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DRAFT

Conveniece translation from Czech – Czech version prevails

Prague, *27 May 2022*
Art. NO. 25 085/2022-611

The Czech Telecommunications Office (hereinafter referred to as the "Office" or "CTU") as the competent state administration authority pursuant to Section 108(1)(b) of Act No. 127/2005 Coll., on Electronic Communications and on Amendments to Certain Related Acts (Act on Electronic Communications), as amended (hereinafter referred to as the "Act") and Act No. 500/2004 Coll, Administrative Procedure Code, on the basis of the results of the public consultation carried out pursuant to Section 130 and the consultation pursuant to Section 131 of the Act, the decision of the Council of the CTU pursuant to Section 107(9)(b)(2) and in order to implement Section 51 of the Act, issues a measure of a general nature

Market Analysis No. A/3/XX. 2022-X,

Market 3 - wholesale market for access to mobile services.

Article 1

Results of the relevant market analysis

(1) The CTU has analysed the relevant market No 3 - the wholesale market for access to mobile services ('the relevant market').

(2) On the basis of the analysis, the CTU finds that the relevant market is not an effectively competitive market during the time period under analysis because undertakings with significant market power are active on it and remedies under national or European Union competition law are not sufficient to address the problem and that measures to prevent further deterioration of competition are necessary on that market in order to protect competition and to protect end users, in particular, preventing the squeezing out of certain competitors from the retail market by imposing unfair contractual conditions in that wholesale market to the detriment of end-users in the retail market.

Article 2

Proposal for the designation of an undertaking with significant market power

On the basis of the analysis of the relevant market, the CTU proposes to designate T-Mobile Czech Republic a.s., with registered office at Tomíčkova 2144/1, Prague 4 - Chodov, ID No 64949681, O2 Czech Republic a.s., with registered office at Za Brumlovkou 266/2, Prague 4 - Michle, ID No 60193336, and Vodafone Czech Republic a.s., with registered office at náměstí Junkových 2808/2, Prague 5 - Stodůlky, ID No 25788001, as undertakings with significant market power on this market.

Article 3

Draft obligations that the CTU intends to impose in the interests of competition and user protection

It is proposed to impose obligations on undertakings with significant market power under Section 51(6)(a), (b), (c), (d) and (e) of the Act:

(a) transparency pursuant to Section 82 of the Act, to publish information relating to access to the extent defined in (d);

b) non-discrimination pursuant to Section 81 of the Act;

1. apply equivalent conditions in equivalent circumstances to other businesses,
2. to provide services and information to other businesses on the same terms and conditions and to the same quality as it provides for its own services;

c) separate records of costs and revenues in accordance with Section 86 of the Act so that:

1. when setting prices at retail and wholesale level, it has been demonstrated that there is no unjustified cross-financing,
2. supporting documents were available to verify the costs and revenues for each service;

d) access to and use of specific network elements and associated facilities pursuant to Section 84 of the Act, namely the obligation to meet the reasonable requests of all undertakings entitled to apply for access under the Act for access to a public communications network or network facilities and to wholesale electronic communications services provided by an undertaking with significant market power for the provision of mobile services as defined in the product definition of the relevant market, i.e. services including data services, voice services and SMS services;

e) related to price regulation under Sections 56 and 57 of the Act, so that wholesale prices will be set on the basis of the principle of prohibition of margin squeeze.

Article 4

Entry into force

This measure of a general nature shall enter into force on the fifteenth day following the date of its publication in the Telecommunications Bulletin.

Justification

Part A

The CTU, observing persistent problems on the market and in response to the Commission's decision of 17 February 2022, supplemented the analysis of the relevant market No.3 - the wholesale market for access to mobile services pursuant to Sections 51 to 53 of the Act and Section 131(2) penultimate sentence of the Act. The relevant market is determined by the Measure of a general nature No. OOP/1/05.2021-5 establishing the relevant markets in the electronic communications sector, including the criteria for the assessment of significant market power (the "Measure"), in accordance with Commission Recommendation (EU) 2020/2245 of 18 December 2020 on relevant product and service markets in the electronic communications sector susceptible to ex ante regulation under Directive (EU) 2018/1972 of the European Parliament and of the Council establishing a European Electronic Communications Code (the "Recommendation").

Part B - Methodology for the definition of relevant markets, analysis of relevant markets, assessment of significant market power and determination of remedies in the field of electronic communications in the Czech Republic

The CTU proceeded with the relevant market analysis in accordance with the Methodology for Relevant Market Analyses (the Methodology), which is published on the CTU's website. The Methodology is generally applicable to all relevant market analyses, is publicly available and is therefore not reproduced in full in this measure. In addition to the above mentioned Methodology, the CTU also relied on the Recommendation for its analysis.

Part C - Introduction to the analysis of Relevant Market 3 - the wholesale market for access to mobile services

C.0 Preamble - Summary of the conclusions of the mobile market analysis 2021-2022

According to an international comparison carried out by the European Commission, **prices for mobile services on the retail market in the Czech Republic are up to 90% higher** than the EU average. In the case of **data prices, the Czech Republic is up to 200% above the average, according to a comparison by Cable.co.uk**.

The reason for the high prices in the retail market is the low level of competition in the retail market, which is also hampered by high prices in the wholesale market, especially in data services, and which the 3 MNOs use to close the market to other players[1] .

Failure of effective competition in the wholesale market

The Czech retail mobile market has been an **oligopoly** since the beginning**, with 3 MNOs** (O2, T-Mobile and Vodafone, formerly a duopoly of Radiomobil and Eurotel), which currently **control**, directly or through MVNOs linked to them by ownership, **approximately 98% of the retail market**[2]. Only around 2% of the market share is accounted for by independent players, i.e. independent MVNOs. The 3 MNOs coordinate their strategy in a tacit

[1] The average prices of data services on the wholesale market are higher than the prices of these services on the retail market, the product offer is limited on the wholesale market and does not allow the entry of new players or the replicability of MNOs' offers on the retail market.
[2] Measured by sales volume in the retail market.

collusion, leading to foreclosure and market sharing. This is evidenced, among other things, by the high prices mentioned above, the **long term stable market shares and the high EBITDA margins of the MNOs, which are close to 40% and among the highest in the EU**.

Imperfect competition and failure to compete

The reason for the low level of competition (and also high retail prices) is mainly due to the **lack of effective competition in the wholesale market, which is the impact of the joint significant market power of the MNOs**. Clear evidence of a market failure is the fact that the average **wholesale data price was approximately twice as high as the** average **retail price in both 2020 and 2021.** In the **2021** analysis, **up to 82% of MNO retail tariffs were non-replicable by MVNOs due to lack of or insufficient wholesale supply. In 2022**, according to the current market analysis, the **situation has worsened and 84% of tariffs are already non-replicable**. The main problem is the replicability of data offerings, in particular tariffs that contain larger or large volumes of data. This fact was also confirmed to the CTU by MVNOs in a questionnaire survey conducted by the CTU in 2022.

Wholesale and retail markets stagnate

The not improving situation on the wholesale market, which to a large extent hinders the improvement of the situation on the retail market (see the Czech Republic's consistently poor position in international comparisons), **cannot be reversed without regulatory intervention**. **Even the application of competition law is not sufficient** to remedy this. The **entry of a new MNO, which would reverse the situation in both markets using national roaming, is not expected by the CTU before 2025**, if at all. The **entry of another player into the wholesale market is not possible in the timeframe considered due to the high barriers to entry, including limited spectrum**.

The continued dysfunction of competition in the mobile market will also pose a threat to the "triple-play" market, i.e. packages of mobile services, fixed internet and TV, which are steadily gaining in popularity in the Czech Republic. All 3 MNOs are also major providers of fixed services and are already beginning to use bundling effectively to drive competitors out of the market - due to the unattractive or lack of a wholesale offer of mobile services, smaller competitors cannot replicate the bundled offer, or have to sell this offer at a significantly lower margin than before.

Economic forecast and implications for the mobile market

Already significantly elevated (above 10%) **inflation increases the risk of future price increases, which will be compounded by rising input prices, especially energy prices**, which will rise by another 30% or so in H2 2022 and **may be used by MNOs as a reason for inadequate price increases not only in the retail but also in the wholesale market.**

Proposal for measures to make the wholesale market competitive

Therefore, for the above reasons, the CTU proposes to proceed to ex ante regulation of the wholesale market, knowing that the 3C test has been clearly demonstrated in the area of barriers to entry, wholesale market dysfunction, and that competition law is not a sufficient tool to fundamentally change the functioning of the market in the Czech Republic, as has also been confirmed by the Office for the Protection of Competition (ÚOHS), BEREC and the EC.

As well as concerted practices have been demonstrated by 3 MNOs under the AIRTOURS test.

3 Criterion test for demonstrating the appropriateness of ex-ante regulation in terms of its structure

Criterion 1 - existence of significant and not temporary structural, legal or regulatory barriers to entry

To assess this criterion, an analysis of the individual barriers to entry is used:

1. Limited spectrum = analysis shows that insufficient spectrum is available for the new MNO;
2. High investment intensity = demonstrated in the analysis e.g. based on the amount of investment of 3 existing MNOs, analysis of complexity and duration of network infrastructure construction;
3. Insufficient and cost disadvantageous existing wholesale supply = demonstrated in the analysis e.g. by replicability test;
4. Ineffective MVNO market entry = demonstrated by analysis of low market share, analysis of differences (e.g. in addressing the offer) between MVNOs linked with MNOs by ownership and independent MVNOs, analysis of replicability and international comparison of MVNOs position in other markets;
5. High investment in brand marketing = proven by analysis;
6. Inability to achieve economies of scale = proven by analysis of the structure of the wholesale and retail market in the Czech Republic.

In the context of the Czech mobile services market, it is true that there are MVNOs on the market, but they cannot enter the market in an efficient way due to the unreplicability of retail offers, so their share remains negligible. Furthermore, there are regulated means of entry for new players in the Czech Republic (national roaming from the 5G auction or wholesale data offers from the 4G and 5G auctions); however, these are not feasible in the relevant timeframe. According to the CTU's analysis, national roaming will not be implemented before the end of 2024 and the wholesale data offers not only do not allow access to voice services, which are currently still demanded by the majority of customers, but also, even in the case of the theoretical possibility of their integration on a single SIM, do not allow for tariff replication for MVNOs. In terms of the price level of regulated wholesale offers for 4G and 5G data, these, combined with commercial wholesale agreements for voice and SMS services for a single customer on a single SIM[3] , do not substantially improve the replicability of MNO products for MVNOs, especially for "Light MVNOs".

Therefore, the CTU considers that the first criterion is fulfilled.

Criterion 2 - Market structure not conducive to effective competition within a given time horizon

[3] In the opinion of the CTU, the possibility of combining these offers on a single SIM is rather theoretical.

The analysis of market developments (e.g. prices, market shares of MNOs, market shares of MVNOs, revenues, profitability, etc.) is used to evaluate this criterion, specifically:

1. Consistently high price in the retail market - demonstrated by international EC comparison and Cable.co.uk comparison (up to 200% higher than EU average);
2. Stably low share of independent MVNOs on the retail market not exceeding 2% in terms of revenues: i.e. 98% of the retail market is controlled by MNOs and MVNOs linked to them by ownership; according to international comparisons, there are only two functional models of an efficient market - aggregate MVNO market share on the retail market above 10% (e.g. in Germany) or existence 4. and another operator; neither model is feasible in the Czech market at least until the end of 2024 under current conditions (4th MNO on the basis of national roaming will enter the wholesale market fully in 2025 at the earliest and independent MVNOs cannot exceed their low market share in the long term due to non-competitive wholesale supply);
3. Twice as higher average data price on the wholesale market than the average price on the retail market;
4. Deterioration of replicability of MNO products by MVNOs in the retail market to 84% (84 % of MNO retail tariffs are non-replicable);
5. Market dynamics in terms of prices - despite a certain decline in retail prices, the Czech Republic has not been able to move from the last place in the international comparison, in all monitored tariffs prepared by the EC;
6. Market dynamics in terms of market share - the share of the three MNOs is stable at 98% compared to the market dynamics in the EU where the CAGR of MVNOs is +6% or more;
7. High level of profitability - according to publicly available sources, the profitability of the three MNOs is almost 40%;
8. Low market elasticity - demand is consistently inelastic throughout the period under review. A change in demand does not affect the price change in any way.

The CTU assessed, in particular on the basis of the stagnation of MVNO market shares, that the market was not developing towards effective competition. In addition, the CTU found, based on international statistics, that prices for retail mobile services in the Czech Republic are among the highest in the EU, especially for data prices. This conclusion is further reinforced by the fact that wholesale prices are not falling at nearly the same rate as retail prices, which means that the room (margin) for MVNOs to operate in the mobile market is steadily shrinking.

Furthermore, the market structure was assessed as not conducive to effective competition on the basis of the application of game theory, which showed that unlike the retail market, where MNOs have a financial incentive to maintain the market structure, including market shares, at the current stable and very high aggregate level, the wholesale market is even dysfunctional and the measurement of market shares is practically irrelevant. More than 50% of all SIMs in the wholesale market are placed with MVNOs that are linked to them by ownership. In terms of voice traffic, in terms of the use of wholesale supply, up to 72% of wholesale supply is sold by the 3 MNOs to the 3 MVNOs linked to them by ownership. The situation is similar (72 %) for SMS offerings. In the case of the data offer, the share of the MVNOs linked with MNOs by ownership is as high as 73 %. Moreover, the share of wholesale sales to MVNOs linked with MNOs by ownership is increasing every year. Thus, MNOs keep the share of independent MVNOs in the retail market stable at around 2%[4] . The wholesale market thus only serves 2% of the retail market in a relevant way, moreover very limited due to the quality (price) limitation of the MNOs´ offers to independent MVNOs. This constraint has even increased, as is evident from the deterioration in the replicability of MVNO tariffs on the retail market compared to the 2021 market analysis. MVNOs are already squeezed into offering a price level of up to CZK 300, whereas in 2021 this threshold level was CZK 500.

Further evidence of the dysfunctional nature of competition in the market can also be found in the elasticity of demand for mobile services and its development - demand is consistently inelastic throughout the period under review. A change in demand does not affect the price change in any way.

All of these indicators confirm that the relevant market is not conducive to effective competition and that, on the contrary, the market situation is continuously deteriorating.

Criterion 3 - Competition law is insufficient in itself to adequately address the market failures identified

In addition to its own analysis, the CTU also provided a statement from the Office for the Protection of Competition confirming that competition law is not sufficient to remedy the failures identified. BEREC also agreed with this conclusion and the Commission did not raise any specific reservations in its Decision.

MNOs act in tacit collusion and have significant joint market power, as demonstrated by the analysis of the so-called Airtours criteria, carried out according to the European Commission's methodology

"Zero" criterion - market is conducive to tacit collusion

This criterion is assessed on the basis of an assessment of whether, by its structure, the market is conducive to tacit collusion. This is assessed by analysing the number of players in the market, their market shares, symmetric position or, for example, the homogeneity of services. Oligopolistic telecoms markets with a limited number of players (typically mobile markets) are considered to be eligible for tacit collusion as they are markets with a low number of players (3-4), which have stable market shares that are essentially symmetric and which provide comparable mobile services. This also applies to the relevant market analysed. The selected main findings for this criterion can be summarised:

1. Game theory has shown that MNOs have a financial incentive to maintain tacit collusion in both retail and wholesale markets;

2. The market share of independent MVNOs in the retail market has remained at 2% for a long time[5] and they have not been able to enter the wholesale market due to the aforementioned barriers; or

3. MNOs keep the wholesale market dysfunctional and non-competitive - MNOs serve a significant majority of the wholesale market (98%-99% of supply depending on the type of service component[6]) e.g. higher data prices in the wholesale market

[4] Measured by revenue volume.
[5] Measured by revenue volume.
[6] voice, SMS or data

than in the retail market, most of the wholesale supply is consumed by MVNOs with ownership links with MNOs, or the fact that none of the MVNOs changed wholesale service providers in the period under review.

Criterion 1 - Transparency

This criterion assesses whether each member of the oligopoly is able to detect the behaviour of the other members in order to verify whether they behave in the same way or not, i.e. whether they follow the same tacitly coordinated strategy. This requires the existence of a so-called focal point and the possibility of transparent monitoring of all players. In the case of the Czech market, the CTU has concluded that the focal point is the retail prices of mobile services, against which wholesale prices can be assessed, and that these prices are observable and transparent for all members of the tacit collusion, although there are multiple tariffs with different parameters and prices. This conclusion was also supported by BEREC, which stated that "market transparency may in principle be sufficient to meet the Airtours criteria".

For a more detailed explanation, the CTU adds that each MNO can easily monitor the level of wholesale prices offered by other MNOs through the level of retail prices of MVNO services active on other mobile networks. Wholesale prices (of MNOs) directly affect retail prices (of MVNOs), which is of course generally a basic principle allowing the CTU to intervene and regulate wholesale markets in general. If one MNO were to deviate from the unified approach and lower its wholesale prices in an attempt to gain a larger share of the wholesale market, then these lower wholesale prices would translate into lower retail prices that are publicly available and therefore observable by other MNOs. All MNOs know which MVNOs are accessing and receiving access from which MNOs and can thus easily monitor the retail prices and offers of MVNOs in the networks of the other two MNOs.

The fact that there has been no change in the wholesale operator[7] by MVNOs since 2014 also points to a dysfunction in the wholesale market. Whenever an MVNO initiates commercial negotiations with one MNO, which becomes common knowledge in the market almost immediately, other MNOs simply do not enter into any effective discussions with such an MVNO.

In addition to the findings already mentioned in criterion zero, the following selected main findings can be summarised:

1. Market transparency has been proven not only by market mapping (mapping of tariffs) and replicability analysis based on publicly available data, but also by the transparency of the so called "non-public" MNOs offers on the retail market, which, in addition to the fact that they are on the decline in the market and are used only minimally[8], are also transparent - either they are found in the MNOs' price lists (and thus are not actually non-public offers) or they are traceable from public sources (which even specialise in collecting information on these offers, but themselves state that the "vast majority" of customers do not use them[9]), of which the CTU provided evidence;

[7] The CTU does not consider a change of wholesale operator to be a forced change caused by a merger/purchase and a change of ownership of the MVNO.
[8] Thus, they are irrelevant to the analysis in terms of quantitative analysis.
[9] For example, https://mojeretence.ictx.cz/.

2. The aforementioned application of game theory has already demonstrated that it is directly disadvantageous for MNOs to deviate from the tacit collusion; the CTU has also demonstrated the functionality of a retaliatory mechanism in the event of MNOs deviating from the tacit collusion, which is also based in principle on financial incentives for MNOs;

3. The non-functionality of the wholesale market and the impossibility of replication of the core and prospective data-oriented tariffs of MNOs on the retail market by MVNOs was also demonstrated on the basis of the CTU questionnaire survey among MVNOs.

Criterion 2 - Sustainability

This criterion assesses whether the state of tacit collusion is sustainable, i.e. whether there are retaliatory measures in place in the event of behaviour deviating from the common course of conduct (common strategy). The crucial point for the assessment of this criterion is whether there is a specific measure identified on the market that could be used by the other members of tacit coordination to deter (preventively or reactively) deviating behaviour. The CTU found this criterion to be met based on the historical conduct of the MNOs where 2 MNOs were able to react within days to the price reduction by the last MNO and as a result there was no change in market shares or further attempts at similar reductions and deviations, indicating the effectiveness of this demonstrated retaliatory measure. The CTU further added reasoning on the retaliatory mechanism. The CTU further elaborated the analysis based on game theory, according to which in the market under review it is not advantageous for any MNO to deviate from the existing common tacitly coordinated strategy of not allowing effective market entry of MVNOs or other players into the wholesale market, thereby protecting their existing retail market shares.

Criterion 3 - existence of external factors

This criterion assesses whether the foreseeable reaction of actual and potential competitors and consumers would jeopardise the outcomes expected as a result of the joint strategy. The CTU has assessed this criterion as meaning that there are significant barriers to entry by another network operator and, at the same time, that neither the demand side nor the (current or potential) competition of potential tacit colluders has the power to disrupt any tacit collusion. This is particularly true in the time horizon covered by the analysis.

The joint significant market power and in particular the tacit collusion of the 3 MNOs in the retail and wholesale markets was also evidenced by a mathematical application of game theory - **none of the MNOs has an economic incentive to change their behaviour and not be part of the tacit collusion**.

Proposal for measures to increase competitiveness and market attractiveness

The CTU's ambition is to achieve an improvement in the application of regulatory instruments that would significantly increase the level of competition and the price level in the retail market (Austria is currently 50% below the EU average in the current price comparison), similar to the situation in Austria in 2012-2013.

The CTU proposes to introduce wholesale market regulation that sets wholesale prices for MVNOs based on the principle of margin squeeze test.

Such a reduction in wholesale prices **will enable a gradual reduction in the price level of mobile services on the retail market in the Czech Republic from the current level of 90% above the EU average[10] to the EU average**. These measures will work in synergy with the possible entry of another MNO into the Czech market in 2025 or later.

Settlement of the Commission's observations pursuant to the decision of 17 February 2022

Point	**Reminder:**	**The CTU's response to the comment**
On the first criterion of the 3C test		
Points 77 and 78	Following the serious doubts raised, the Commission considers that the draft measure is not sufficiently forward-looking as required by Article 67(2) of the Code. The Commission takes note of the CTU's proposal to impose the proposed regulation for a period not exceeding four years and then to conduct a mid-term market assessment. In this respect, the Commission does not question the possibility or even the usefulness of a mid-term market assessment, in particular because of the rapidly changing market environment, but considers that the CTU's notified proposal for action should already at this stage be based on a forward-looking analysis as required by Article 67(2) of the Code. In the Commission Staff Working Document accompanying the 2020 Recommendation on relevant markets, the Commission stated that "Since ex ante regulation addresses a lack of effective competition that is expected to persist over time in line with the duration of the review period, the market analysis carried out by the NRA must be forward-looking". Moreover, "a tendency towards effective competition does not necessarily imply that the market will reach a state of effective competition during the review period. It simply means that there is clear evidence of market dynamics during the period, which suggests that a state of effective competition will be achieved in the foreseeable future without ex ante regulation in the market concerned."	The CTU has carried out a forward-looking analysis in accordance with Article 67(1) of the Treaty. Notwithstanding the fact that the CTU has carried out a forward-looking analysis, such as the analysis of national roaming or the conclusions of the market survey and the application of game theory, all these (and other) parts of the analysis indicate that the poor market situation will remain unchanged without regulatory intervention until at least the end of 2024 (see e.g. Chapter C.8 or the time definition of the relevant market) and proposes to set remedies for this period.
Point 79	The Commission does not dispute that barriers to entry in the mobile market (first criterion) are typically high for new entrants to become infrastructure operators and wholesale service providers. **However, regulated access options are available to interested parties in the Czech market**. Under the terms of the 5G auction in 2020, O2 is obliged to provide access to national roaming on its networks not only to CentroNet (a new entrant in the mobile market and one of the winners of the 5G auction), but also to Nordic Telecom (which won 20 MHz of spectrum in the 5G auction on top of the 80 MHz already won in the 2017 auction) and PODA (as the winner of the 3.6-3.8 GHz auction in 2017). The Commission understands that in order to qualify for regulated national roaming, access bidders must	The CTU agrees that there is a regulated approach to national roaming, but this will not affect the market situation as estimated by the CTU before 2025, as the CTU suggests in Section C.8 below.

[10] In the case of data prices, the difference is up to 200%, according to a comparison by Cable.co.uk.

Point	Reminder:	The CTU's response to the comment
	demonstrate that they have achieved coverage of 10% of the population for 5G services, plus a service availability condition defined as 500 base stations. The Commission considers, as already stated in the letter of serious doubts, that two new entrants (Nordic Telecom and PODA) have either already reached or are close to reaching the required number of base stations.	
Point 80	In addition, the obligation to provide access to O2 spectrum on cost-based terms is valid until 2029, so the Commission considers that it is in the interest of access seekers to enter the market as quickly as possible to cover their costs and to benefit from this regulation over a longer period, which should allow for the replicability of existing mobile service offerings. Moreover, the CTU has the necessary legal tools at its disposal to enforce this existing regulatory obligation. Furthermore, in its response to the request for information, the CTU confirmed that the national roaming obligation provides that O2 may not prohibit eligible bidders from providing wholesale services34.	The CTU refers to its response above, where it concluded that national roaming will not have an impact on the market situation before 2025.
Point 81	The Commission takes note of the CTU's view, as expressed in the Notice and responses to information requests, that potentially eligible access seekers are currently unable to enter the market and are expected to enter the market in 2026 or even later. However, the CTU does not support this conclusion with any convincing evidence. The Commission also notes that it was the CTU itself that imposed the network access obligation on O2 for the period up to 2029. The Commission assumes that the timeframe of the access obligation imposed on O2 is based on the principle of proportionality, to allow access seekers to enter the market early enough to enjoy regulated services for a number of years and to provide services while they roll out their networks. According to O2's statement, national roaming can indeed be provided to Nordic Telecom as early as 2022.	The CTU has partially accepted the Commission's comments and has shortened the horizon and the product market definition on the basis of the additional analysis, the market investigation and the technical analysis. The CTU supports this analysis with the specific evidence set out in Section C.8.
83	Moreover, the long entry period described by the CTU does not reflect the experience of a fourth operator entering the market in other Member States. The entry of a fourth operator in Slovakia (which the CTU itself cites as an example) demonstrates that a new operator can start competing with an incumbent within a few years. Similar accelerated entry has occurred in Poland (Play), France (Iliad) and Italy (Iliad).	The time horizon of 'several years' within which a new entrant can start competing with incumbents corresponds to the time horizon for which this regulation is set, i.e. until the end of 2024. The CTU does not disagree with the Commission's comment on this point.
84	The obligation imposed on all 5G spectrum holders to provide MVNOs with access to provide mobile data services should further reduce barriers to entry in the retail market. This obligation should be fulfilled by mobile network providers by mid-2022, but already at this stage the Commission notes that T-Mobile, in its publicly available reference offer, opens up the possibility 'to provide to its subscribers any other electronic communications services not covered	As the CTU states in Section 5.3, the regulated wholesale offers mentioned above only concern data services and are therefore not able to ensure the desired effect on the analysed market. For the case, in the CTU's view, of the purely theoretical possibility of combining these offers with other wholesale products for voice and SMS on 1 customer SIM, the CTU has carried out a replicability analysis in Chapter 5.3 and concluded that T-Mobile's published offer, in the

Point	**Reminder:**	**The CTU's response to the comment**
	by this Treaty that a Party is authorised to provide under its certificate'.	case of a purely theoretical combination with commercial wholesale agreements, would not substantially improve the low replicability of the MNO offers for medium and larger MVNOs and would even worsen it for smaller MVNOs. The CTU is also conducting a review of compliance with the obligation to publish wholesale bids from the 5G auction. However, these obligations are not capable of replacing the proposed regulation for the reasons described in Section 5.3.
85	Further, based on information from the CTU, there is clear evidence of MVNO presence in the market and that entry into the retail market is still possible and occurring, although the potential for growth may be limited. As of 2014, 68 of the 133 currently active MVNOs provide mobile services. Over the past five years, the number of MVNOs has fluctuated between 162 and 133. Several new MVNOs enter the market each year and some MVNOs exit the market. The Commission considers that all these MVNOs have entered the market on the basis of commercial agreements.	As described in chapters 2.2 and 3.1, the CTU does not dispute the formal possibility to enter the market as MVNOs, but these MVNOs are not able to gain any relevant market position and exert competitive pressure on the MNOs due to the significant market power of the MNOs - see the market share of independent MVNOs, which in the long term does not exceed 2% (measured by revenues). The international comparisons presented in Chapter 2.2 also show that MVNOs in the Czech Republic have a significantly lower market share than in competing developed markets. The CTU therefore assesses the entry of independent MVNOs on the market as inefficient due to the barrier of non-replicability of MVNOs' retail offers.
86	The Commission recognises that MVNOs currently operating in the market face replication problems with the retail offerings of mobile network operators. However, the already existing spectrum licence-based regulation referred to above should, on the one hand, strengthen competition at wholesale level and, on the other hand, provide opportunities for access seekers to provide high-speed Internet access services to the same extent as those services are provided by the relevant 700 MHz allocation holder.	As the CTU describes above and later in the analysis, the regulated national roaming referred to in this comment cannot be expected before 2025. By then, ex ante regulation must be in place. See also the settlement of paragraph 84.
87	The evidence presented in the draft measure therefore does not support the conclusion that the first criterion is met.	See above. On specific evidence, the CTU refers in particular to Chapter C.8 on the expectation of national roaming.
On the second criterion of the 3C test		
88	As regards the second criterion (tendency towards effective competition), the Commission (like BEREC) acknowledges the existence of competition problems in the Czech mobile market. There is still room for more competition at retail level, as prices charged remain above the EU average. Even MVNOs cannot offer competitive prices to subscribers due to burdensome conditions at wholesale level. However, the Commission notes that some wholesale and retail prices have decreased in recent years. Moreover, as mentioned above, the trend towards effective competition does not necessarily mean that the market will reach a state of effective competition during the review	Although the CTU is aware of the declining prices on the retail market, this trend is significantly slower compared to other EU Member States, which means that the Czech Republic's position is not improving or even deteriorating in relative terms. As the CTU illustrates in Chapter C.7 and also 3.2, the trend in the Czech Republic is not towards effective competition, but instead the level of competition is steadily decreasing.

Point	Reminder:	The CTU's response to the comment
	period. The access obligations imposed under spectrum licences should open up the market to new entrant(s) with the ambition to become the fourth mobile network operator. In addition, regulated access to mobile data should help existing MVNOs to update their offerings.	
89	The Commission therefore considers that the CTU has not sufficiently taken into account the importance of the existing regulation, which can improve the competitive situation in the market during this market review period.	The CTU refers here to the evaluation of the current regulation and its expected impact on the market no earlier than 2025 above.
On the third criterion of the 3C test		
90	Finally, in view of the fact that the first and second criteria are not met, the Commission maintains its concerns expressed in the letter of serious doubts, but leaves open the question whether the third criterion is met. Although the Commission does not consider that the proposed regulation is proportionate, it recognises that regulatory intervention by the CTU in the form of spectrum licence conditions should play a key role in ensuring that market conditions improve in the Czech Republic.	The CTU maintains its position that the application of competition law alone will not sufficiently ensure that the identified market failures are remedied. This conclusion was also explicitly supported by the Czech Competition CTU.
On market transparency		
94	In analysing the CTU's arguments on retail pricing strategy, the Commission maintains its view that retail prices are indeed difficult to monitor. In this respect, the Commission does not share BEREC's view. Firstly, in recent years, a large number of discount offers have played a significant role in the market and allowed retail customers to benefit from lower prices. The CTU now observes that two of the three incumbent mobile operators have significantly reduced the number of individual discount offers and apply public price lists. However, if the third operator is still generally pursuing a strategy of retaining its customers by offering lower targeted offers, the transparency of the market as well as the collusive behaviour of the three MNOs must be called into question.	The CTU insists that non-public offers do not play a role in the market and their number is significantly decreasing. This is described in Chapter 5.1.
95	The CTU argues that retention pricing aims to retain existing customers, not to attract new customers (as new potential customers do not see these prices). The Commission does not dispute this. However, this different pricing strategy of one of the three mobile network operators suggests that (i) one operator is pursuing a pricing strategy different from any alleged common market behaviour and (ii) the behaviour of this operator shows that it cannot act independently of its own end-users, as it needs to attract them with new offers in order to maintain a contractual relationship with them. Both of the above findings contradict the finding of SMP.	See above and further in detail in Section 5.1.The CTU further notes that the number of non-public offers is so low and insignificant in terms of the overall market that it does not constitute a different pricing strategy of one of the operators that would prove that there is no tacit collusion in the market.
On the sustainability of tacit collusion		

Point	Reminder:	The CTU's response to the comment
96 a 97	It is essential that the state of tacit collusion can be maintained for some time, i.e. there must be an incentive not to deviate from the common way of behaving in the market. This aspect needs to be analysed from a historical perspective, but also with a view to a forward-looking analysis. This forward-looking analysis must take into account expected or foreseeable market developments in the period up to the next review in order to determine whether a tacit collapse is a likely market outcome. In this context, the Commission refers to the regulatory obligations imposed on O2 (as part of the spectrum conditions) to provide access to national roaming to new entrants holding 5G spectrum. The Commission notes the view of the CTU that regulated access under the spectrum licence will not be granted during this market review. However, this view is not supported by any convincing evidence. In addition, the Commission has learned during its investigation that O2 and Nordic Telecom, without waiting for the eligibility criteria to be met, are in fact continuing negotiations and that market entry is possible later this year. In its submission to the Commission, O2 confirmed that negotiations with Nordic Telecom have progressed to the next stage and that they are currently discussing a draft national roaming contract. Although Nordic Telecom is unlikely to meet the conditions for mandatory provision of national roaming before 2023, O2 estimates, based on ongoing commercial negotiations, that it will provide access to national roaming on its mobile network during 2022. In the hypothetical situation referred to by the CTU, in which such access would not be provided despite meeting the eligibility criteria, the CTU has, as it has acknowledged, the appropriate legal tools to ensure O2's compliance with these regulatory obligations.	See above on the expectation of the effect of national roaming on the market only in 2025, as well as Section C.7 (test of tacit collusion via game theory) and the description of retaliatory mechanisms in Section 5.2. The MNOs are motivated to remain in the tacit collusion based on financial incentives, while there is a functional retaliatory mechanism that would be applied in case the MNOs deviate from the joint strategy.
98	The fact that O2 not only faces pressure from a competitive market, but also has to comply with regulatory obligations, creates a significant asymmetry in the market, as players in an oligopolistic market are no longer in the same position to act independently of their competitors. As BEREC has pointed out, O2 has to comply with its regulatory obligations and will not be able to act independently of operators who can apply for regulated domestic roaming on the basis of cost-based pricing.	See above on the expected effect of national roaming on the market only in 2025. Until then, O2's position will not be different from that of other MNOs. In this respect, the CTU further notes that the fact that O2 has voluntarily auctioned off the block associated with the national roaming obligation does not affect the fact that there is a concerted strategy not to allow MVNOs into the wholesale market in such a way that they are able to compete in the retail market with MNOs.
99	The same applies to the obligation imposed on all 5G spectrum holders to provide access to MVNOs for the purpose of providing mobile data services. This obligation should be met by mobile network operators by mid-2022. The Commission agrees with the CTU that regulated offers that allow access seekers to provide internet-only services should be considered as complementary to mobile services, which typically consist of bundled products that also include voice and SMS services. However, the Commission	See the analysis of T-Mobile's published offer in Section 5.3 and the settlement of paragraph 84. There is no situation in the market where an MNO would provide wholesale data access to an MVNO at a regulated price under a margin squeeze prohibition, while providing additional wholesale services (voice and SMS) on top of that data at prices that would allow the MVNO to replicate the MNO's offerings.

