favour stakeholders with substantial resources and therefore not necessarily result in the greatest value”. The panel went on to recommend a “hybrid assignment model which combines elements of the current regime and market-based and spectrum commons approaches”.<sup>30</sup>

This does imply a role for spectrum auctions within an integrated, differentiated approach, but, as a recommendation, has no policy force. It was this policy lacuna, together with the longstanding delay in formally updating the spectrum policy, that appears to have prompted the regulator, ICASA, finally to embark on a process to auction off high-demand spectrum. In mid-2016 it issued an invitation to apply (ITA) covering four asymmetric lots of spectrum, with an overall asking price of R12 billion.<sup>31</sup> (ICASA’s impatience at the long policy delay also led it to issue draft regulations dealing with dynamic spectrum assignment and TV white spaces.)

The minister, however, with his eye on the imminent promulgation of a white paper setting out a specific set of measures involving high-demand spectrum and a wholesale open access network (WOAN), then went to court to prevent the regulator from proceeding. The resultant interdict required ICASA to hold off on the ITA pending a judicial “review” of its auction decision. Interestingly, the ruling reaffirmed the independence of the regulator, requiring that ICASA only need “consider existing national policy and existing policy directives” – rather than any in the pipeline.

The ensuing white paper,<sup>32</sup> which followed in short order, and which does reflect a revision of official government policy, effectively killed off ICASA’s spectrum auction plans. It is similarly concerned with how the existing “provision of exclusive rights to spectrum [in the hands of] a few players in the mobile market” constrains “growth and innovation”, and argues that spectrum assignment should be determined by the “social and economic value [of spectrum, which is] of greater importance” than mere “monetary value”. The subsequent draft Electronic Communications Amendment Bill<sup>33</sup> goes on to deal extensively with spectrum issues, particularly in relation to the role of the minister in respect of spectrum policy (the draft bill considerably diminishes ICASA’s role and independence in relation to spectrum management), and in relation to “high-demand” spectrum, its assignment to the WOAN, and its assignment by the regulator.

That position seems rapidly to be shifting, however, with high-demand spectrum now set for imminent release to operators.

Under pressure from incoming President Cyril Ramaphosa,<sup>34</sup> and in the face of research by the Council for Scientific and Industrial Research (CSIR) suggesting that the spectrum needs of the proposed WOAN are dramatically less than originally envisaged,<sup>35</sup> the minister has moved rapidly to bury the auction hatchet with the regulator.<sup>36</sup> ➔

◀ He is further in the process of finalising the necessary policy direction<sup>37</sup> empowering ICASA to proceed with licensing a substantial proportion of high-demand spectrum (the CSIR study suggests that the WOAN will require at most 135 MHz) in the 700, 800 and 2600 MHz bands.

While there is as yet no explicit mention of auctions as an assignment model, it seems likely that the “high-demand” nature of the spectrum in question will preclude any other approach. The draft policy direction does, however, enjoin the regulator to take into account a number of the issues discussed above – including universal access and service, market concentration and provision for new entrants – in addition to being preoccupied with linking the process to the licensing of the WOAN. ICASA, in turn, has responded by issuing a flurry of spectrum documents for public comment.

It seems likely, therefore, that South Africa will rapidly move to implement the auction model for the assignment of high-demand spectrum, albeit a model shaped by public interest objectives and complicated by the commitment to licensing a WOAN. It is an approach in which careful and complex auction design becomes paramount.

## IMPLICATIONS FOR SPECTRUM MANAGEMENT

A number of overall implications for the management of spectrum follow from the preceding analysis. These affect both those jurisdictions already engaged in spectrum auctions, and others contemplating dipping their toes in the muddy waters.

To begin with, international good practice and market trends, together, point to the need for a carefully considered, mixed approach to the assignment of spectrum: the kind of hybrid approach envisaged above by South Africa’s ICT Policy Review Panel. This implies a differential assignment of spectrum according to the characteristics of the band in question, and in accordance with unfolding market trends and evolving usage demands.

The administrative assignment model, as it currently exists in many jurisdictions, remains a useful model for many of the spectrum bands in developing countries. It is an approach that couples well with an administered incentive pricing (AIP) scheme of the kind implemented in South Africa, to realise fair value from the spectrum thus assigned, and to incentivise effective usage by licensees.

However, consideration needs to be given to the provision of additional licence-free spectrum for “commons” use, where appropriate, something that has been widely advocated in recent years.<sup>38</sup>

Consideration too may be given to the judicious introduction of spectrum auctions, where this is appropriate, such as for high-demand spectrum. Auctions should, however, clearly not be viewed primarily as a source of revenue generation, or, worse, narrowly motivated by revenue maximisation. Rather they should be considered as a market-based model to ensure allocative efficiency and to realise fair value from such spectrum.

Such a hybrid approach needs to be supported by measures that seek to encourage innovation in the deployment and usage of spectrum. This may include provisions such as the promotion of spectrum refarming, spectrum trading, and dynamic spectrum assignment (including TV white space spectrum).

As we have seen, design and process management are critical success factors for any auction of spectrum. Where spectrum auctions are to be deployed, therefore, a carefully considered auction design needs to be employed, prioritising universal access and service, along with the key objective of ensuring benefits to the market, the economy and society, including users and consumers as key constituencies. This may require the use of spectrum caps to ensure equitable access to spectrum, the imposition of coverage requirements to promote universal access and service, and the specification of set-asides to facilitate market diversity.

It is also clear that the auction model for the assignment of spectrum needs further research – to investigate the market, economic and social impacts of auctions; to identify which spectrum bands might be suitable for auction-based assignment; and to develop and design appropriate measures to ensure the outcomes of such auctions generate long-term benefits in the public interest.

While spectrum auctions are clearly here to stay, their adoption needs to be far more carefully considered, and their implementation far more carefully managed. The lessons distilled here, on the basis of a benchmark consideration of comparator deployments, hopefully form a basis for such a consideration, and offer some assistance towards the further development of spectrum policy.

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