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ECONOMISING ON NETWORK PROVISION WHILE PRESERVING COMPETITION: THE CHALLENGES OF 5G MOBILE NETWORK SHARING

30TH ITS EUROPEAN CONFERENCE
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5G network sharing is in the pipeline

Telefonica's O2 and Vodafone have stepped up their challenge to British market leader BT by extending their network sharing deal to cover 5G, enabling them to accelerate the deployment of the faster mobile service at a lower cost.

Reuters, TECHNOLOGY NEWS, JANUARY 23, 2019

"It's great to see competitors such as Vodafone and O2 putting their differences aside to ensure the speedier rollout of 5G services."
Ernest Doku, uSwitch

"UK 5G rollout is on the way and operators need to be more accepting of sharing infrastructure to ensure that coverage demands from consumers and businesses can be met as quickly as possible."
Ingo Flomer, Cobham Wireless

"The move is motivated by an aim to bring 5G services to market faster and to reach more customers in the most efficient and economical way."
Kester Mann, CCS Insight

Source: Network sharing could be key for enabling speedier 5G rollouts in UK
By *Paul Lipscombe*, mobile news - January 28, 2019

5G network sharing announcements in Europe

We know about 4 announcements, all of them are the 5G extension of existing NSAs :

- UK: Vodafone – Telefónica O2
- Spain: Vodafone – Orange
- Italy : Vodafone – TIM
- Sweden: Telenor – Tele2

Vodafone, being a party in 3 out of the 4 agreements, is an active promoter of 5G network sharing

Main motivating questions in the paper

- ❑ Are 5G extensions of other working network sharing agreements on the way? Will we see some new, too?
- ❑ Is 5G network sharing different than under previous technology generations?

Mobile network sharing agreements (NSAs)

A type of cooperation between competing mobile network operators to jointly use, manage and/or develop some of the network inputs required for their operations

Active NSA: at least part of the radio access network (RAN) is shared

RAN sharing:

- **MORAN** (only the RAN is shared)
- **MOCN** (spectrum is also shared)

From the consumers' point of view:

+ **Potential benefits to consumers:** Operators can economise on the costs associated with providing networks – savings may be passed on to consumers in various forms.
− **Potential harm to consumers:** Operators are direct competitors – these agreements could potentially lead to a restriction of competition.

Because of the potential restriction of competition, competition authorities and sometimes regulatory authorities become involved.

Some basic facts about the active NSAs in Europe

based on our collection, till start of 2019:

- Out of 17 active NSAs: 10 MORAN, 7 MOCN.
- 16 commercial agreements, 1 merger commitment (IT)
- In some countries there is more than one (SE, UK, FR)
- 10 out of 17 apply to all technology generation till 4G
- Geographic scope varies between rural only to national

A framework for NSA competition assessment

An NSA is a **production agreement – between direct competitors**: **assessed under Article 101 TFEU**

Not all NSAs are created equal! – The assessment of the balance of harm and benefits to customers is complex.

In a 2018 paper we prepared a **competitive assessment framework** we found useful for the analysis of up to 4G mobile network sharing practices, based on:

- ✓ the approach laid out in Article 101 of the European Treaty and the European Commission's Guidelines
- ✓ the understanding of the technology background
- ✓ competition economics
- ✓ competition cases and available guidelines

NSA competition assessment framework

Papai, Z. – Csorba, G.- Nagy, P – McLean, A. (2018): Competition policy issues in mobile network sharing: a European perspective

