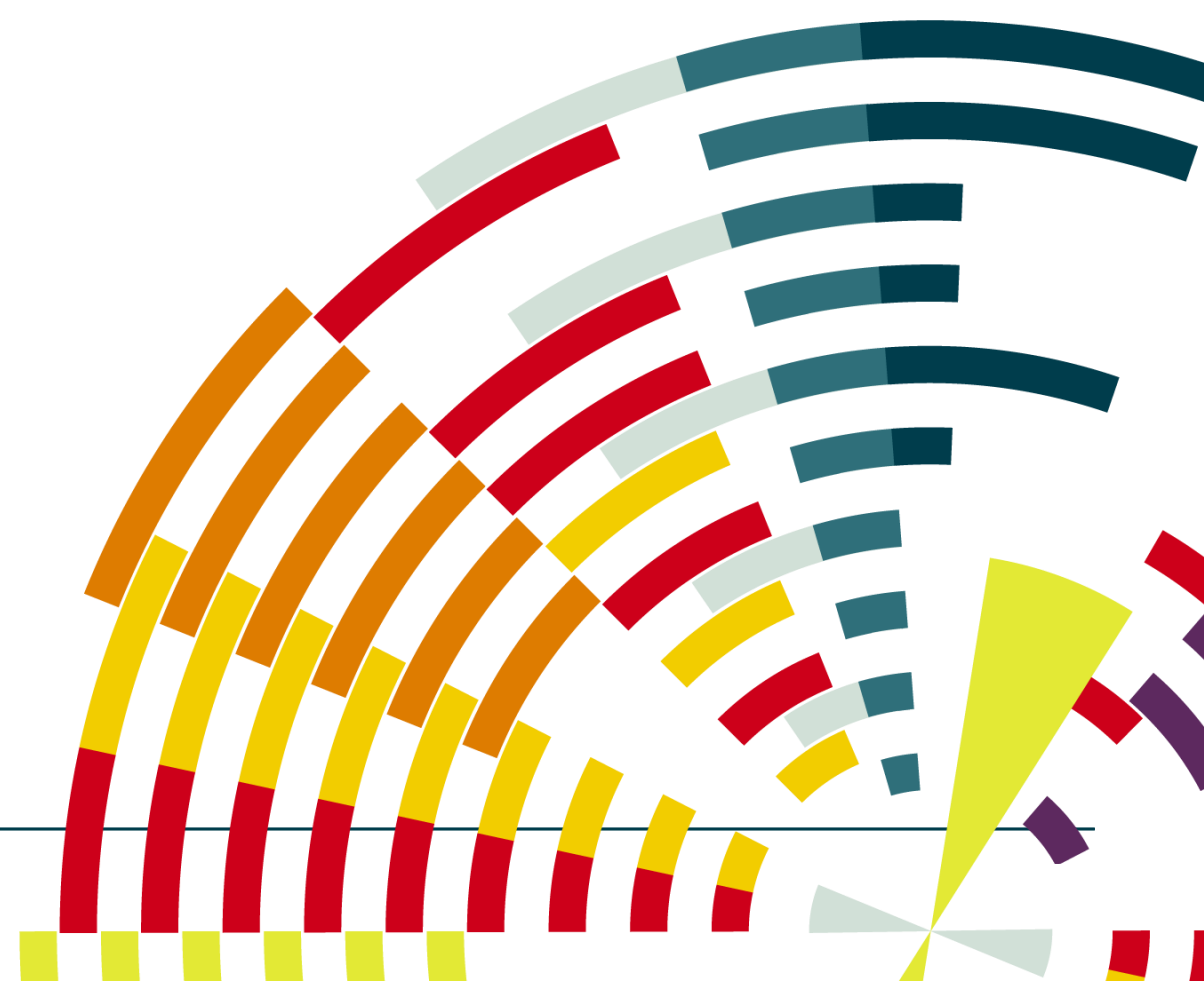


Public consultation on the planned allocation of 900MHz, 2100MHz and 3600MHz spectrum

Presentation for Slovak Telekom

January 2022



Agenda

Our understanding of NRA's objectives for this auction	3
Is there actually a need to promote new entry in the Slovak mobile market?	7
Is the NRA's proposed support package for SWAN justified and/or appropriate?	17
Does the proposed intervention strike the right balance between different regulatory objectives?	26

Agenda

Our understanding of NRA's objectives for this auction

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Our understanding of NRA's objectives for this auction

NRA stated aims

1.

Promote effective competition

2.

Promote efficient use of spectrum

3.

Promote innovation and the development of new services

NRA's proposed tools

- **Support new MNO/MVNO entry**
 - Spectrum reservation for potential new MNO entrant in first round of auction
 - Wholesale access requirements on three largest MNOs
- **Support viability of 4th operator**
 - Spectrum reservation for SWAN
 - National roaming requirements

- **Spectrum as a scarce resource** to be allocated to those operators that are likely to make most efficient use of it
- Well designed **auction** should allow for an efficient spectrum allocation (subject to other constraints, such as spectrum caps)

- **Promote deployment of 5G networks** by giving MNOs opportunity to secure additional spectrum resources for the duration of licences

There is inherent tension between these objectives, requiring NRA to prioritise between them based on three key questions...

1.

- Is there actually a **need to promote new entry** in the Slovak mobile market?

2.

- Is the NRA's proposed **support package for SWAN** justified and/or appropriate?

3.

- Does the proposed intervention strike the **right balance between different regulatory objectives** (e.g. investment vs. price competition)?

...while properly considering the functioning of the Slovak mobile market today

Our initial assessment suggests that the NRA's proposed approach may be too heavy handed...

Don't fix what is not broken – no need for an intrusive intervention in a well functioning mobile market

- Slovakia is the **only low population / low income country** in the EU with **4 MNOs** and a strong **MVNO challenger**
 - Mobile prices are ranked as “**relatively inexpensive**” by the EC
 - Slovakia's mobile services **quality** is ranked next to the UK and Italy
- **No obvious need to promote further MNO/MVNO entry**

The proposed support package for SWAN is unjustified and appears excessive

- It is **not clear a 4th operator is viable longer term** given the conditions of the Slovak market, even with regulatory support
- Even if it is, **NRA's proposed measures** appear excessive and **risk disincentivising network investment**

Proposed restrictions and obligations on existing MNOs could dampen 5G investment

- Slovakia is **lagging significantly behind in 5G deployment**
- NRA's proposed interventions risk further **fragmenting spectrum holdings** thus hampering its efficient use for the deployment of 5G networks
- This goes **against the NRA's objective** of promoting innovation and development of new services

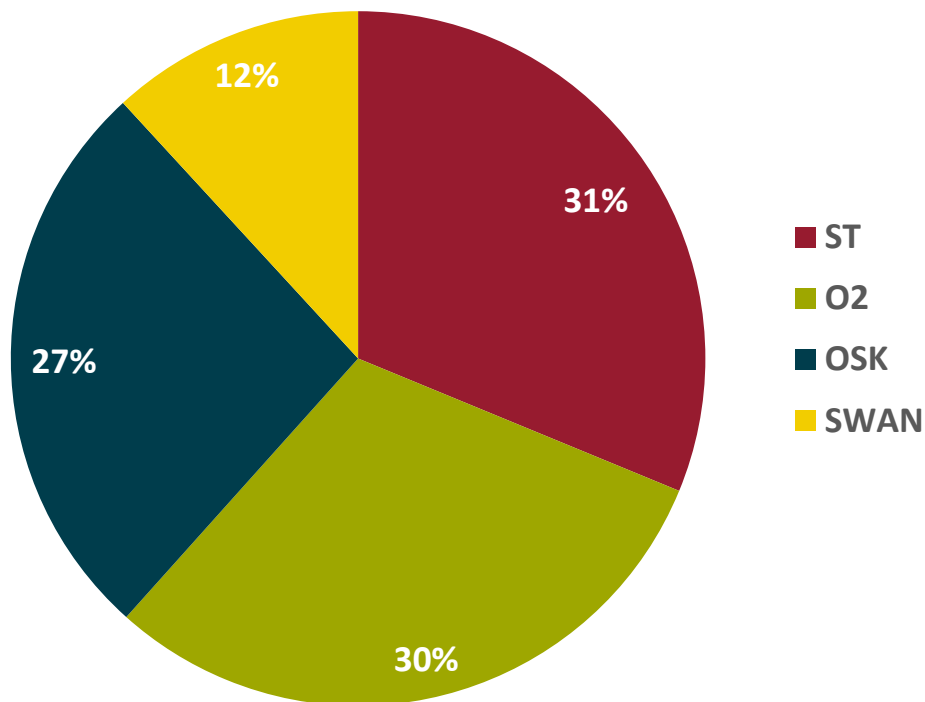
...and not in line with the NRA's stated objectives