Point	Reminder:	The CTU's response to the comment
	reiterates that it cannot be excluded at this stage that 5G-based data offers (provided on regulated terms) could be bundled with MVNO commercial agreements covering other services (e.g. voice and SMS). This could increase the attractiveness of MVNO offers. Such a possibility exists in T-Mobile's recently published reference offer. This operator published its offer approximately six months before the legal deadline and before its competitors. The Commission notes that the CTU has decided not to wait for these obligations to be met and their impact on the market.	
100	In addition, there is a significant asymmetry between the three mobile network operators in general, particularly between T-Mobile and O2 on the one hand and Vodafone on the other. In terms of market shares, T-Mobile and O2 have retail market shares in excess of 30 %, while Vodafone is smaller, with market shares below 25 %. This asymmetry is even more significant at the wholesale level, where Vodafone has the largest market share (approximately 46 %), while O2 has approximately 36 % and T-Mobile 17 %. This asymmetry is further accentuated by the different cost structures of the three mobile network operators (in particular Vodafone, which, unlike T-Mobile and O2/CETIN, is not part of a network sharing agreement and operates on the wholesale market).	The retail market shares of network operators are virtually constant over time. This is a consequence of market characteristics, For symmetry see also chapter C.7.
On the retaliation mechanism		
101	The CTU believes that retaliation in this case may occur at both retail and wholesale levels. It explains that non-deviating mobile network operators would respond by reducing their own prices at the retail level. If the incumbents were to enter into a price war, market shares would remain the same (although even this is not certain), but at lower prices and profitability. Given that this outcome would reduce the level of profitability of mobile operators, the CTU argues that the retaliatory mechanism at the retail level provides a credible incentive not to deviate from the common course of conduct. The CTU cites several examples of price competition between mobile network operators and argues that these show that a possible deviation from a common strategy can be immediately punished by an immediate reaction from other players. However, the Commission notes that CTU has not provided any evidence that these price reductions are in any way retaliatory and that they are not a standard element of competition in the market. As regards the need to apply sanctions, the General Court has made it clear that the mere existence of an effective deterrent mechanism is in principle sufficient, since there is no need to apply sanctions if the members of the oligopoly comply with the common policy. The most effective deterrent is one that does not have to be used38. In the present case, however, the Commission has concluded on the basis of evidence39 provided by the CTU that retail price reductions,	On the retaliation mechanism, see the addition of the game theory argument in Chapter C.7.

Point	Reminder:	The CTU's response to the comment
	usually initiated by one operator, will be followed by others, resulting in overall lower retail prices in the market. If a mobile network operator were able to act independently of its competitors and customers, prices would return to or approach their original levels after a period of retaliatory price decreases. However, this has not happened. The price reductions in question cannot therefore be considered an effective retaliatory mechanism, since they do not lead to price changes that do not last long (once the penalty has taken effect, prices should return to a higher level), but are accepted by other market players and are not reversed. This shows the ineffectiveness of such a retaliatory mechanism and calls into question its existence.	
102	The Commission further notes that while it cannot be ruled out that such retaliation may occur, it is difficult to draw a clear conclusion as to the future behaviour of the three incumbent mobile operators. The Commission further considers that the CTU has not sufficiently considered whether the reaction by the MNOs in the retail market to reduce their retail prices in response to possible improved wholesale agreements by one or more MVNOs is plausible. The alleged retaliatory measures in the form of price reductions would have had significant negative effects on the MNOs and would have led to lower profitability and limited growth in retail market share (if the other MNOs had indeed adjusted their strategies).	On the retaliation mechanism, see the addition of game theory arguments in Section C.7 and 5.2.
103	Finally, if the CTU decides to enforce its obligations under the spectrum licence, O2 will be forced to provide access on the basis of regulated prices, regardless of the potential retaliation it would face. Enforcing national roaming in favour of an operator that already has its own infrastructure and spectrum may indeed change the dynamics of the market. This operator would be able to put pressure on the members of the oligopoly both at retail level (as a 'non-conforming' operator) and at wholesale level as a fourth MVNO access provider. BEREC agrees with the Commission that the regulatory obligations imposed on O2 (as part of the 2020 spectrum auction) ensure that O2's behaviour must be so different from other MNOs as to raise doubts as to whether such tacit collusive behaviour could exist during the market review period.	With regard to the enforcement of the existing regulatory obligation for national roaming, the CTU refers in particular to its comments on the Commission's comments on the first criterion of the so-called 3-criteria test, in particular with regard to the expected effect of national roaming only in 2025.

C.1 Basis for regulation - the state of the Czech mobile market

According to a comparison by the European Commission, prices for mobile services in the Czech Republic are still the highest in the entire European Union. This is a long-term trend over the last decade, with prices for mobile services, especially mobile data, among the most expensive in Europe. In addition to the European Commission, Strategy Analytics (Teligen Tariff & Benchmarking) has consistently reported high prices for mobile services in the Czech Republic in its analyses, including the latest analysis from the end of 2021, where the Czech

Republic's position has deteriorated compared to 2020. In particular, in the area of tariffs with higher data volumes, the Czech Republic continues to be ranked as the country with the worst situation (position) in the EU[11] .

Mobile data prices offered by the three major network operators in the wholesale market are more than twice as higher[12] than the already very high retail prices. Thus, the already severe situation for the average wholesale data price has worsened for H1 2021 compared to 2020: the price has remained unchanged and the average retail data price has fallen between 2020 and H1 2021. Compared to 2020, this implies an even more intense squeeze of MVNOs from the retail market by the existing three mobile operators. Up to 84% of MNO products are currently not replicable by MVNOs, which represents a deterioration from the previous relevant market analysis carried out by the CTU in 2021, when the non-replicability rate of MNO offers was 82%.

In the past, the CTU has tried to improve the competitive environment in the mobile market by using other regulatory means within the scope of its competences under the Act. In particular, by increasing the number of network operators (MNOs) on the mobile market in the Czech Republic by setting conditions for new entry in tenders for frequency allocations for the operation of mobile networks. There have also been several legislative changes in the past period to enable faster switching between service providers, including eliminating switching costs for consumers. At the same time, the CTU has acted as a mediator in negotiations between MNOs and MVNOs within its remit and has issued opinions accordingly. Nevertheless, an adequate level of competition has not been achieved in the market, in particular at price levels comparable to those achieved in effective competitive markets within the EU, as documented by the CTU in the analysis presented in section C.3 below.

The unsatisfactory situation and development of the mobile market in the Czech Republic was further aggravated by the situation when T-Mobile terminated the wholesale contracts of a large part of MVNOs in its network in 2021. There is therefore uncertainty in the contractual relations between MNOs and MVNOs in the wholesale market. It is possible that a similar situation could recur at any time, inter alia because wholesale contracts normally contain the right for MNOs to terminate the contracts within a relatively short period of three months without giving reasons. The risk of uncertainty and instability in the wholesale market, particularly with regard to the possibility of MVNOs being squeezed out, is also due to the fact that in the event of termination of a wholesale contract, negotiating any new contract, whether with the same or another MNO, would be complex and lengthy, as evidenced, inter alia, by the experience of the CTU in 2021, when many contracts terminated by T-Mobile took many months to renew. Despite these contract renewals, however, this practice by T-Mobile has demonstrated the existence of a potential problem of contract terminations and access denials in the future.

The CTU is not the only one to assess the situation on the mobile market in the Czech Republic negatively. Rewheel Research in its analysis "The Greek mobile market is the most expensive market in EU"[13] from 2021 cites the Czech Republic as one example of an

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[11] Source: the EC study "Mobile and Fixed Broadband Prices in Europe 2020", published in 2021

[13] Source : https://research.rewheel.fi/downloads/The_3-MNO_Greek_market_is_the_most_expensive_market_in_EU_PUBLIC_VERSION.pdf

incompetent oligopolistic market[14] and a market with consistently highest prices. The company also analysed the factors that have an impact on the deterioration of competition in the market and are harmful to consumers. The Czech Republic meets most of these factors - e.g. the presence of 3 MNOs with a significant portfolio of fixed telecommunications services.

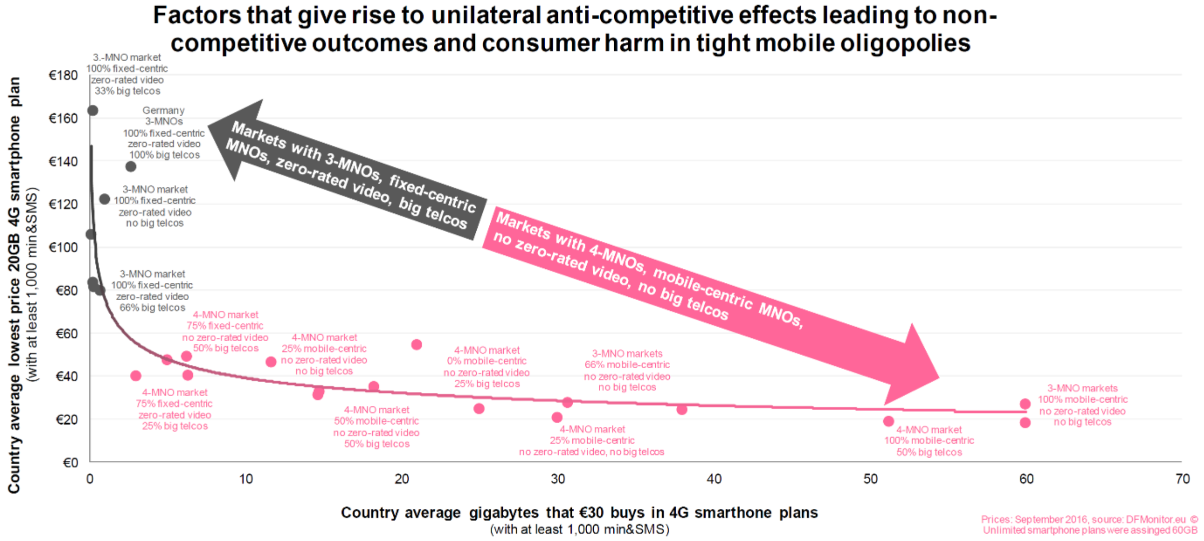


Image 1: Factors influencing the degree of competition in the mobile market
Source: study by Rewheel Research (PUBLIC VERSION), 11/ 2021 - https://research.rewheel.fi/downloads/The_3-MNO_Greek_market_is_the_most_expensive_market_in_EU_PUBLIC_VERSION.pdf

[14] Although the original analysis is based on data from 2016, Rewheel also presents it in the 2021 analysis. Compared to 2016, there has been no improvement in the level of competition in the Czech Republic (rather a deterioration), so the assessment of the Czech Republic can still be considered relevant.

2016

Index rank	Country	Index	Competition outcome	Oligopoly classification
		100% (max)		
28	Germany	90%	Non-competitive	Tight oligopoly
27	Greece	83%	Non-competitive	Tight oligopoly
26	Portugal	80%	Non-competitive	Tight oligopoly
25	Hungary	80%	Non-competitive	Tight oligopoly
24	Slovak Republic	76%	Non-competitive	Tight oligopoly
23	Czech Republic	73%	Non-competitive	Tight oligopoly
22	Romania	71%	Non-competitive	Tight oligopoly
21	Malta	68%	Non-competitive	Tight oligopoly
20	Belgium	63%	Non-competitive	Tight oligopoly
19	Luxemburg	63%	Non-competitive	Tight oligopoly
18	Spain	63%	Non-competitive	Tight oligopoly
17	Cyprus	60%	Non-competitive	Tight oligopoly
		59%		Threshold
16	Bulgaria	57%	Sub-competitive	Sub-competitive oligopoly
15	Croatia	56%	Sub-competitive	Sub-competitive oligopoly
14	Italy	56%	Sub-competitive	Sub-competitive oligopoly
13	Austria	53%	Sub-competitive	Sub-competitive oligopoly
12	Slovenia	50%	Sub-competitive	Sub-competitive oligopoly
11	Ireland	50%	Sub-competitive	Sub-competitive oligopoly
10	Netherlands	49%	Sub-competitive	Sub-competitive oligopoly
9	United Kingdom	47%	Sub-competitive	Sub-competitive oligopoly
8	France	45%	Sub-competitive	Sub-competitive oligopoly
		43%		Threshold
7	Denmark	34%	Effective competition	Competitive oligopoly
6	Poland	34%	Effective competition	Competitive oligopoly
5	Sweden	28%	Effective competition	Competitive oligopoly
4	Estonia	17%	Effective competition	Competitive oligopoly
3	Lithuania	17%	Effective competition	Competitive oligopoly
2	Latvia	13%	Effective competition	Competitive oligopoly
1	Finland	13%	Effective competition	Competitive oligopoly
		0% (min)		

Image 2: Comparison of the degree of competition in mobile markets in European countries
Source: study by Rewheel Research (PUBLIC VERSION), 11/ 2021 - https://research.rewheel.fi/downloads/The_3-MNO_Greek_market_is_the_most_expensive_market_in_EU_PUBLIC_VERSION.pdf

The situation in the mobile market is therefore very serious and urgently requires regulatory intervention.

C. 2 Summary of the current situation, Commission decisions and BEREC opinion and adoption of measures

In November 2021, in accordance with Article 32 of the Code and Section 131 of the Act, the CTU submitted a proposal for long-term ex ante regulation of the wholesale mobile market for European consultation. The Commission expressed serious doubts about the draft measure in accordance with Article 32(4) of the Code, which it transmitted to the CTU on 20 December 2021. BEREC adopted its opinion on the serious doubts, partly agreeing with the Commission's doubts and partly agreeing with the CTU. Subsequently, on 17 February 2022, the Commission issued a decision under Article 32(6)(a) of the Code requiring the CTU to withdraw the draft long-term measure.

In its decision to withdraw the draft measure, the Commission did not support the original draft measure of long-term ex ante regulation of the mobile market, in particular in view of the expected effects of O2's national roaming commitment taken in the 700 MHz radio frequency tender, which the European Commission concluded would increase the level of effective competition in this market in the medium to long term. At the same time, the European Commission noted that the appropriate approach could be to apply parallel regulatory instruments that have the potential to achieve effective competition in the market.[15]

At the same time, BEREC, the European association of regulators, although it shared some of the European Commission's reservations, concluded in its opinion that the Czech wholesale and retail mobile market has serious competition problems. [16]

In completing its analysis of the relevant market, the CTU also focused on addressing the reservations raised by the European Commission and BEREC in their opinions.

In the context of the above, the CTU notes the following for the sake of recapitulation:

1. The Czech Republic's position in international retail price comparisons has worsened. Retail prices for mobile services in the Czech Republic continue to be the highest in the EU. Although there is some decline in retail prices in the medium term, prices in other EU countries are falling faster than in the Czech Republic. This is also confirmed by the latest data and analysis from the European Commission.
2. The position of independent MVNOs in the retail market is also not improving, with their market share stagnating. MVNOs "cannot offer competitive prices to subscribers". This is due to 'burdensome conditions' in the wholesale market. The wholesale market in the Czech Republic is therefore not functioning as it should, i.e. it is not tending to competitive prices in the downstream retail market for mobile services. The survival of independent MVNOs and the wholesale market itself is threatened.
3. Based on the information received from relevant market players, and the CTU's assessment thereof, the CTU considers that the obligation to provide access on the basis of national roaming taken up under the 5G auction will not be fulfilled before 2025, if at all, creating a delay between the current undesirable situation requiring an urgent solution and the effectiveness of this obligation. At present, in the CTU's view and based on its analysis, there is also still no certainty of new nationwide

[15] In its statement of reasons for the decision of 17 February 2022 pursuant to Article 32(6) of Directive (EU) 2018/1972 (Withdrawal of notified draft measure) in Case CZ/2021/2351: Wholesale market for access to mobile services, the European Commission states, inter alia: *'...the Commission (like BEREC) recognises the existence of competition problems in the Czech mobile market. There is still room for more competition at the retail level, as prices set remain above the EU average. Even MVNOs cannot offer competitive prices to subscribers due to burdensome conditions at wholesale level."*

The European Commission also states in its decision that *"The access obligations imposed under spectrum licences should open the market to new entrant(s) with the ambition to become the fourth mobile network operator. In addition, regulated access to mobile data should help existing MVNOs to update their offerings."*

The European Commission goes on to state in a later part of its decision that *"In particular, the entry into the market of a new mobile operator that could quickly become an MVNO (either on the basis of national roaming provided by O2 on cost-oriented terms or as a result of spectrum usage rights acquired) and which could also provide MVNO access, can be expected to create additional competitive pressure at both retail and wholesale levels and undermine any potential tacit collusion."*

[16] The BEREC opinion states, for example, *"BEREC is of the view that the data set provided by CTU, although not complete, shows that the mobile market at both the retail and wholesale level has serious competition problems."*

And further: "*The "overall overall data lead to the conclusion that:*
- *There is significant market failure at the retail level with the prices established well above the EU average. MVNOs cannot offer competitive prices to subscribers due to the burdensome terms and conditions at the wholesale level.*
- *The competition in the wholesale market that would trigger competition at the downstream market is insufficient. The behaviour of the three MNOs shows that they exercise their power in order to force the MVNOs to accept commercial agreements that do not allow them to compete with the MNOs on equal terms.*
- *Market shares are stable and give no indication of tendency towards competition in the near future. "*

MNO entry into the retail and wholesale markets based on the use of commercial (i.e. unregulated) national roaming for 2024 or beyond.

4. Regulated access to mobile data on 5G can only help MVNOs upgrade their offerings to a limited extent, given the limited 5G coverage, low penetration of compatible handsets, the complexity or even impossibility of combining this wholesale offering on a single customer SIM with other wholesale voice and SMS products and, last but not least, its financial disadvantage, which even exacerbates the already worsened replicability of MVNO tariffs.
5. The CTU has not yet received information that would clearly confirm the interest of 2 other potential new network operators (who are entitled to national roaming on O2's network) to provide access to the wholesale market for MVNOs and thus create competitive pressure at the wholesale level and disrupt the tacit collusion. Such wholesale provision by them is not even required in the context of the use of the national roaming entitlement.
6. The wholesale market will continue to be volatile: MVNOs may continue to exit the market due to unfavourable wholesale terms and the non-replicability of key MNO offerings in the retail market.
7. Wholesale prices could continue to evolve disproportionately to retail prices (e.g. increase as they did for the 2020 data price or decrease at a significantly slower pace), while retail prices would continue to fall, albeit at a pace insufficient compared to other countries.
8. MVNOs would also continue to be squeezed out of the market through the aggressive offering of bundled mobile, fixed internet and TV services by MNOs in the retail market, which MVNOs cannot successfully offer due to the non-replicability of the mobile component of the bundle in the retail market. This would push MVNOs not only out of the retail market for mobile services but also out of the fixed market.

C.3 International comparison of the retail market situation in the Czech Republic

According to the European Commission's (EC) study "Mobile Broadband Prices in Europe 2019"[17] of 19 September 2020, the price level of mobile services on the retail market in the Czech Republic was higher by more than 150%. Given the ever increasing demand and consumption of mobile data services[18] and the growing importance of mobile data services when switching mobile operators in the Czech Republic, this information is alarming and supports the thesis of low competition in the mobile telecommunications services market in the Czech Republic.

[17] Source : https://digital-strategy.ec.europa.eu/en/library/mobile-broadband-prices-europe-2019
[18] E.g. in KPMG's Digital Home 2021 study: https://assets.kpmg/content/dam/kpmg/cz/pdf/file.pdf.

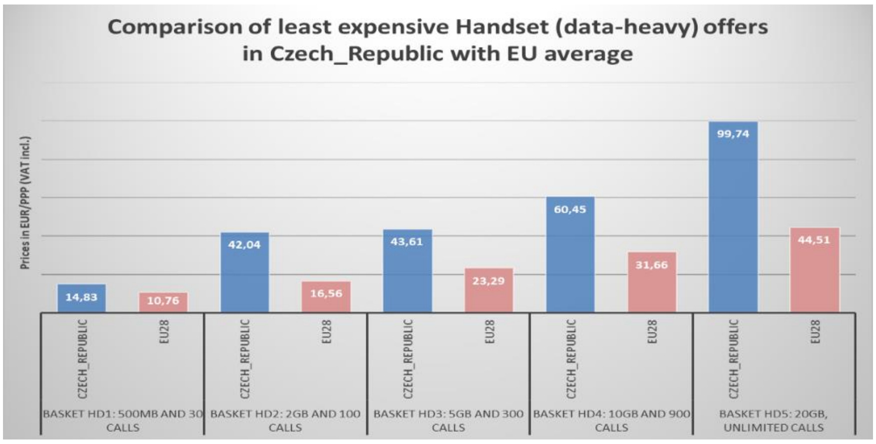


Image 3: Comparison of service prices in the Czech retail mobile market vs. EU average
Source: the EC study "Mobile Broadband Process in Europe 2019, 19 Sep 2020

		Price in EUR/PPP (VAT included)	Difference with EU average
Basket HD1: 500MB and 30 calls	Czech_Republic	14,83	38%
	EU28	10,76	
Basket HD2: 2GB and 100 calls	Czech_Republic	42,04	154%
	EU28	16,56	
Basket HD3: 5GB and 300 calls	Czech_Republic	43,61	87%
	EU28	23,29	
Basket HD4: 10GB and 900 calls	Czech_Republic	60,45	91%
	EU28	31,66	
Basket HD5: 20GB, unlimited calls	Czech_Republic	99,74	124%
	EU28	44,51	

Image 4: Service price differences in the Czech retail mobile market vs. EU average
Source: the EC study "Mobile Broadband Process in Europe 2019, 19 Sep 2020

According to the updated study "Mobile and Fixed Broadband Prices in Europe 2020", the Czech Republic is one of the countries with the highest prices for mobile services:

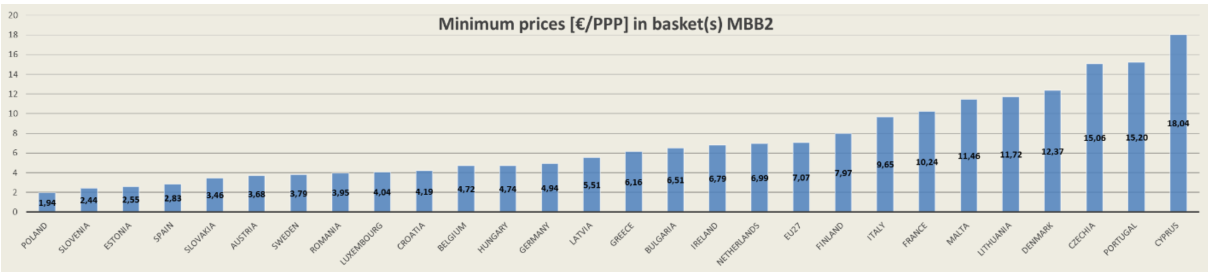


Image 5: Service price differences in the retail market for mobile services in the Czech Republic and EU countries
Source: the EC study "Mobile and Fixed Broadband Prices in Europe 2020", published in 2021

The findings of the study confirm the data from previous periods as well as the CTU's conclusions on price increases: *'Prices for mobile broadband services in the Czechia show no clear trend compared to the previous year (2019). Prices for offers including 0.5 GB mobile data with no calls rose very strongly."*

The new study also shows no improvement compared to other EU countries: *'Compared to all EU27 countries, prices for mobile broadband in the Czech Republic are much higher than the EU average. No offers were found to be less expensive than the EU average."*

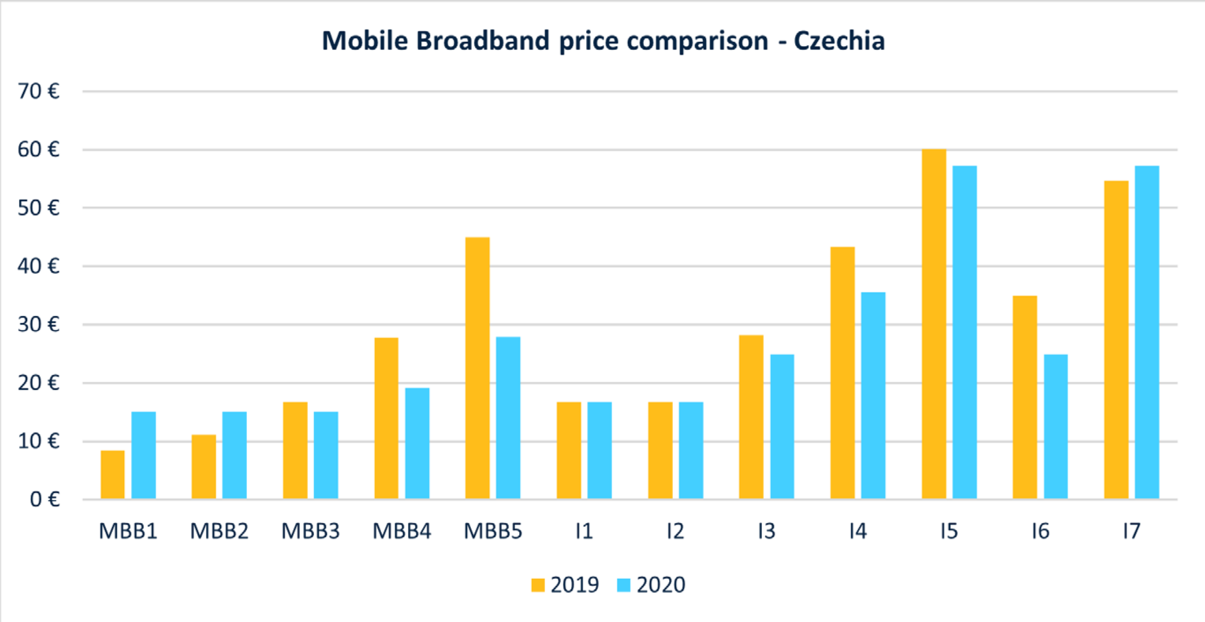


Image 6: Comparison of retail price developments in the Czech Republic between 2019 and 2020
Source: the EC study "Mobile and Fixed Broadband Prices in Europe 2020", published in 2021

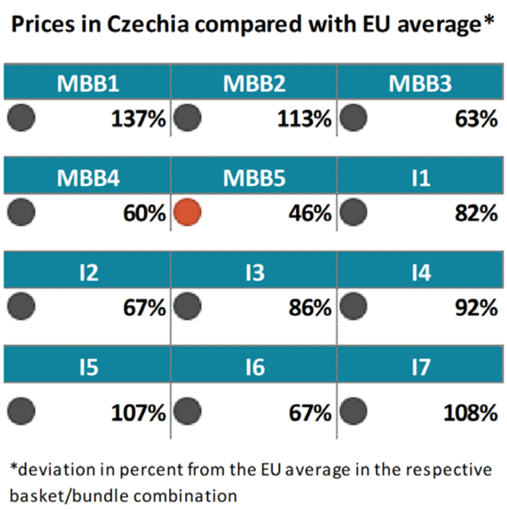


Image 7: Comparison of retail prices of mobile services in the Czech Republic with the EU average
Source: the EC study "Mobile and Fixed Broadband Prices in Europe 2020", published in 2021

Least Expensive Offers

Usage basket	Provider and offer	EUR/ PPP	EU27 average
MBB1: 0.5 GB mobile data with no calls	T-Mobile | Můj svobodný tarif 4 GB	15.06	6.35
MBB2: 1 GB mobile data with no calls	T-Mobile | Můj svobodný tarif 4 GB	15.06	7.07
MBB3: 2 GB mobile data with no calls	T-Mobile | Můj svobodný tarif 4 GB	15.06	9.23
MBB4: 5 GB mobile data with no calls	T-Mobile | Můj svobodný tarif 4 GB	19.17	11.99
MBB5: 20 GB mobile data with no calls	Vodafone | Wi-Fi síť na doma i na chatu	27.88	19.11
I1: 0.5 GB mobile data with 30 calls	o2 | GO Data 3 GB	16.72	9.18
I2: 1 GB mobile data with 30 calls	o2 | GO Data 3 GB	16.72	10.03
I3: 2 GB mobile data with 100 calls	o2 | GO Data 5 GB	24.94	13.40
I4: 5 GB mobile data with 300 calls	Vodafone | Red Basic a Dostatek dat 4GB	35.50	18.47
I5: 20 GB mobile data with 300 calls	Vodafone | Red Standard a Dostatek dat 15GB	57.19	27.60
I6: 5 GB mobile data with 30 calls	o2 | GO Data 5 GB	24.94	14.93
I7: 20 GB mobile data with 100 calls	Vodafone | Red Standard a Dostatek dat 15GB	57.19	27.44

Image 8: Comparison of the cheapest retail mobile tariffs in the Czech Republic with the EU average
Source: the EC study "Mobile and Fixed Broadband Prices in Europe 2020", published in 2021

The high prices of mobile services in the Czech Republic are systematically documented by the following studies:

- EU Digital Economy Scoreboard 2015[19] (European Commission): in the report "Connectivity - Broadband market developments in the EU" on page 36, it mentions mobile broadband prices and the Czech Republic as a country with very high prices. In the so called Implementation Report, in the chapter on the CZ there is no criticism of prices, but instead hope that there will be changes in the market due to the entry of MVNOs. *"In 2014 a significant expansion of the MVNO market took place in the Czech Republic. Several new MVNOs came onto the market, mainly service providers, while some have exited the market. MVNOs set up arrangements with MNOs on a commercial basis, without regulatory intervention. There are currently approximately 80 MVNOs or MVNEs. Licence conditions related to the spectrum for 4G networks set the obligation to provide wholesale offers. It is estimated that MVNOs may represent approximately 5 % of the mobile market. The entrance of MVNOs has contributed to the wider choice of services for consumers and positively influenced the level of retail prices, together with other factors such as decrease of MTRs or introduction of new attractive flat rates."*

[19] https://digital-strategy.ec.europa.eu/en/library/digital-agenda-scoreboard-2015-strengthening-european-digital-economy-and-society

- EU Digital Economy Scoreboard 2016 - Telecom Factsheet[20] : identified a problem with the level of retail prices under "*Consumer Issues": "The average retail Eurotariff price for roaming is 0,153EUR per minute of calls made and 0,043EUR per minute of calls received (with alternative tariffs more expensive for both calls made and calls received), 0,056 per SMS, generally close to EU average. However, 0,178 EUR per MB for data is well beyond the EU average (EU 0,059 EUR per MB). On the other hand, average retail price paid for alternative data tariffs per MB was 0,058 EUR (close to EU average of 0,063) alternative tariffs)".*
- EU DESI 2018 Telecom Chapter[21] : The Czech Republic has one of the highest mobile broadband (mobile internet) prices in the European Union (EU).
- EU DESI 2019 Telecom Chapter[22] : Pages 5-6 show that prices for mobile users are very high, almost double the EU average.
- EU DESI 2019 Connectivity Report[23] : page 31 again mentions that prices in the Czech Republic are high.
- EU DESI 2020 Telecom Chapter[24] : page 4 mentions that prices for mobile services remain among the highest in the EU.
- EU DESI 2020 Connectivity Report[25] : on pages 24-25 it is mentioned that mobile operators' offers are expensive in the CZ.
- Digital Economy and Society Index (DESI) 2021 Czech Republic on page 4: "Broadband prices remain among the highest in the EU."