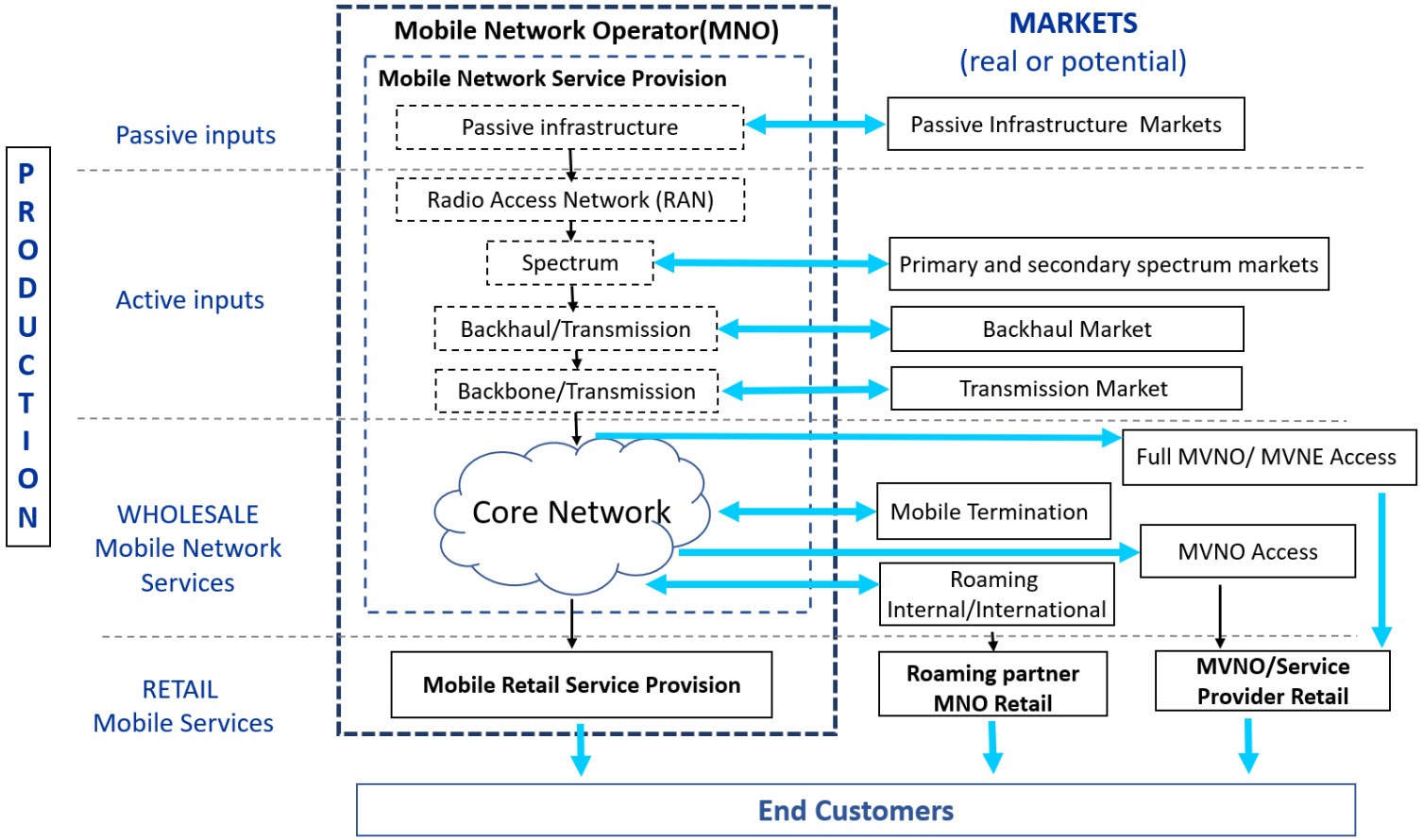
Institute of Economics - Centre for Economic and Regional Studies, Hungarian Academy of Sciences, Discussion Paper, MT-DP – 2018/28, 2018

It was presented at the 29th European Regional Conference of the International Telecommunications Society, Trento, Italy, 1st – 4th August 2018

The proposed framework for the competitive assessment of NSAs:

- ❑ possible competition concerns,
- ❑ main factors that influence their seriousness,
- ❑ ways to mitigate the concerns, and
- ❑ the principles of assessing efficiency benefits.