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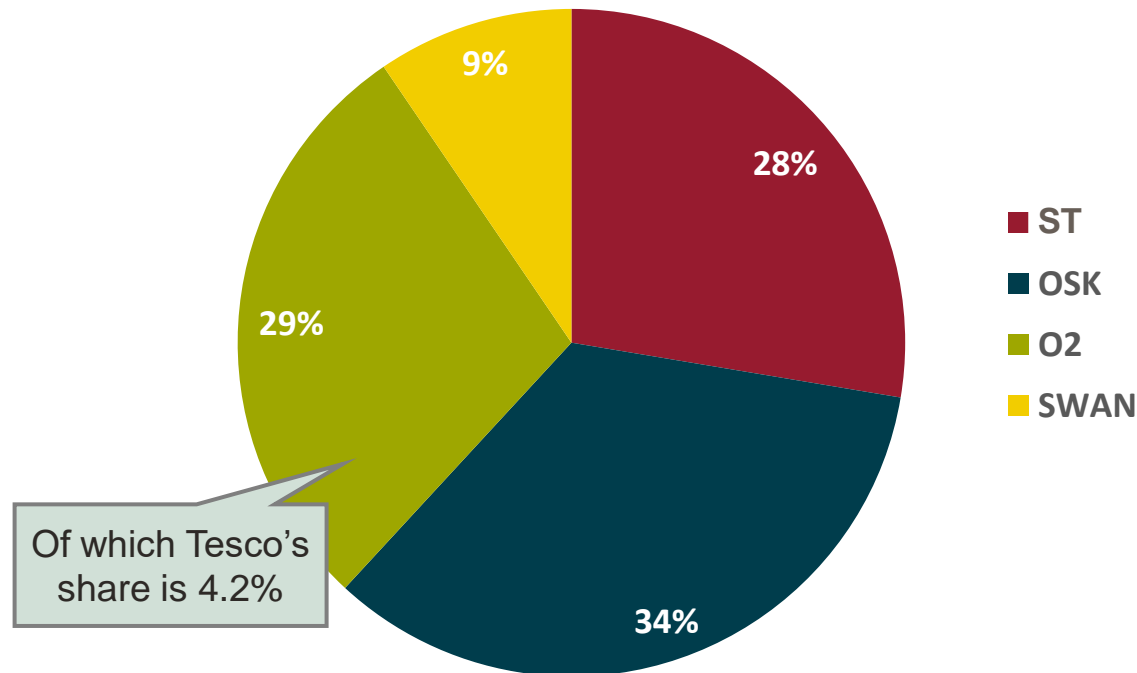
Slovakia has four national mobile network operators, multiple regional FWA providers and a strong MVNO challenger (Tesco Mobile)

Operators' shares of total spectrum holdings



Source: ST*

Operators' subscriber market shares



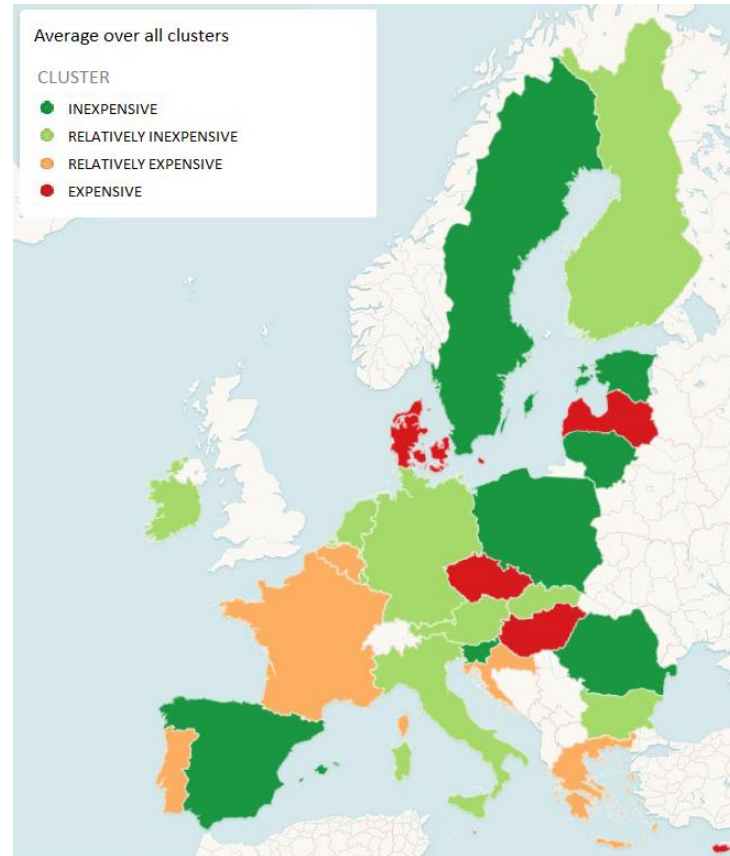
Source: Telegeography

Slovak mobile market is delivering favourable outcomes for consumers

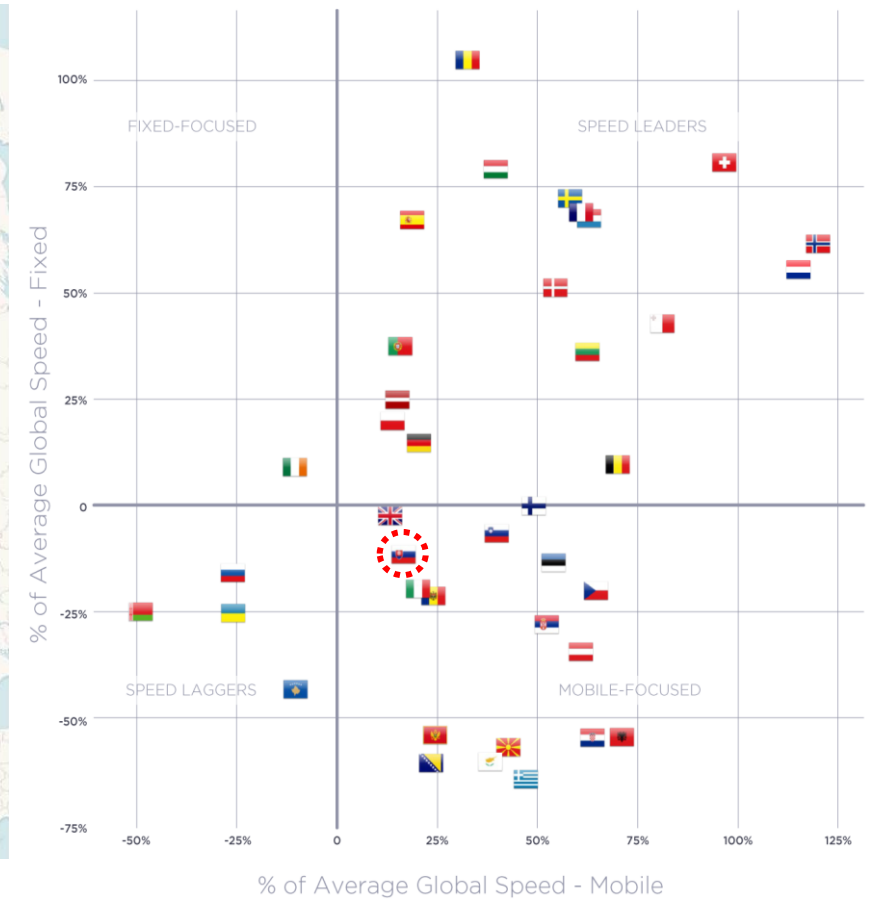
- According to the EC,* Slovakia falls in the “**relatively inexpensive**” price cluster among EU countries together with e.g. Germany and the Netherland
- According to data from [Ookla](#), Slovakia falls among the “**mobile focused**” countries in terms of quality together with the UK and Italy