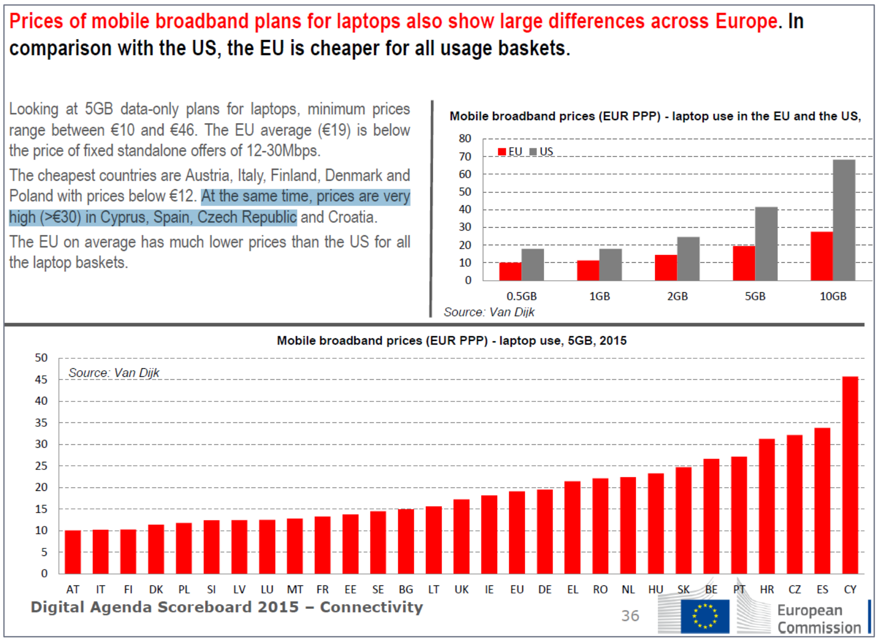


Image 9: EU Digital Agenda Scoreboard 2015

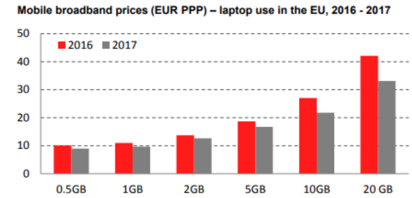
[20] https://digital-strategy.ec.europa.eu/en/library/telecommunications-data-files-digital-scoreboard-2016
[21] https://digital-strategy.ec.europa.eu/en/library/desi-report-2018-telecoms-chapters
[22] https://digital-strategy.ec.europa.eu/en/policies/desi-telecoms
[23] https://digital-strategy.ec.europa.eu/en/policies/desi-telecoms
[24] https://digital-strategy.ec.europa.eu/en/policies/desi-telecoms
[25] https://digital-strategy.ec.europa.eu/en/policies/desi-telecoms

Prices of mobile broadband plans for laptops and tablets also show large differences across Europe. On average, prices have decreased for all types of consumption baskets since 2016, ranging between 8 % and 21 %.

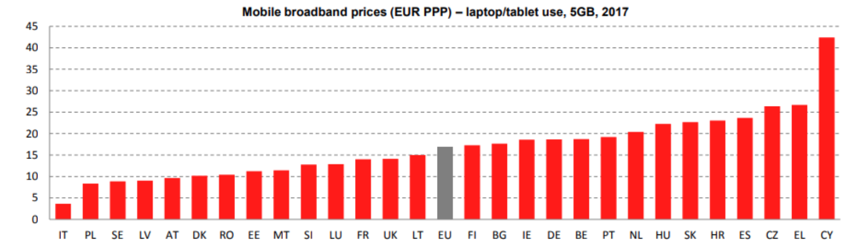
Looking at 5GB data-only plans for laptops, minimum prices range between EUR 3.7 and EUR 42. The EU average (EUR 17) is below the price of fixed standalone offers of 12-30 Mbps.

The cheapest countries are Italy, Poland, Sweden, Latvia and Austria, with prices below EUR 10. At the same time, prices are very high in Cyprus (EUR 43).

Laptop prices have decreased for all types of consumption baskets since 2016. The largest price drop is registered in the highest consumption basket (20 GB), with a 21 % decrease.



Source: Van Dijk and Empirica, 2016 and 2017



Source: Empirica, Mobile Broadband Prices study, February 2017

DESI Report 2018 – Connectivity 35 European Commission

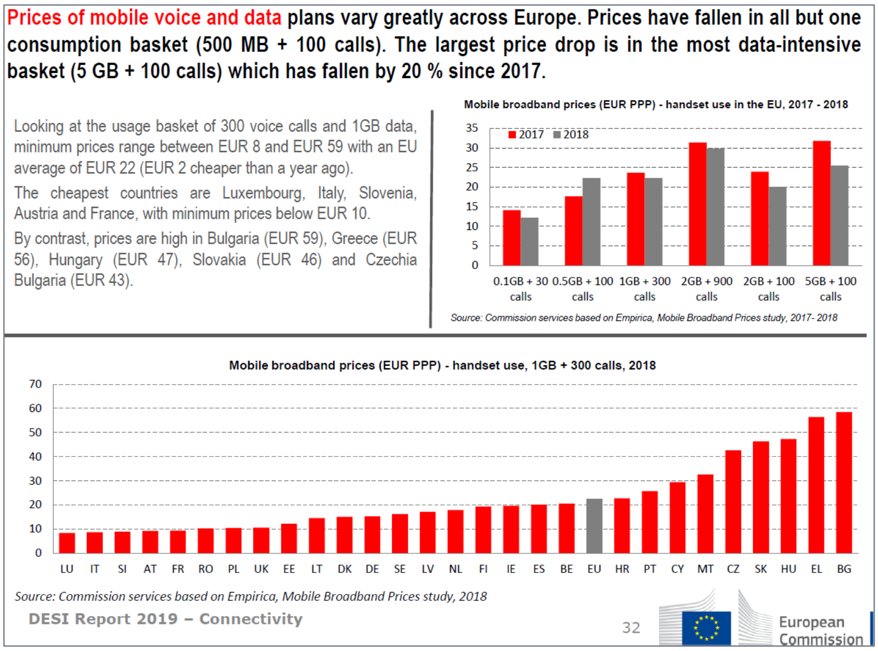
Image 10: EU DESI 2018 Telecom Chapter

Růst v oblasti konektivity celkově zpomalil a klesl těsně pod úroveň průměru EU. Česko však téměř splnilo svůj cíl, pokud jde o plné pokrytí pevným širokopásmovým připojením, a pokrytí přístupovými sítěmi nové generace (NGA) se rozšířilo do té míry, že nyní převyšuje průměr EU. Mezi důvody tohoto zvýšení patří zavádění optických vláken alternativními operátory a modernizace kovové sítě zavedeného operátora na vysokorychlostní technologii VDSL. Počet uživatelů s pevným širokopásmovým připojením vzrostl zejména v městských oblastech, které jsou dobře rozvinuté. Nyní dosahuje 74 % domácností, což je stále pod průměrem EU ve výši 77 %. Výsledky Česka v oblasti superrychlého širokopásmového pokrytí (63 %) jsou o něco lepší než průměr EU (60 %). Z údajů o pokrytí FTTP je však patrná digitální propast mezi městy a venkovem: pokryto je méně než 8 % venkovských oblastí (polovina průměru EU ve výši 14 %), zatímco celkové pokrytí činí 38 %, tedy více než průměr EU dosahující 30 %. Míra využívání rychlého (37 %) a superrychlého (18 %) širokopásmového připojení je pod průměrem EU (41 % a 20 %), což ukazuje výrazně pomalejší tempo růstu. Zavádění superrychlého širokopásmového připojení se věnují noví účastníci na trhu, kdežto

itální ekonomiky a společnosti 2019, zpráva o Česku Strana 5 z 14

v síti zavedeného operátora je pouze okrajové. Pokrytí mobilním širokopásmovým připojením 4G je téměř stoprocentní (99 %). Využívání mobilního širokopásmového připojení (82 %) se v minulém roce mírně zvýšilo, ale je výrazně pod průměrem EU ve výši 96 %. Důvodem tohoto relativně nízkého využití může být skutečnost, že ceny pro uživatele mobilních telefonů patří k nejvyšším v Evropě. Ceny za mobilní širokopásmové připojení pro telefony[2] (42,6 eur) jsou téměř dvojnásobné oproti průměru EU ve výši 22,3 eur. Index cen pevného širokopásmového připojení se však velmi blíží průměru EU.

Image 11: EU DESI 2019 Telecom Chapter

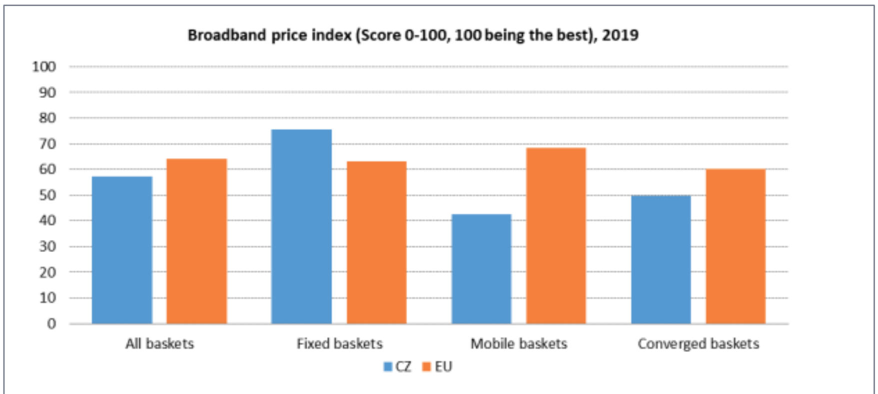

Prices of mobile voice and data plans vary greatly across Europe. Prices have fallen in all but one consumption basket (500 MB + 100 calls). The largest price drop is in the most data-intensive basket (5 GB + 100 calls) which has fallen by 20 % since 2017.

Looking at the usage basket of 300 voice calls and 1GB data, minimum prices range between EUR 8 and EUR 59 with an EU average of EUR 22 (EUR 2 cheaper than a year ago).

The cheapest countries are Luxembourg, Italy, Slovenia, Austria and France, with minimum prices below EUR 10.

By contrast, prices are high in Bulgaria (EUR 59), Greece (EUR 56), Hungary (EUR 47), Slovakia (EUR 46) and Czechia Bulgaria (EUR 43).

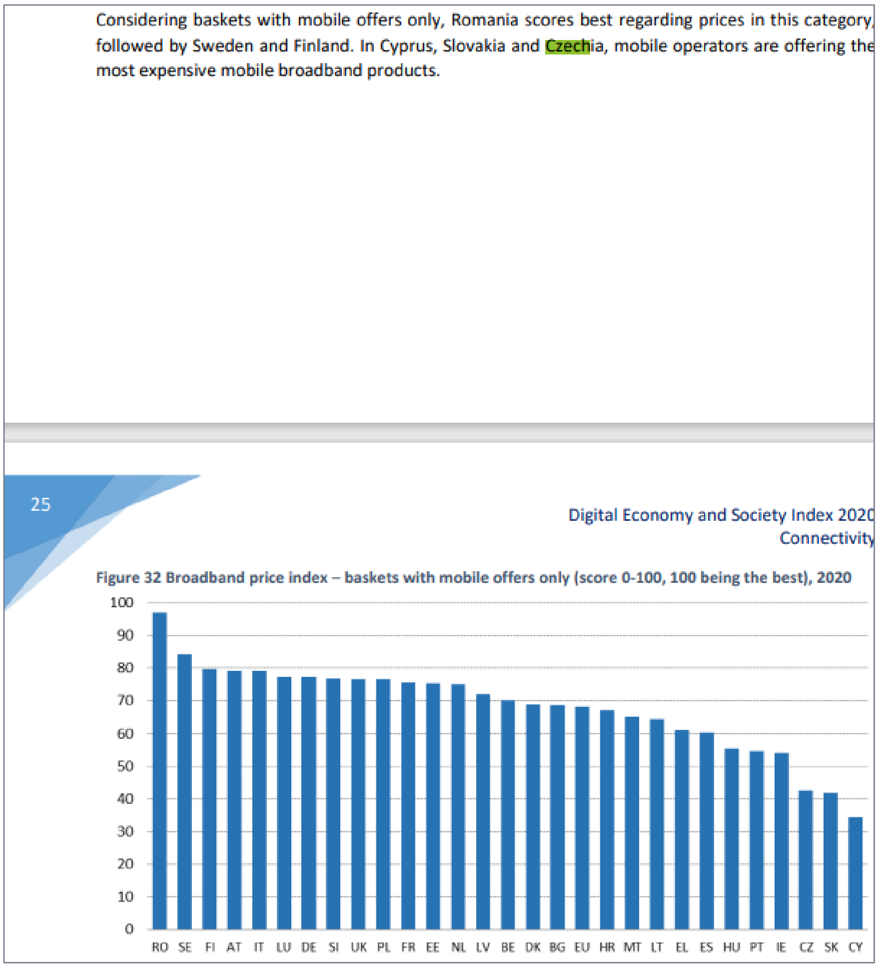
Image 12: EU DESI 2019 Connectivity Report



Source Commission services based on Empirica (Retail broadband prices studies)

Retail prices for mobile baskets in Czechia are among the highest in Europe – the country's broadband price index in the mobile baskets segment is 43, compared to the EU average of 68. As an example, consumers can expect to pay €20.92 (adjusted for purchasing power parity) for the least expensive offer for 1GB mobile data with 30 minutes of calls, which is almost twice the EU average price. The prices in the converged baskets segment are equally high (index of 50, compared to the EU average of 60). At the same time, the fixed broadband price index (76) is above the EU average (64), meaning that customers can benefit from relatively low prices.

Image 13: EU DESI 2020 Telecom Chapter


Considering baskets with mobile offers only, Romania scores best regarding prices in this category, followed by Sweden and Finland. In Cyprus, Slovakia and Czechia, mobile operators are offering the most expensive mobile broadband products.

25

Digital Economy and Society Index 2020
Connectivity

Figure 32 Broadband price index – baskets with mobile offers only (score 0-100, 100 being the best), 2020

Image 14: EU DESI 2020 Connectivity Report

In order to illustrate the level of retail prices in the Czech Republic for mobile services in comparison to the EU average, the European Commission's simulation tool was used to measure differences in price levels across EU Member States. The basis of this simulation tool is the construction of a standardised product mix in each Member State according to product baskets with parameters for voice and data services. The construction of the product baskets was carried out using the OECD-Teligen approach.

Using the European Commission's simulation tool, which measures differences in price levels across EU Member States, it was identified that the average price difference in the Czech Republic compared to the EU average is 99%, with the highest difference, up to 154%, observed in product basket 2 and the second highest difference, up to 124%, in product basket 5.

This comparison of price levels with the EU average only confirms that price differences between mobile service products increase with the amount of data offered within the products. However, the exception is product basket 2, which is the most used product type within the Czech retail market.

Given that the retail price of products depends primarily on the amount of data offered within each product, the primary ambition of the remedy should be to reduce the retail price of the data carried, which is offered together with voice and SMS services.

Cable.co.uk's "Worldwide Mobile Data Pricing 2021" analysis, which mapped the price of mobile data services across 230 countries, identified the price of data offered in mobile service products, with the results showing that the data price gap between the Czech Republic and the EU average was 201% at the end of 2020.

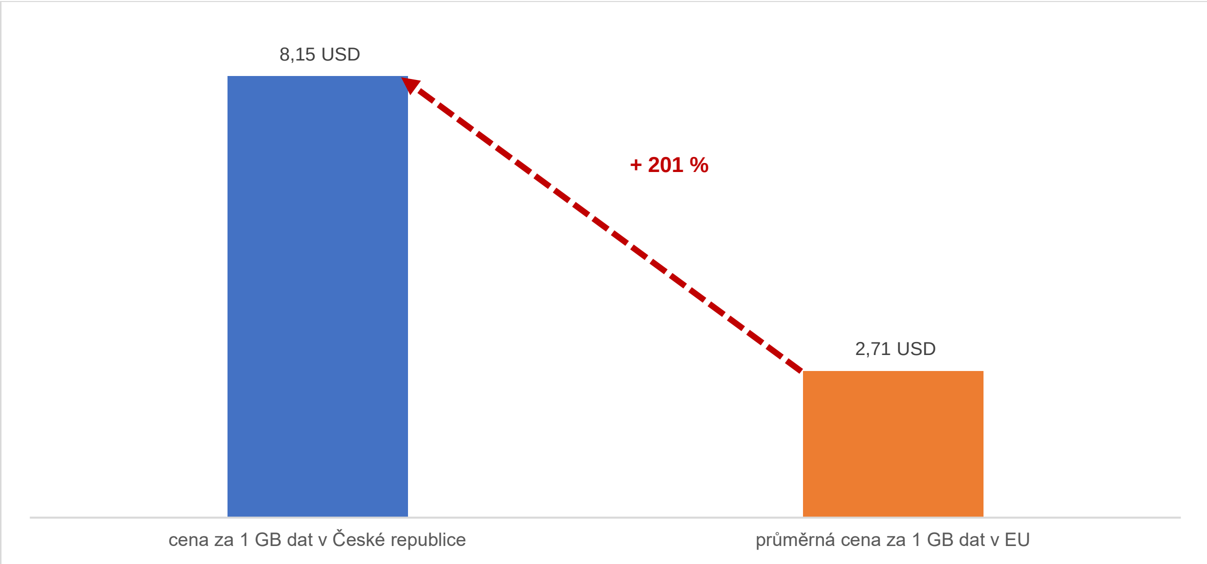


Chart 1: Comparison of price per 1 GB of data in the Czech Republic and the EU
Source: Worldwide Mobile Data Pricing 2021, Cable.co.uk

The poor situation on the retail market in the Czech Republic, especially in the area of tariffs with higher data volumes, is confirmed by the European Commission's study "Mobile and Fixed Broadband Prices in Europe 2020", which was published in 2021. These tariffs fall almost exclusively into the area of retail market offers in which the Czech Republic is rated the worst possible score of 4 (expensive cluster) in the pan-European comparison. The Czech Republic is ranked as the worst country in this comparison.

Figure 5 - Price variation per offer category across the EU, country clusters (mobile broadband)

	0.5GB mobile data with no calls	1GB mobile data with no calls	2GB mobile data with no calls	5GB mobile data with no calls	20GB mobile data with no calls	0.5GB mobile data with 30 calls	1GB mobile data with 30 calls	2GB mobile data with 100 calls	5GB mobile data with 300 calls	20GB mobile data with 300 calls	5GB mobile data with 30 calls	20GB mobile data with 100 calls
PL	1	1	1	1	1	1	1	1	1	1	1	1
RO	2	2	1	1	1	1	1	1	1	1	1	1
EE	1	1	1	1	2	1	1	1	2	2	1	2
ES	1	1	1	1	2	1	1	2	1	2	1	2
IE	3	3	2	1	1	1	1	1	1	1	1	1
SI	1	1	1	2	1	2	2	2	1	2	1	2
AT	2	2	2	2	2	2	2	2	1	1	2	1
DE	2	2	3	2	2	1	1	2	1	2	2	2
LU	2	2	2	2	3	1	1	2	1	3	1	3
NL	2	3	2	3	2	2	1	2	2	2	2	2
SE	2	2	2	3	2	2	2	2	2	2	2	2
SK	2	2	2	2	3	1	1	3	3	2	2	2
FR	4	3	3	3	2	3	2	3	2	1	2	1
IT	4	3	3	2	1	4	3	3	2	1	2	1
BE	2	2	3	3	3	2	2	3	2	3	2	3
FI	2	3	4	3	2	2	2	3	3	2	3	2
HR	2	2	2	3	3	3	2	3	3	3	3	3
LV	3	2	2	2	1	3	4	3	3	3	3	3
BG	3	3	2	2	3	3	3	3	3	3	3	3
DK	4	4	3	3	2	4	3	3	2	2	2	2
EL	3	3	2	3	2	3	3	3	4	4	3	4
HU	2	2	3	3	4	3	2	4	4	4	3	4
LT	4	4	4	4	3	3	3	3	3	3	3	3
MT	4	4	3	4	4	3	3	3	4	3	3	3
PT	4	4	4	4	3	2	3	3	3	4	4	4
CY	4	4	4	4	4	3	4	4	4	4	4	4
CZ	4	4	4	4	3	4	4	4	4	4	4	4

Cluster Centres [EUR]

1	2.43	2.43	3.12	5.19	7.53	5.53	5.53	5.52	8.09	10.2	6.67	9.87
2	4.15	4.29	7.41	9.05	14.55	8.44	9.2	9.21	13.12	18.75	12.21	19.29
3	6.23	7.75	10.29	12.62	24.74	11.37	13.14	14.87	22.69	33.69	19.9	34.8
4	11.36	13.97	17.45	22.3	42.31	14.93	18.37	27.26	36.62	52.83	29.03	52.83

Number of cases in each cluster

1	4	4	5	5	6	8	9	4	8	6	7	6
2	11	10	10	8	10	7	8	7	7	9	9	9
3	4	7	7	9	8	9	7	13	7	7	8	7
4	8	6	5	5	3	3	3	3	5	5	3	5

Green symbol 1 – inexpensive cluster
Blue symbol 2 - relatively inexpensive cluster
Yellow symbol 3 – relatively expensive cluster
Red symbol 4 – expensive cluster

Image 15: Service price differences in the retail market for mobile services in the Czech Republic and EU countries
Source: the EC study "Mobile and Fixed Broadband Prices in Europe 2020", published in 2021

C.4 Regulation of the mobile market in the Czech Republic and the EU

Ex ante regulation of mobile markets is not unique in Europe. For example, wholesale access to mobile services has been subject to ex ante regulation in Norway since 2016. Until 2017, a similarly defined market was also subject to ex ante regulation in Spain.

Regulation of the mobile market is also common in the EU through instruments other than ex ante regulation. Typical instruments of mobile market regulation include, for example, commitments taken on by merging mobile operators or commitments taken on by cartel participants. Examples of such markets include Ireland and Austria, where wholesale access to mobile data for MVNOs has been part of the commitments accepted by merging mobile operators since 2012.

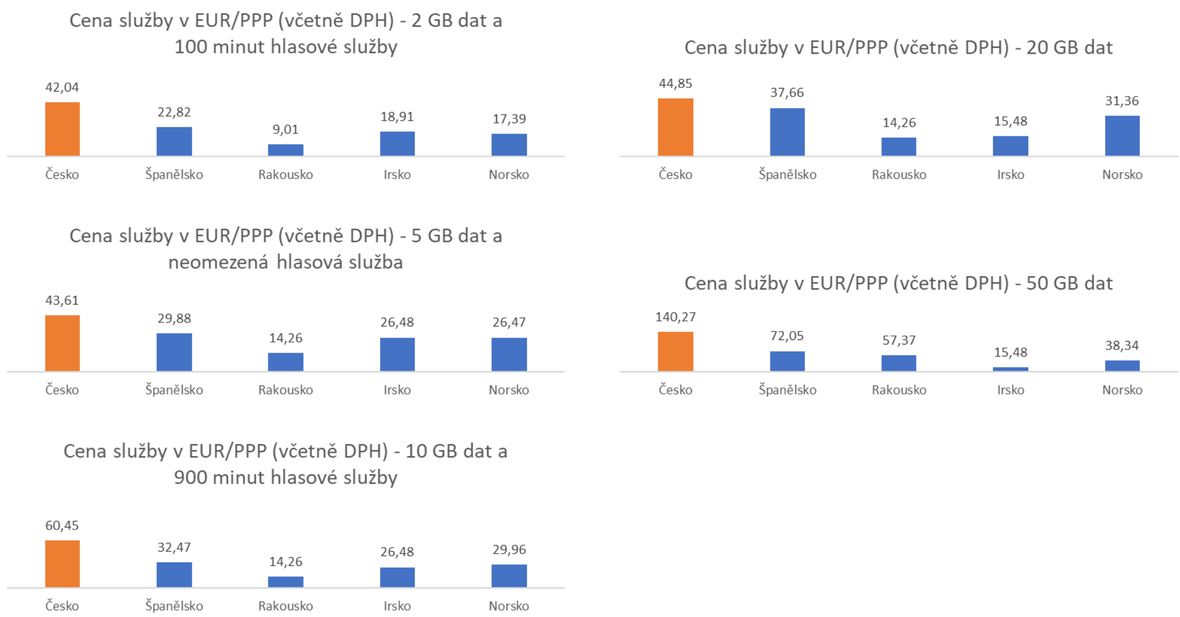


Chart 2: Price of mobile service products by type of mobile product for the countries discussed
Source: the EC Simulation tool (prices from 02/2019) and CABLE.co.uk (2021)

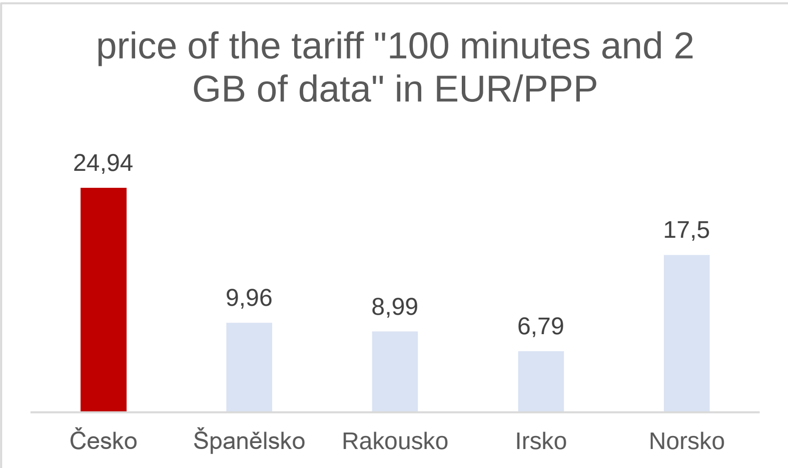


Chart 3: Price of mobile service products by type of mobile product for the countries discussed
Source: the EC Simulation tool 2021

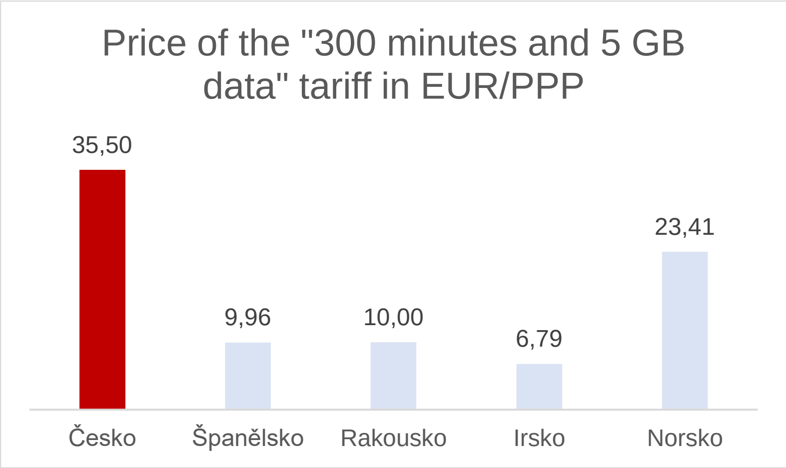


Chart 4: Price of mobile service products by type of mobile product for the countries discussed
Source: the EC Simulation tool 2021

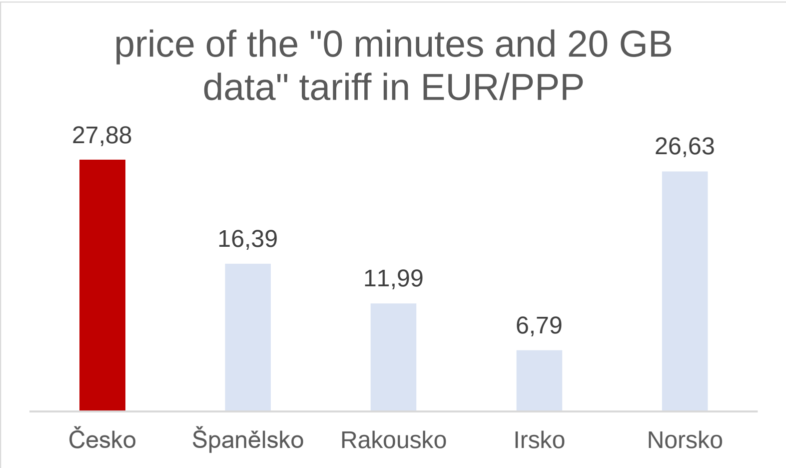


Chart 5: Price of mobile service products by type of mobile product for the countries discussed
Source: the EC Simulation tool 2021

As is also evident from recent international comparisons of mobile prices (see above), countries where mobile prices are significantly lower than in the Czech Republic are also regulated (also through instruments other than ex-ante). It is therefore clear that regulation of mobile markets, including ex ante regulation, is a commonly used tool of regulatory authorities and the proposed analysis by the CTU is not unusual.

In addition to international comparisons, it is necessary to take into account the specifics of the Czech mobile market, which has long been among the most expensive and least competitive. The CTU came forward with the proposal to regulate wholesale access to mobile services because the prices of mobile services in the Czech Republic have long been among the highest and high prices, especially in markets with a small number of significant players (oligopolies), are a typical manifestation of insufficient competition and a violation of healthy competition, and also because it found, on the basis of its analysis, the need to introduce a wholesale approach in order to protect MVNOs from the current threats of MVNOs being squeezed out of the wholesale market.

The CTU shares the Commission's view that ex ante (SMP) regulation should be a tool to address unsatisfactory market situations only after other appropriate regulatory tools have been exhausted. These include the already mentioned mediation or efforts to change the market structure through frequency auctions.

In view of the above, the CTU only proceeded to propose ex ante regulation after repeated attempts to regulate the mobile market in other ways, for example by setting the conditions for 4G and 5G auctions. Although the terms of both auctions were set with the aim of attracting a fourth MNO or encouraging other forms of competition through the possibility of access to national roaming services for other new frequency holders from the auctions or wholesale services for MVNOs, the effect of these auctions has not yet been felt in the market. And as the market remains a situation of limited competition, in particular as demonstrated by high prices and a stagnant MVNO market, the CTU has decided to apply ex ante regulation.

Finally, the CTU states that it has considered ex ante regulation of the mobile market on several occasions in the past. However, the CTU has not yet applied ex ante regulation, for various reasons set out below.

Between 2012 and 2016, the CTU concluded that market failures did not need to be corrected by ex ante regulation, especially in view of the rapid developments in the mobile market at the time, with MVNOs entering the market for the first time in 2013 and the 4G auction with wholesale access commitments, which was expected to change market conditions. Although the CTU assessed during this period that ex ante regulation was not needed, the above circumstances did not ultimately lead to the expected outcome and the very high prices of mobile services as well as the limited competition of the three MNOs without relevant MVNO impact in the market remained.

Subsequently, the CTU considered ex ante regulation in 2017-2019. In 2017, the CTU conducted a 3-criteria test in the mobile services market.[26] The 3 criteria test was subsequently consulted with the public pursuant to Section 130 of the Electronic Communications Act and all comments were addressed.[27] The draft 3-criteria test was subsequently commented on by the Office for the Protection of Competition (ÚOHS), which had no substantive comments on the test.[28] Subsequently, the CTU consulted the European Commission on the results of the 3 criteria test, which did not raise any serious doubts about the CTU's conclusions, although it did comment on the conclusions, in particular in relation to the substantiation of the CTU's conclusions with additional evidence.[29] During 2019, the CTU also prepared and issued a preliminary analysis[30] of the market, which it also consulted the public pursuant to Section 130 of the Electronic Communications Act, including the settlement of comments.[31] This analysis builds on and builds on the CTU's previous work in recent years, in particular the above-mentioned documents and the conclusions set out therein, including that all three criteria of the 3C test were cumulatively met in the defined market and that the preliminary analysis indicated the existence of joint significant market power of the network operators O2 Czech Republic a.s. ("O2"), T-Mobile Czech Republic a.s. ("T-Mobile") and Vodafone Czech Republic a.s. ("Vodafone"). Following the previous implementation of the 3-criteria test, the CTU classified the market for mobile services as a relevant market eligible for ex ante regulation under the general nature measure No. OOP/1/12.2019, and subsequently confirmed the classification as a relevant market under the general nature measure No. OOP/1/05.2021-5,

[26] https://www.ctu.cz/trh-mobilnich-sluzeb/3k-test

[27] https://www.ctu.cz/sites/default/files/obsah/ctu/vyzva-k-uplatneni-pripominek-k-navrhu-testu-tri-kriterii-pro-trh-mobilnich-sluzeb/obrazky/tabulkavyporadani3ktest.pdf

[28] https://www.ctu.cz/sites/default/files/obsah/stranky/223526/soubory/pripominkyuohskt3k04-2018.pdf

[29] https://www.ctu.cz/sites/default/files/obsah/stranky/223526/soubory/cz-2019-218920adoptedcsredacted.pdf

[30] https://www.ctu.cz/sites/default/files/obsah/ctu/sdeleni-o-zahajeni-konzultace-k-predbezne-analyze-velkoobchodniho-trhu-mobilnich-sluzeb/obrazky/predbeznaanalyzavelkoobchodnihotrhumobilnichsluzebverzeprovkprozverejnenipodepsany.pdf

[31] https://www.ctu.cz/sites/default/files/obsah/ctu/vyzva-k-uplatneni-pripominek-k-predbezne-analyze-trhu-mobilniho-backhaulu/obrazky/mobilnibackhaultabulkapripominekvkprozverejnenipodepsan.pdf

which establishes the relevant markets in the field of electronic communications, including the criteria for assessing significant market power as market No. 3. The above documents and the conclusions contained therein have been reviewed and assessed by the CTU in the context of this analysis on the basis of updated data and information.