Mobile service production and related markets



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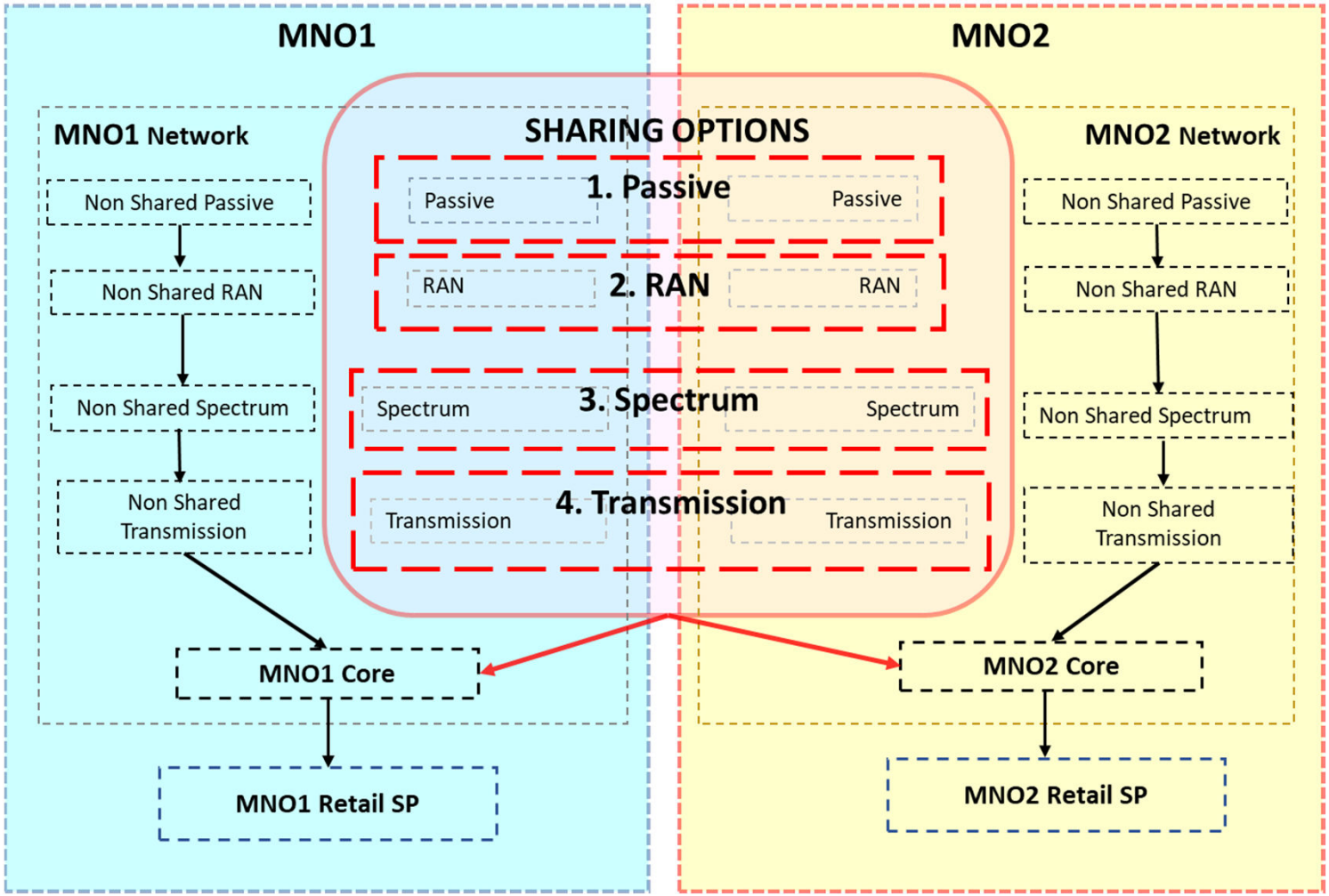
A general view of network sharing



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Possible competition concerns until 4G

Type of effect	Potential concerns
Horizontal unilateral effects	***1. Decrease in incentives to compete due to the decreased differentiation of services between parties*** *2. Decrease in incentives to compete due to fixed costs becoming variable*
Horizontal coordinative effects	***3. Increased commonality of costs*** ***4. Information exchange***
Vertical effects	*5. Access to MNOs to passive infrastructure* *6. Wholesale access to MVNOs to the operators' network*
Unfair competitive advantage	*7. Potential exclusion of operators not party to the NSA* *8. Excessive concentration of spectrum*

Will 5G competition assessment be different?

Some new characteristic features must be investigated in a 5G NSA competition assessment

- Cloud-RAN

  centralised, cloud-based architecture for the radio access network

- Mobile Edge Computing

  placing core computing and processing functionalities right at the edge of the RAN, closer to the end user

- Network Slicing

  "network slice is an independent end-to-end logical network that runs on a shared physical infrastructure, capable of providing an agreed service quality"

- Verticals

  new business models which will use a customised and optimised network hinged on the 5G network

- Implementation of new RAN features (in general)

Some 5G characteristics and potential concerns in a 5G NSA assessment

The relevance of three highlighted network sharing competition concern types in relation to 5G's characteristic features

	Horizontal **loss of differentiation**	***Coordinative*** **information exchange**	***Vertical***
C-RAN	*relevant*		
Mobile Edge Computing	*possibly relevant*	*relevant*	
New RAN feature implementation	*relevant*	*relevant*	
Network Slicing	*possibly relevant*	*relevant*	*possibly relevant*
Verticals			*relevant*

Thank you for your attention!