The Slovak mobile market is competitive and does not warrant a heavy regulatory intervention

Clusters of countries by price (mobile broadband), 2021

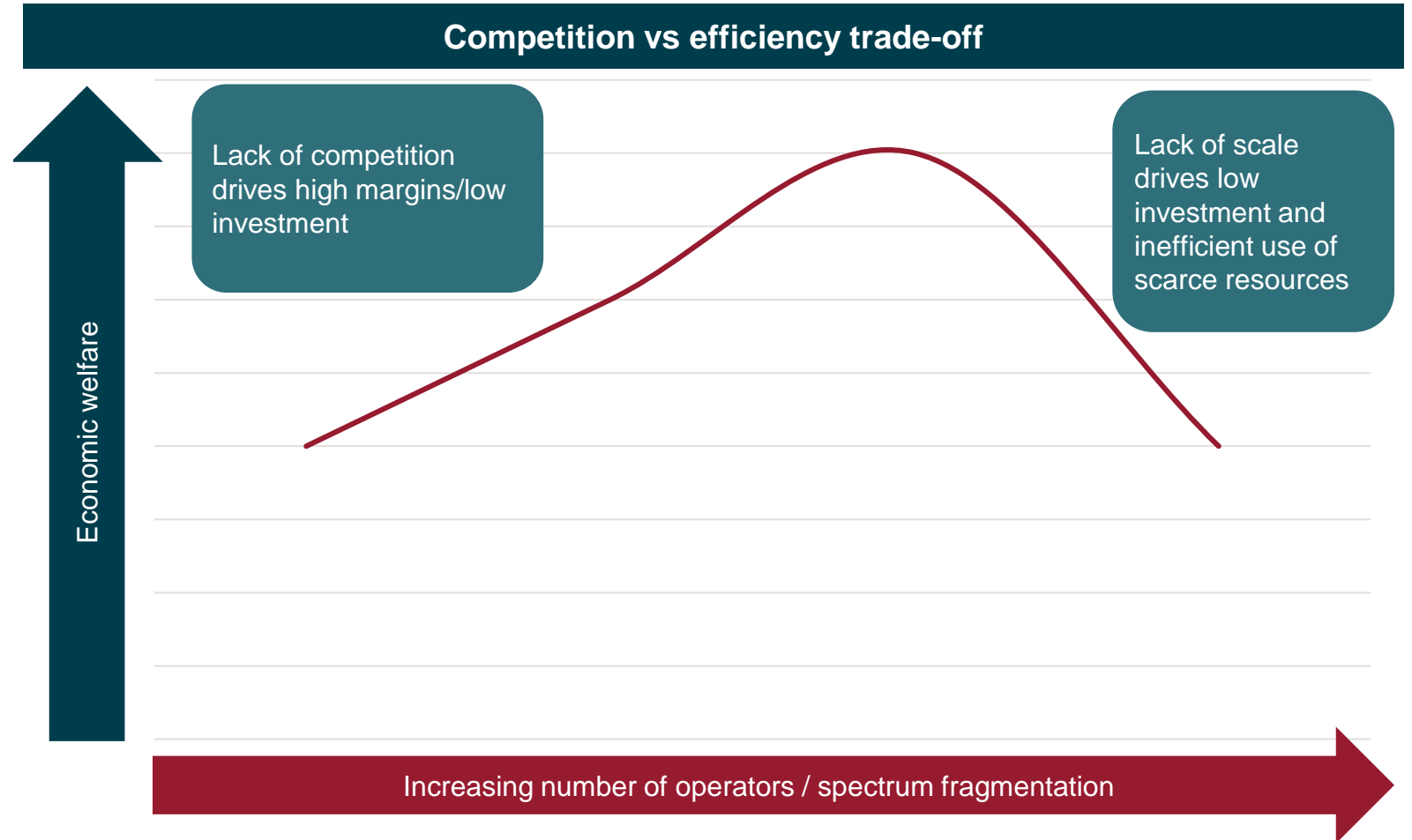


Average global fixed and mobile speeds, 2019

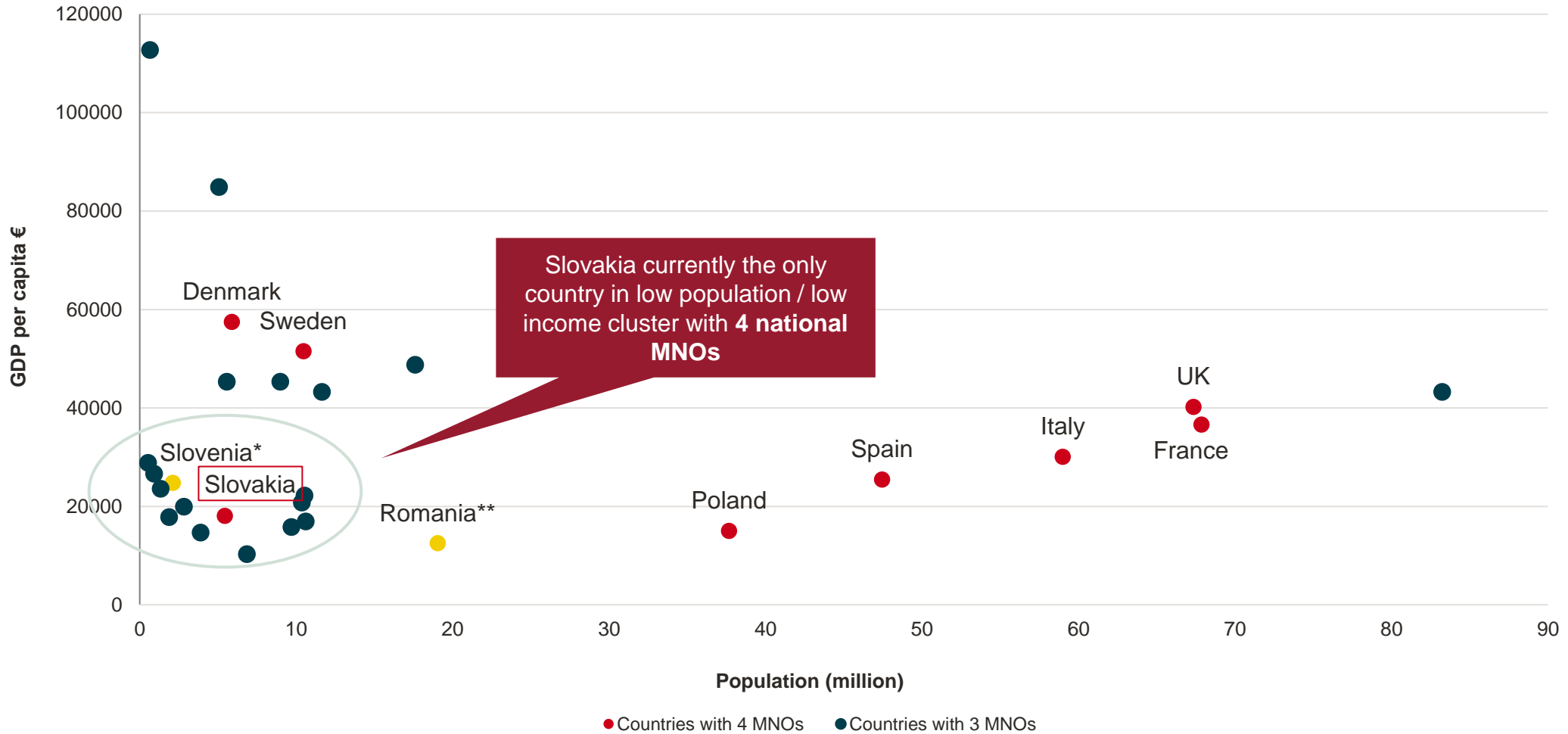


More players in the market does not automatically imply better outcomes for consumers