The CTU eventually postponed the completion of the ex ante regulation process of the mobile market in 2020 due to the planned 5G auction, which took place in 2020[32]. Although the CTU expects a positive impact of the commitments that were part of the 5G auction, it is reasonable to expect that these commitments will have a time lag in the market. Given that the current situation, pending the real impact of the 5G auction results on the market, requires, in the opinion of the CTU, intervention to develop an effective competitive environment, the CTU has decided to use the tool of ex ante regulation.

Therefore, in 2021, following the conclusion of the above-mentioned 5G auction and the evaluation of its results, when no new network operator obtained the reserved frequencies in the 700 MHz band, the CTU proceeded to complete the analysis of the relevant market for wholesale access to mobile services (relevant market No 3). As part of this process of proposing ex ante regulation of the mobile market, the CTU updated both the evaluation of the three criteria test and the market environment assessment[33]. On 18 November 2021, the CTU started the notification of its draft measure with the analysis of relevant market 3 to the European Commission. The Commission expressed serious doubts on the draft measure in accordance with the procedure laid down in Article 32(4) of the Code, which it notified to the CTU on 20 December 2021. BEREC adopted its opinion on the serious doubts, partly agreeing with the Commission's doubts and partly agreeing with the CTU. Subsequently, the Commission issued a decision under Article 32(6)(a) of the Code, dated 17 February 2022, requiring CTU to withdraw the draft notified measure.

C.5 Assessment of the wholesale market situation by virtual network operators

The CTU surveyed the intensity of events on the wholesale market of mobile services in the Czech Republic through a questionnaire. 14 MVNOs responded to the questionnaire, with a total of 533,852 active SIMs in 2021, i.e. MVNOs with a 48% share of all SIMs. Both MVNOs linked with MNOs by ownership and independent MVNOs are represented in the responses. Both MVNOs with a small number of active SIMs and MVNOs among the largest in terms of SIMs are represented in the responses.

Of the MVNOs that responded, 36% had been subject to a merger, sale, or change in legal form since entering the market. This too indicates, together with the very low market share of independent MVNOs (around 2%[34]), that the market is not stable and there is turnover and change in MVNOs.

The responses of the MVNOs interviewed also clearly show that the level of competition in the wholesale mobile market is extremely low:

[32] In addition to the national roaming and wholesale obligations, the auction conditions included the reservation of a part of the spectrum (in the 700 MHz band) for the possible entry of a new bidder to operate as an MNO, which did not happen.
[33] The table of the settlement of comments is available here: https://www.ctu.cz/sites/default/files/obsah/ctu/vyzva-k-uplatneni-pripominek-k-navrhu-opatreni-obecne-povahy-analyzy-trhu-c.a/3/xx.2021-x-trhu-c.3-velkoobchodni-trh-pristupu-k-mobilnim-sluzbam/obrazky/art3tabulkavyporadanifinalbezotkezverejnenispeceti.pdf

[34] Measured by sales volume.

1. Between 2016 and 2021, none of MVNOs changed wholesale service provider following competition in the wholesale market[35] - this is also an indicator of a lack of competition in the wholesale market.

2. The average rate of proactive formal contacts offering new services by an MNO or MVNE to an MVNO was only 1.4 contacts per MVNO per year in 2020. In 2021, it was 1.9 contacts (however, 1 MVNO contacted reported up to 18 contacts in 2020 and 13 contacts in 2021; without these outliers, the average number of contacts would have been 0.07 in 2020 and 0.92 in 2021).

3. The average rate of proactive formal contacts offering to change existing services by an MNO or MVNE to an MVNO was only 2.9 contacts per MVNO per year in 2020. In 2021, it was 3.1 contacts (however, 1 MVNO contacted reported up to 36 contacts in 2020 and 36 contacts in 2021; without these outliers, the average number of contacts would have been 0.29 in 2020 and 0.57 in 2021).

4. The average rate of proactive formal contacts regarding termination of a contract by an MNO or MVNE for an MVNO was 0 contacts per MVNO per year in 2020. In 2021, it was 0.4 contacts.

Of the mobile service tariffs currently offered by MNOs in the retail market, those that are most attractive to customers from the perspective of the MVNOs interviewed[36] , and which the MVNOs interviewed cannot offer in the retail market, e.g. for financial reasons or because the MNO or MVNE has not offered them a suitable wholesale product, etc., the MVNOs interviewed cited the following reasons in particular as preventing them from offering them:

- the absence of an adequate wholesale supply;
- wholesale prices are higher than the retail prices of the network operator's end customer; and
- high SIM card costs, which disproportionately increases operating costs.

The answers also confirmed the fact that both small and large MVNOs in the Czech Republic are so-called "light MVNOs", i.e. they have outsourced most of their IT systems, which are crucial for providing services to end customers on the retail market, to their wholesale partner:

- 35% of MVNOs have outsourced all key IT systems;
- 65% of MVNOs have at least 1 key IT system operated by their own capacity;
- 64% of MVNOs have at least 2 key IT systems operated in-house; and
- 57% of MVNOs have at least 3 key IT systems operated by their own capabilities.

It is therefore clear from the above that an entity newly entering the wholesale market for mobile services in the Czech Republic will have to offer these IT systems to its potential wholesale customers in order to be competitive.

[35] The CTU records cases where MVNOs have changed their hosted network, e.g. due to a merger with another entity; the CTU does not consider these forced changes caused by a merger/purchase and change of ownership to be a change of wholesale service provider due to competition.

[36] Respondents proposed a total of 33 tariffs, of which up to 64% included unlimited voice and SMS services and 49% included unlimited free data. Although not all tariffs were data ambitious, up to 88% of tariff proposals included a data package of more than 4GB and 58% of tariffs included a data package of more than 10GB.

C. 6 Analysis of the replicability of network operators' offers

The market analysis carried out by the CTU in 2021 already concluded that the data component of mobile tariffs is key to competition in both the retail and wholesale markets. According to the KPMG study "Czech Digital Household 2021"[37], the average monthly data consumption in 2020 will reach 2.6 GB or up to 4 GB for customers with an active data tariff. According to the CTU's data, the consumption reached in 2020 was 3.1 GB per month, while according to OECD data it was 3.2 GB per month.

The KPMG study also defines 2 customer segments of the retail market, the so-called "Content Consumers" and "Digital Prime", which together account for 53% of the market share.

Segmentace - digitální index

Index		Zařízení	Služby	Spokojenost	Chování	Znalosti
2,7	Pasivní minimalisté	3	2,5	3	3	2
3,7	Konzumenti obsahu	3,5	4,5	3	5	2,5
4,2	Konzervativní znalci	4	4	4	4	5
4,6	Digitální premianti	5	5	3	5	5

Image 16: Customer segmentation
Source: the KPMG study "Czech Digital Household 2021"

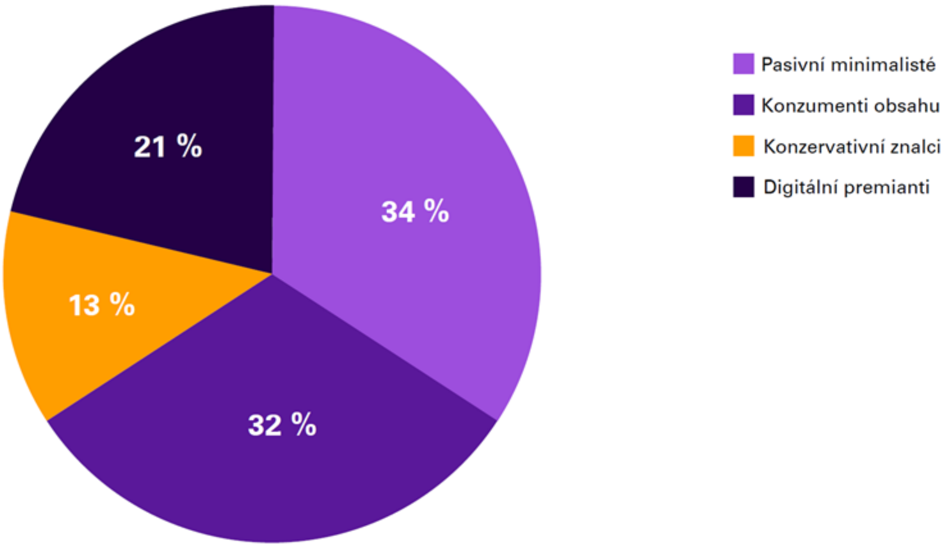


Image 17: Customer segmentation
Source: the KPMG study "Czech Digital Household 2021"

[37] Source : https://assets.kpmg/content/dam/kpmg/cz/pdf/20210920_telco_study_CZ_digital.pdf

The KPMG study also describes the behaviour of these customer segments:

- Content consumers: '...almost half consume more than 3GB of data per month....';
- Digital Prime: "...18% of respondents consume more than 10GB of mobile data per month...";
- Passive Minimalists: '...less than 10% of representatives consume more than 1GB of mobile data...';
- Conservative pundits: "...mobile data consumption is also similar to the first segment (passive minimalists), i.e. consumption is minimal or even non-existent...".

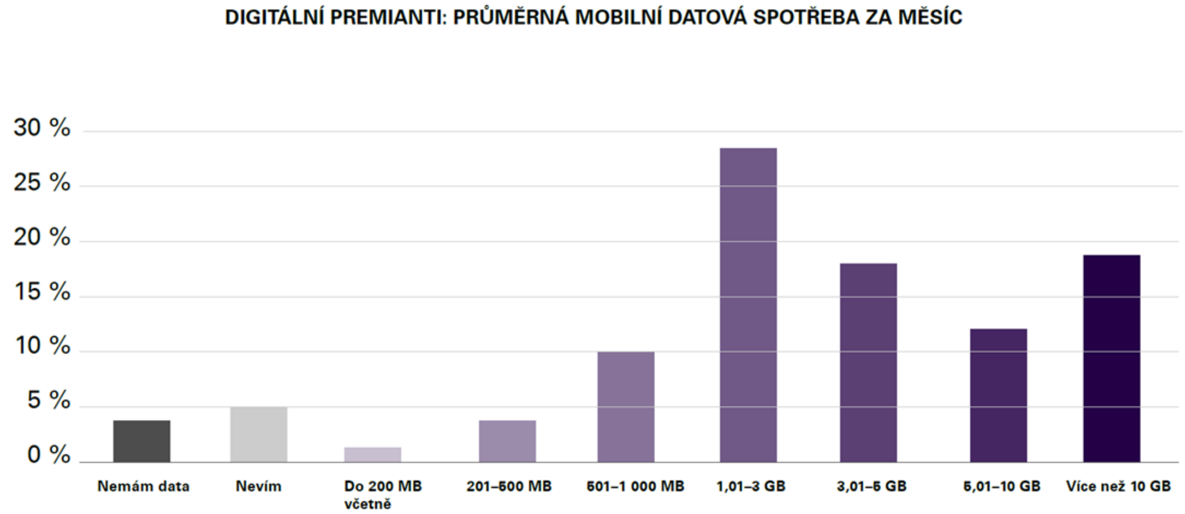
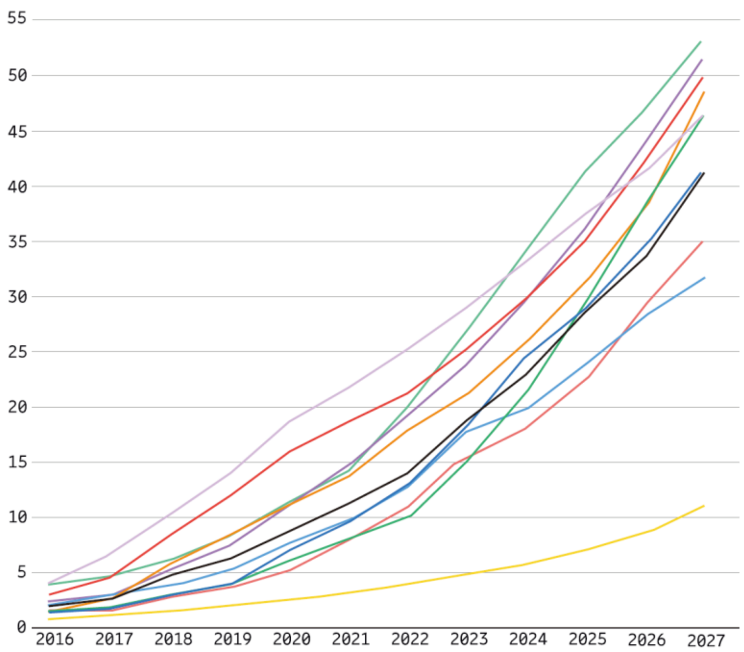


Image 18: Data consumption of the "Digital Prime" segment
Source: the KPMG study "Czech Digital Household 2021"

Given the fact that data on mobile data consumption in the Czech Republic is only available for the period up to 2020, the CTU also took into account the analysis "Mobile data traffic outlook" by Ericsson[38] . According to this analysis, data consumption per "smart" phone in 2021 in Central and Eastern Europe reached 9.9 GB per month and for 2022 data consumption is estimated at almost 13.6 GB per month. The company also estimates average annual growth in consumption to 2027 at 22%. Ericsson forecasts that average monthly data consumption per smartphone in CEE will reach approximately 17 GB by the end of 2023.

[38] Source : https://www.ericsson.com/en/reports-and-papers/mobility-report/reports/november-2021



Regions	2021	2027	CAGR 2021–2027
North America	14.6	52	24%
Western Europe	15.2	51	23%
India	18.4	50	18%
North East Asia	13.9	48	23%
South East Asia and Oceania	8.0	46	34%
GCC	22	46	13%
Middle East and North Africa	9.6	41	27%
Global average	11.4	41	24%
Latin America	7.9	35	28%
Central and Eastern Europe	9.9	32	22%
Sub-Saharan Africa	2.9	11	25%

Figure 19: Mobile data traffic per smartphone (GB per month)

Image 19: Mobile data consumption per "smart" phone (GB per month)
Source: the Ericsson Mobility Report 2021

The subject of the newly conducted (compared to 2021) replicability analysis is a total of 335 products of network and virtual mobile operators identified by the CTU as new or modified compared to the August 2021 product survey. The product mapping was carried out between 25 April 2022 and 5 May 2022.

Of the mapped products, 84 products are in the offers of network operators and 251 products are in the offers of virtual operators.

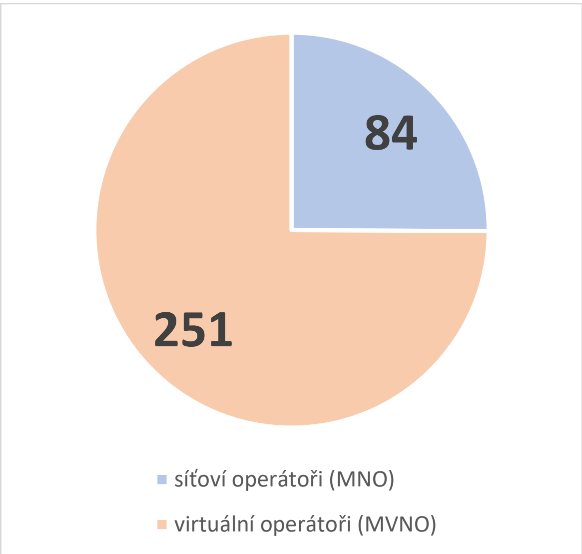


Chart 6: Number of products mapped by type of operator
Source: the CTU, 2022

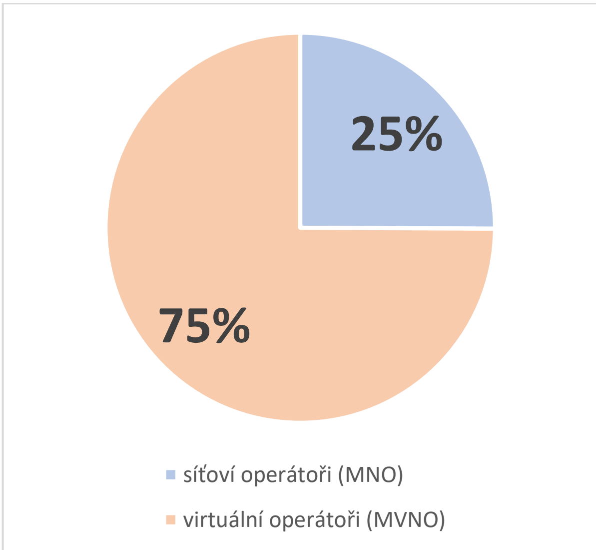


Chart 7: Composition of mapped products in terms of operator type
Source: the CTU, 2022

The product portfolios of network operators are mostly oriented towards tariffs in price levels from CZK 301 to CZK 800 excluding VAT. On the contrary, the product portfolios of virtual operators are oriented mainly towards tariffs with price levels up to CZK 300 excluding VAT, and significantly less so with price levels between CZK 301 and CZK 500 excluding VAT.

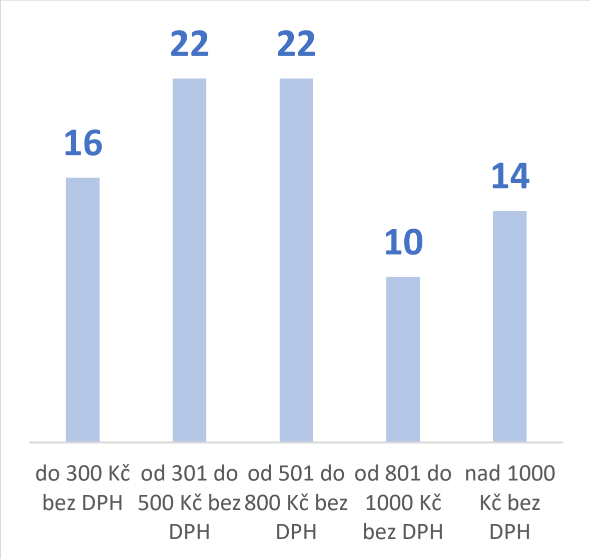


Chart 8: Frequency of mapped products of network operators in terms of price level
Source: the CTU, 2022

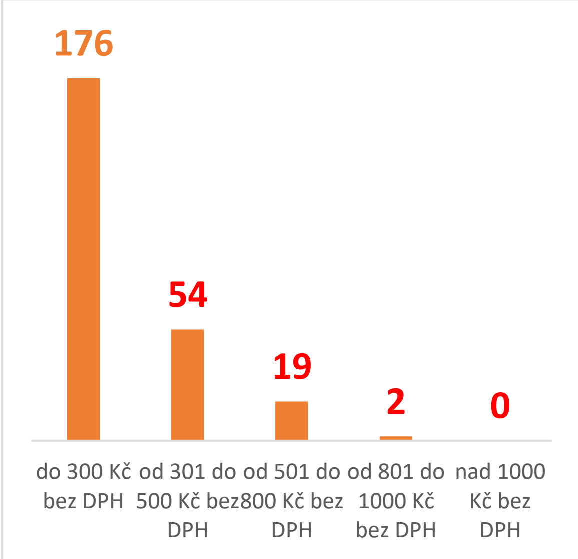


Chart 9: Frequency of mapped products of virtual operators in terms of price level
Source: the CTU, 2022

The concentration of virtual mobile operators' products at the price level up to CZK 300 excluding VAT and network operators' products at the price level above CZK 300 excluding VAT is also confirmed by the price stratification of virtual and network mobile operators' products.

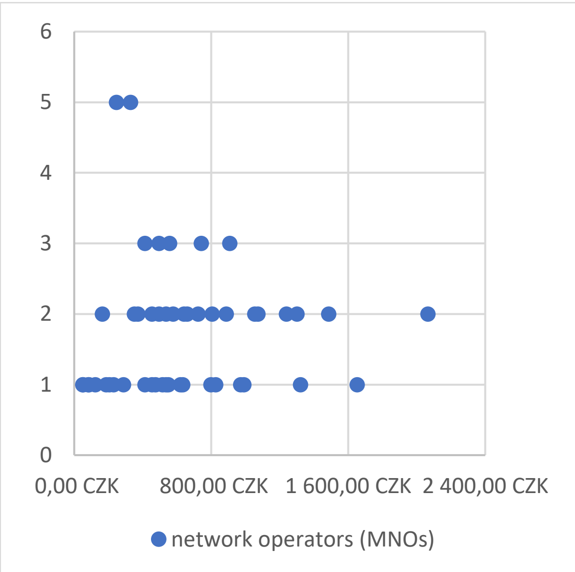


Chart 10: Price stratification of mobile service products of network operators
Source: the CTU, 2022

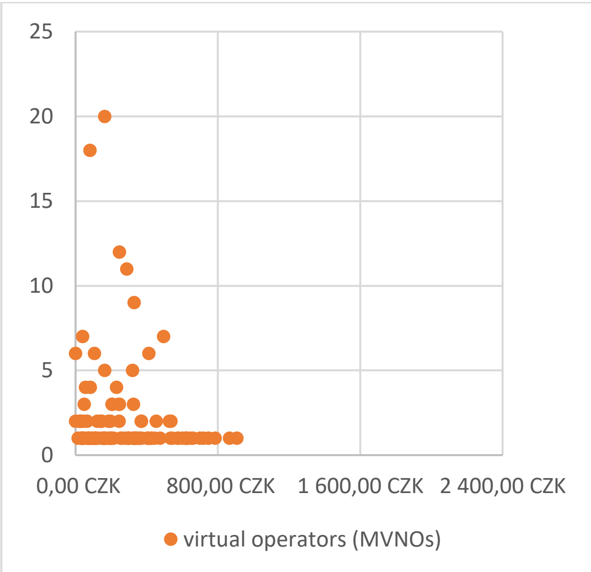


Chart 11: Price stratification of mobile service products of virtual operators
Source: the CTU, 2022

Products up to CZK 300 excluding VAT are characterised by a relatively low number of free minutes and a low volume of free data. From this it can be clearly identified that virtual operators focus on less demanding clients who are relatively highly price sensitive.

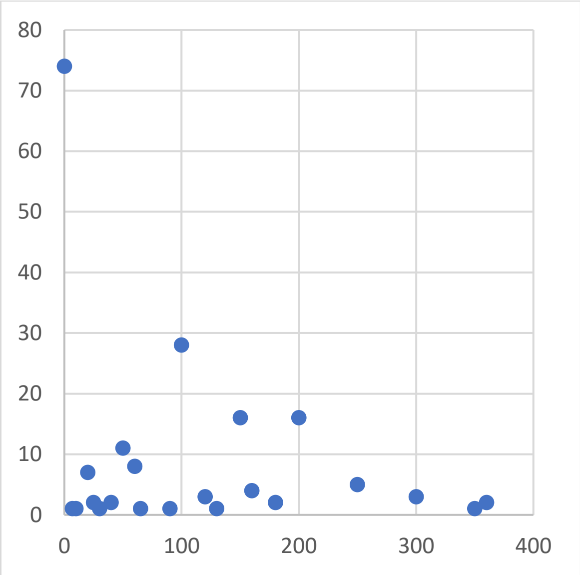


Chart 12Stratification of products in the price level up to CZK 300 excluding VAT in terms of number of free minutes (tariffs without unlimited voice service)
Source: the CTU, 2022

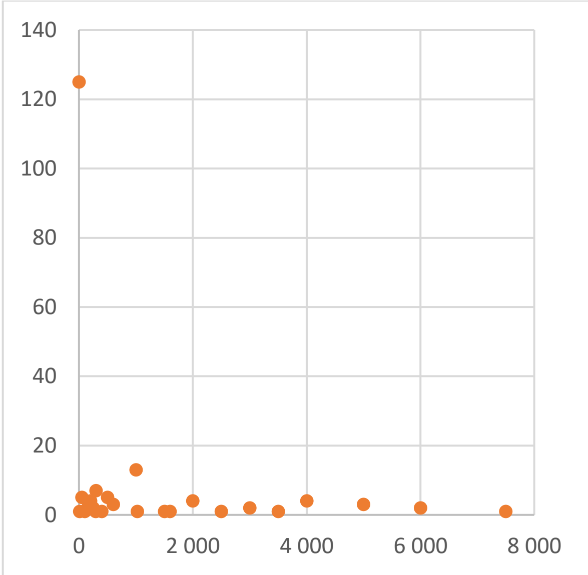


Chart 13Stratification of products in the price level up to CZK 300 excluding VAT in terms of the number of free data in MB (tariffs without unlimited free data offer) Source: CTU, 2022

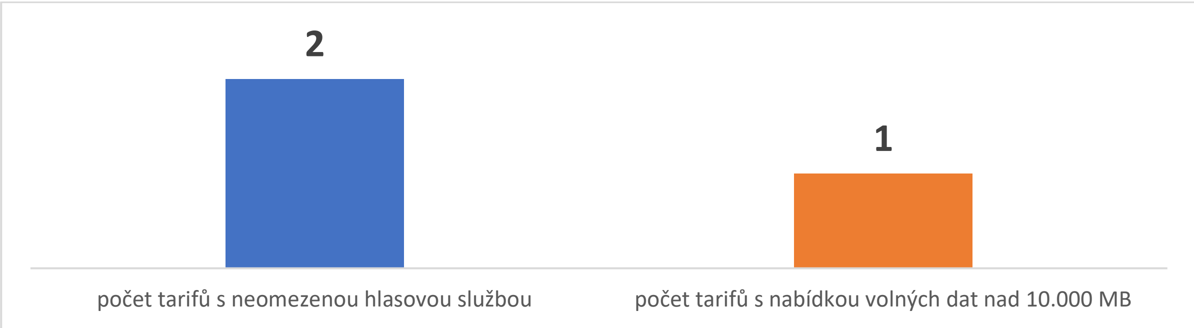


Chart 14: Tariffs in the price level up to CZK 300 excluding VAT with unlimited voice service and free data offer above 10,000 MB
Source: the CTU, 2022

In contrast, products above CZK 300 excluding VAT are characterised by a high number of free minutes and a large volume of free data, which clearly means that network operators concentrate on demanding clients whose price sensitivity is relatively low.

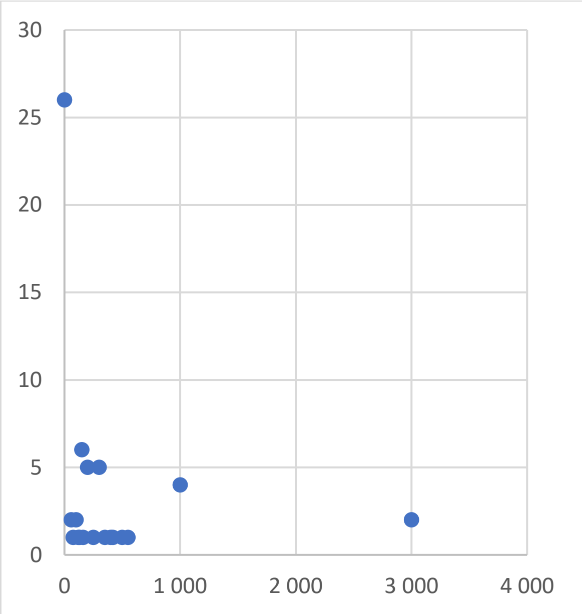


Chart 15Stratification of products in the price level above CZK 300 excluding VAT in terms of number of free minutes (tariffs without unlimited voice service)
Source: the CTU, 2022

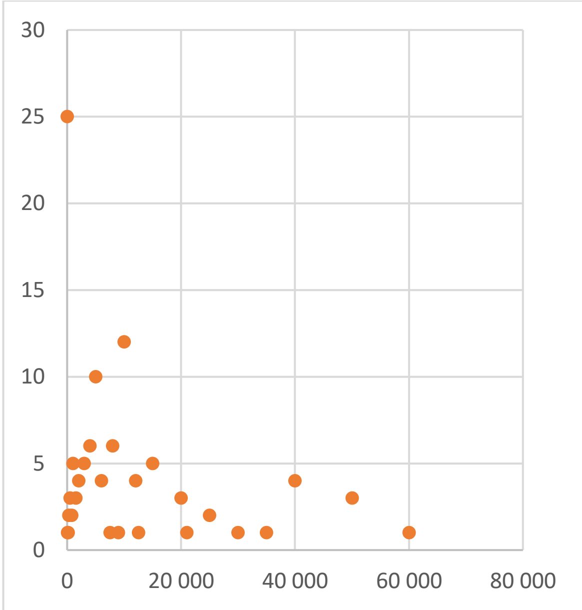


Chart 16Stratification of products in the price level above CZK 300 excluding VAT in terms of the number of free data in MB (tariffs without unlimited free data offer)
Source: the CTU, 2022

Chart 17: Tariffs in the price level above CZK 300 excluding VAT with unlimited voice service and free data offer
Source: the CTU, 2022

An in-depth survey of the products offered by mobile operators in the retail mobile market allows us to define the typical product mix of network operators and virtual operators in terms of voice, SMS and mobile internet services.

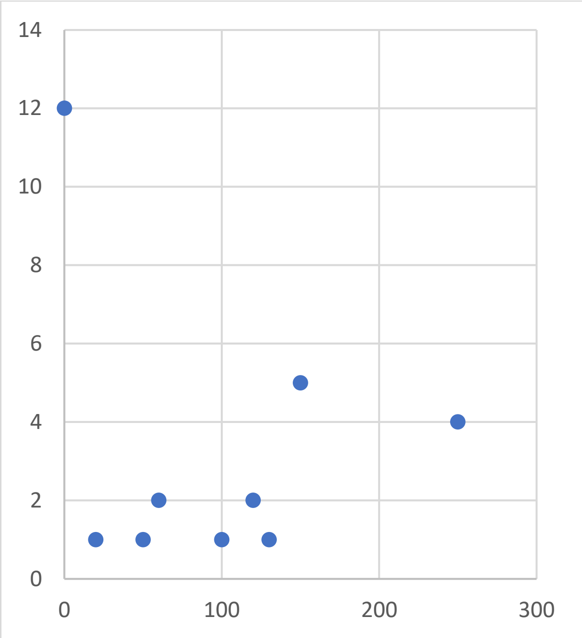


Chart 18: Stratification of network operators' products in terms of free minutes (tariffs without unlimited voice service)
Source: the CTU, 2022

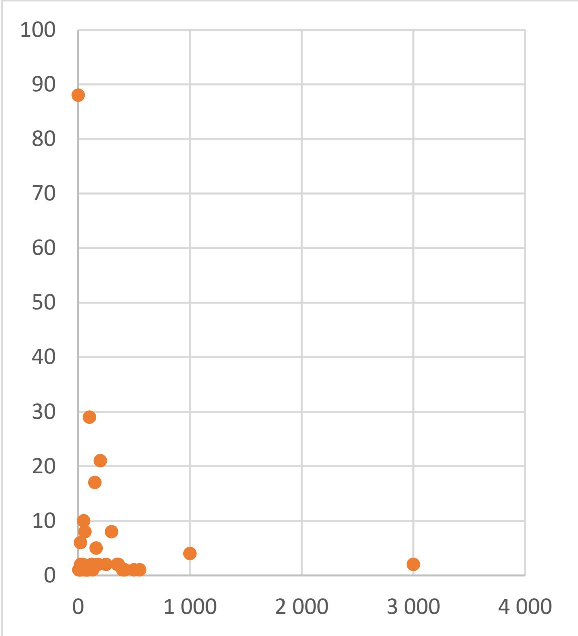


Chart 19: Stratification of MVNO products in terms of free minutes (tariffs without unlimited voice service)
Source: the CTU, 2022

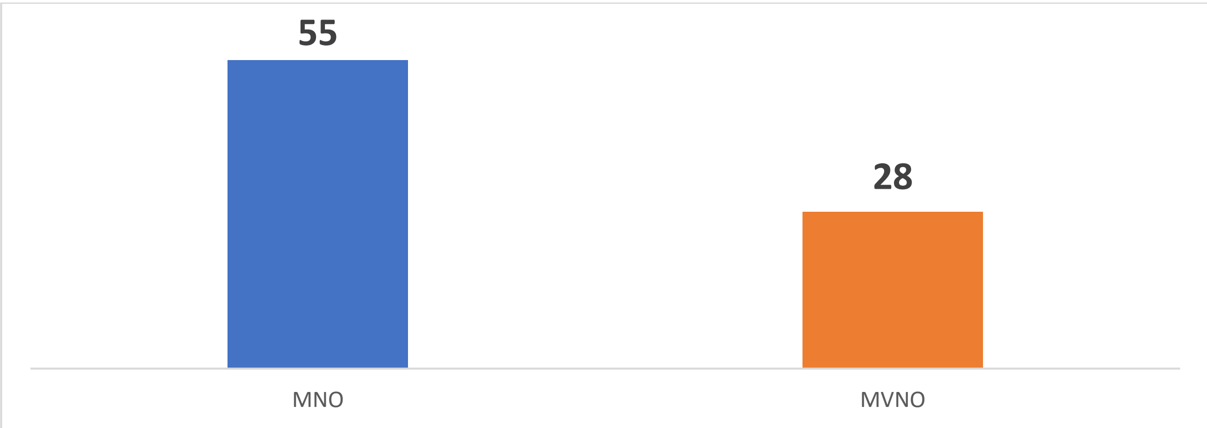


Chart 20: Tariffs with unlimited voice service
Source: the CTU, 2022

Network operator products are characterised by a generous voice service offering. The voice service offerings of virtual operators fall far short of those of network operators. Unlimited voice service is offered by up to 65 % of the mapped network operator products and only 11 % of the virtual operator products.