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Additional slides

Competitive assessment

A **production agreement – between direct competitors**: assessed under Article 101 TFEU. There are „**Horizontal Guidelines**" to aid assessment.

A two-step process:

1. **Is competition restricted**? Burden of proof on the competition authority.
2. If yes, then: **are there efficiency gains that outweigh the harm**? Burden of proof on the parties.

Some general observations:

- All concerns are assessed **separately in all affected** product and geographic **markets**. The methods used are very similar in each case, but the results could differ.
- The **market power** of the parties to the NSA is key and can substantially affect whether a concern arises.
- **Change** is very important: markets may be more or less competitive at the outset, but what counts is the change **due to the NSA,** compared to the appropriate **counterfactual**: the expected (future) situation on the market without the NSA.

Horizontal unilateral effects: differentiation

- The argument:
  - Certain aspects of the **operators' services will become more similar** to each other.
  - Their technical autonomy will decrease.
  - The possibility (and/or incentive) to differentiate will also decrease.
  - **The loss of differentiation implies a loss of competition.**
- The concern is **more serious for deeper agreements**:
  - *The more of the network is shared, the larger the geographic scope, the more technologies are involved, the more of the operators' spectrum bands are included.*
- There are strong counter-arguments:
  1. **Technical and commercial differentiation differ.** Many of the most important aspects of product differentiation are plainly commercial (pricing, bundling, marketing), and obviously unaffected. But even technical differentiation mainly takes place in the core.
  2. All NSAs so far leave **the core separate** – this is where most technical differentiation happens.
  3. **More similarity may mean better results for everyone** – e.g. increased, but identical coverage, better service quality.
- Overall, is **hard to substantiate**. But if it is, there is **no easy fix**.

Horizontal coordinative effects

Increased cost commonality

- The argument:
  - The **proportion of costs** that the parties **share will increase**.
  - It **may** reach a level which enables them to **collude**.
- The theory refers to **variable costs** only, but fixed costs may also be taken into account.
- The concern is more serious if the NSA is deeper.
- **No safe harbour** – but even when the full network is shared, we expect less than half of costs to be shared.
- Mitigation: no easy fix. **Difficult to substantiate** harm, but **difficult to remedy** if substantiated.

Information exchange

- The argument:
  - Parties must share some **sensitive information** with each other: they must maintain the shared network, and settle accounts with each other.
  - Sharing information **facilitates collusion** or makes it more stable, especially through increasing market transparency.
- The concern is more serious if the NSA is deeper.
- Mitigation: The **amount and scope** of information exchange should be **as small as possible**. This depends on the design of the NSA.

Vertical effects

Access to passive infrastructure

- The argument:
  - NSA parties will consolidate their networks and abandon facilities their competitors also use.
  - This may (temporarily) adversely affect competitors' consumers.
- The effect is mostly small, if any. Easy fix: parties can commit to offering access or similar.

Wholesale access

- The argument: three concerns may arise:
  - Parties may limit or overprice MVNOs access to wholesale services.
  - MVNOs will have fewer distinct networks to choose from.
  - NSA parties may optimise their networks in a way that there remains less free capacity for MVNOs.
- Mitigation: if concerns are substantiated, they can be remedied by commitments to offer access.

Efficiencies: the potential benefits to consumers

Two main types of efficiencies may arise in NSAs:

- Cost efficiencies:
  - Cost savings resulting from the agreement which translate into lower prices (or similar benefits) to consumers.
  - These **can and should be quantified**.
    - Usually parties can easily quantify their own cost savings.
    - They also need to show how much are passed on to consumers.
- Qualitative efficiencies:
  - The quality of services (such as coverage, speed or reliability) improve for some or all consumers.
  - Certain improvements (such as new technologies and thereby, services) may reach consumers sooner than they would have absent the agreement.
  - **Often not quantifiable, or their quantitative assessment is not trivial.**
  - **Taken together may be larger and more important than those passed through in the form of price decreases.**

On balance: some conclusions

There is a solid business rationale for active network sharing, so we expect their number to continue increasing, especially with the coming of 5G.

Many effects are not anticompetitive.

- Competition authorities must keep this in mind when assessing NSAs.

Many potential concerns can be easily addressed.

- Parties must keep this in mind when designing NSAs.

Some important issues remain, the arguments must be allowed to play out: the „hard to substantiate, hard to mitigate"-type.

- Further precedents can help establish safe harbours (see cost commonality).
- Some consensus should emerge regarding the assessment of certain concerns (for example, differentiation).