- Mobile telecommunications is a capital intensive business requiring sufficient subscriber scale to cover fixed costs: **requires some degree of concentration to drive investment** and efficiency
- Promotion of **new entry risks fragmenting the spectrum market**: existing players may not access the spectrum they need to guarantee its efficient use and deployment of new technologies (5G)



Slovakia is already an outlier with 4 MNOs and there is unlikely to be space for additional viable national operators



**It could be potentially argued that Slovenia's fourth MNO T2 should not be considered as a legitimate national challenger, it has been active in the mobile market since 2012, but it is only present in major cities and has a total subscriber share of 7% and spectrum share of 5%. T2 has not yet deployed 5G services, in contrast to the other three MNOs.*

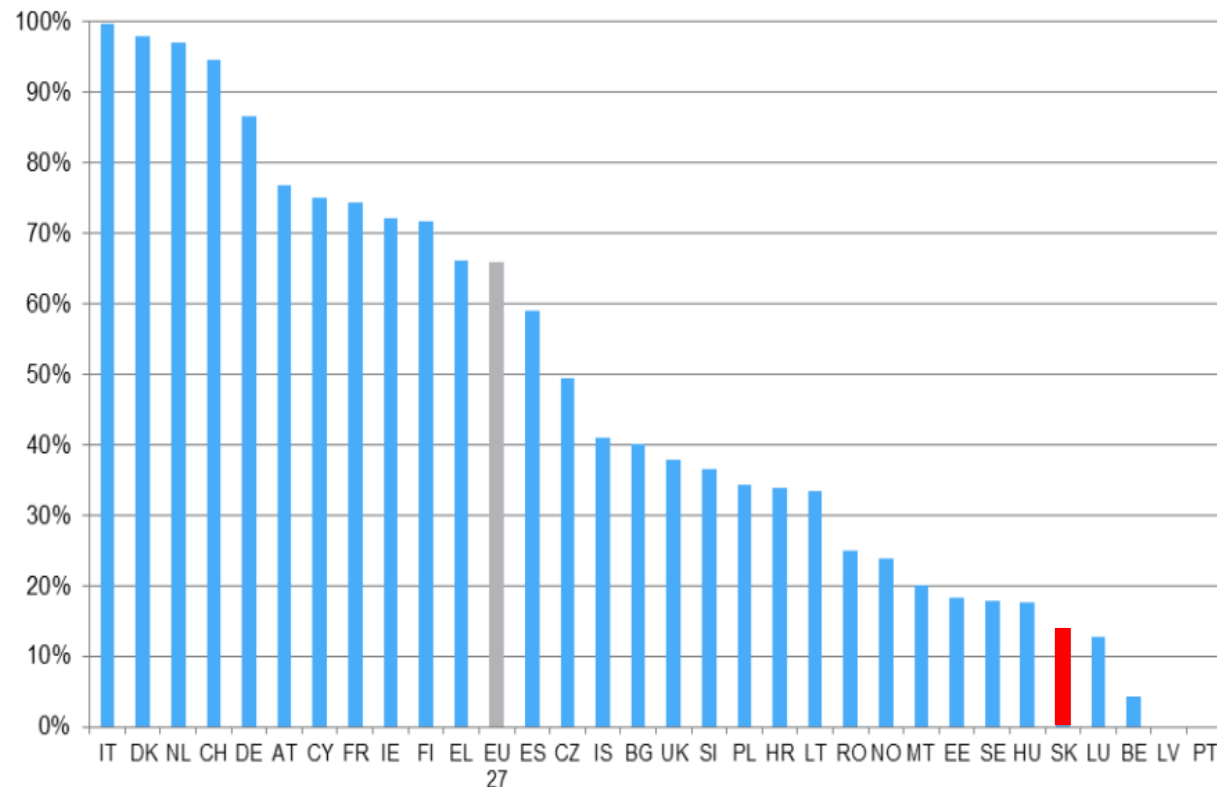
***Publicly available [information](#) indicates upcoming consolidation in Romania*

New MNO entry could do more harm than good to existing network competition in Slovakia, especially given the significant capital requirements of 5G deployment

New entry could hamper NRA's "innovation" objective

- Slovakia is lagging significantly behind in 5G deployment
- Achieving NRA's objective of innovation and development of new services will require extensive 5G deployment
- Such deployment can only be achieved effectively if operators are able to achieve sufficient scale

5G coverage by country, 2021



Source: Broadband Coverage in Europe 2021, a study by IHS Markit, Omdia and Point Topic for the European Commission

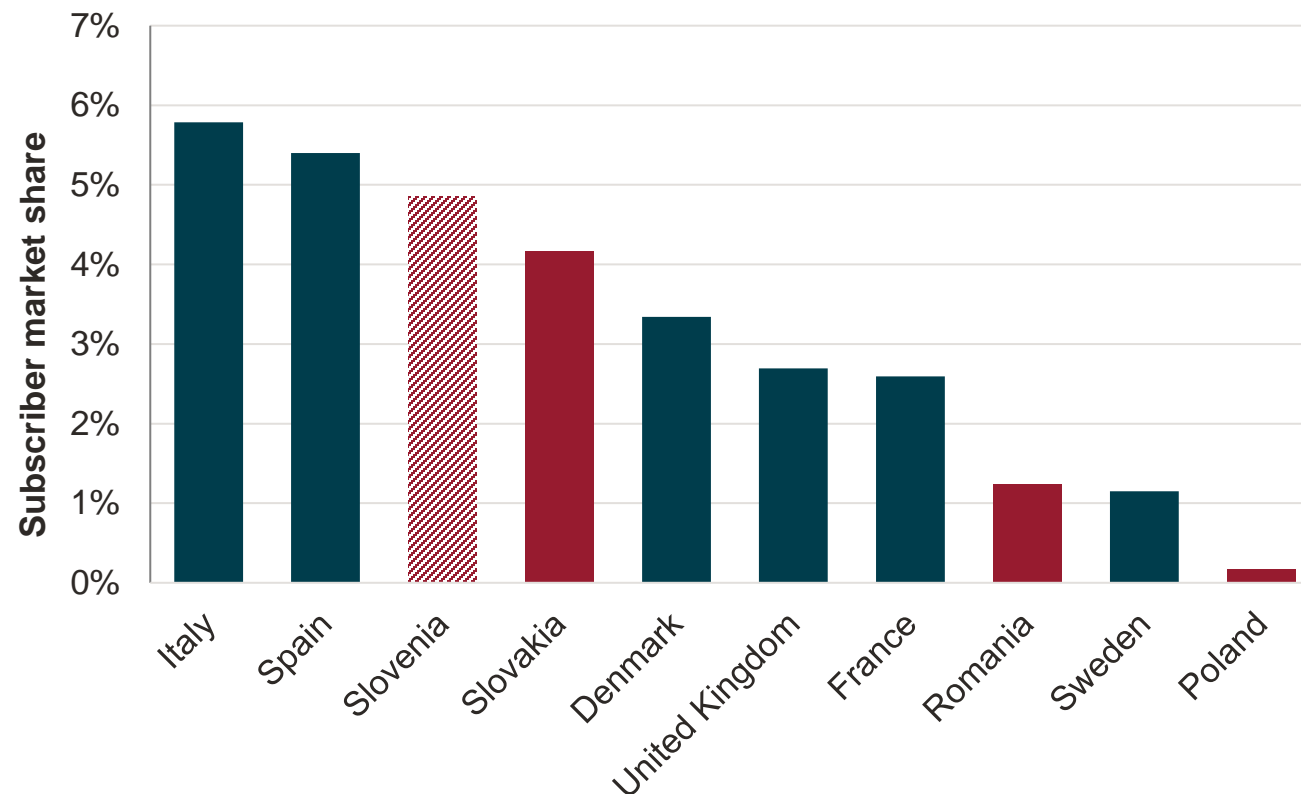
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Tesco Mobile is the strongest MVNO challenger among 4-MNO markets in the region

