



ZOLTÁN PÁPAI – ALIZ McLEAN – PÉTER NAGY – GÁBOR SZABÓ – GERGELY CSORBA

THE IMPACT OF NETWORK SHARING ON COMPETITION:

THE CHALLENGES POSED BY EARLY VS MATURE 5G

ITS Conference Online Event
June 14-17, 2020

Introduction and main motivation

- 5G rollouts are under way, but promise to be very costly → network sharing
- Mobile network sharing agreements (NSAs): agreements between mobile network operators to jointly build/use (parts of) their network
 - Becoming more and more widespread since the 2000s
 - Main incentive: cost savings, but can also benefit consumers (faster rollout, better quality, etc.)
 - Agreement between direct competitors → potential restriction of competition → potential harm to consumers → competitive assessment may be needed
- **NSAs are already being made for 5G, yet we know little about how 5G changes their effects on competition and consumers – this is our focus**
 - 5G is not a uniform, simple service – so a careful case-by-case evaluation is needed
 - Early 5G and mature 5G differ significantly – so do their effects
 - We look at the three concerns where we expect 5G to bring the greatest change

Announced 5G NSAs in Europe

	New NSA or extension of existing NSA	New	Extension
Geographic Scope	Whole country	BE 2019 2G/3G/4G/5G 3 MORAN JV LT 2019 2G/3G/4G/5G 3 MOCN JV LV 2019 2G/3G/4G/5G 3 MOCN JV	SE 2018 2G/4G/5G 4 MOCN JV DK * 2G/3G/4G/5G 4 MOCN JV
	"Regional" - municipalities with number of inhabitants under a certain threshold	IT 2019 2G/4G/5G 4 MORAN JV	UK 2019 2G/3G/4G/5G 4 MORAN JV ES 2019 2G/3G/4G/5G 4 MORAN No JV
	Rural - only white or grey spots	DE 2019 4G/5G 3 MOCN No JV	-
key: Country #Date of announcement Technology generations #No of MNOs Type Form			

Competition assessment framework

Possible competition concerns that can be raised

Horizontal unilateral effects	Decrease in ability and incentives to compete due to the decreased differentiation of services between parties
	Decrease in incentives to compete due to fixed costs becoming variable
	Decrease in the ability or incentive to innovate
Horizontal coordinative effects	Increased commonality of costs
	Information exchange
Vertical effects	Access to MNOs to passive infrastructure
	Wholesale access to MVNOs to the operators' network
Unfair competitive advantage	Potential exclusion of operators not party to the NSA
	Excessive concentration of spectrum

This framework was originally developed and applied to NSAs till 4G in

Pápai – Csorba – Nagy – McLean (2020): *Competition policy issues in mobile network sharing: a European perspective*, Journal of European Competition Law and Practice:

<https://doi.org/10.1093/jeclap/lpaa018>

Early versus mature 5G

	Early 5G	Mature 5G
Deployment scenario	Non-standalone	Standalone
Time frame	From 2019	Expected after 2023
Relationship between 5G and 4G	5G piggybacks on 4G core	Independent
Spectrum used	Sub-6 GHz	Sub-6 GHz and mmWave
Densification	Moderate / Gradual	Widespread

Mature 5G promises certain features that could affect NSAs and their competition assessment, for example:

- Service-Based Architecture, Virtualisation: flexibility in introducing new services, can make differentiating services easier
- Network slicing: the possibility to define special-purpose networks that can open up new dimensions in differentiation
- Mobile Edge Computing: bringing the core closer to the end-user: possible partial core sharing

Main results of our paper's discussion

- Early 5G closely resembles 4G in its network and service capabilities; overall, it is closer to 4G than mature 5G and NSAs can be assessed as before
- For the significantly different mature 5G, we looked at three concerns in more detail. In general, they are not easy to substantiate, and may even be less grave than under 4G.
 - Loss of differentiation: the role of the core will increase – non-core NSAs result in smaller similarity
 - But partial core sharing could emerge, possibly exacerbating the concern
 - Cost commonality: market definition becomes more important, as in the „usual“ general-purpose network, the concern may lessen
 - But in new markets may become more severe
 - No safe harbour defined by authorities / courts
 - Vertical issues: the usual access concerns may arise, but remain hard to substantiate and easy to fix with commitments;
 - But new markets may need more careful assessment

Thank you for your attention!

Infrapont Economic Consulting
infrapont@infrapont.hu

Additional slides

The loss of differentiation concern under mature 5G

- Sharing implies certain aspects of the operators' services will become more similar to each other
 - Their technical autonomy decreases, therefore the ability and/or incentive to differentiate decreases → potential loss of rivalry?
- Up to 4G: hard to substantiate for authorities, but no easy fix for parties
 - Many aspects of differentiation are not RAN-related – unaffected
- Some changes with mature 5G
 - The relative importance of the core increases vs the RAN → smaller similarity due to RAN sharing
 - Broader choice in RAN sharing configurations → more possibilities to fine-tune an agreement
 - Possible *partial* core sharing → could increase the concern
- A contentious subject: coverage differentiation
 - NSA for the roll-out of a new network: coverage will become more similar – but most probably higher than in the counterfactual scenario
- Overall: concern expected to become less grave than under 4G
 - Relative increase in the weight of the core is the key factor

The cost commonality concern under mature 5G

- The concern: the proportion of costs that the parties share will increase → could it reach a level which enables and incentivises them to collude?
- No safe harbour defined by authorities / courts
 - Up until 4G: even when the full network is shared, we expect less than half of costs to be shared, because non-shared retail costs are substantial
 - Scope of the agreement matters: wider scope, higher commonality
 - Technology generations, spectrum bands, MORAN/MOCN, geographic scope, densification
- With mature 5G: market definition matters!
 - Emerging possible new markets connected to mature 5G services – for business customers → if shared, cost commonality could be higher

Vertical concerns under mature 5G

- The concern: parties may deny access to critical upstream inputs to downstream competitors
 - Such as: passive infrastructure, backhaul, wholesale mobile services to virtual operators
 - In general: difficult to substantiate, relatively easy to mitigate
- Passive infrastructure: there may be more incentive to share than before
 - Passive sites may become a bottleneck; more sites needed rather than dismantling existing ones
- Backhaul: will become more important, possibly involving more scrutiny – but can be mitigated by commitments
- Wholesale markets: new markets may emerge and need to be evaluated