A perspective on spectrum auctions: when and when not to use auctions?

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David Abecassis
Analysys Mason is a globally trusted adviser on telecoms, media and technology

- Analysys Mason is a trusted adviser on telecoms, technology and media. We work with our clients, including operators, regulators and end users, to:
  - design winning strategies that deliver measurable results
  - make informed decisions based on market intelligence and analytical rigour
  - develop innovative propositions to gain competitive advantage
  - implement operational solutions to improve business efficiency
- With around 235 staff in 12 offices, we are respected worldwide for our exceptional quality of work, independence and flexibility in responding to client needs
- For 25 years, we have been helping clients in more than 100 countries to maximise their opportunities
We have recently worked on topics that are at the forefront of thinking for leading Asian telecoms and media entities

### Mobile

**New business opportunities**
- Developed a mobile data strategy for a mobile group, assessing big vs. small screen opportunities
- For a retail bank, developed its mobile banking strategy
- Valuation and successful acquisition of LTE licence

**Cost rationalisation**
- Assisted two operators in developing a network sharing plan
- Bottom-up network cost modelling (including broadband)
- Strategic investor in outsourcing call centre

### Fixed and broadband

**NGN networks strategy**
- Advised an operator on its strategic approach to a new FTTH network
- Technical and procurement review for a large government-supported NGN

**Enterprise infrastructure investment and market review**
- Assessed the costs and benefits of a lease versus build model for its enterprise fibre network
- Market sizing and growth strategy for managed services

### Media and content

**New pay TV/OTT business models**
- Advised a quad-play operator on the risks from new content business models and strategy to prevent fragmentation of traditional pay-TV distribution
- App store ecosystem development for mobile group

**Broadcasting/Content**
- For a leading TV broadcaster, defined a vision and strategy to enter content production and distribution
- Business plan development for sports channel for market entry into a large South-East Asian country

### Spectrum, policy and regulation

**Digital dividend**
- Defined the strategy for digital dividend spectrum for a leading regional regulator

**National broadband plan policy**
- Prepared a national broadband plan to address existing barriers to development of the market – 2 markets

**Regulation**
- We helped diagnose content exclusivity and its impact on competition for a regulator
- Digital dividend spectrum lobbying support for operator
Auctions are a relatively recent way to assign spectrum, but are in many cases superior to alternative options if complexities can be mastered

- Policy makers and spectrum managers are responsible for ensuring that radio spectrum, as a scarce public resource, is used in a way that optimises the public’s requirements and best interests
- A few core principles are now widely agreed upon: transparency, fairness, economic efficiency
- Policy objectives can vary: raising revenue, promoting competition or contestability (entry), service quality and ubiquity

<table>
<thead>
<tr>
<th>Administrative assignments</th>
<th>Beauty contest</th>
<th>Auctions</th>
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<tbody>
<tr>
<td><strong>Pros</strong></td>
<td></td>
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<tr>
<td>Easy to implement policy objectives / obligations</td>
<td>Easy to implement policy objectives / obligations</td>
<td>Transparent</td>
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<tr>
<td>Simple / fast / low cost process for the spectrum management entity</td>
<td>Can enable competition on non-monetary dimensions (e.g. coverage, pricing)</td>
<td>Fair and economically efficient, if well designed</td>
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<td><strong>Cons</strong></td>
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<tr>
<td>Lack of transparency</td>
<td>Criteria may not be transparent / fair</td>
<td>Difficult to implement contestability in mature market</td>
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<td>Potential for unfair practices</td>
<td>Potential windfall gains for successful applicants</td>
<td>Complexity in designing the process and rules of auction</td>
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<td>Does not necessarily promote economic efficiency</td>
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<td>‘Winner’s curse’, spectrum price can be passed onto consumers if competition is insufficient</td>
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<td>Spectrum pricing can be contentious</td>
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In Asia-Pacific, auctions are gaining traction, but recent examples highlight the difficulty to balance competing objectives.

**Spectrum auctions in Asia-Pacific**

- **2.3GHz (2012)**
- **850MHz (2011)**
- **1800MHz, 2.6GHz (2009)**
- **2.0GHz (2001)**

- **800MHz / 1800MHz (2011)**
- **2.1GHz (2011)**
- **2.3GHz (2005)**
- **2.0GHz (2001 / 2000)**

- **2.0GHz (2003)**

- **1800MHz (2011)**
- **2.0GHz (2010)**
- **2.5GHz (2005)**
- **2.0GHz (2001)**

- **800 / 1800MHz (2012)**
- **2.3GHz (2010)**
- **2.1GHz (2010)**

- **2.3GHz (2011)**
- **2.0GHz / 2.1GHz (2001)**
- **800MHz (1999/1998)**

- **2.3GHz / 2.5GHz (2007)**
- **2.0GHz (2003/2001)**
- **900MHz / 1800MHz (2002)**

**Two recent contentious auctions**

- **Thailand**
  - Oct 2012, 2×45MHz in the 2.1GHz band
  - New entry unlikely given the indirect value for existing concession-holders
  - Spectrum caps initially set at 2×20MHz, guaranteeing at least three licensees
  - Changed at the last minute to 2×15MHz, essentially determining the outcome
  - Bid value ended up very close to the reserve price
  - *In the end, was it really an auction?*

- **India**
  - Nov 2012, ca. 2×5MHz in the 800MHz band and ca. 2×15MHz in the 1800 MHz band in most areas
  - Designed to remedy issues with the “first come first serve” assignments in 2008, which were considered riddled with unfair practices
  - The auction was scuppered by excessive reserve prices, concerns about the regulatory environment, and much of the spectrum remained unsold
  - *Auctions must be carefully designed and cannot in themselves guarantee a level playing-field*