Tesco mobile is in a very good position compared to other MVNOs

- The Slovak MVNO **Tesco Mobile is the most successful independent MVNO among 4-MNO countries in the CEE**, with a market share more than three times higher than the 2nd most successful independent MVNO
- Tesco Mobile is also the **third most successful MVNO in 4-MNO countries in the EU overall**
- This takes into account the fact that it could be argued that Slovenia's fourth MNO T2 should not be considered as a legitimate national challenger, and therefore **Slovenia should not be considered a truly 4-MNO market**:
 - T2 has been active in the mobile market since 2012, but it is only present in major cities and has a total subscriber share of 7% and spectrum share of 5%
 - T2 has not yet deployed 5G services, in contrast to the other three MNOs

Largest independent MVNO's market share in 4-MNO countries, Dec 2022



Source: Frontier based on data from Telegeography

Note: Western European countries are in teal, CEE countries are in red

There appears to be a limited scope for further MVNO entry in Slovakia

Current MVNO landscape in Slovakia does not require intervention

- **The Slovak retail market is competitive** and delivering favourable outcomes for consumers
- **Slovakia has a well-functioning MVNO market:**
 - The overall MVNO share in Slovakia is among the highest in the CEE
 - Tesco Mobile, which is targeting the lower end of the market, is the **second largest MVNO in CEE** and one of the more successful independent MVNOs in the EU
- Slovakia is at the **start of a significant 5G investment cycle** – promoting further retail competition through **aggressive retail entry** would be **counterproductive to the aim of fast 5G deployment**

MVNO market shares (total across all MVNOs), Dec. 2021

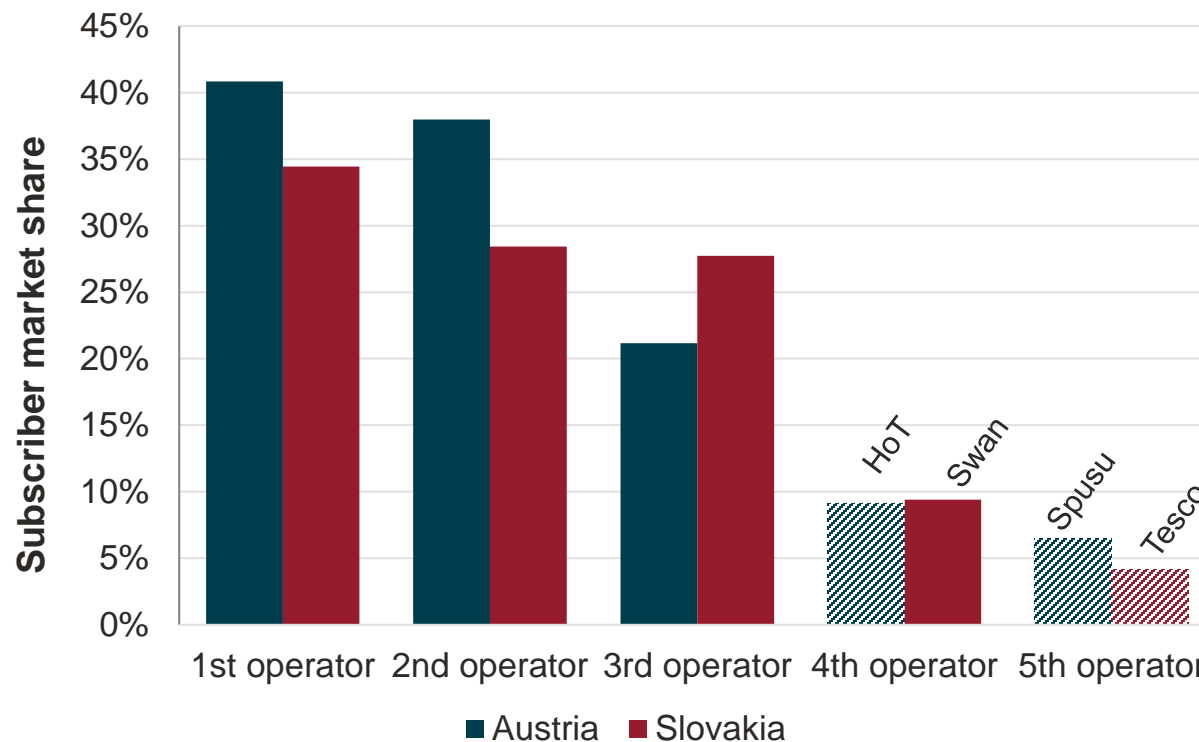
Country	Total	Independent* MVNOs' share	# Independent* MVNOs
Czech Republic	7.8%	5.6%	52
Slovenia	6.4%	4.8%	3
Slovakia	4.2%	4.2%	1
Romania	1.2%	1.2%	2
Serbia	0.7%	0.7%	1
Poland	5.2%	0.3%	29
Bosnia-Herzegovina	0.1%	0.1%	2
Latvia	1.6%	0.0%	4
Rest of CEE	0.0%	0.0%	7

If MVNO access is imposed, the terms should be left to commercial negotiations, ensuring wholesale prices are set at the fair market value (promoting efficient retail entry and protecting MNOs' investment incentives)

Austria does not appear to be a relevant example for what a potential MVNO market could look like in Slovakia

- Austria is a three MNO market, with around 30% of subscribers held by MVNOs (15% of which are independent MVNOs)
- The growth of the MVNO market was spurred by the 4-to-3 merger of Orange and Hutchison in 2012, which was **conditional** on the merged entity providing **wholesale access to 30% of network capacity** to up to **16 MVNOs** over the following 10 years

Largest operators' (MNO and MVNO) market shares, 2022



Source: Frontier based on data from Telegeography
 Note: Striped operators are MVNOs

The situation in Slovakia and Austria today is not very different

Austria has 3 MNOs with 2 strong MVNO challengers

Slovakia has 4 MNOs with 1 strong MVNO challengers

Conclusion – Is there actually a need to promote new entry in the Slovak mobile market?

Don't fix what is not broken – no need for an intrusive intervention in a well functioning mobile market

- Slovakia's mobile market is delivering positive outcomes for consumers
 - Mobile prices are ranked as “**relatively inexpensive**” by the EC
 - Slovakia's mobile services **quality** is ranked next to the UK and Italy

- Slovakia is the **only low population / low income country** in the EU with **4 MNOs** and a strong **MVNO challenger**

No obvious need for new MNO or MVNO entry

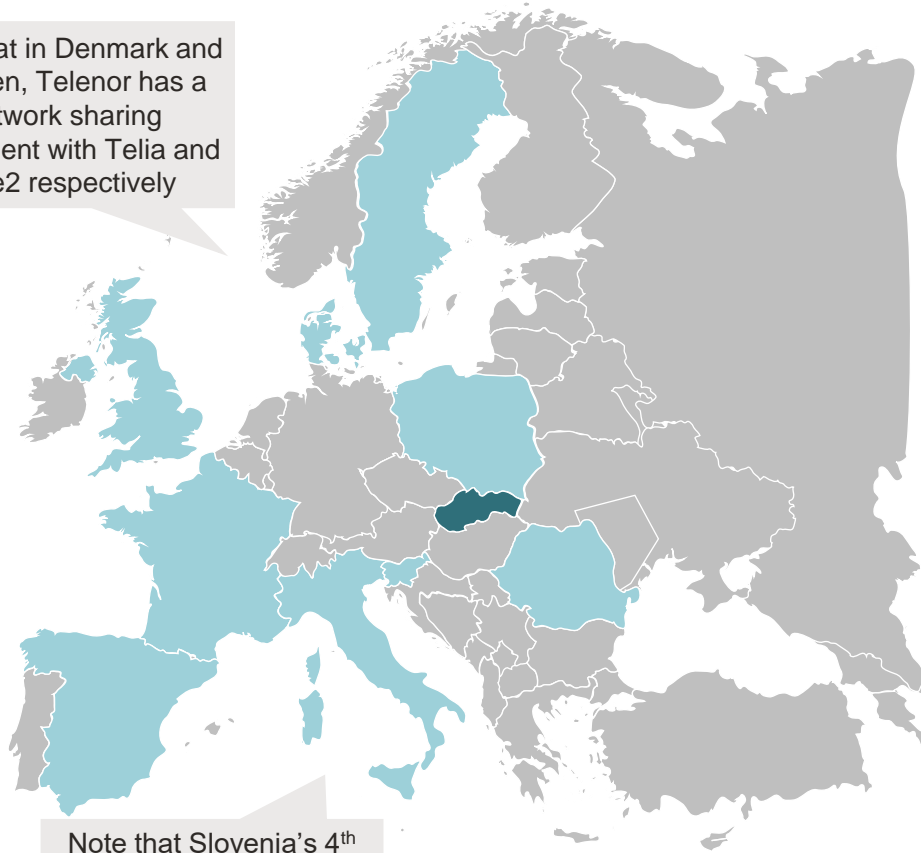
Agenda

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Four MNOs are usually present only in bigger markets, and even there the trend is towards further consolidation