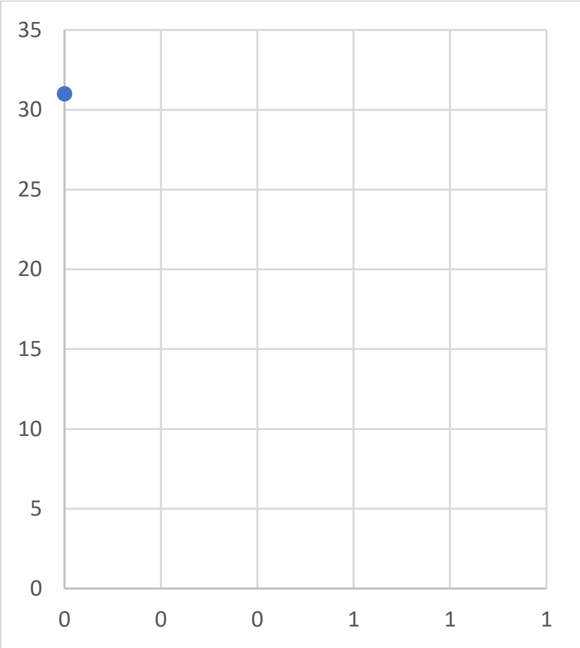


Chart 21: Stratification of network operators' products in terms of number of free SMS (tariffs without unlimited SMS service)
Source: the CTU, 2022

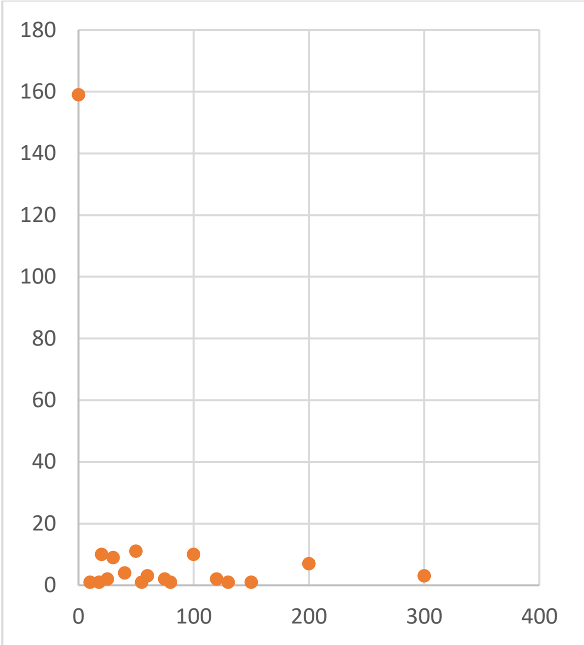


Chart 22: Stratification of MVNO products in terms of number of free SMS (tariffs without unlimited SMS service)
Source: the CTU, 2022

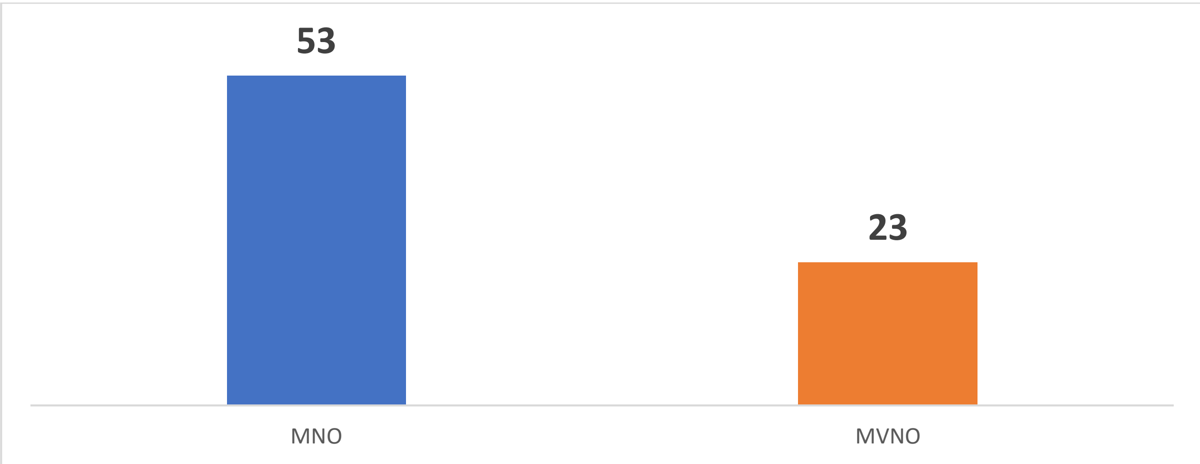


Chart 23: Tariffs with unlimited SMS service
Source: the CTU, 2022

Parity of offer between virtual and network operators is not found in the case of SMS services either. Unlimited voice service is offered by up to 63% of the mapped products of network operators and only 9% of the products of virtual operators.

Network operators' products are characterised by a generous offer of free mobile data. The virtual operators' products fall far short of the network operators' products by offering internet on mobile. Up to 31% of the mapped network operator products and none of the mapped virtual operator products offer unlimited mobile internet.

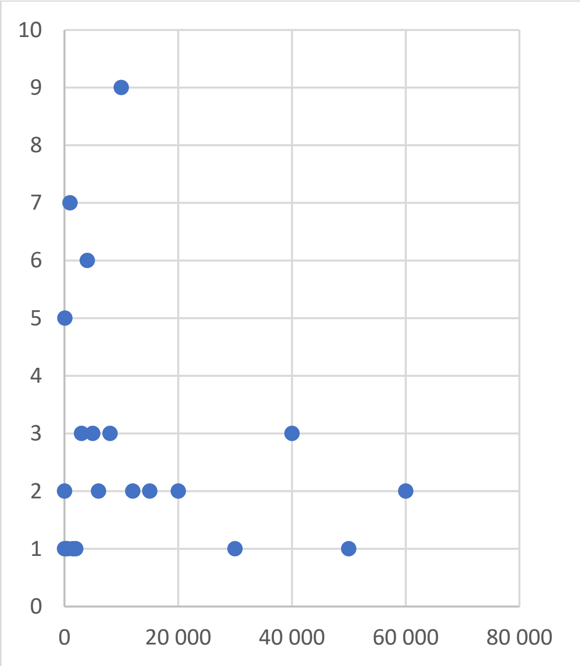


Chart 24: Stratification of network operators' products in terms of free data in MB (tariffs without unlimited free data offer)
Source: the CTU, 2022

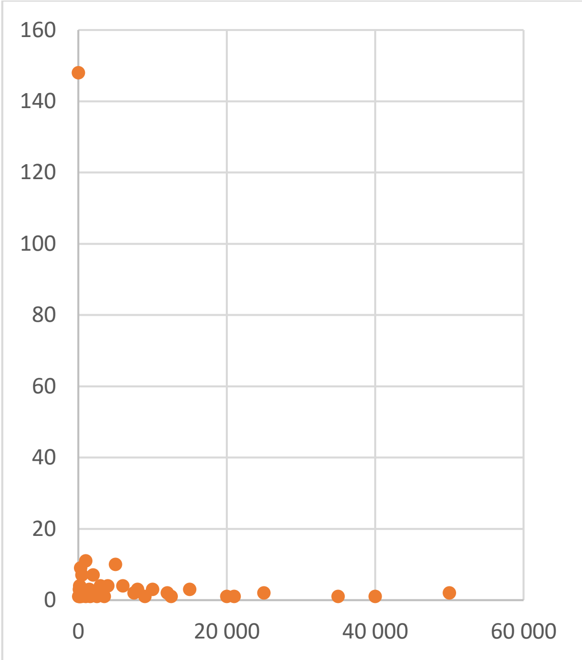


Chart 25: Stratification of MVNO products in terms of free data in MB (tariffs without unlimited free data offer)
Source: the CTU, 2022

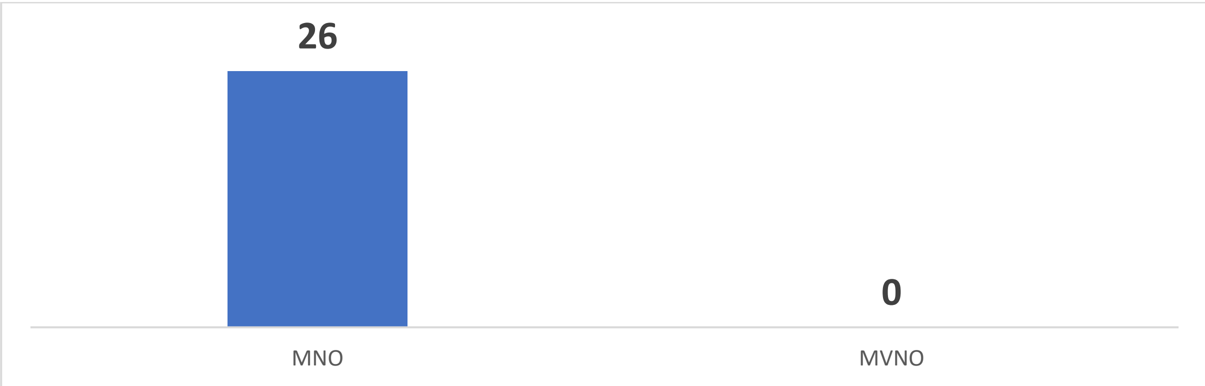


Chart 26: Tariffs with unlimited free data
Source: the CTU, 2022

The differences that a comparison of the product mix of network operators and virtual operators has shown are significant. On average, MVNO products contain 83 % less voice service, as measured by free minutes, 85 % less SMS service, as measured by free SMS messages, and up to 99 % less free data than network operator products.

In view of the logic of the demonstrated differences in the product mix of network operators and virtual operators, it is important to define the manner and form of pricing for each type of mobile service. The basis for pricing mobile services from the perspective of network operators is predominantly fixed costs, which do not increase substantially as the volume of services offered increases, but aggregate costs are substantially higher than those of virtual operators. From the perspective of virtual operators, the basis for pricing mobile services is predominantly variable costs, which increase with each unit increase in the volume of mobile services offered, but aggregate costs are substantially lower than those of network operators.

It is therefore important for network operators to increase effective demand to achieve economies of scale, and it is essential for virtual operators to achieve a positive operating profit for each unit of mobile service offered.

This is also demonstrated by the calculation of the replicability of network operator products by virtual operators. The principle behind the replicability calculation is to compare the wholesale payments for the average consumption of the network operators' customers with the prices of the individual retail products of the network operators. A schematic representation of the replicability calculation is as follows:

$$\sum_{i=1}^{3} RAC_i \times WP_i < RRP$$

Where:

i = voice, SMS, data

RAC = retail average consumption in tariffs of individual network operators

WP = unit wholesale price of the mobile service

RRP = retail price of the network operator's product

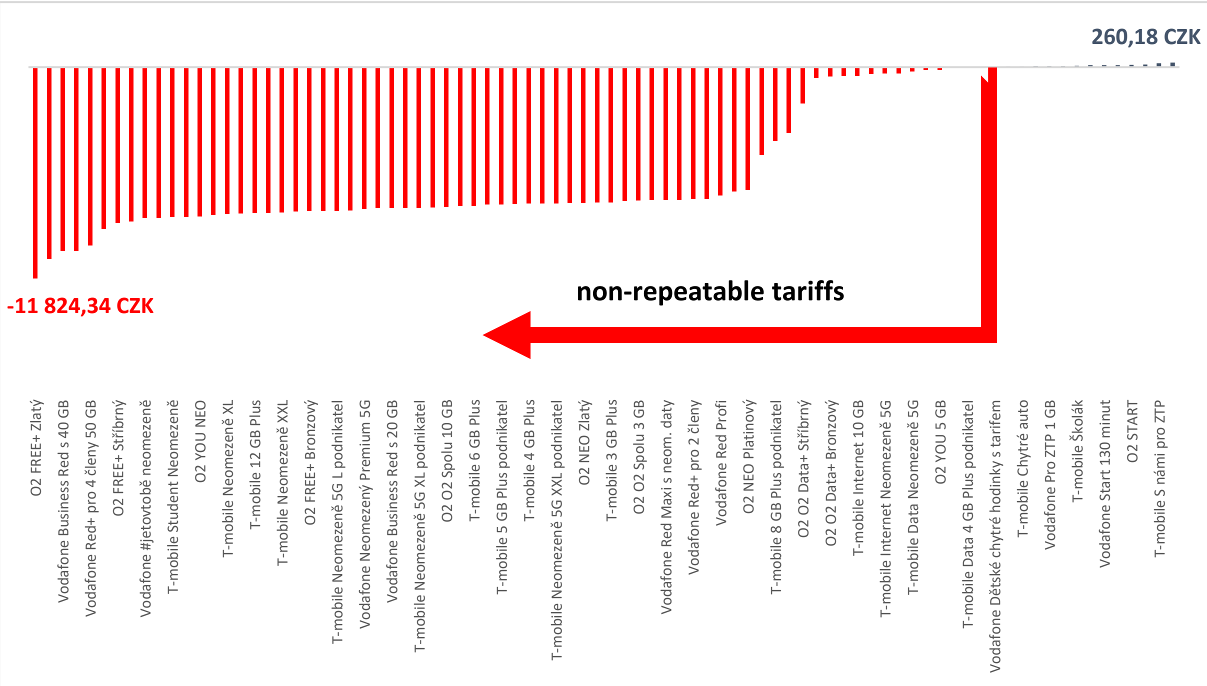


Figure 27: Replicability of network operator products by virtual operators
Source: the CTU, 2022

The replicability analysis, supported by the above calculation, shows that up to 84% of MNO products cannot be replicated by MVNOs. MVNOs are not realistically able to replicate products with more than 250 free voice minutes and more than 1000 MB of free mobile data. This is a worsening of an already bad situation compared to the findings of the 2021 in-depth product survey, where the CTU identified 82% of MNO products as non-replicable.

Only the MNO tariffs listed below were found to be replicable, which, as the table shows, are targeted at customers with very low consumption (especially of data) such as senior citizens or schoolchildren, or are specific tariffs for selected devices such as smartwatches or in-car telematics devices. In the opinion of the CTU, the gross margin remaining after deducting the MVNO's wholesale costs is insufficient to finance the marketing and sales activities of these tariffs. At the same time, the tariffs themselves have so little customer appeal or customer-specificity that there is very little likelihood of their mass successful sale even with high investment in marketing.

Operator	Tariff name	Price in CZK without VAT	Free minutes	Free SMS	Free data (MB)	Difference between replicable price and market price in CZK without VAT
Vodafone	Vodafone Kids Smartwatch with tariff	85,12	100	0	250	23,79
Vodafone	Vodafone Business Mini	50,41	20	0	0	42,42
T-Mobile	T-mobile Smart Car	51,24	0	0	50	46,96
Vodafone	Vodafone 60+ for pensioners	247,11	250	0	1 000	61,71
Vodafone	Vodafone Pro ZTP 1 GB	247,11	250	0	1 000	61,71
Vodafone	Vodafone Start 250 min.+neom. SMS	247,11	250	0	1 000	61,71
T-Mobile	T-mobile Schoolboy	81,82	0	0	10	80,96
T-Mobile	T-mobile 50 network for seniors	123,14	50	0	0	103,16
Vodafone	Vodafone Start 130 minutes	247,11	130	0	1 000	109,66
O2	O2 My First Tariff	247,11	120	0	1 000	113,66
O2	O2 START	164,46	60	0	50	136,21
Vodafone	Vodafone Start 250 minutes	329,75	250	0	1 000	144,36
T-Mobile	T-mobile With us for the disabled	230,58	0	0	50	226,30
O2	O2 FREE Mini	288,43	60	0	50	260,18

Table 1: Replicable tariffs of network operators
Source: price lists, 2022

The bad situation with the replicability of MNO tariffs is also confirmed by a questionnaire survey conducted by the CTU among MVNOs between 22 April 2022 and 2 May 2022.The respondents were asked, among other things, to provide a list of the top 5 mobile service tariffs, from their point of view the most interesting for customers, currently offered by MNOs on the retail market, which they cannot offer on the retail market, e.g. The MNOs are not able to offer their wholesale services to MNOs in the wholesale market because they cannot afford to do so for financial reasons or because their wholesale service provider (or other providers) have not offered them a suitable wholesale product, etc.

Respondents to the questionnaire indicated a total of 32 types of tariffs, of which 21 tariffs include unlimited voice service, 21 tariffs include unlimited SMS service and 16 tariffs include unlimited free data. The essence of the requests made for the optimal composition of tariffs is based on current price developments.

Tariff no.	Free minutes	Free SMS	Free data (MB)	Free data transfer rate (in Mbps)
1	130	Unlimited	5 120	600 Mbps
2	150	150	4 096	25 Mbps
3	Unlimited	Unlimited	Unlimited	2 Mbps
4	Unlimited	Unlimited	Unlimited	10 Mbps
5	no preference	no preference	Unlimited	10 Mbps
6	Unlimited	Unlimited	2.5 GB	no preference
7	Unlimited	Unlimited	Unlimited	10 Mbps
8	Unlimited	Unlimited	Unlimited	5 Mbps
9	Unlimited	Unlimited	Unlimited	5G
10	Unlimited	Unlimited	Unlimited	5G
11	Unlimited	Unlimited	Unlimited	5G
12	Unlimited	Unlimited	Unlimited	5G
13	Unlimited	Unlimited	Unlimited	5G
14	Unlimited	Unlimited	Unlimited	2 Mbps
15	150 min	150 SMS	4 GB	5G
16	Unlimited	Unlimited	1 GB	5G
17	Unlimited	Unlimited	1.5 GB	5G
18	Unlimited	Unlimited	3 GB	5G
19	Unlimited	Unlimited	Unlimited	5G
20	0	0	charged by KB	20 Mbps
21	Unlimited	Unlimited	Unlimited	after downloading 15 GB max. speed 10 Mbps
22	no preference	no preference	Unlimited	no preference
23	60	30	1 500	no preference
24	60	30	10 000	no preference
25	400	400	30 000	no preference
26	150	150	4 000	no preference
27	150	150	10 000	no preference
28	Unlimited	Unlimited	8 GB	there is no description
29	Unlimited	Unlimited	3 GB	there is no description
30	Unlimited	Unlimited	Unlimited	after downloading 15 GB max. speed 10 Mbps
31	100	25	3 GB	no preference
32	unlimited in the Czech Republic	unlimited in the Czech Republic	CR unlimited EU 30 GB	10 Mbps

Table 2: Tariffs proposed by the VNOs contacted in the survey
Source: questionnaire of the CTU

To increase accuracy, the CTU also implemented a replicability test with wholesale prices of individual MNOs, in 2 alternatives - 1) for all tariffs analysed and 2) for only tariffs of the respective MNO. The following results were found:

O2:

- all tariffs analysed: 83% non-replicable;
- O2 tariffs only: 88% non-replicable.

T-Mobile:

- all tariffs analysed: 88% non-replicable;

- T-Mobile tariffs only: 82% non-replicable.

Vodafone:

- all tariffs analysed: 80% non-replicable;
- Vodafone tariffs only: 85% non-replicable.

In its analysis of the replicability of MNO tariffs, the CTU also focused on assessing the replicability of MNO tariffs by MVNOs that are linked to MNOs by ownership. The analysis applied the wholesale unit prices of the relevant MVNOs and analysed the replicability of the tariffs of all MNOs as well as the replicability of the tariffs of only the relevant host MNO. The result of the analysis can be summarised as follows:

COOP Mobil s.r.o.

- overall replicability: 76% non-replicable;
- Replicability of guest MNO tariffs: 74% non-replicable.

O2 Family s.r.o.

- overall replicability: 83% non-replicable;
- Replicability of guest MNO tariffs: 88% non-replicable.

Tesco Mobile s.r.o.

- overall replicability: 79% non-replicable;
- Replicability of guest MNO tariffs: 83% non-replicable.

From the above, it is clear that although the overall replicability of MNO tariffs for MVNOs with ownership links to MNOs is better than the average replicability for all MVNOs, it is still very low. In the case of replicability of host MNO tariffs, replicability is also better than average for 2 out of 3 MNOs. The worst replicability was achieved by the MVNO that shares a brand name (O2 Family) with the hosting MNO in addition to the ownership link. O2 Family also achieved the largest difference between the replicability of the tariffs of the hosting MNO (88% of tariffs not replicable) and all 3 MNOs (83% of tariffs not replicable).

From the perspective of statistical data, it is important to point out that a significant part of the retail and wholesale market is experiencing different price dynamics, which has a significant impact on the competitive position of market players in terms of the attractiveness of their products for end customers. The significant part of the market is made up of three players representing up to 92 % of the supply of the retail market and 99,8 % of the supply of the wholesale market.

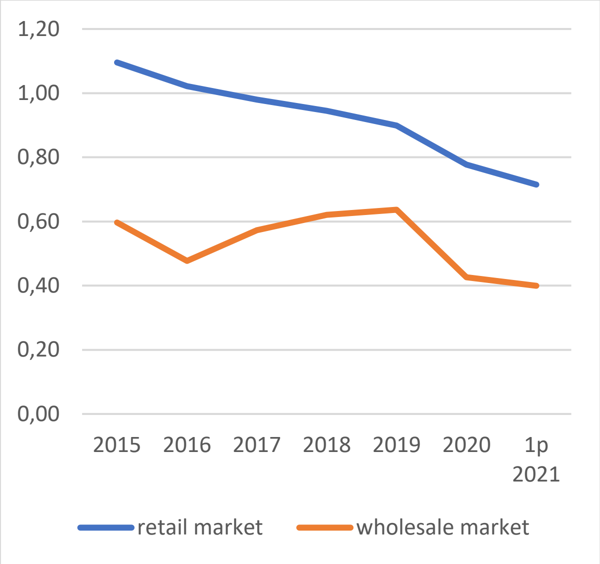


Chart 28: Development of wholesale and retail price per 1 minute of voice service in CZK
Source: the CTU, 2022

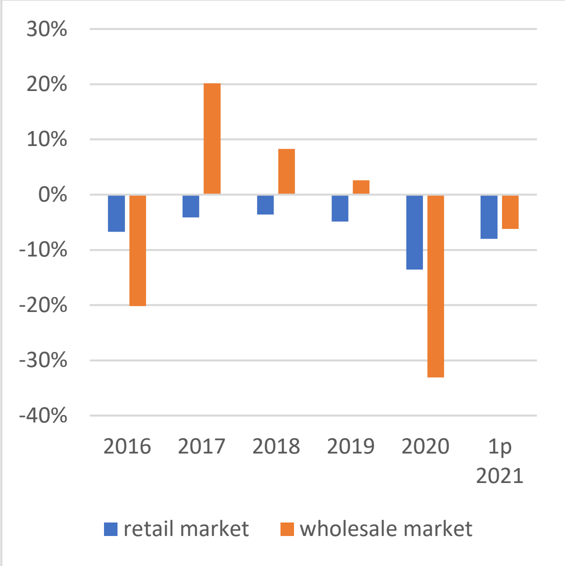


Chart 29: Year-on-year change in wholesale and retail price per minute of voice service in %Source: CTU, 2022

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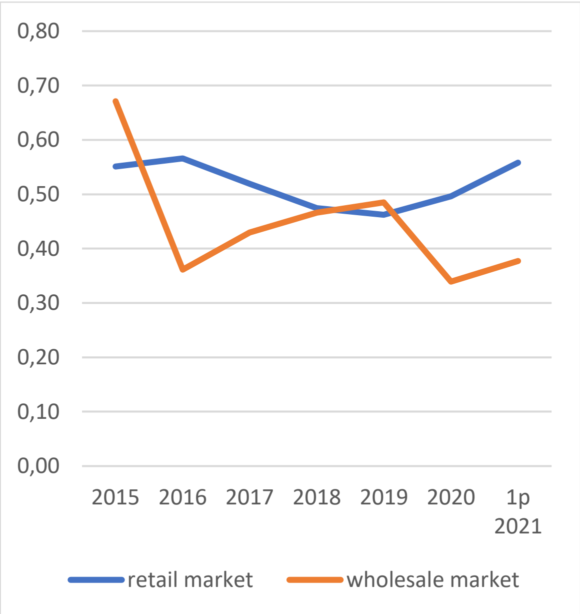

Chart 30: Development of wholesale and retail price per 1 SMS in CZK
Source: the CTU, 2022

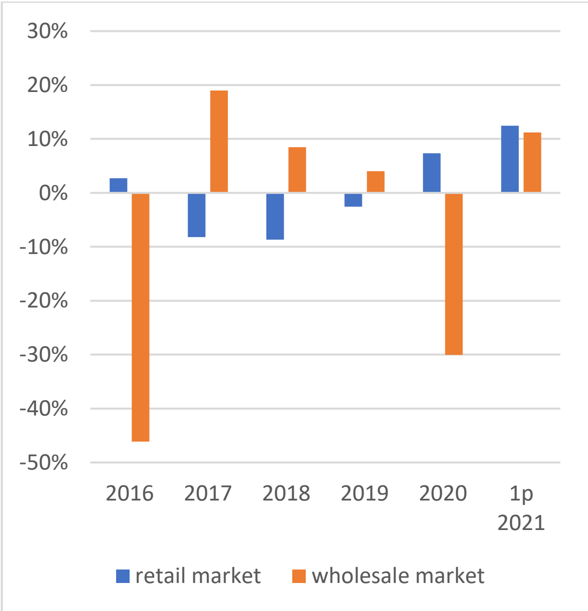

Chart 31: Year-on-year change in wholesale and retail price per SMS in %
Source: the CTU, 2022

941

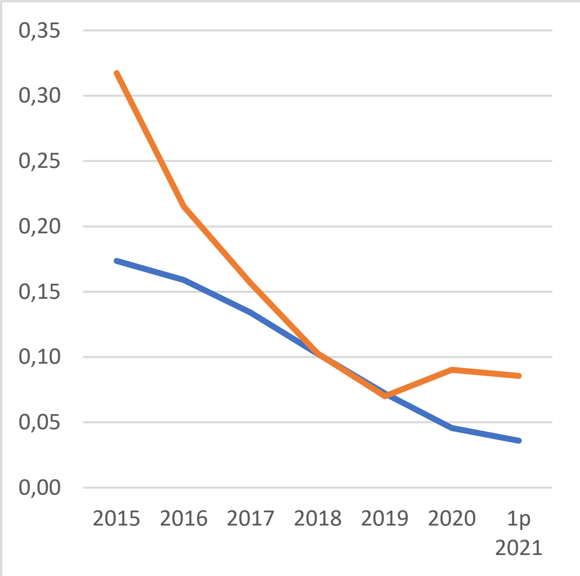

Chart 32: Development of wholesale and retail price per 1 MB of data in CZK
Source: the CTU, 2022

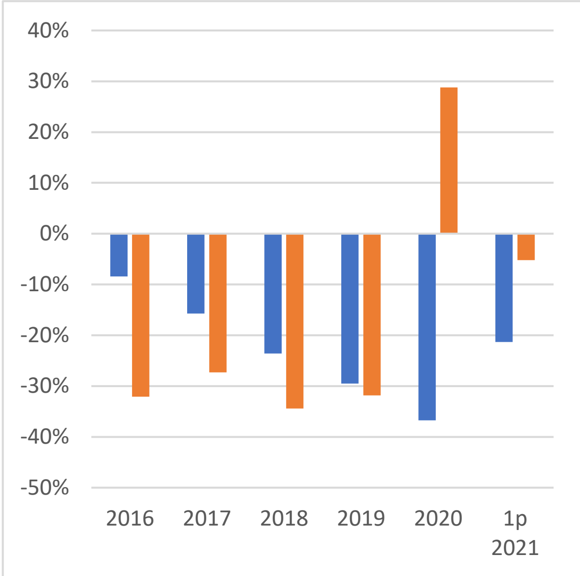

Chart 33: Year-on-year change in wholesale and retail price per MB of data in %
Source: the CTU, 2022

The retail price of voice service has been falling steadily, but the wholesale price has developed unevenly, followed by a decline in the retail price with a significant lag. The evolution of the retail and wholesale price for SMS is uneven, but provides scope for virtual operators to create unit value added. Critically, however, the evolution of the wholesale price of mobile data, which is an order of magnitude higher than its retail price, makes it impossible for MVNOs to market competitive tariffs with the potential to compete effectively in the retail market for end-customers and thus contribute effectively to increasing competition in the retail market for mobile services.

C.7 Test for tacit collusion in the retail and wholesale markets by applying game theory

Situation on the retail market

The mobile services market in the Czech Republic is characterised by its concentrated oligopolistic structure. Simply put, it is a situation where three mobile network operators hold the majority of the mobile services on offer. It is therefore a form of imperfect competition in the mobile services market, which results in a reduction in the efficiency of the market mechanism in establishing the equilibrium price in the mobile services market.

There are several aspects to the examination of the degree of inefficiency achieved by market competition in the provision of mobile services. In particular, there is an analysis of market concentration, an examination of the degree of differentiation in the supply of mobile services and the identification of barriers to entry.

We examine market concentration from two perspectives, namely in terms of revenues from mobile services and the number of SIM cards. Revenues for mobile services include revenues for voice, SMS and mobile data services. The total number of SIM cards includes all active SIM cards registered with a network or virtual mobile operator.

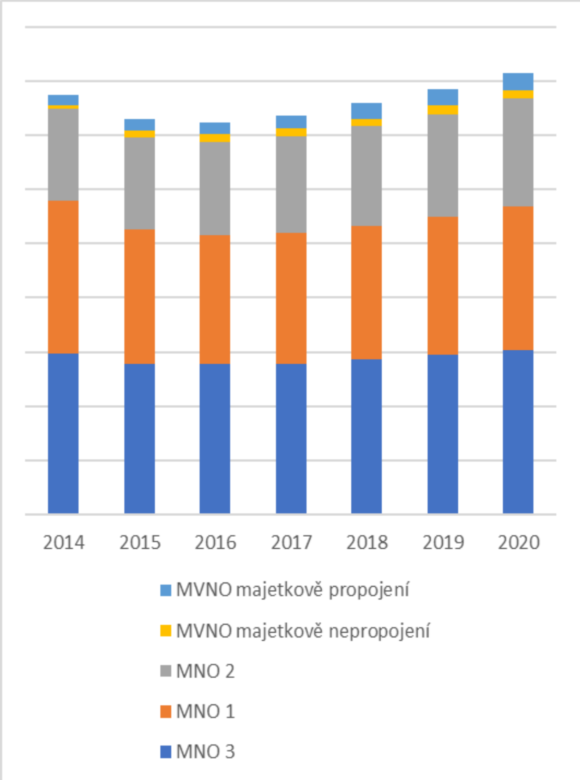

Chart 34: Revenue from mobile services in CZK
Source: CTU, 2021

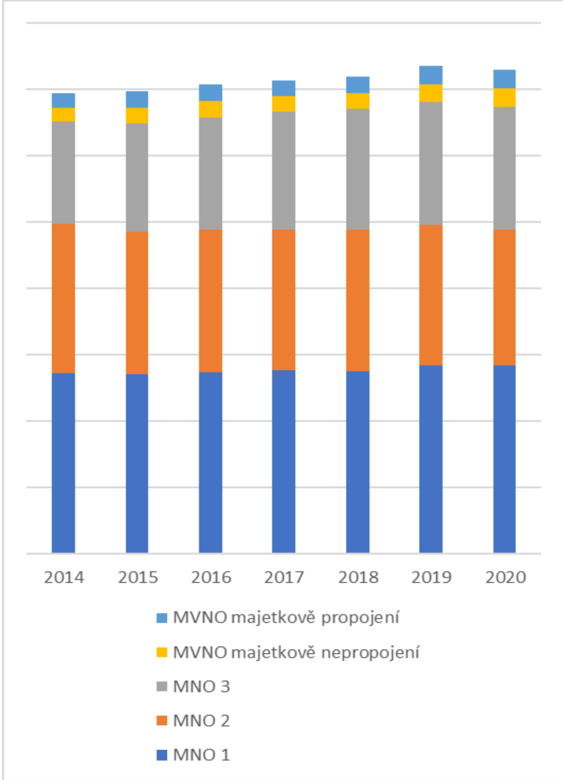

Chart 35: Active SIM cards in pieces
Source: CTU, 2021

Between 2014 and 2016, the volume of sales for mobile services declined despite the increasing number of active SIM cards. Between 2017 and 2020, mobile service revenues rose again, reaching 2014 levels in 2019. In 2020, mobile service revenues reached CZK 40.8 billion, up 5.3% compared to 2014, while the number of active SIM cards increased by 5% compared to 2014. Thus, in 2020, for the first time since 2014, mobile service revenues per active SIM card were higher than the 2014 value.