Sources: Analysys Mason Research’s Spectrum auctions tracker, 2012
Well-designed auctions enable price discovery and efficient assignments between bidders where there is excess demand

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<th>Objectives</th>
<th>Challenges</th>
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<td><strong>Transparency and fairness</strong></td>
<td><strong>Resist lobbying from incumbents</strong></td>
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<td>- Remove connections and political power from the equation (as much as possible)</td>
<td>- Who (understandably) want to protect their existing business</td>
</tr>
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<td><strong>Economic efficiency</strong></td>
<td><strong>Design the auction well</strong></td>
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<td>- Ensure that the spectrum is assigned to the party that values it most</td>
<td>- Ensure that all objectives are fulfilled</td>
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<td><strong>Price discovery / managing information asymmetry</strong></td>
<td><strong>Ensure all parties understand the rules</strong></td>
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<td>- Takes the view that economic value is best assessed by market participants</td>
<td>- To avoid clearly sub-optimal outcomes in complex auction processes (e.g. Swiss big-band auction)</td>
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The complexity of LTE-A spectrum provides a useful illustration of how auctions are essential to managing information asymmetry.

**Today:** 6 bands are ~90% of LTE deployments, limited multi-band deployments in each country – still manageable

**Tomorrow:** LTE-A (3GPP Rel. 11) will use 35 different bands, complementary or overlapping in different ways – not easy!
The two examples mentioned earlier unfortunately failed to fulfil these criteria, and their shortcomings were predictable (and widely predicted!)

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<th>Thailand</th>
<th>India</th>
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<td>▪ Specific situation where the concession regime for 2G made it hugely valuable for incumbent to acquire the spectrum</td>
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<td>– Limited scope for new entry, given this + market maturity</td>
<td>▪ India recently auctioned 2G spectrum licenses, after the Supreme Court cancelled several Telco licenses in 2012</td>
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<td>▪ Spectrum caps:</td>
<td>▪ The reserve price was set at too high a level (higher than final prices of last auctioned 2G and 3G licenses), discouraging operators from participating</td>
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<td>– Initially conceived to guarantee three-player market (2 × 20MHz out of 20 × 45MHz total)</td>
<td>– Only five operators won spectrum – including three who aimed to protect their existing investments in India</td>
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<td>– Later changed to 2 × 15MHz further to lobbying</td>
<td>– Only two operators – Bharti and Vodafone – were investing to improve their quality of service</td>
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<td>▪ Outcome: no new entry, spectrum acquired at (or very close to) reserve price</td>
<td>▪ Outcome: only 42% of all blocks put up for sale were auctioned</td>
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<td>▪ This illustrates how auction design and market conditions influence the result</td>
<td>– The government fetched less than a quarter of its revenue targets from the auction</td>
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<td>– <strong>Limited scope for entry + caps guaranteed no excess demand, and therefore pre-determined the outcome</strong></td>
<td>– <strong>Government focused on revenue maximisation (high reserve price – few bidders), instead of price discovery through efficient auction design (low reserve price – many bidders)</strong></td>
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Sources: TelecomAsia, Wall Street Journal, Business Times
What the focus on results show is the underlying assumption that bidders’ valuations are aligned with the auctioneer’s objective – not always true!

- As we have seen, auctions can help fulfil two core objectives in a transparent way:
  - Information asymmetry is managed – i.e. the auctioneer does not have to know the exact value of the spectrum and can elicit valuations through the auction process
  - The outcome is economically efficient – i.e. the party that values the spectrum most will get it
- However, what if economic efficiency is not the core objective of the auctioneer?
  - Some uses (e.g. emergency communications, defense) are not intended to produce output
  - There may be overriding objectives around dynamic efficiencies that are unlikely to be satisfied at auction (e.g. market entry which would in the long-run be efficient)
- In many cases, auctions can still be used if well-designed
  - One idea: could emergency services spectrum be preempted at auction in the same way as works of art are?

Example: PPDR / emergency services

- Emergency services are often confronted with communications difficulties in case of large scale accidents, weather phenomena or other disasters
  - Narrowband requirements (voice and messaging) are generally well-served
  - Broadband requirements are not catered for in a systematic way, however, and evidence shows real-time video is highly effective
- There are two key issues:
  - Can broadband requirements be catered for with existing PPDR spectrum / spectrum that can be rationalised?
  - What is the opportunity cost of assigning commercially interesting spectrum?
- In some cases, value is monetary (if there is a higher cost alternative); sometimes it is human and social (if there is no alternative)
  - This is a key case of tension between market-led mechanisms and non-monetary value, and other speakers will explore it in more details today
- Note that Hurricane Sandy will provide a wealth of evidence on how emergency services can use commercial LTE networks!

Sources: Analysys Mason, WIK / Aegis, Rakesh Bharania (disaster 2.0), Light Reading
Auctions are here to stay as a core tool for assigning radio spectrum; they must be used judiciously and designed appropriately

1. Well-designed auctions enable spectrum managers to carry out economically efficient, fair and transparent assignments, in a way that they cannot hope to do on their own because of information asymmetry and complexity (especially with LTE-A)

2. Badly-designed auctions may fail to satisfy each and all of these objectives – careful and professional preparation in a transparent regulatory context remains essential, and auctions are no substitute for good governance

3. In some cases, auctions will remain unsuited to assignments – but we believe the principles behind auctions could be applied more broadly than they are today
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