Countries with four MNOs (2022)

Note that in Denmark and Sweden, Telenor has a network sharing agreement with Telia and Tele2 respectively



Note that Slovenia's 4th operator (T-2) holds <5% of spectrum and only operates in major cities

Source: National Regulatory Authorities

Four to three mergers are happening even in larger countries, in an effort to achieve MVS in a difficult market



- Vodafone and Hutchinson (3rd and 4th operators) are in merger talks



- Orange and MasMovil (2nd and 4th operators) signed a merger in 2022



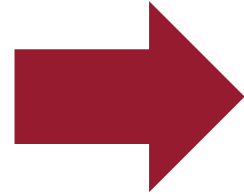
- Vodafone and recent entrant Iliad (3rd and 4th operators) are in merger talks



- Telefonica and E-Plus (3rd and 4th operators) merged in 2014

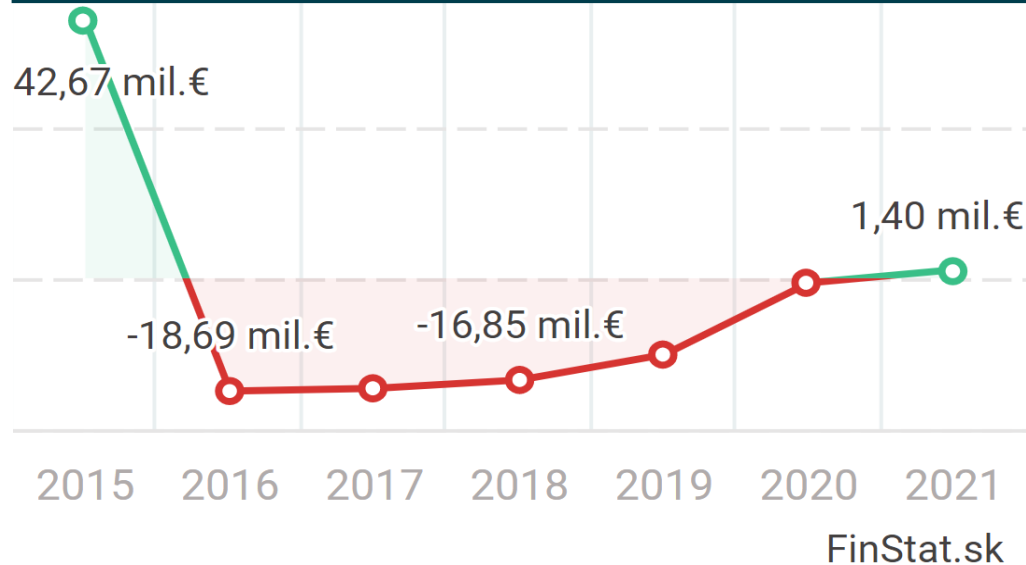
Swan is already struggling financially today, and its situation will only become more difficult as need for 5G deployment becomes acute

SWAN's financial situation is already precarious today



The need for 5G investment coupled with the small scale of the Slovak market will only amplify this difficulty

Evolution of SWAN's profits



Countries with 4 MNOs' population size

Country	4 → 3 consolidation?	Population (million)	Times Slovak population
Slovakia		5.4	-
France		67.8	12.6
UK	Yes	67.3	12.5
Italy	Yes	59.0	10.9
Spain	Yes	47.4	8.8
Poland		37.7	7.0
Romania	Yes*	19.0	3.5
Sweden		10.5	1.9
Denmark		5.9	1.1
Slovenia**		2.1	0.4

It is not obvious that a 4th operator in Slovakia is viable longer term given where the market is trending

* According to publicly available [information](#) about the upcoming consolidation in Romania

The NRA does not justify its measures to selectively support SWAN...

Regulators commonly reserve spectrum for new entrants...

- Regulators commonly **reserve spectrum for new entrants**: existing MNOs are typically willing to pay more than new entrants due to higher intrinsic valuation due to sunk costs and strategic value in foreclosing new entry

...and while there are examples of regulatory support also for established operators...

- **Ofcom considered H3G unlikely to be a credible 4th competitor without new spectrum**, as its share of total spectrum after the auction would have been only 6%. This is **almost half of the 11% held by SWAN**.
- Ofcom also considered **the risk of regulatory failure to be reversible** (via subsequent consolidation or spectrum trade)

...these are intrusive interventions that need to be properly justified

- **SWAN can no longer be considered a new entrant**, having been in the market since 2014
- **NRA did not reserve any spectrum for SWAN in the 2020 auction**, unclear why its approach has changed today
- **SWAN did not bid for 700MHz spectrum** in 2020, indicating SWAN may not find acquiring low frequency spectrum necessary to ensure viability

The NRA has not justified its proposed intervention to selectively support SWAN in the upcoming spectrum auction

...but its aim appears to be ensuring the viability of a 4th MNO in the market

The UK 4G spectrum auction provides useful precedent on regulatory measures used to support the viability of the 4th MNO

Similar market situation

- The UK was a **competitive mobile market** ahead of a **new technological cycle**

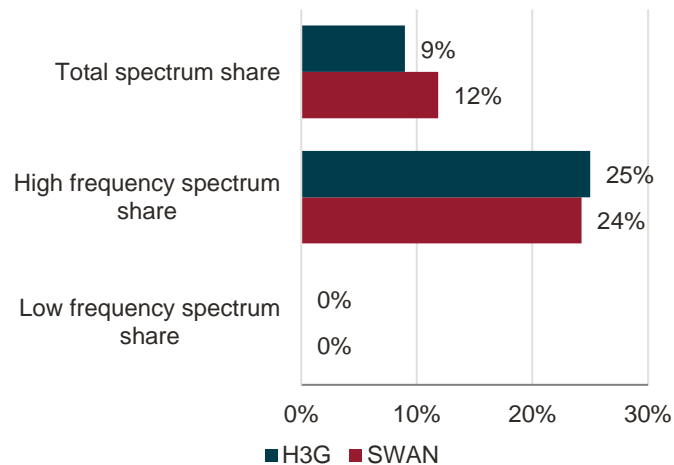
Similar competitive structure

- The market had **four established MNOs** with asymmetric spectrum holdings
- The smallest MNO, Hutchinson (H3G), had 7% of subscribers, 9% of total spectrum holdings and no sub-1GHz spectrum

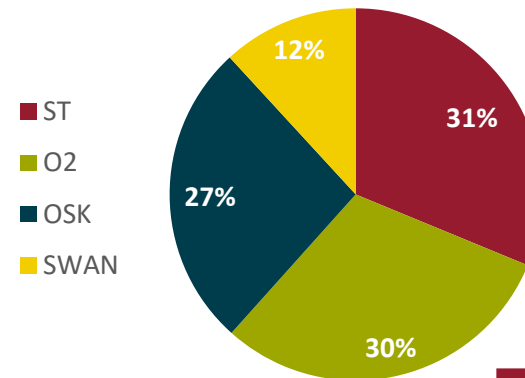
Similar regulatory objectives

- Ensure 4th operator (H3G in UK case) **remained viable/credible** longer term

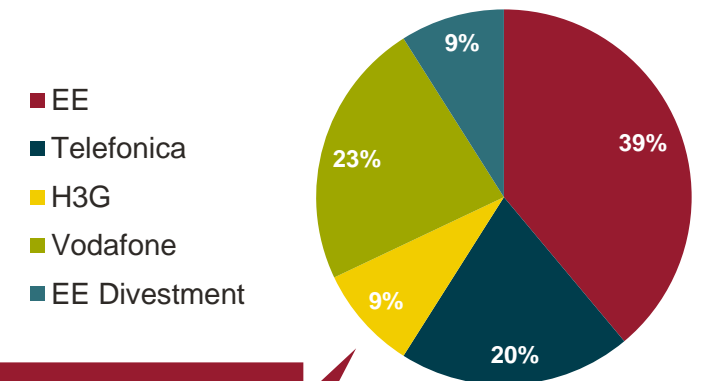
H3G vs SWAN spectrum holdings



MNOs' spectrum shares, Slovakia 2022



MNOs' spectrum shares, UK 2013



Main concern for Ofcom: H3G could end up with only 6% spectrum share if it failed to acquire additional frequencies in the 2013 auction