The growth trajectory of the number of active SIM cards in relation to the average population will break in 2020. Despite the reduction in penetration in 2020, the increasing intensity of the use of mobile services represents a major opportunity for mobile operators in the Czech market for long-term and sustainable growth.

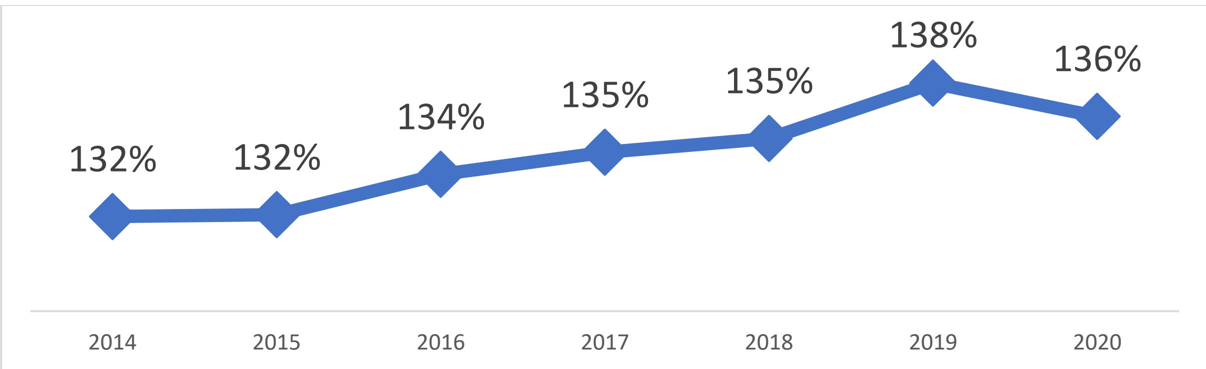

Chart 36: Penetration of active SIM cards in the Czech Republic
Source: CTU, Czech Statistical Office, 2021

However, only mobile network operators really benefit from the high penetration of active SIM cards on the Czech mobile market. Virtual operators have only marginal market importance.

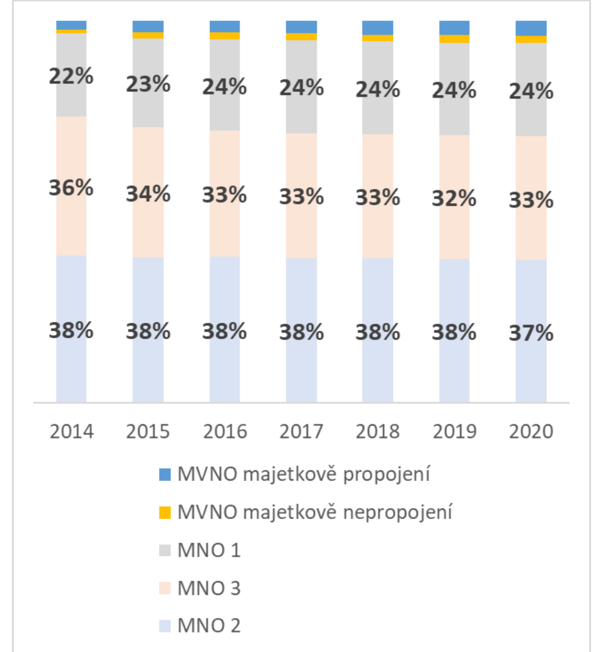

Chart 37: Market shares in terms of total revenues for mobile services
Source: CTU, 2021

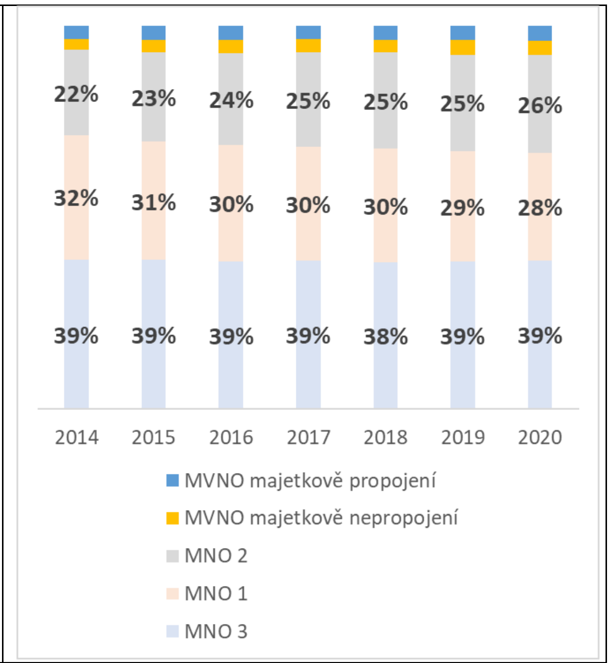

Chart 38: Market shares in terms of number of active SIM cards
Source: CTU, 2021

The market shares of mobile network operators have been stable in the medium term, both in terms of total revenues from mobile services and the number of active SIM cards. Network operators account for up to 94% of total revenues and 92% of the total number of active SIM cards in the mobile services market.

A comparison of the market shares of network mobile operators from the above perspectives shows that [redacted] has the highest revenue per active SIM card. The lowest revenues per active SIM are achieved by the non-affiliated MVNOs. Equity-linked MVNOs achieve higher revenues per active SIM than [redacted] and [redacted] only because of [redacted].

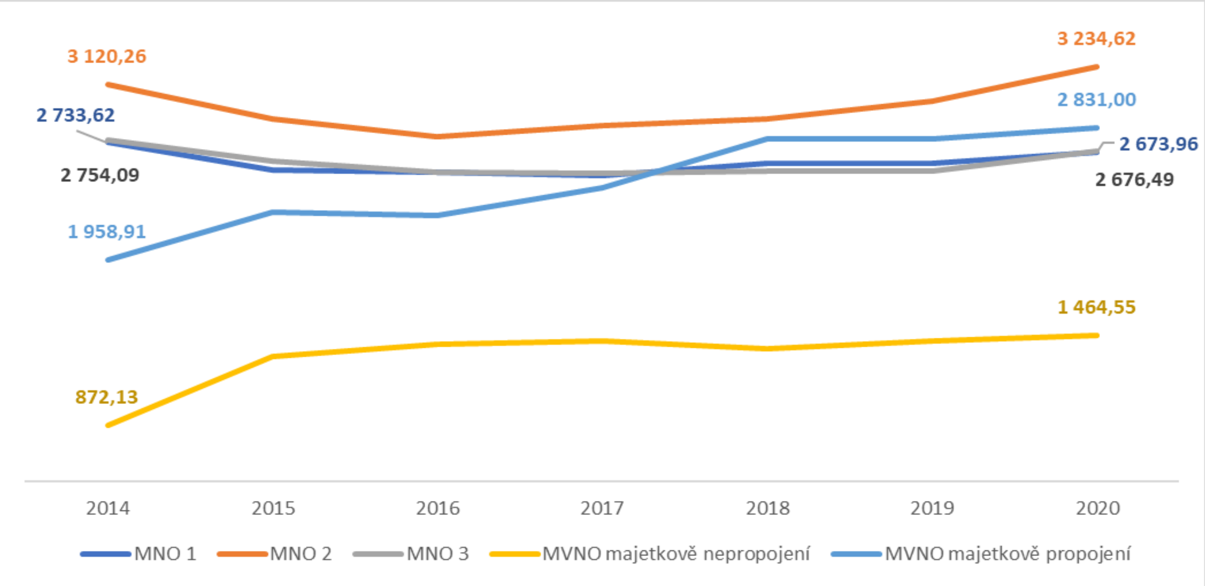

Chart 39: Revenue per active SIM card in CZK/year
Source: CTU, 2021

Differences in revenue per active SIM card across mobile operators are due to qualitative modifications of the services offered for the same nature and purpose. The differentiation lies in the parameters of the services offered, namely the physical volumes of the services offered and their qualitative parameters.

	Number of products	Average number of free minutes	Average number of free SMS	Average free data in GB	Supported data transfer technologies
T-Mobile Czech Republic a.s.	33	606 084	575 757	397	4G, LTE, 5G
O2 Czech Republic a.s.	24	666 681	624 999	299	4G, LTE, 5G
Vodafone Czech Republic a.s.	27	703 749	703 703	234	4G, LTE, 5G
Virtual operators	91	120 944	109 902	3	4G, LTE, 5G

Table 3: Quantitative and qualitative parameters of mobile service products offered (data collection in March 2022)
Source: operators' websites

The results of the data collection on mobile service products show that the products of network operators and virtual operators (excluding O2 Family) are similar within the defined boundaries between network and virtual operators. In quantitative terms, network operator products contain much larger physical volumes of spare units of consumption and in qualitative terms allow for orders of magnitude higher mobile data transfer speeds than virtual operators.

In order to confirm the results of the market share calculations, it is necessary to proceed to the calculation of the so-called Herfindahl index, which is a tool for measuring competition in a particular industry and is defined as the sum of the squares of the market shares of all firms in the market. As such, it can take values from 0 to 1, ranging from a large number of small firms (a value close to 0) to a monopoly (a value close to 1).

	2016	2017	2018	2019	2020
Herfindahl index of the number of active SIM cards	0,300	0,301	0,299	0,297	0,296
Herfindahl Total Mobile Revenue Index	0,312	0,310	0,308	0,306	0,305

Table 4: Herfindahl index for the relevant retail market for mobile services
Source: CTU, 2021

The calculation of the Herfindahl index on the basis of two different market power indicators has clearly shown that in each year and in each market indicator under review it takes on a value higher than 0.18, which means that the relevant retail market has reached a very high (oligopolistic) market concentration since at least 2014.

The high level of concentration in the mobile services market is the result of the existence of significant barriers to entry for another full-fledged MNO. Specifically, there is a high investment intensity of entry into the market, where the construction of a nationwide mobile network represents an investment of tens of billions of crowns. The high upfront investment is related to the need to acquire a critical mass of customers (assumed to be in the order of millions of customers), which is, however, only possible in a situation of very high penetration of mobile services (well over 100% of the population) through the acquisition of customers of existing operators, which represents another major barrier to successful market entry.

However, the availability of the frequency band needed to build a mobile network is absolutely crucial in terms of barriers to entry for another network operator. In the last spectrum auction, held at the end of 2020, no new operator won spectrum in the 700 MHz band. All suitable frequencies in the sub-1 GHz band (700, 800 and 900 MHz bands) are held by existing network operators and no further suitable sub-1 GHz frequency band will be available in the timeframe until at least 2024.

Based on the conclusions of the above analyses, it is evident that:

- The mobile market has shown a high price level for mobile services in international comparison throughout the period under review, as already presented in the preceding text of this analysis;
- the mobile market showed an almost unchanged structure in terms of market shares and a high level of concentration throughout the period under review;
- the differentiation of products between network operators and virtual operators lies in the parameters of the services offered, namely the physical volumes of the services offered and their qualitative parameters; and
- The market for mobile services is characterised by significant structural barriers to entry.

Given these conclusions, it is evident that in a concentrated oligopoly environment, the strategy of the oligopolistic market players that make up the mobile service offering is to maintain their current market position and achieve optimal profitability. The fulfilment of this strategy consists in maintaining parity between marginal revenue and marginal cost. In practice, this means that they extend their mobile service offerings until the revenue from the last unit of mobile service offered on the market is equal to the cost of providing it.

Since in practice it is very difficult to determine the minimum efficient marginal revenue of a concentrated oligopoly in an exact way, the interdependence between marginal revenue and marginal cost has to be investigated using game theory. According to the concept of game theory, this situation can be modelled as an infinitely repeated game. Each competitor decides which strategy to choose (collusion or competition) and accordingly obtains the profit of that strategy.

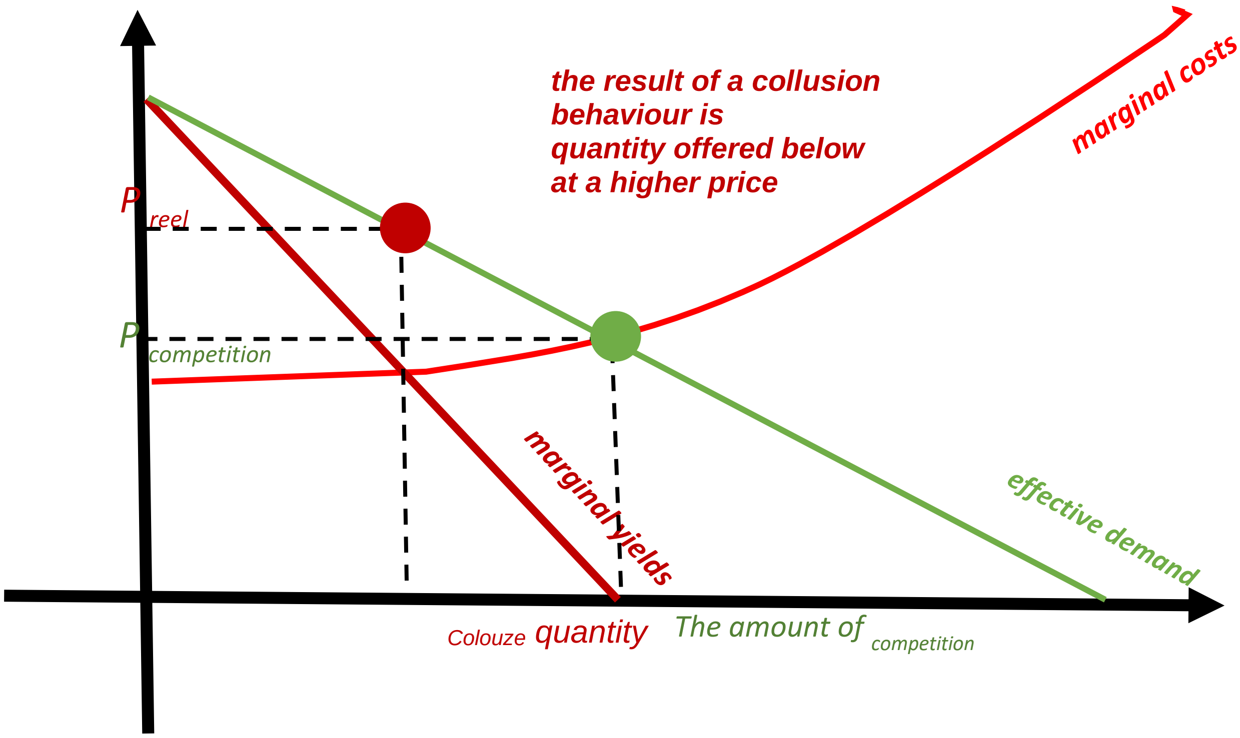

Image 20: Graphical representation of collusion behaviour at the theoretical level
Source : https://thismatter.com/economics/oligopoly-game-theory.htm

In terms of the model situation, the competitors have two options - coliseum or competition. We assume that if three competitors cooperate, they share the profit symmetrically. They earn $\frac{\pi^M}{3}$ (current profit)[39] . If one competitor breaks collusion, he gets (at most) the entire monopoly profit π^M and the other two competitors get no profit. If one of the competitors violates the collusion, in all subsequent rounds we observe a price war where each of the competitors realizes a profit π^W(competitive profit). Thus, $\pi^M \geq \frac{\pi^M}{3} \geq \pi^W$.[40]

Whether a competitor chooses to breach the collusion depends on two factors which must be satisfied simultaneously:

- elasticity of demand, where $E_d \geq 1$ must hold for a violation, and
- on how the competitor values current versus future profits, i.e. the discount rate δ[41]. We assume that the discount rate is equal to the WACC.

We compare the returns from the strategies using "value function analysis". In general, we know that the profit from a chosen strategy is equal to the discounted profit from all rounds. That is, it is equal to the profit from the first round of the game plus the discounted profit from all subsequent rounds. Symbolically speaking:

$$V_0 = \sum_{t=0}^{\infty} \delta_t \pi_t = \delta_0 \pi_0 + \sum_{t=1}^{\infty} \delta_t \pi_t = \pi_0 + \sum_{t=0}^{\infty} \delta_t \pi_t = \pi_0 + \delta \sum_{t=0}^{\infty} \delta_t \pi_{t+1} = \pi_0 + \delta V_1$$

We apply the stationarity condition, i.e. we assume that the same profit is made in each round: $V_t = V_{t+1} = V_t$.[42]

It follows from the above that the total profit in this case is equal to the profit from one round divided by the inverse of the discount rate: $V = \pi_0 + \delta V => V = \frac{\pi_0}{1-\delta}$

Thus, if all three competitors cooperate, then each of them will earn a third of the monopoly profit divided by the inverse of the discount rate: $V_i^C = \sum_{t=0}^{\infty} \frac{\pi^M}{3} = \frac{1}{1-\delta} \frac{\pi^M}{3}$.[43][44]

If one of the competitors breaks the coliseum in a given round, they make a one-time profit π^M and a price war in subsequent rounds, i.e., the entire monopoly profit in one round and the competitive profit in all subsequent rounds.[45] :

$$V_i^D = \pi^M + \sum_{t=1}^{\infty} \delta_t \pi^W = \pi^M + \frac{\delta}{1-\delta} \pi^W$$

Thus, a collusion will be stable (in equilibrium) if the discounted profit from the collusion is greater than the discounted profit from the competition (the monopoly profit in the first period and the discounted competitive profit in subsequent periods). Next, we modify the formula to determine the relationship between the discount factor and the monopoly and competitive profits, which is the condition for the profitability of the collusion[46] .

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[39] π^M= monopoly profit
[40] π^W= competitive profit
[41] δ = discount rate
[42] https://www.parisschoolofeconomics.eu/docs/chassagnon-arnold/cpgt1_2019.pdf
[43] V = total profit in all periods
[44] i = discount factor
[45] https://www.parisschoolofeconomics.eu/docs/chassagnon-arnold/cpgt1_2019.pdf
[46] https://www.parisschoolofeconomics.eu/docs/chassagnon-arnold/cpgt1_2019.pdf

$$V_i^C \geq V_i^D \Leftrightarrow$$

$$\frac{1}{1-\delta}\frac{\pi^M}{3} \geq \pi^M + \frac{\delta}{1-\delta}\pi^W \Leftrightarrow \pi^M \geq 3(1-\delta)\pi^M + 3\delta\pi^w \Leftrightarrow 3\delta(\pi^M - \pi^W) \geq 2\pi^M \Leftrightarrow$$

$$\delta \geq \frac{2\pi^M}{3(\pi^M - \pi^W)}$$

As regards the elasticity of demand for mobile services and its evolution, it has been consistently inelastic throughout the period under review. Between 2017 and 2019, even with an increase in sales per active SIM card, there was also an increase in the number of SIM cards at the same time.

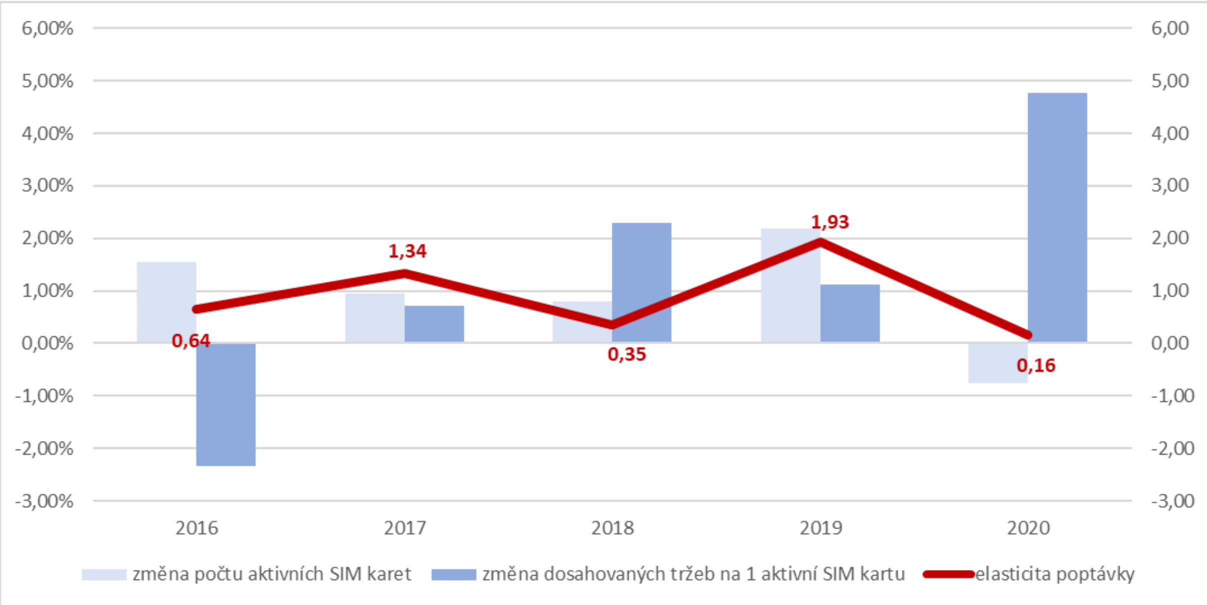


Chart 40: Evolution of the elasticity of demand for mobile services
Source: the CTU, 2022

The interim findings of the mobile services market investigation have shown that the oligopolistic market players have stable levels of revenues from mobile services and profits from the provision of mobile services, indicating that none of the oligopolistic market players has an interest in significantly reducing the price of the mobile services offered below the level of other oligopolistic market players, i.e. none of the oligopolistic market players tends to reduce the prices of its mobile services towards its marginal cost level.

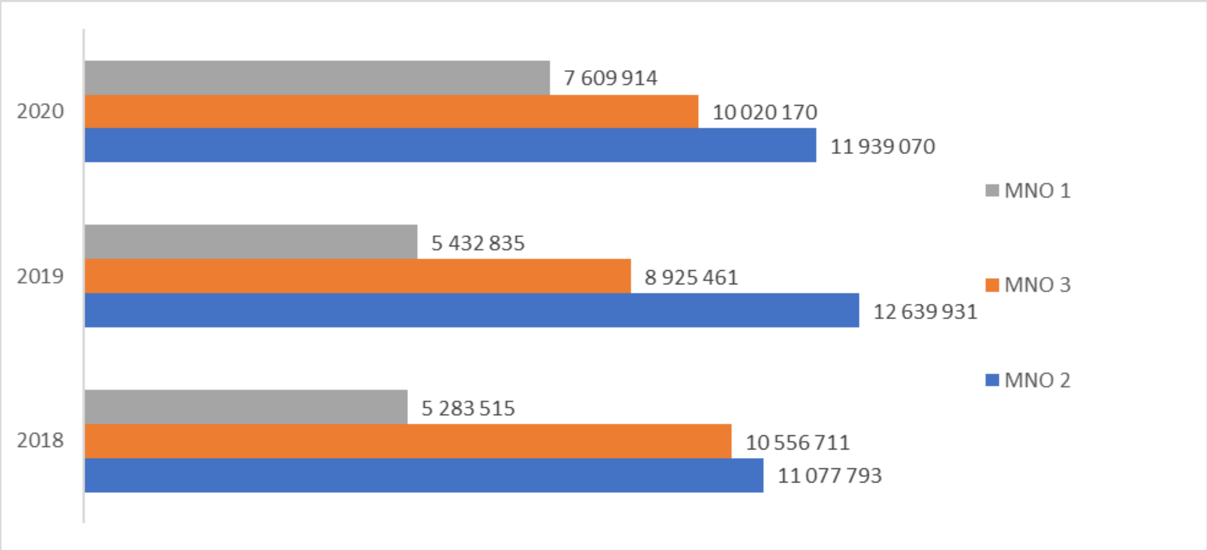


Chart 41: EBITDA of mobile service providers in thous. CZK excluding VAT
Source: the CTU, 2022

The initial confirmatory factor for this assumption is the distribution of profit margins in the mobile market. The profitability of sales indicator, i.e. profit margin, expresses the percentage of EBITDA to sales of goods, products and services. In general, this indicator is described as a % of profit per CZK of sales. Since the trend in the indicator is mainly influenced by changes in price (sales margin), cost levels, sales levels and changes in the structure of the sales mix, the convergence of profit margins of oligopolistic players in the mobile services market implies market consolidation in terms of both quantitative and qualitative market indicators.

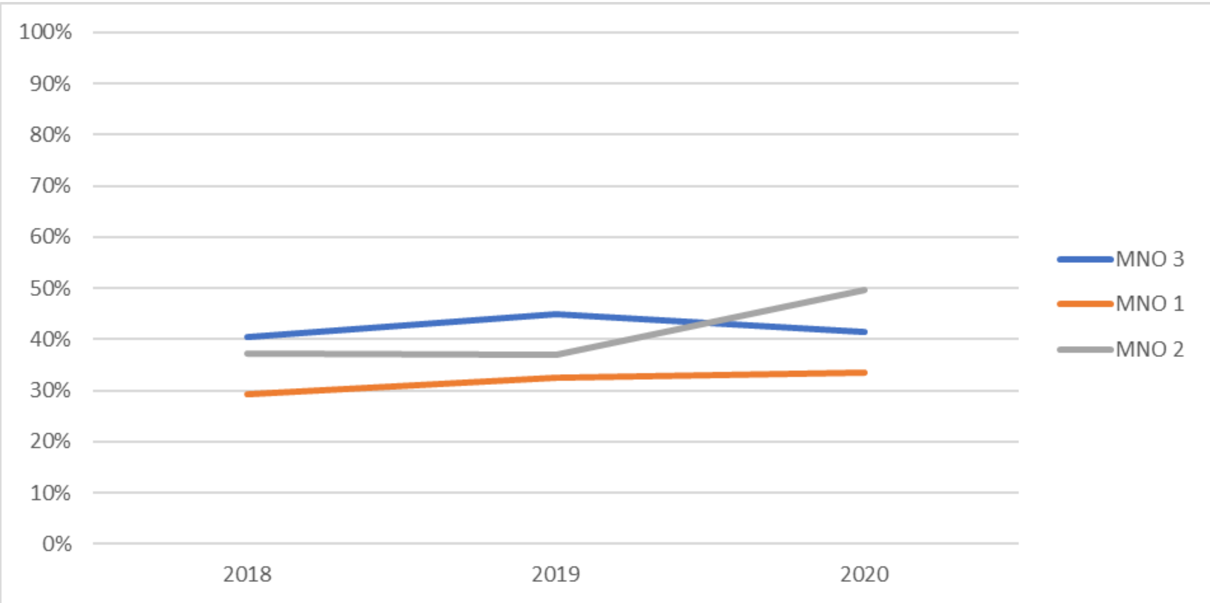


Chart 42: Evolution of the EBITDA margin of network operators in the mobile market
Source: the CTU, 2022

Given the period of sustained high profitability of all three network operators in mobile services, we can conclude that their incentives to collude are also high. The basic condition for the profitability of the collusive strategy for all three network operators is that their weighted average cost of capital (WACC) must not exceed the theoretical inverse of the discount factor, which we convert the future value of the benefits of collusion into the net present value of the benefits of collusion.

If we assume that the expected profit in a price war is zero due to the reduction of mobile prices to marginal cost levels, then according to the formula above, if the value of the discount factor exceeds 66.6% (i.e. 2/3), the collusive strategy would cease to be profitable. In other words, if the weighted average cost of capital were higher than the inverse of the discount factor (i.e. the discount rate) it would be more profitable for the oligopolists to compete with each other.

T-Mobile's annual report for 2020 puts the WACC at 9.13%. The CTU estimates that O2's and Vodafone's WACCs converge to this value (due to similar profit margin parameters and comparable credit conditions for raising foreign capital). It can therefore be assumed that the collusive strategy's profitability condition is met by all oligopolistic entities.

Situation on the wholesale market

The formation of the wholesale supply of mobile services is currently free from quantitative and qualitative constraints, although some form of regulation is present in the wholesale market, particularly with regard to auction commitments. In essence, however, the parameters of wholesale supply formation depend almost entirely on the strategy of network operators.

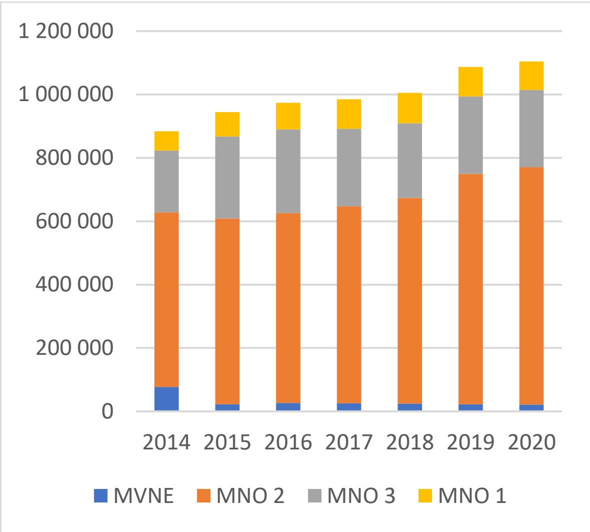


Chart 43: Wholesale supply generation - number of SIM cards sold
Source: the CTU, 2022

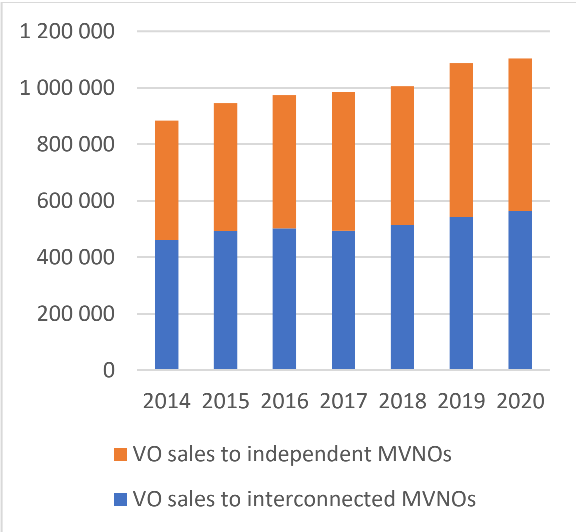


Chart 44: Use (mix) of wholesale offerings by type of wholesale customer - number of SIM cards sold
Source: the CTU, 2022

In terms of the use of wholesale supply, up to 51% of the wholesale SIM supply is sold to MVNOs, i.e. virtual operators with direct ownership links to network operators. In addition, the share of wholesale SIM card sales to MVNOs is increasing every year. Thus, the above charts show that 98 % of the wholesale SIM card supply is made up of three network operators, which sell up to 51 % of the wholesale supply to three MVNOs.

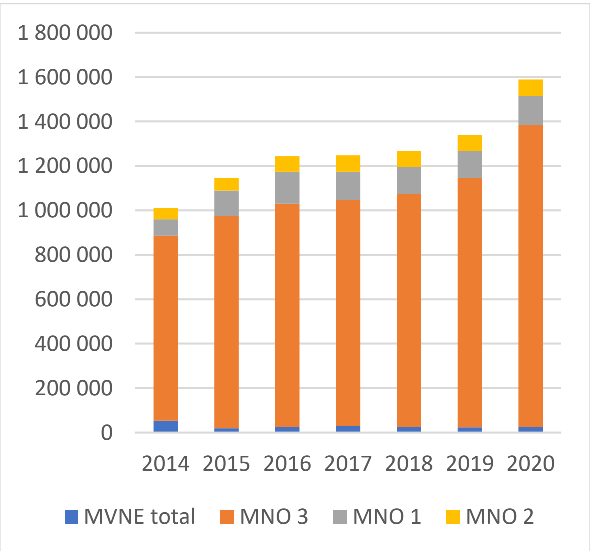


Chart 45: Wholesale supply generation - voice traffic (in thousands of minutes)
Source: the CTU, 2022

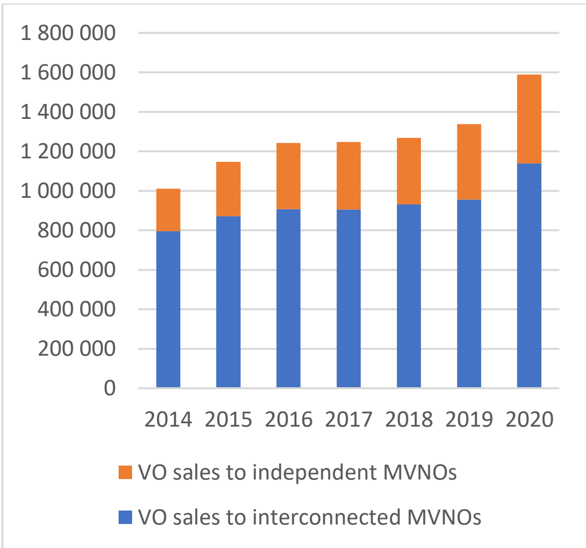


Chart 46: Use (mix) of wholesale supply by type of wholesale customer - voice traffic (thousands of minutes)
Source: the CTU, 2022

In terms of voice traffic, in terms of the use of wholesale supply, up to 72% of wholesale supply is sold to MVNOs, i.e. virtual operators with direct ownership links to network operators. In addition, the share of wholesale sales to MVNOs is increasing every year. The figures above show that 98,5 % of the wholesale supply is made up of three network operators, which sell up to 72 % of the wholesale supply to three MVNOs.

