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> Spectrum 5.0: Policy choices for 5G Deployment

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The 5G spectrum background

- Governments in most countries face "...widespread public dissatisfaction around coverage, particularly outside urban areas." (Ofcom, 2016)
- Ofcom « Technical advice to Government on improving mobile coverage » (Sept 2018)

-> Signs of change in regulatory paradigm



5G: The EU high level perspective

European Commission

- « 5G Revolution » Across industries changeover: « Verticals »
- BEREC: « Reconcile competition & investment »



How does these considerations impact assignement methods?

- Spectrum auctions have been inspired by a very deep faith in the efficiency of market mechanisms
- Spectre assignment by auctions has become progressively prevalent in most European countries since the early 2000'.
- Arguments in favor can be summarized as follow:

- « Application in the case of spectrum of universally optimal market mechanisms. »

 « The radio spectrum is a public resource and governments have a duty to maximise the price paid users of that resource »

- « By their bids in auctions, telcos demonstrate their commitment to invest in network roll-out and mobile industry development »



Moderating influence weak

Opposition was either represented by:

- conservative proponents of administrative management of spectrum
- idealistic believers in over the board unlicensed, shared spectrum, etc.
- Neither was convincing enough to exert a moderating influence on spectrum assignment mainstream thought.



- Competition has indeed had a globally positive effect on telecommunications in particular and the digital industries in general.
- However, spectrum assignment rules and fees have imposed a heavy burden on mobile operators



That could have been considered justified and bearable in the exuberance of the bubble at the beginning of this century.

This illusion collapsed with the financial crisis of 2008.



Today...

- Slower than expected roll-out of 3G and 4G,
- Growing insatisfaction at Government level (UK, Germany, France, Italy, Sweden, etc) on speed of roll-out and population and geographic coverage
- Challenge of 5G business models

Series of factors coming together to question and provoke a *re-visiting of the generally accepted wisdom*:



Re-visiting the generally accepted wisdom: Auctions on fees-> negative impact on investments and the Telecom industry

 GSMA and NERA (2017) conclude: "Statistical evidence shows the impact on consumers and links high price outcomes with:
 Lower quality and reduced take-up of mobile broadband services;

•Higher consumer prices for mobile broadband data »

- Cambini & Garelli (2017)
 - spectrum fees and availability do not have significant impact on operators' revenue and investments.



Re-visiting the generally accepted wisdom: Auctions on fees->negative impact on investments and the Telecom industry

Commission study by PolicyTracker, LS Telcom & VVA (Oct 2017)

 « ...questions the common view that operators who pay high prices for spectrum must invest in their networks to recoup their investment.



Re-balanced Spectrum assignment core principles

- Pogorel/Bohlin 2017*
 - Learn the lessons of 15 years of wireless communications development
 - Maximising the return on public assets is no guarantee of industry development and global welfare
 - The state assets must be managed in the public interest: The state cannot behave as a private entity maximising its own income
 - Spectrum is a public resource to serve the public interest as government defined objectives
 - 2017*

https://www.researchgate.net/publication/316524026_Spectrum_50_Improving_assignment_procedures_to_meet_economic_and_social_policy_goals_A_position_paper



Spectrum assignement: Current thinking still too conservative

- Present assignment procedures do not incentivise the industry development in the expected manner
- Growing body of evidence that spectrum auctions do not stimulate network investments



 Defining Spectrum awards 5.0
 Competition is of the essence... *COMPETITION MEANS COMPETITION (Not only auction)*
 Competition should take place in network deployment, service provision

A « successful » spectrum award results in positive outcomes for the economy, not a race on frequency fees like we have done in the past



Focus now is on positive economic thinking, not abstract ECON 101 principles

Let spectrum people not be the last of the Mohicans







An end to Spectrum Assignment Schizophrenia

Governments say broad policy objectives are to be pursued

End of the day Governments, or Agencies in charge of license assignments, focus exclusively or primarily on maximising the fees they can derive from the spectrum auction



Re-balance spectrum assignment criteria

- Pogorel/Bohlin 2017*
 - Spectrum has no value in itself...Its value resides exclusively in the contribution It makes possible for society, the economy, public safety
 - <u>This</u> economic and social
 <u>contribution</u> is to be maximised
 - (Not frequency fees)

*https://www.researchgate.net/publication/316524026_Spectrum_50_Improving_assignment_proced ures_to_meet_economic_and_social_policy_goals_A_position_paper



Recent events are confirming the mood is changing and a paradigm shift is looming on the horizon:

- Realisation at EU that the digital europe perspectives is hindered by the burden of spectrum auctions
- EU RSPG to conduct « Peer reviews »
- France « New Deal »: Decision on 4G licence renewal without auctions, but with corresponding investments and speeded up network roll-out in February 2018
- Reduced expectations on the proceeds of the 5G auction in Italy (from 3.5 to 2.5 Bn Euros) in September 2018
- Japan endorsing « comprehensive strategic approach » for 5G spectrum
- Spain: July 2018 3.6 GHz fees paid in instalments
- Ofcom « Technical advice to Government on improving mobile coverage » (Sept 2018)



Spectrum awards 5.0 re-balanced criteria

Competitive Deployment commitments of bidders as criterion #1

Fees to the Government agency in charge #2



Sample investment incentive procedure

- **1. Competitive bidding on deployment objectives**
- "Those entitled to the use of the frequencies are identified, for each right of use, on the basis of rankings expressed by band and for the reserved lot, based on the deployment objectives offered through a system of competitive improvements, according to the modalities established in the call for tenders, starting from a pre-determined level, established for each lot."



Sample Procedure 2: Frequency fees

- Successful tenderers are required to pay a frequency fee for the relative rights of use, as a contribution to the use of radio frequencies. Those are based on the pre-determined amount, affected by a coefficient 0<X<1 corresponding to the investment effort.
- The pre-determined amount is defined by an international benchmark and an assessment of costs and profitability.
- A coefficient of 0 corresponds to 100% deployment -> no or minimal frequency fee
- Coefficient 1: no commitment-> full frequency fee





- Overcoming the concerns of the Ministry of Finance
- Major role played by Agencies in charge of national and regional development
- Monitoring the commitments of the operators



Thank you!

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