Ofcom analysed possible auction outcomes in detail and considered options to achieve its objective with minimum distortion to competition

Ofcom's key priority was ensuring **four credible national MNOs** after the auction. Ofcom implemented this by:

Reserving spectrum for the 4th MNO

- Ofcom selected different portfolios of reserved spectrum for the 4th MNO, **including options without sub-1GHz spectrum** or just 2x5 MHz
- Note that reserving spectrum was a **less intrusive intervention** in the UK case given that the auction was **assigning new spectrum**, rather than redistributing existing spectrum holdings as in the case of Slovakia

Setting reasonable spectrum caps on total spectrum holdings

- 2x15 MHz (ca.39%) on total spectrum holdings and 2x27.5 MHz (**ca.42%**) on **sub-1GHz** spectrum holdings
- **Ofcom evaluated tighter caps** (that would stop some operators from acquiring sub-1GHz spectrum) **but considered them too stringent**, and at risk of causing significant inefficiencies **detrimental to consumers**, as well as a risk of unsold spectrum
- Note that since new spectrum was being auctioned, these caps still allowed all operators to acquire additional spectrum

Basing reserve price on sensible benchmarks

- Ofcom commissioned analysis based on benchmarks of recent auctions in comparable countries, so that **reserve prices reflected market value** (with a discount)

No access obligations

- Ofcom did not include any **national roaming / wholesale access obligations** requirements

We note **Hutchinson is ultimately still struggling today**, not making sufficient returns to cover its cost of capital. However this **does not seem to be due to lack of spectrum** (Hutchinson currently holds ca. **22% of UK spectrum**)

Slovak NRA's proposed support package for SWAN appears excessive

	Spectrum allocation	Market structure
UK (2013)	Imposed much less strict spectrum caps (39% on overall holdings, 42% on sub-1GHz)	Did not aim for symmetry in spectrum holdings (portfolios offered even excluded sub-1GHz spectrum)
UK (2021)	<ul style="list-style-type: none"> Imposed much less strict spectrum caps (37% on overall holdings) No caps on sub-1GHz 	Ofcom: <i>"Asymmetries in spectrum holdings are not negative per se. Such asymmetries can, in certain instances, be positive for competition and give rise to consumer benefits"</i> *
Slovakia (2023)	Imposing restrictive spectrum caps on sub-1GHz spectrum holdings to 2x25 MHz, corresponding to 26% of sub-1GHz spectrum	Aiming for symmetry in the sub-1 GHz band resulting in alignment of the three largest MNOs and an increased share for SWAN

Excessive intervention creates a risk of **inefficient spectrum allocation** and distorting competition in the long run, e.g. the largest MNOs may be **deprived of spectrum needed for further deployment of 5G** networks

* Ofcom, *Award of the 700 MHz and 3.6-3.8 GHz spectrum bands*

NRA's national roaming requirements risk further hindering network competition

Rationale for national roaming (NR) obligations

- NR obligation should be a **temporary intervention** ensuring that a new entrant can effectively compete in the period before they achieve full national coverage with their own network
- NR has been used **preferentially for legacy networks** to allow new entrants to prioritise deployment on 4G/5G networks
 - In France, Free had a national roaming agreement with Orange for 2G/3G services, which has however been gradually phased out since 2016 to encourage Free to deploy its own network
 - In the UK, Hutchinson had a national roaming agreement with EE for 2G services

Risks in the present context

- NRA itself **no longer considers SWAN as a “new entrant”**:
- Access to NR could therefore disincentivise SWAN from deploying its low frequency spectrum
- It would instead encourage SWAN to offload excess traffic in areas it has deployed instead of investing in increasing the capacity of its networks

Conclusion - Is the NRA's proposed support package for SWAN justified and/or appropriate?

The proposed support package for SWAN is unjustified and appears excessive

- Given the conditions of the Slovak market, it is **not clear a 4th operator is viable longer term**, even with regulatory support
- Even if it is, the **NRA's proposed measures** appear excessive and **risk disincentivising network investment**

The NRA's proposed support package for SWAN is neither justified nor appropriate

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Does the proposed intervention strike the right balance between different regulatory objectives?

<p>NRA stated aims</p>	<p>1. Promote effective competition</p>	<p>2. Promote efficient use of spectrum</p>	<p>3. Promote innovation and the development of new services</p>
<p>Effects of the NRA's proposed interventions</p>	<ul style="list-style-type: none"> ▪ The NRA seems to be prioritising this goal in its proposed auction design : <ul style="list-style-type: none"> ▫ Spectrum reservation aims to support/amplify MNO competition ▫ Proposed wholesale access requirements aim to support new MVNO entry ▪ But the available evidence is not supportive of the need to introduce additional competition and instead shows this risks hindering the NRA's other objectives 	<ul style="list-style-type: none"> ▪ Increased spectrum fragmentation may prevent existing MNOs from putting scarce resources to their most efficient use and may dampen investment and distort network competition in the long run: <ul style="list-style-type: none"> ▫ At least one of the existing MNOs will end up with only 2x5 MHz of 900 MHz spectrum. As this spectrum is currently deployed to serve 2G/3G customers, this could lead to service disruptions which would harm customers relying on these legacy technologies, especially in border areas ▫ Existing MNOs would be deprived of spectrum that could be efficiently re-farmed to support deployment of much-needed 5G. Instead, the NRA proposes to reserve this spectrum for SWAN / a 5th entrant which: <ul style="list-style-type: none"> i. are not able to immediately use the spectrum (they don't have national networks); ii. may not be viable in the long run, therefore spectrum would be unused / used inefficiently ▪ Tools promoting retail competition, including wholesale access and national roaming requirements, may further disincentivise network investment 	

NRA's currently proposed approach is too intrusive and should be revisited to meet its wider regulatory objectives

1 Less intervention in spectrum allocation

No spectrum reservation for a would-be new MNO

Less or no spectrum reservation for SWAN

- Slovakia is the **only low population / low income country** in the EU with **4 MNOs** and a strong **MVNO challenger**
- The Slovak **market is competitive** and delivers good outcomes for consumers
- There is unlikely to be a scope for **additional MNO entry** – **inefficient market structure** and spectrum fragmentation

- It is not clear that NRA's aim to promote the long term viability of **a fourth MNO** is a economically justifiable objective
- Even if it is, **reserving excessive amounts** of spectrum is not guaranteed to achieve this objective

2 No NR requirements, or only apply to legacy networks

- SWAN is not a new entrant, therefore **NR requirements are not appropriate**
- If they are implemented, NR requirements should apply only to legacy networks, so as to **incentivise SWAN's investments** in next generation technologies (and combined with appropriate **deployment criteria**)