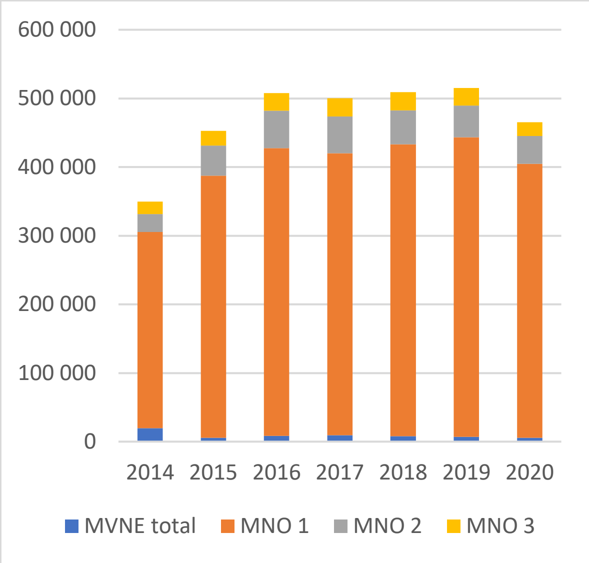


Chart 47: Wholesale offer creation - SMS sent (thousands of SMS)
Source: the CTU, 2022

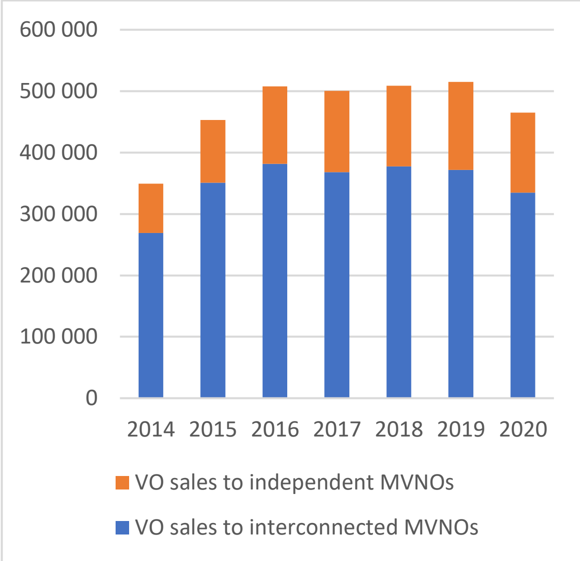


Chart 48: Use (composition) of wholesale offer by type of wholesale customer - SMS sent (thousands of SMS)
Source: the CTU, 2022

In terms of SMS sent, in terms of the use of wholesale supply, up to 72% of wholesale supply is sold to MVNOs, i.e. virtual operators with direct ownership links to network operators. In addition, the share of wholesale sales to MVNOs is increasing every year. The figures in the above charts show that 98,7 % of wholesale supply is accounted for by the three network operators, which sell up to 72 % of wholesale supply to the three MVNOs.

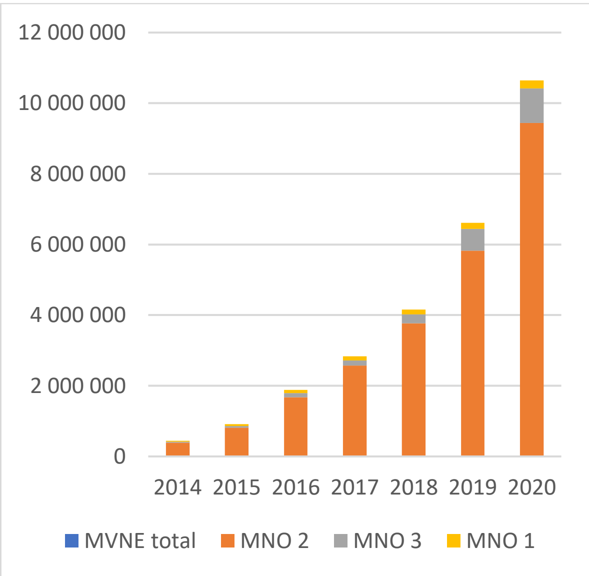


Chart 49: Wholesale offer creation - volume of data transferred in GB
Source: the CTU, 2022

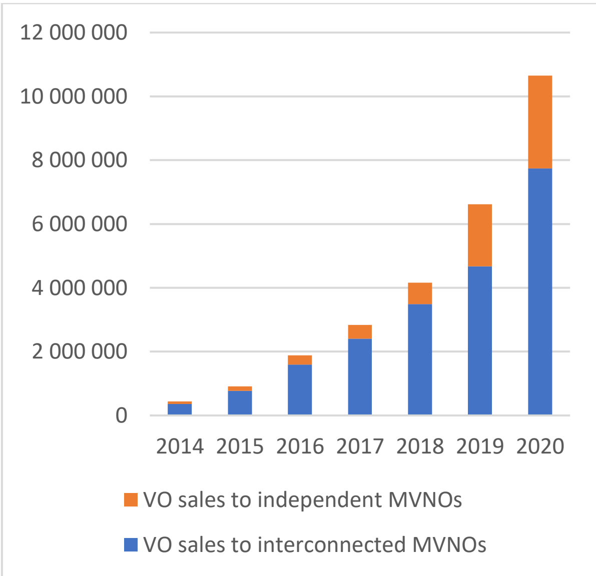


Chart 50: Use (mix) of wholesale offerings by type of wholesale customer - volume of data transferred in GB
Source: the CTU, 2022

In terms of the volume of data transferred, in terms of the use of wholesale supply, up to 73% of wholesale supply is sold to MVNOs, i.e. virtual operators with direct ownership links to network operators. In addition, the share of wholesale sales to MVNOs is increasing every year. Thus, the data in the above charts show that 99,8 % of the wholesale supply is made up of three network operators, which sell up to 72 % of the wholesale supply to three MVNOs. The high concentration of supply in the wholesale market, with 72 % of services being sold by

MNOs 'to themselves', means that the wholesale market does not operate in a standard way and that the collusive practices of MNOs have a significant impact there.

	2016	2017	2018	2019	2020
Herfindahl index of the number of active SIM cards	0,461	0,470	0,481	0,505	0,516
Herfindahl Voice Services Index	0,669	0,678	0,696	0,716	0,742
Herfindahl index of SMS services	0,696	0,688	0,710	0,728	0,745
Herfindahl Data Services Index	0,784	0,817	0,819	0,780	0,791

Table 5: Herfindahl index for the wholesale mobile market
Source: the CTU, 2022

The conclusions from the analysis of the formation and use of wholesale mobile services are confirmed by the calculated Herfindahl indices. The concentration of wholesale supply is strengthening, making the oligopolistic wholesale market for mobile services increasingly pronounced.

From the perspective of assessing the degree of collusive behaviour of oligopolistic entities, there are 3 oligopolistic entities operating in the wholesale market for mobile services, which constitute their supply. Specifically, there are 3 mobile network operators that sell mobile services to virtual operators on the wholesale market. These are identical players to those in the relevant retail market for mobile services.

That is:

- the profit margin is approximately the same for all three network operators;
- the incentives of network operators to engage in collusive behaviour are also converging;
- if we assume that the expected profit in a price war is zero due to the reduction of mobile prices to marginal cost levels, then if the value of the discount factor exceeds 66.6% (i.e. 2/3), the collusive strategy would cease to be profitable;
- if the weighted average cost of capital were higher than the inverse of the discount factor (i.e. the discount rate) it would be more profitable for oligopolists to compete with each other.

T-Mobile's annual report for 2020 puts the WACC at 9.13%. The CTU estimates that O2's and Vodafone's WACCs converge to this value (due to similar profit margin parameters and comparable credit conditions for raising foreign capital). It can therefore be assumed that the condition for the collusive strategy to be beneficial is fulfilled by all oligopolistic entities.

Conclusion

The application of game theory also confirmed the presence of tacit collusion in both the retail and wholesale markets. The application showed that all three network operators have a financial incentive to tacitly coordinate their activities in both markets.

C.8 Assessment of the technical readiness of a potential new mobile network operator to enter the retail and wholesale markets and its potential beneficial impact on end customers

Readiness of the host MNO's network infrastructure to provide national roaming

In order to provide national roaming using a combination of allocated spectrum in the Czech Republic, investment in the guest operator's network may be necessary and not yet realised. Specifically, this is an investment in "core" network infrastructure systems for the provision of 5G SA ("Stand Alone" type).

At present, 5G networks of the NSA ("Non-Stand Alone" type) type are operated in the Czech Republic, which means that user (customer) data is transmitted via the 5G network in the 700 MHz band, but for the transmission of so-called "control data" signalling, it is necessary to use the 4G network in the 800 MHz or 900 MHz band simultaneously.

Given the scale of this investment, it may not be implemented by potential host MNOs until 2024, which may technically push the start of national roaming services beyond 2024.

Unrealistic for a new entrant mobile network operator to gain access to regulated national roaming before 2024

Based on this information, and the CTU's assessment [redacted][47] The CTU does not expect the qualification to be met and regulated national roaming to be implemented by the end of 2024.

Technical aspects of the use of commercial national roaming to enable a new mobile network operator to enter the retail market

In addition to the use of a regulated access to national roaming, there is also the possibility of a commercial agreement between an existing (or even multiple) MNO and a new entrant. In the case of a commercial agreement, from a legal and regulatory perspective, there is no need to wait for the new entrant MNO to meet qualifying conditions, such as coverage of its own network, and the agreement can therefore take place at virtually any time.

In this regard, it should be noted that such an agreement could have occurred at any time since 2017, when radio frequencies suitable for mobile services were allocated to holders different from the existing MNOs. To date, no such agreement has occurred and the conclusion of such an agreement is highly speculative. The mere hypothetical possibility of such a commercial agreement cannot be a regulatory starting point for the CTU and a reason to delay regulatory action indefinitely.

[redacted]

[47]

[redacted]

Technically, the following technical interconnections and adjustments are particularly necessary on the part of the full-fledged MNO entering the national market and receiving national roaming:

1. a "core network" system at a national roaming recipient;
2. direct separate network interconnection ("interconnect") with the host MNO (national roaming provider), separately for voice traffic and separately for data traffic;
3. Independent direct network connection between the core systems of the host MNO and the receiving MNO for signalling;
4. network integration between the host MNO and the recipient of national roaming;
5. modification of systems for processing CDR ('call detail records') records from the host MNO that document the SIM traffic of the national roaming recipient on the host network;
6. linking and integrating the "billing" systems of the host MNO and the recipient of national roaming;
7. SIM management; and
8. "service provisioning" system.

According to CTU estimates, the above modifications would require a one-off investment of EUR 1.198 million and annual operating support costs of approximately EUR 235 thousand. This assumes that the number of SIMs of the newly entering MNO does not exceed 100 thousand and the newly entering MNO already has a CRM system for nationwide mobile services and other corresponding BSS ("business support systems") systems - "charging" system, "billing" system, MNP, DWH, eCare/eChannel, Fraud Management, AML, etc. It will take at least 3-6 months for a national roaming beneficiary to make the quantified investments, get the national roaming system up and running, and fine-tune it operationally. The need for investment is also confirmed by [redacted] In addition to the above costs, the national roaming recipient will also bear the costs of building and operating its own mobile network, national roaming charges, network interconnections with the host MNO, SIM production, security and logistics costs, marketing and sales, additional human resources and general administration.

Another factor that may affect the national roaming recipient's time readiness to launch nationwide services is the aforementioned type of 5G network (SA vs NSA), also for the national roaming recipient. If a national roaming beneficiary wishes to provide voice, SMS and data on its 5G network, its 5G 'core' network system must include not only data but also voice functionality for 5G voice services, so-called VoNR ('Voice over New Radio' or Vo5G). The CTU has not yet received information that any potential national roaming beneficiary has already deployed its own SA-type 5G network. According to the CTU, the 5G NSA networks that are now in place in the Czech Republic involve a voice call on a 4G network (VoLTE - "Voice over LTE"), to which the end customer's mobile phone must be switched to make the call. In the 5G network, only data traffic takes place.

The CTU expects, also on the basis of statements by relevant stakeholders, that the deployment of the SA network type for any potential beneficiary of national roaming will not take place before the end of 2024, or rather later, if at all.

Another key parameter for the launch of services of (not only) a new network operator based on the use of national roaming in the 5G standard is also the availability of terminal equipment, in particular mobile phones that support not only the used frequency spectrum, but also interoperability between the provider and the recipient of national roaming. A distinction should also be made between the availability of a model that supports the band used for 5G by the national roaming beneficiary (N78[48]) and also the 5G band of the national roaming provider (N28), and the adaptation of its firmware for use in the network of the national roaming beneficiary in particular[49] . This modification, together with testing, may take 6 to 12 months, possibly longer, given the likely low priority assigned to small operators in the country and the "release" windows for firmware updates by major mobile phone manufacturers. There are currently in the order of 250 mobile devices available (with a market presence in the Czech Republic) that support the N78 and N28 bands[50] . Testing them on the new MNO's network and adjusting the firmware can therefore take a considerable amount of time. Therefore, the selection of devices that will work reliably in the network of the new MNO will not be many when the services are launched. This applies to both the retail and wholesale markets.

An important aspect that affects both the end-customer satisfaction of the recipient of national roaming and its operating costs is the extent and density of population coverage of its own network.

If the coverage of the population and territory by the recipient of national roaming by its own network is low, which is the current situation according to the information available to the CTU from potential recipients of national roaming (Nordic Telecom, PODA, CentroNet/Incrate), the recipient of national roaming will probably have to set up the SIM cards of its end customers to maximise the use of national roaming when launching nationwide services. Without this setup, the customer experience of end-customers in the retail market could be significantly worse than their experience with existing MNOs until they build sufficient coverage on their own network.

If the coverage of the national roaming recipient's own network is inhomogeneous, which is highly likely at present given the complexity of building mobile networks in the Czech Republic at least until the end of 2024, end devices (e.g. mobile phones) could negatively

[48] See https://www.qorvo.com/design-hub/design-tools/interactive/3gpp-frequency-bands
[49] Potential national roaming providers (3 MNOs) in the country belong to large international groups that have a strong bargaining position vis-à-vis mobile phone manufacturers, but potential beneficiaries do not.
[50] https://www.gsmarena.com/results.php3?sMakers=59,48,46,89,121,41,45,58,73,20,4,1,95,82,86,9,19,123,80,62&s5Gs=28,78

affect the quality of service of the national roaming recipient from the end customer's perspective by switching more frequently between the national roaming recipient's own network and national roaming.

According to the CTU, the coverage of all realistic potential recipients of national roaming is far from continuous and homogeneous, especially for indoor coverage on the frequency 3400-3600 MHz due to the very low penetration of this spectrum inside buildings, problems with uplink between a mobile phone and a BTS over a longer distance (500 m, or at most approximately 1 km) also in the outdoor environment (open space). This also corresponds to the state of coverage of the actual network of potential beneficiaries of national roaming, which the CTU maps on https://digi.ctu.cz/pokryti/ and https://digi.ctu.cz/3g7/.

If the customer's terminal equipment of a national roaming recipient is in national roaming, it periodically searches for the presence of its own network ("background scanning"). During this search, the terminal equipment may be unavailable.

If the customer end device of a national roaming recipient is on its own network and does not have an active call (or data "session"), it will be logged out of its own network when the signal level from the base station is low. Consequently, the terminal device searches for an available own network or national roaming network and is therefore also unavailable for a certain period of time. For coverage of the 5G own network in the 3400-3600 MHz band (or also 3600-3800 MHz), in the case of cities, the distance of the terminal device from the base station needs to be 500 m or less, and even then the signal penetration into indoor areas will be weaker.

It is clear from the nature of the spectrum available to eligible national roaming bidders and the terms of the 5G Auction that services in the 2G and 4G standards will always be provided exclusively over the host MNO's network. With regard to data and voice services in the 5G standard, it can be assumed from the above that, given the current low and inhomogeneous coverage of the population and territory by eligible bidders for national roaming, a significant part of the end-devices of customers receiving national roaming will remain on the host network in the coming years. The completion of continuous coverage of significant parts of the territory and population with its own network cannot be expected before 2024, and probably not even in the next few years, given the nature of the spectrum available to eligible national roaming applicants, the complexity of the process of building and connecting new base stations and the frequency required.

The exact business model of each eligible national roaming customer cannot be predicted with certainty. A number of scenarios are possible. For example, if a holder of 3400-3600 MHz spectrum wanted to use this spectrum for fixed data services by connecting a fixed FWA terminal with an external antenna in a 5G SA network, the effective distance to the BTS could be extended to 5-7 km and thus the quality of coverage requirements would be significantly reduced. In combination with national roaming, this service could be a relevant customer offering.

From the above, it is clear that national roaming to the extent envisaged by the 5G Auction commitment cannot be envisaged until 2024 based on a potential commercial agreement between [redacted].

Use of commercial national roaming to enable a new mobile network operator to enter the wholesale market

The technical implications and timing estimates described for the entry of a new MNO using national roaming into the retail market also apply equally well to entry into the wholesale market.

In addition to the investment and operational costs associated with serving the retail market and the cost and time to complete coverage, a newly entering MNO will need the following systems (and investments) in particular to serve wholesale customers:

1. CRM system for wholesale customers (separate from our own CRM system for retail customers;
2. "Umbrella OSS" ("Operational Support Systems") for wholesale KPI tracking;
3. "Charging" system for wholesale; or
4. "Billing" system for wholesale.

The amount of this investment could exceed €1.4 million with annual technical support costs of €120,000. Relevant staff costs also need to be added.

The investment cost for the integration of 1 MVNO as a wholesale customer of a new MNO can reach up to 67 thousand euro and the annual operating cost for the technical management and operation of the central components of the MNO for 1 MVNO can reach up to 60 thousand euro.

A new MNO entering the wholesale market using national roaming will thus face two major risks:

1. the initial poor quality of service may deter potential wholesale customers; and
2. The high start-up and operational costs of the wholesale model (one-off as well as cost per MVNO) combined with potentially low SIM numbers and low wholesale ARPU (see replicability analysis) may make the wholesale model unattractive for a new MNO.

In the case of commercial national roaming, (1) there is no entitlement for the access seeker to benefit from regulated (cost-based) prices for regulated national roaming as specified in the terms of the 5G auction and (2) there is no obligation for the national roaming provider to allow the recipient of national roaming to also provide wholesale services in national roaming. According to the CTU's information, such non-enabling of the wholesale model in commercial national roaming agreements is an existing practice. However, the wording of the response does not preclude a model where the ability of a recipient to use commercial national roaming for its wholesale market is commercially or technically restricted by the provider, or the respondent MNO reassesses its plans during the course of negotiations and begins to push for a wholesale ban.

Based on an evaluation of the information obtained and its own analysis, the CTU has concluded that the entry of a new nationwide full-fledged MNO into the retail and wholesale markets with the potential to increase the level of competition in these markets will not be realized by the end of 2024. Such entry, if it can be expected at all, will be realized over a much longer time horizon.

Regardless of the specific business model chosen by individual national roaming applicants, there is no doubt that they will be fully reliant on national roaming for voice services well beyond 2024 (at least until the majority of the population has migrated to data-capable terminals), while at the same time they will be largely reliant on national roaming for 5G data services in the same timeframe due to the lack of coverage on their own network. The market impact could thus be expected in particular if any eligible bidder is able to secure regulated national roaming on the basis of the 5G Auction commitment, i.e. in particular at a regulated price. The launch of wholesale services is not yet certain at all, even beyond 2024. The launch of commercial national roaming, as well as the nature and extent of these services, is uncertain in this timeframe and no related significant impact on the relevant market can be anticipated.

C.9 Expectations of the CTU

The CTU expects that the proposed regulation based on the findings of the analysis will develop the competitive environment in the retail market under MVNOs and strengthen their market position. The regulation should allow for the setting of reasonable wholesale conditions for access to mobile services, both technical and pricing. These conditions must be applied simultaneously and the absence of either of them will not allow effective development of competition in the market.

The introduction of regulation should prospectively increase the margin between the retail and wholesale price of mobile services in the Czech Republic to enable replicability of MNOs´ offers by MVNOs.

This will then enable a gradual reduction in the price level of mobile services on the retail market in the Czech Republic from the current 90% above the EU average[51] to the EU average.

Part D - Analysis of Relevant Market 3 - Wholesale market for access to mobile services

1. Introductory background

1.1 High mobile prices abroad

This comparison is described in detail in section C.3 of this document.

1.2 The impact of bundled mobile, internet and TV services for households on MNOs' incentives to offer competitive wholesale mobile services

If a retail customer were to switch from an MNO to an MVNO, the MNO would be in a more difficult position to sell fixed telecommunications services to the customer as well, particularly internet and TV services. The importance of "3-play" packages (mobile services, fixed internet, TV) in the customer's decision-making process when choosing a particular telecommunications service provider in the Czech Republic is growing. According to KMPG's Czech Digital Household 2021 study[52] , "the share of respondents combining multiple services from a single provider has increased from 18% in 2016 to 22% in 2018 to 27% in 2020".

[51] In the case of data prices, the difference is up to 200%, according to a comparison by Cable.co.uk.
[52] Source : https://assets.kpmg/content/dam/kpmg/cz/pdf/file.pdf

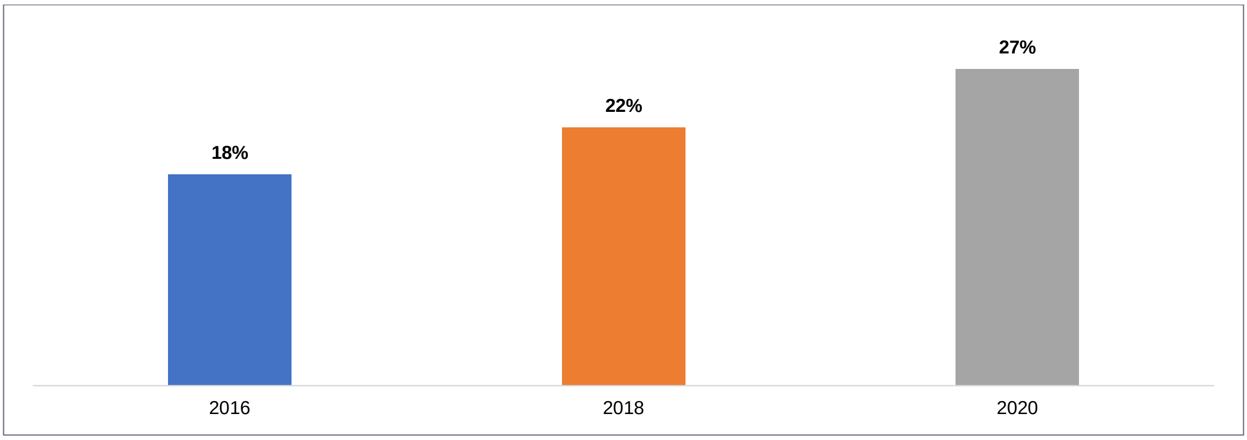


Chart 51: Market share of 3-play customers in the Czech Republic
Source: 2016-2021 KPMG "Digital Household" study

All 3 MNOs operating in the retail and wholesale markets in the country are so-called integrated operators that already provide or plan to provide bundles of multiple types of services at a discounted rate nationwide[53] .

It should also be pointed out that the accelerating take-up of bundled mobile, fixed internet and TV services will further exacerbate the negative effect of wholesale mobile market failure on end-customers. Their choice of these bundled offerings will be even more limited in the future as integrated MVNOs (MVNOs that also operate in the fixed market) exit the retail mobile market due to the dysfunctional wholesale mobile market.

Given that bundles are still used by 27% of[54] customers, i.e. a minority of the market, early regulatory intervention can prevent restrictions on competition in other electronic communications markets. Although in this analysis the CTU only focuses on the mobile market, it perceives the impact of competition, or lack thereof, not only on the mobile market but also on the TV and fixed internet markets, or one 3-play market.

2. Market definition and assessment for analysis purposes

2.1 Market definition

The definition of the relevant market has been carried out in accordance with Part 2 of the Guidelines[55], which state in paragraph 26 that the starting point for the definition of the relevant market is an assessment of the relevant retail markets, taking into account demand-side and supply-side substitutability from the end-user perspective over subsequent review periods, based on current market conditions and their likely evolution.

The CTU based its assessment of the offers of individual operators only on public list prices, as the existence of non-public offers in the Czech Republic is in decline and two of the three network operators no longer offer such non-public offers. Unlike in previous years, when the CTU took non-public offers into account in the market definition, the impact of non-public offers on real prices of mobile services is much less significant to negligible. Therefore, the CTU did not examine non-public prices in the forward-looking analysis.

[53] Source : www.o2.cz, www.t-mobile.cz, www.vodafone.cz
[54]Source: KPMG Czech Digital Household 2021 Study, page 26 (https://assets.kpmg/content/dam/kpmg/cz/pdf/file.pdf)
[55] Commission Communication 2018/C 159/01: Guidelines on market analysis and the assessment of significant market power under the EU regulatory framework for electronic communications networks and services.

In its decision of 17 February 2022, the Commission did not comment on the product or geographical definition of the relevant market. Therefore, the CTU did not change the market definition compared to the analysis submitted in 2021. The CTU has also confirmed the original definition in the updated market overview as of 2 May 2022. In the light of the Commission's comments, as well as the updated and supplemented market survey and the supplemented technical analysis, the CTU has shortened the timeframe for defining the relevant market to 31 December 2024, when it expects a new operator to enter the retail and potentially the wholesale market on a national roaming basis. The CTU subsequently reflected this time definition of the relevant market in its assessment of the three criteria test as well as in its assessment of SMP.

2.1.1 Product market definition

From a product perspective, the relevant retail market consists of all products and services that are considered interchangeable or substitutable from a consumer perspective, based on their characteristics, prices and intended use. Geographically, the relevant retail market is traditionally identified on the basis of two main criteria, namely the area covered by the network and the existence of legal and other regulatory instruments.

2.1.2 Market Research

The analysis included an in-depth product survey that mapped 335 specific mobile service product offerings in the retail market that can be described as new or modified from the last product survey conducted in August 2021, with the assumption that product offerings that did not enter the mapping have a negligible impact on the mapping results. Details are provided in section C. 6 of this document.

Virtual mobile operators offer a range of products whose basic characteristic is low free data volume. Up to 80% of the mapped MVNO products have a monthly free data volume of up to 200 MB. In contrast, products with more than 10 GB of free data account for only 1% of MVNO products.

In terms of the structure of network operators' products, products with free data volumes up to 200 MB per month account for only 13% of the share. On the other hand, products with free data volumes above 10 GB per month account for up to 45% of network operators' products.

An analysis of the replicability of mobile operators' products showed that virtual operators are generally not competitive for packages containing data volumes above 1.9 GB per month. An analysis of the structure of mobile operators' products showed that mobile network operators offer on average up to 10 times more free data within their products than virtual operators. The product survey clearly shows that the retail market for mobile services is composed of products (tariffs) on the supply side that **include mobile services with free volume of voice and SMS units or unlimited volume of voice and SMS units with potential of ad-hoc mobile internet access, products with free units (in MB/GB) or unlimited mobile internet access with potential access to voice and SMS services (per unit), and products with voice, SMS and mobile internet access with free units or unlimited usage of voice, SMS and data services.**

In terms of potential product substitution, mobile communications service providers provide three basic types of services over mobile communications networks, with different service components (voice, SMS/MMS and data services) included in the tariff:

- mobile tariff without data component,
- mobile tariff with data component,
- mobile internet (tariffs without voice and SMS component for e.g. tablets, USB dongles, laptops).

A mobile tariff without data usually includes a certain volume of call minutes and SMS/MMS and/or a so-called FUP limitation ("fair user policy"[56]) for some or all of the tariff components if any of the components (e.g. calls) are marketed by the service provider as "infinite" or "unlimited". In the case of a tariff without data, data services are generally enabled on the SIM card, with the proviso that the tariff does not include a certain volume of data in the flat-rate price, but data may be consumed and charged for either on the basis of actual consumption of data units, typically MB (megabytes), and FUP does not apply for these types of tariffs, or on the basis of the purchase of a data package, the consumption of which is generally limited not only in volume but also in time, e.g. for 30 days. The first type of charging described above is called 'pay as you go' in English and is applied to SMS/MMS services in the Czech Republic for a significantly minority of tariffs (27 %).

A mobile tariff with data usually includes a certain amount of call minutes, SMS/MMS and data and/or FUP for some or all of the plan components. Typically, for this type of tariff, the FUP limitation is applied to the voice component ("unlimited calls") and in some cases also to the data component ("unlimited data").

As a subset of the type of mobile tariff with data, there are also tariffs on the market that contain only a certain amount of data without minutes and SMS. Historically, these tariffs with a small amount of data (typically tens of MB) were intended for business customers for machine to machine "M2M" communication purposes, e.g. for monitoring fleets of company cars.

Currently, the market also includes tariffs with significantly larger (typically in the order of GB or tens of GB) data volumes, including tariffs with unlimited data usage (so-called "full flat" tariffs). These tariffs are primarily targeted at innovative customers in the retail market who are shifting all or a significant part of their voice and SMS/MMS communications from traditional mobile operator services to applications. According to the AMI Digital Index 2021 study[57] , 76% of the country's population uses social networking sites on a daily basis, and 80% of the population overall. 75% of them use Facebook's Messenger app for communication and 57% use WhatsApp from the same company. The other applications used are Skype from Microsoft (21%) and Viber (13%). All four of these applications allow their users to communicate with each other via data communication via voice in real time and also via messages, which can contain multimedia content (images, video, voice) in addition to text. Even given the high penetration of these applications in the Czech Republic, the need for data communication for mobile telecommunication customers in the Czech retail market is crucial

[56] The FUP restriction is applied as a stop of further communication in case of reaching the minutes or SMS/MMS limit and as a stop of further communication or significant slowdown of data communication speed in case of reaching the data limit.
[57] Source : https://amidigital.cz/ami-digital-index-2021/

now and in the future. Another study that documents this customer need is the "Czech Digital Household" study by KPMG from 2021.

The mobile internet service is primarily designed to connect a tablet, laptop or modem to the internet. These services on the retail market in the Czech Republic usually contain a larger volume (in the order of GB or tens of GB) of data or FUP. As a rule, they do not contain free minutes and SMS/MMS, but these services are usually not blocked on the SIM card, but are charged on a "pay as you go" system - payment per unit consumed (minute, SMS).

All the services (tariffs) in this category that are offered on the retail market within the coverage of a given operator in the Czech Republic do not contain a geographical limitation, i.e. it is possible to use mobile internet services throughout the entire territory of the Czech Republic. They also do not contain a limitation (pairing) to a specific device, i.e. a SIM card with this tariff can also be used in a mobile phone.

Virtually all "smart" phones allow you to connect your tablet or laptop to the internet via Wifi (personal hotspot) or other internet access sharing (e.g. sharing between Apple devices). With the growth in the volume of data on data tariffs that has occurred over the last 5 years, this removes the need for separate devices such as a modem with a dedicated SIM card and tariff.

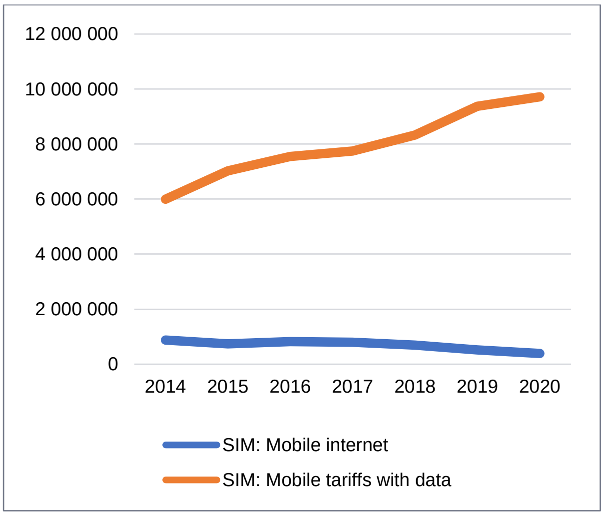


Chart 52: Evolution of the number of mobile internet SIM cards and mobile data tariffs per year
Source: CTU, 2022

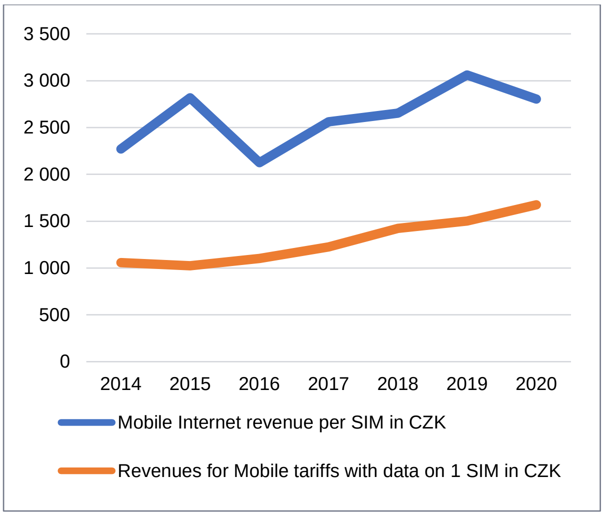


Chart 53: Revenue development from sales of mobile internet products and mobile data plans with data per SIM card per year
Source: the CTU, 2022

It follows from the above that the mobile internet tariff type is no longer relevant in the retail market, at least for the mass market segment, and is being replaced by a mobile data tariff. It can be concluded that although the relevance of the mobile internet tariff is low for the purposes of this analysis, given its relatively low consumption by customers or the limitation of supply by operators, it should be included in the analysis. The reason for inclusion lies precisely in the aforementioned convergence (substitution) of mobile data and mobile internet services.