3 No need for intrusive wholesale access requirements

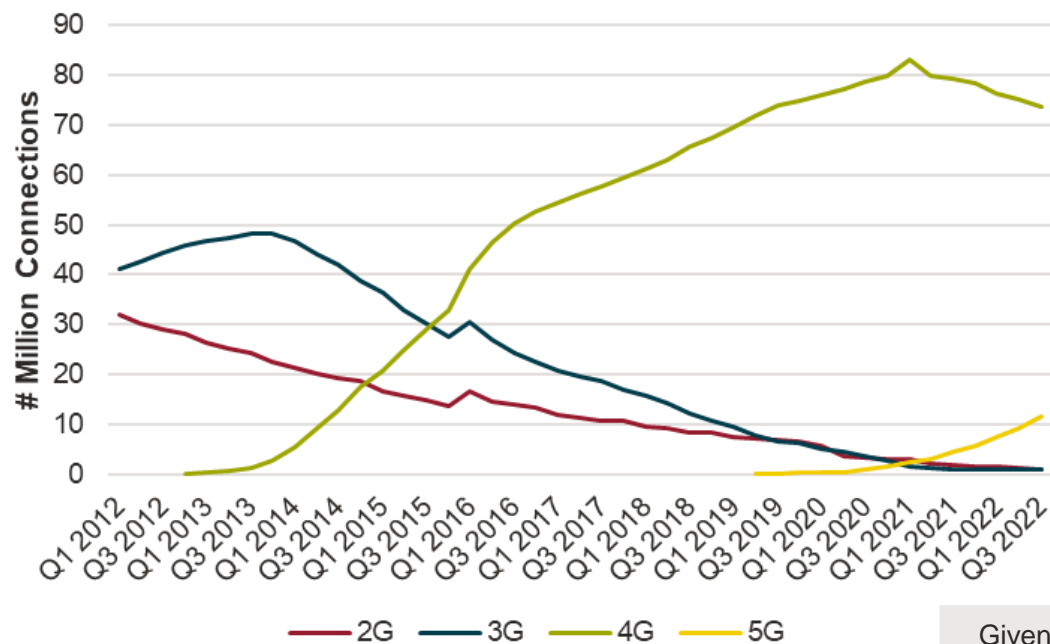
- The Slovak retail market is competitive and there is **limited scope for further MVNO entry**
- Any wholesale access agreements should be **commercially negotiated** to ensure efficient entry (and without undermining MNOs investment incentives)

Questions?

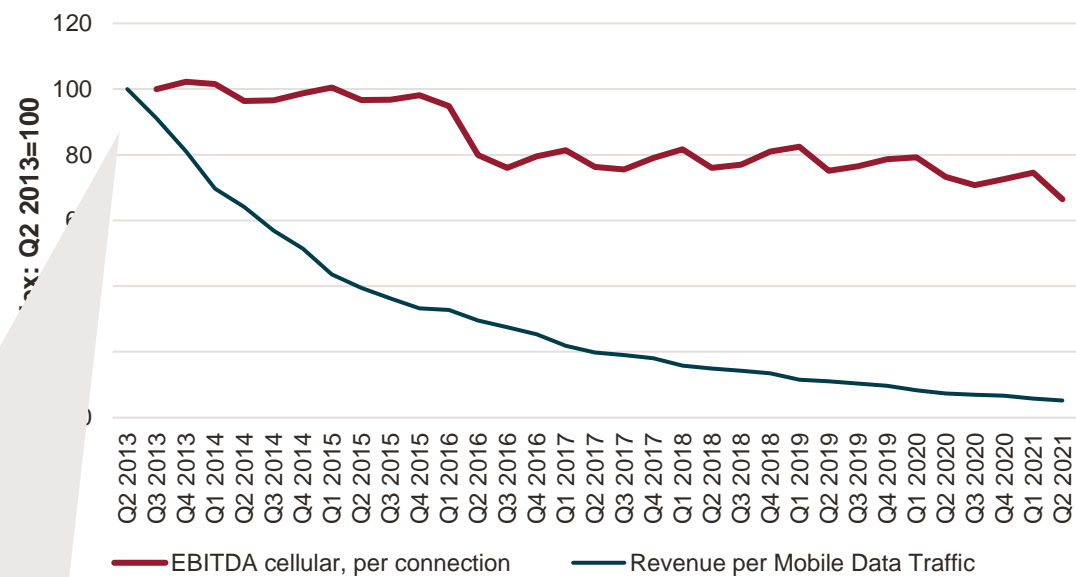
Investment in new mobile technologies drives consumer benefits

- **Network competition is a key driver of investment and consumer benefits**
- Evidence shows that it is **investment in new technologies that drives consumer outcomes** in mobile (rather than retail price competition)

Major technology changes every 8-10 years

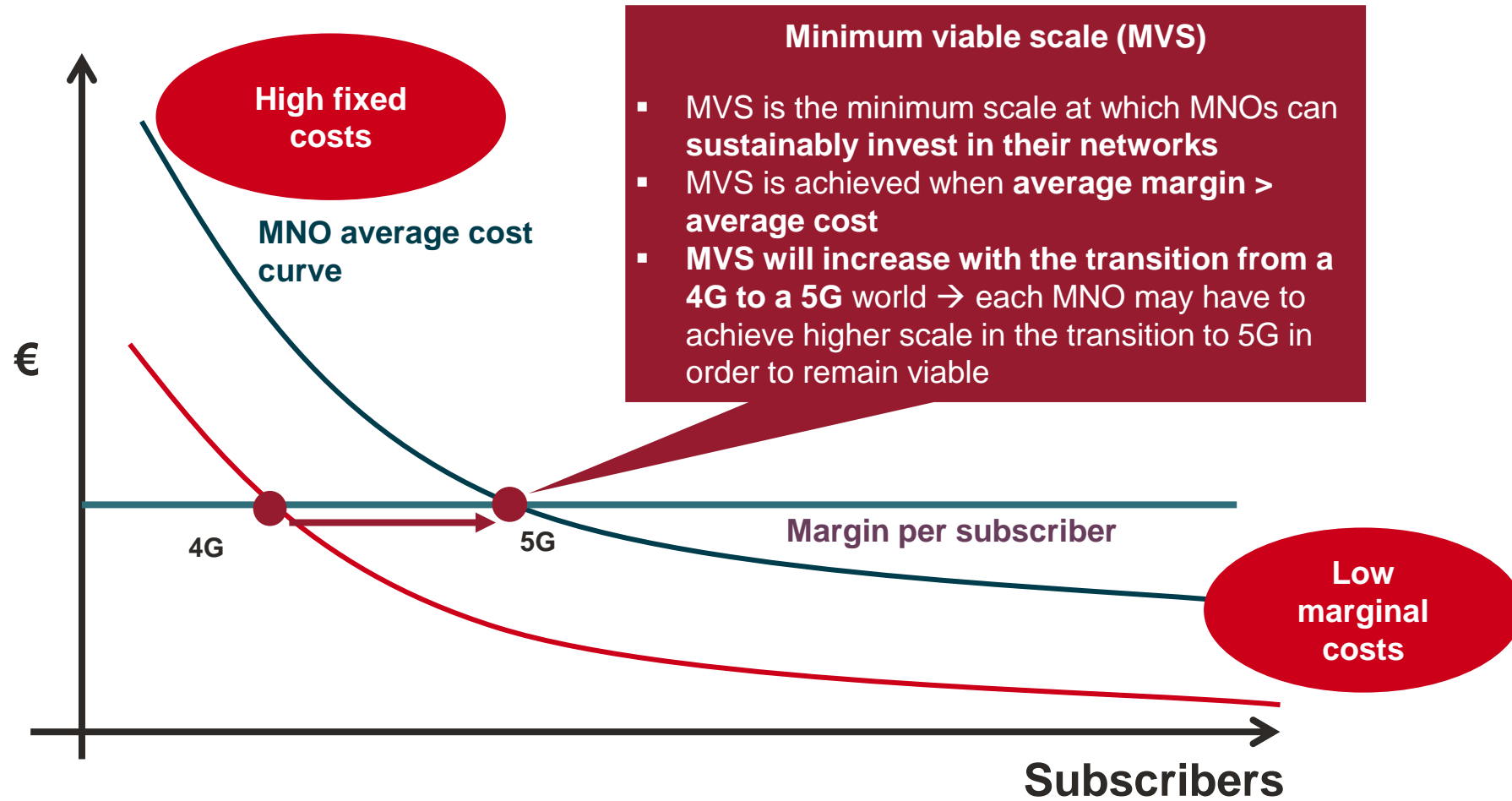


Investment in new tech drives fall in prices



Given that retail competition is based on margins, we would expect that, all else equal, margins and prices should diminish by the same %. Instead we see a much larger difference, which is driven by technology improvements

Scale is even more important in a 5G world





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