Mobile telecommunication services can also be divided according to the way they are paid for in the retail market into:

- invoiced services (post-paid),
- prepaid services.

In the case of invoiced services, payment for the services is made by the customer only after consumption of the services. As a rule, the mobile telecommunications service provider bears the so-called credit risk in case the customer does not pay for the services consumed.

In the case of pre-paid services, the customer can only consume the services if he/she has pre-paid for the services in the form of a credit. Recently, automatic credit top-ups have also been gaining ground in the Czech market, e.g. via the payment card[58]. Given this development, the distinction between billed services and prepaid services is gradually disappearing and there is no reason to distinguish between these two categories of services for the purposes of this analysis.

In addition to the above services, other services were also considered for inclusion in the relevant market definition, such as a mobile tariff without data usage (i.e. mobile tariffs with SMS and voice only) and a mobile tariff with data only without voice and/or SMS usage. Both services were excluded from the market definition on the basis that they failed the quantitative SSNIP test and also on the basis of an assessment of the qualitative SSNIP test as part of an in-depth analysis of the product mix in the Czech market. As regards mobile tariffs without data usage, a constant decline can be observed. This indicates a growing preference of end-users for mobile tariffs including data services, which is also supported by the fact that network

[58] E.g. https://www.vodafone.cz/predplacene-karty/ or https://www.o2.cz/osobni/platebni-karta

operators no longer actively offer mobile tariffs without data. The CTU therefore concluded that mobile tariffs without data are not a substitute for mobile tariffs with data due to different customer characteristics and requirements, and that customers would not switch to these tariffs even if there were a small but significant increase in the price of tariffs with data (see Section 2.1.3 in the reasoning section of the SSNIP test). In view of the above, it can be assumed that this trend will continue and that the mobile market will be increasingly dominated by tariffs including mobile data services and therefore, in line with the forward-looking principle, non-data tariffs have not been included in the relevant market.

Partial conclusion to the market research:

The mobile services product survey and its evaluation have shown that, in product terms, the retail market is defined by products that enable end customers to use data, voice and SMS services. Specifically, the following types of these services appear on the market:

(i) a mobile tariff without included (free) data but with included (free) mobile voice services (in minutes) and SMS services (in number of SMS), which allows the purchase of data services in "pay as you go" mode or in predefined packages (in MB/GB);

(ii) a mobile tariff including (free) data, mobile voice and SMS services; and

(iii) services known as mobile internet, which historically only allowed data services but now include (free) data services (in MB) and allow the purchase of voice and SMS services on a 'pay as you go' or pre-defined packages.

All these products typically include voice, SMS and data (internet access), but differ in the way each service is included in the product and how it is charged.

2.1.3 SSNIP test

In order to verify the definition of the relevant market on the basis of the market survey, a quantitative hypothetical monopolist test (SSNIP test) was conducted, which is a standard framework for defining the relevant market. In other words, the SSNIP test answers the question whether mobile service providers in a given territory are constrained in their pricing by existing competitive barriers. In particular, demand-side substitutability and supply-side substitutability are among the barriers that prevent providers from setting an arbitrary price for their services.

The SSNIP test was based on the definition of the so-called focal product (i.e. the narrowest possible defined market), which is mobile tariffs with data, SMS and voice, as defined above. The hypothetical monopolist test used the application of the own price elasticity of demand, which is defined as the percentage change in the quantity demanded of the hypothetical monopolist's product following a one per cent increase in the price of that product. The threshold for defining the relevant market, within the meaning of the Guidelines, is if even a 5-10% increase in the price of the product does not lead to a decrease in profitability. In other words, a 1 % change in price cannot lead to a change in quantity demanded of more than 1 %.

According to the hypothetical monopolist test methodology, if the own price elasticity of a product is low, it indicates that the product does not face a close substitute under examination. It further implies that a price increase of 5-10 % by the hypothetical monopolist in this market would be profitable for him and therefore this product should be considered as a separate market. The opposite situation arises if the elasticity is high. Such a result indicates that consumers have an available close substitute and a price increase would not be profitable for the hypothetical monopolist. These substitutes should therefore be considered as part of the wider market.

The first step, according to the methodology and in line with the conclusions of the SSNIP test, is to determine the critical loss in the case of a mobile tariff with data. An equilibrium approach ('break-even approach') has been applied, based on the question of whether a hypothetical monopolist would be able to profitably increase the price. The question of profitability is understood in the sense that the new profit would not be lower than the original profit of the hypothetical monopolist.

In the case of a mobile data tariff, it is reasonable to assume that a hypothetical monopolist would be able to profitably increase the price of mobile services. This assumption can be justified on the basis of the evolution to date of the volume of total sales of voice, SMS and data services and the volume of voice and SMS services, the total number of active SIM cards and the average sales per SIM card of voice, SMS and data services.

The volume of total sales of voice, SMS and data services increased by 5.32% in the period under review, the total number of active SIM cards increased by 5.01% in the period under review and the average amount of sales of mobile services per active SIM card increased by 0.3%.

The second step primarily tested the own price elasticity of demand for products that include voice, SMS and internet access, i.e. services provided under a mobile data tariff as an identified focal product, as discussed in the conclusion of the previous section 2.1.2.

	2014	2015	2016	2017	2018	2019	2020
Total revenues from voice, SMS and data services in thous. CZK	38 717 797	36 517 885	36 210 090	36 811 358	37 956 182	39 217 295	40 779 246
Total number of active SIM cards	13 903 681	13 935 357	14 149 901	14 283 776	14 397 523	14 711 057	14 599 978
Average revenue per SIM card for voice, SMS and data services	2 785 CZK	2 621 Kč	2 559 Kč	2 577 Kč	2 636 CZK	2 666 Kč	2 793 Kč

Table 6: Basis for the calculation of own price elasticity after voice, SMS and data services
Source.

The calculations showed that the demand for voice, SMS and data services, as defined in the focal product, is inelastic, as a 1% change in price causes a 0.94% change in quantity demanded. The result indicates that the mobile data tariff does not face a close substitute and is therefore a confirmation of the result of the SSNIP reasoning test, which defined the mobile data tariff as a focal product.

The CTU adds that the elasticity of the individual components of the focal product, i.e. voice, data and SMS, was also tested. The quantitative SSNIP test of these individual components confirmed that these components individually are not a focal product.

Partial conclusion on the SSNIP test:

It was based on the definition of the so-called focal product (i.e. the narrowest possible defined market). The SSNIP test used the application of the own price elasticity of demand, which is defined as the percentage change in the quantity of demand for the hypothetical monopolist's product following a one percent increase in the price of this product.

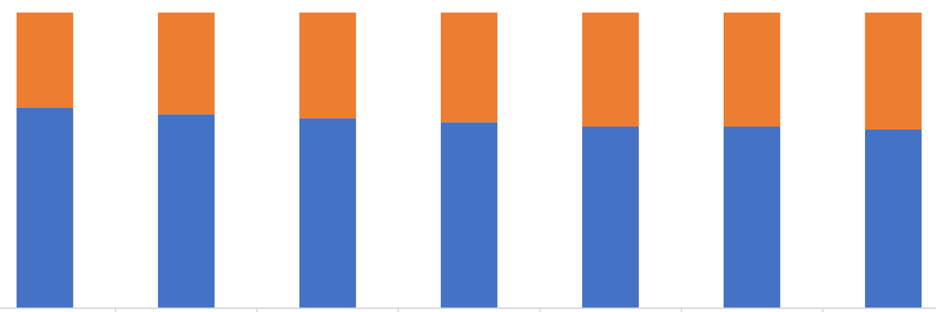
The calculations showed that the demand for voice, SMS and data services, as defined in the focal product, is inelastic because a 1% change in price causes a 0.94% change in quantity demanded.

The relevant retail market from a product perspective is therefore the market for mobile voice, SMS and data services. The focal product is a tariff that allows the end customer to use voice, SMS and data (Internet access).

2.1.4 Assessment of the product market definition in terms of customer segmentation

The next step in defining the relevant retail market is to assess the appropriateness of segmenting the retail market for mobile services. The aim of market segmentation is to group end-customers according to common characteristics and specific characteristics. According to the Recommendation, the relevant segments of the electronic communications market are the mass market and the business market.

In terms of the above Recommendation, 2 segments of the retail market were assessed, namely the household and business customer segments.



	2014	2015	2016	2017	2018	2019	2020
corporate customers	4 483 717	4 795 019	5 062 493	5 303 224	5 552 049	5 666 563	5 763 929
Households	9 419 964	9 140 338	9 087 408	8 980 552	8 845 474	9 044 494	8 836 049

Chart 54: Mobile market segmentation in terms of number of active SIM cards
Source: the CTU, 2022

Households account for more than 60% of the mobile market in terms of the number of active SIM cards. However, the number of household SIM cards is continuously declining at an average rate of 1% per year. On the contrary, the growth in the number of SIM cards is recorded by the business customer segment, at 4.3% per year.

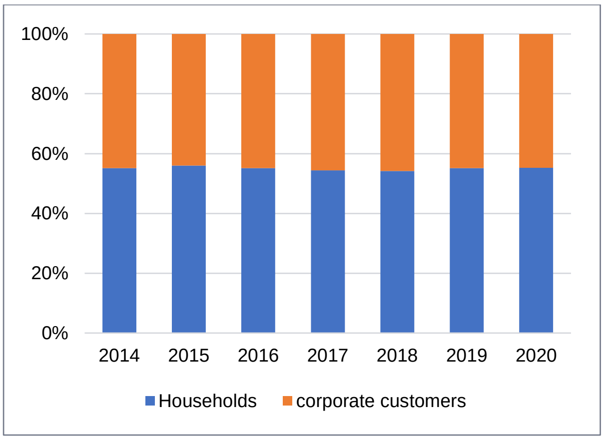


Chart 55: Market segmentation in terms of number of minutes called
Source: CTU, 2022

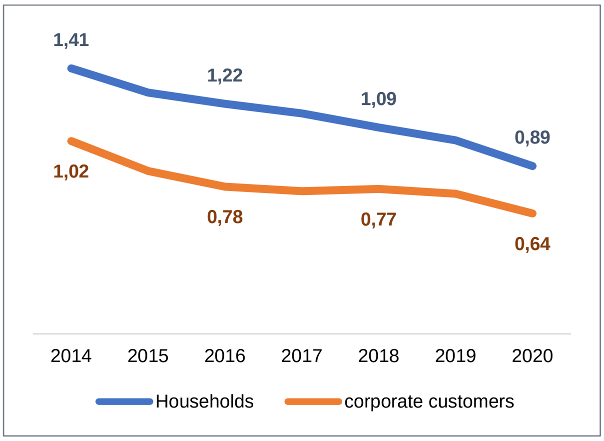


Chart 56: Average retail price per minute of voice services in CZK
Source: the CTU, 2022

Similar to the number of active SIM cards, the share of households in voice services is on average 55% of the total volume of voice services used at a unit price per minute that is on average 45% higher than for business customers. The usage of voice services on a per SIM card basis shows an average 42% higher intensity on the business customer side compared to residential customers.

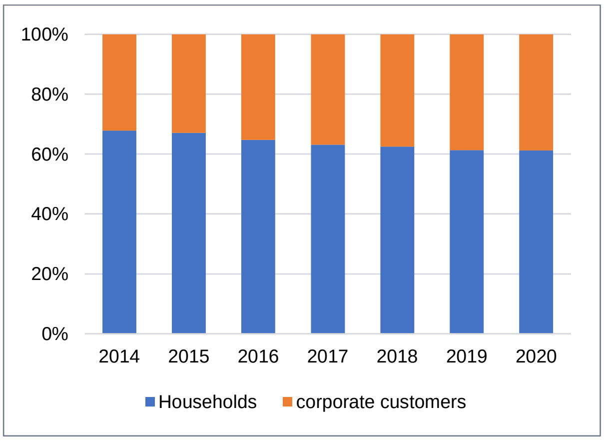


Chart 57: Market segmentation in terms of number of SMS
Source: the CTU, 2022

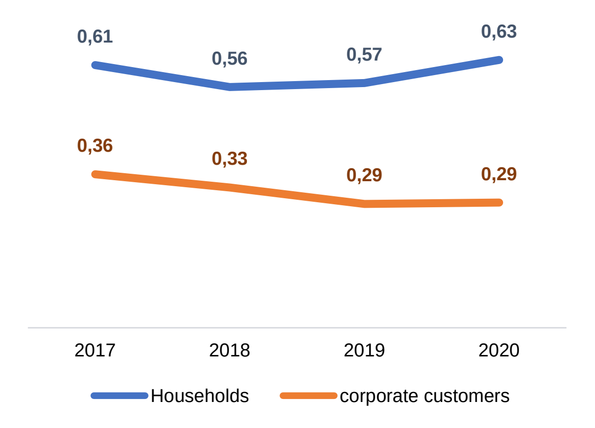
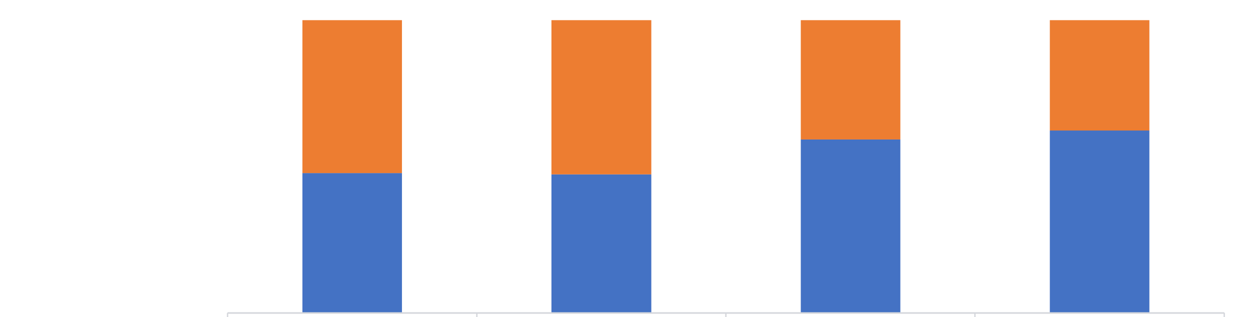


Chart 58: Average retail price per SMS in CZK
Source: the CTU, 2022

In the case of SMS services, the retail market is clearly dominated by households with an average share of up to 64% and a retail price per SMS that is up to 88% higher than prices for business customers. The intensity of use of SMS services is balanced between household and business customers.



	2017	2018	2019	2020
corporate customers	45 013 505	70 545 594	85 729 315	143 409 700
Households	41 197 227	63 289 694	124 807 387	236 918 558

Chart 59: Segmentation of the mobile market in terms of annual data volume in GB
Source: the CTU, 2022

When comparing the volume of data transferred, the retail market has literally undergone a small revolution, as it has seen quantitative growth, cumulatively at 340% since 2017, with an average annual growth rate of 64%. At the same time, the share of households in the volume of data transferred has increased substantially over the period under review, from a level of 48% in 2017 to 62% of households in 2020.

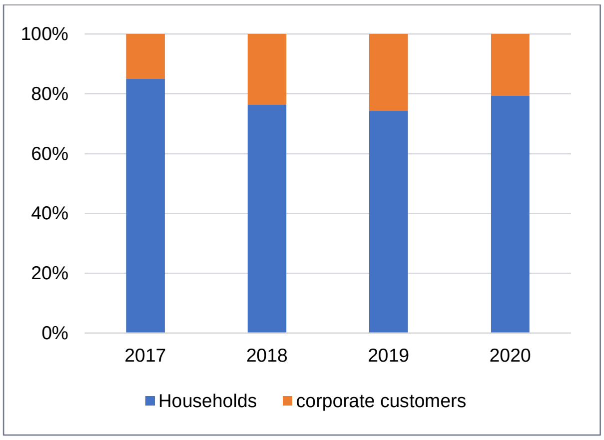


Chart 60: Market segmentation in terms of number of SIMs with mobile data ad hoc tariff
Source: the CTU, 2022

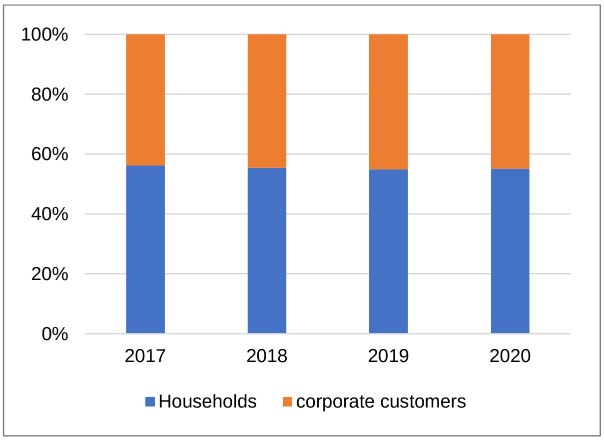


Chart 61: Market segmentation in terms of number of SIMs with a mobile tariff with flat-rate data
Source: the CTU, 2022

The trend in the volume of data transferred is also mirrored by a comparison of the number of active SIM cards with a mobile data tariff, where households clearly dominate with a share of 79% in the case of ad hoc data and 55% in the case of flat-rate data.

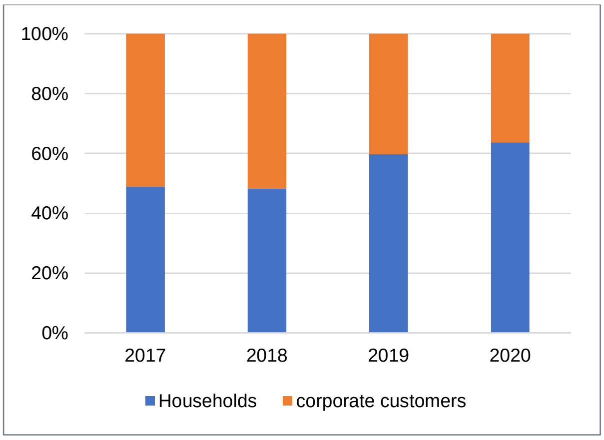


Chart 62: Market segmentation in terms of annual data volume on a mobile data plan
Source: the CTU, 2022

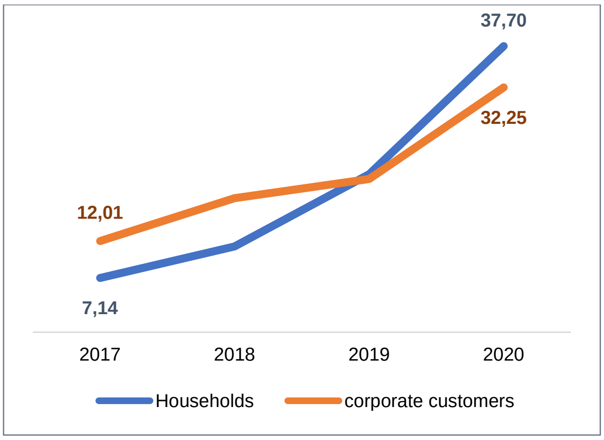


Chart 63: Volume of data transferred in GB per SIM with a mobile data plan per year
Source: the CTU, 2022

Developments in recent years have redefined the average mass market customer (households), with households still only carrying 37% of the total data on a mobile data plan in 2017, rising to 64% of the total data carried in 2020. The data consumption of the average mass market (household) customer has increased from 7.14 GB per year to 37.7 GB per year. This is an absolutely unprecedented increase, as the data consumption of the average business customer grew by 40% per annum and that of the typical mass market (residential) customer by up to 75% per annum over the period under review.

Partial conclusion on the "user" segmentation of the retail market:

The segmentation of the mobile services market into residential (mass market) and business customers has shown that these two customer segments are separate from each other, both in terms of customer behaviour and in terms of the level of average unit prices for different types of mobile services.

Business customers, compared to residential customers, make more intensive use of voice and SMS services and, conversely, make less intensive use of mobile internet (data services). Mobile internet usage is increasing at an average rate of 75% per year for residential customers, while for business customers it is only 40% per year.

In terms of unit payment levels for different types of mobile services, residential customers pay on average up to 45% more per 1 minute of voice service and 88% more per 1 SMS message sent.

2.1.5 Geographical definition of the retail market

According to point 51 of the Guidelines, in the electronic communications sector, the geographic scope of the relevant market has traditionally been determined on the basis of two main criteria:

- the area covered by the network (in practice, this area corresponds to the boundaries of the area in which the operator has an operating licence);

- the existence of legal and other regulatory instruments (for example, mobile operators can only provide mobile services in geographical areas where they have been granted authorisation to use the radio spectrum).

The mobile operator receives allocations of radio frequencies to provide mobile services in the Czech Republic. Also, the potential geographical scope of active communication activities is limited by the scope of the Electronic Communications Act and related legislation to the Czech Republic.

2G 3 MNO coverage in the Czech Republic exceeded 99% of the population in 5/2022. 4G network coverage in the Czech Republic reached 92.2% to 94.6% of the Czech population for 3 MNOs. 5G network coverage reached 8.7% to 22.8% of the Czech population for 3 MNOs[59] .

Based on an analysis of all 139 mobile service providers in the Czech Republic, it can be concluded that none of the mobile service providers in the Czech Republic limits the offer of its mobile services to specific parts of the Czech Republic. This conclusion also applies to mobile service providers in the category of virtual operators (MVNOs), which have their own and/or leased fixed telecommunications infrastructure through which they provide fixed telecommunications services, in particular Internet access or TV services (so-called '3-play' products). Where these 'regional' providers provide bundled fixed and mobile communications services, these bundles are logically limited in the fixed part of their offer to the geographical area covered by the fixed telecommunications infrastructure.

From the perspective of the mobile part, a full-fledged mobile service (voice, SMS, data) bound to only part of the territory of the Czech Republic is logically meaningless and unjustified for the vast majority of end customers in the Czech Republic - an important aspect when assessing the geographical market definition is also the consumption of the offered and provided mobile services. From the technical nature of all mobile services offered in the Czech Republic, it can be concluded that they are consumed by customers throughout the territory of the Czech Republic. This consumption is neither technically nor contractually restricted by the mobile service providers.

Based on an analysis of 663 publicly offered services from all mobile operators, it can be concluded that these mobile services are provided on the same price terms throughout the Czech Republic, i.e. the geographical location of service coverage and/or consumption of the service is not a price differentiator. The competitive conditions throughout the Czech Republic can thus be considered sufficiently homogeneous. The geographical scope of the retail market for mobile services is therefore the whole of the Czech Republic.

Based on the analysis of the terms and conditions of wholesale contracts concluded between MNOs and MVNOs in the Czech Republic, it can be concluded that the above criteria of coverage (availability), consumption and price of services apply without exception also on the wholesale market.

Partial conclusion on the geographical definition of the retail market:

[59] Sources: www.o2.cz, www.t-mobile.cz, www.vodafone.cz and https://digi.ctu.cz/pokryti/pokryti/pokryti/pokryti/

Based on the identification of the potential territorial scope, it is therefore possible to geographically define the relevant retail market to the territory of the Czech Republic.

2.1.6 Time definition of the retail market review

As can be seen in particular from section C.8, the relevant market and the remedies imposed by the CTU are considered in the timeframe until the end of 2024, i.e. until the entry of a new national MNO into the retail and wholesale market.

Partial conclusion on the time definition of the retail market:

In view of the above, the timeframe for defining and analysing the wholesale market is set until the end of 2024, by which time the market impact of the measures set out in the 700 MHz auction can realistically be expected.

2.1.7 International comparison

The product, time and geographical definition of the mobile retail market as set out in this analysis is also supported by recent studies by reputable companies, as set out below.

The relevant retail market, which comprises mobile voice, SMS and mobile internet services, has characteristics that both define and frame it.

A defining characteristic in terms of retail demand is the availability of the mobile services offered. According to a KPMG study entitled "The Czech Digital Household - Operator of the Future"[60] , which was based on data from an independent survey conducted in late 2020 on a sample of 1,000 respondents from the Czech Republic who had a fixed internet connection at home or use mobile data, in terms of mobile voice and SMS services, it is a commodity for all respondents.

[60] Source : https://assets.kpmg/content/dam/kpmg/cz/pdf/KPMG_Ceska_digitalni_domacnost_2018.pdf

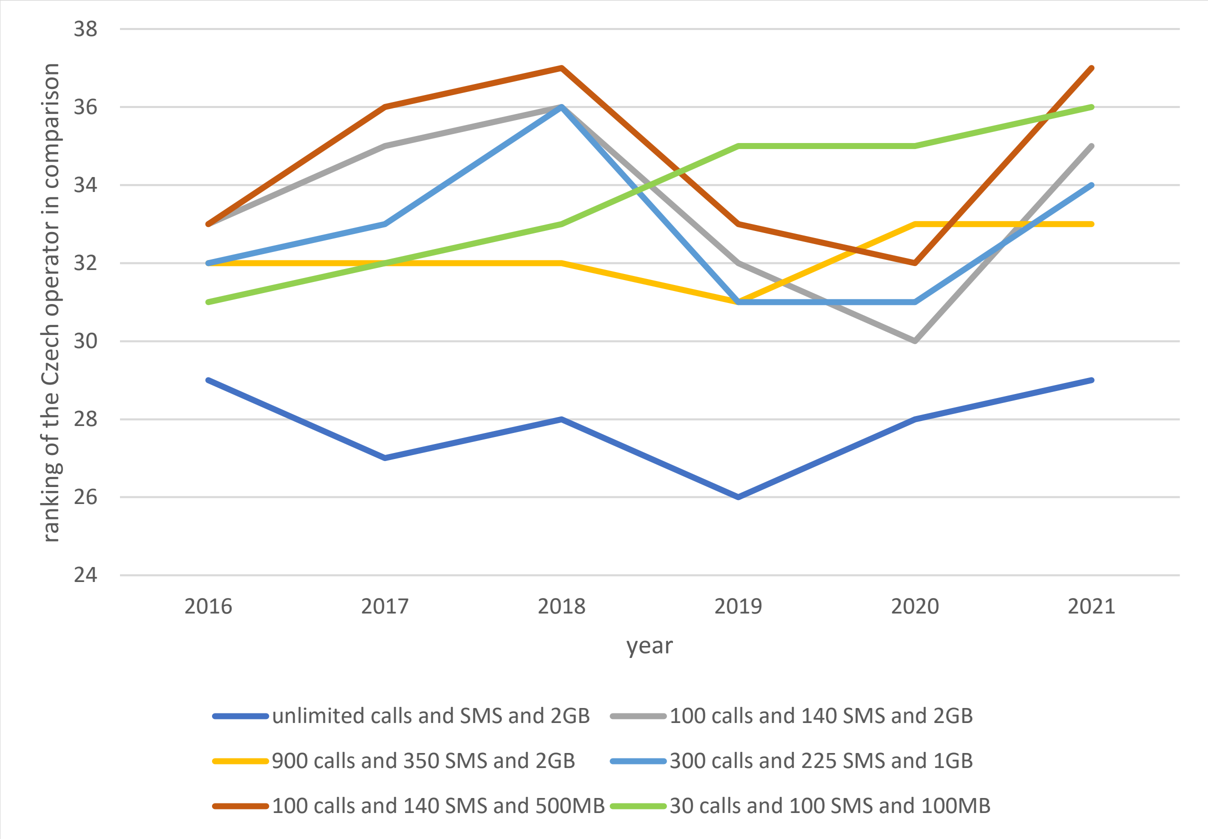


Chart 64: Mobile operator's position in the international comparison of OECD countries
Source: the OECD - TELIGEN, 2022

However, mobile voice and SMS services are relatively expensive commodities in the Czech Republic, as shown by OECD comparisons, and the Czech Republic is usually among the 40% of countries with the highest prices for these services worldwide. The OECD 2020 survey also showed that the Czech Republic is among the 32% of countries with the highest prices for mobile voice and SMS services worldwide. In addition, the decline in prices for these services is lower than the OECD average. This can be seen, among other things, in the chart above comparing the OECD mobile services consumption baskets for 2021. This shows that in 2021 the position of the Czech Republic among the comparator countries has deteriorated further, with a deterioration in almost all mobile services consumption baskets.

The Czech Republic is also one of the countries where prices for mobile communication services have fallen more slowly than the EU average.

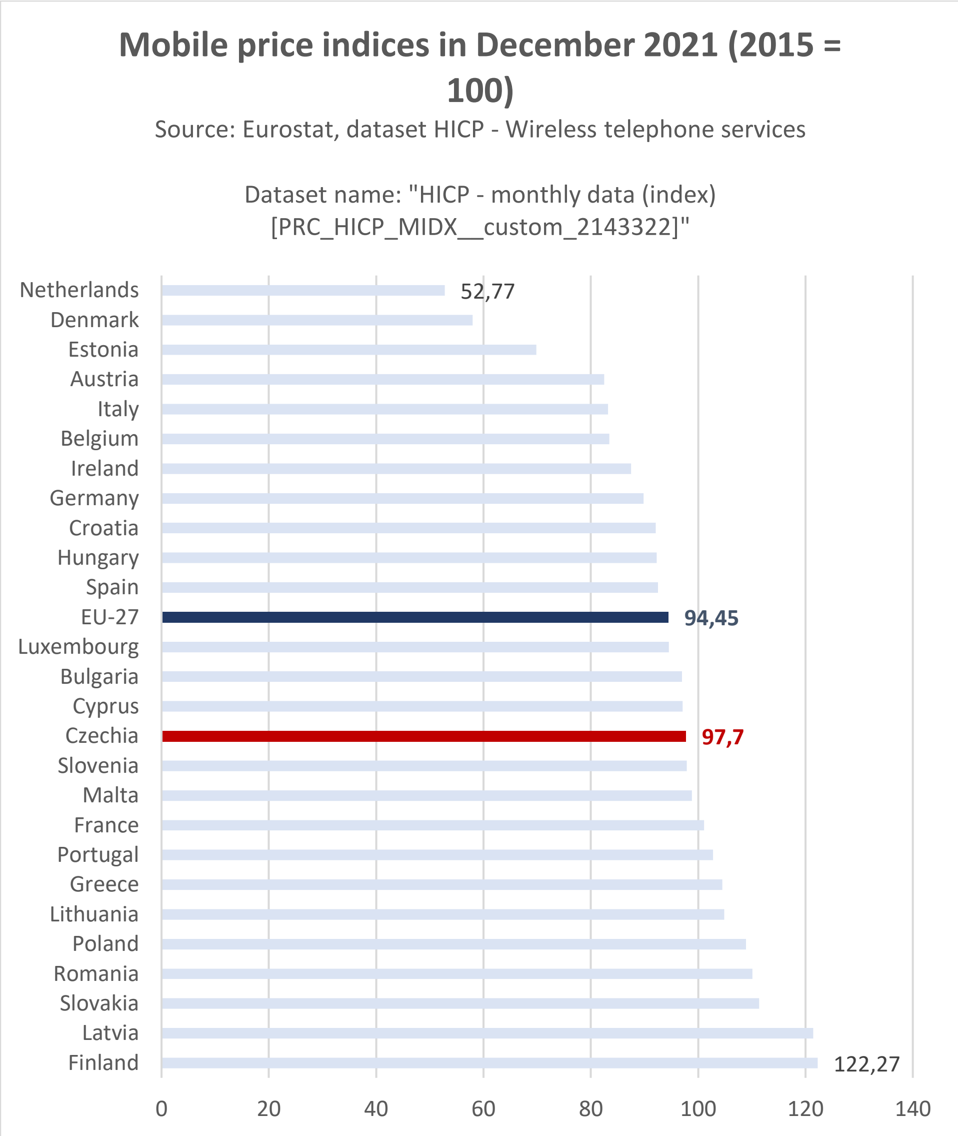


Chart 65: Position of the Czech Republic in the international comparison of EU countries in the decline of prices of mobile communication services
Source: Eurostat, 2022

According to available international comparisons of prices for mobile services, the Czech Republic is one of the countries with the most expensive mobile services, at least within the EU-27 (see Cable.co.uk and OECD Teligen comparison). This is a long-standing feature of the Czech mobile market. The entry of MVNOs into the Czech market should have increased competition and created a viable alternative for part of the effective demand for mobile services in the Czech Republic. Despite these objectives, we have to conclude that the potential of MVNOs in the current market environment has not been fulfilled, as evidenced by the unsatisfactory price development of mobile services.

EUROSTAT's Harmonised Index of Prices (HICP) measurement for wireless telephony services shows that prices for mobile services are falling not only in the Czech Republic but also in 16 other EU-27 countries.Specifically, the level of wireless telephony prices in the Czech Republic in December 2021 has fallen by only 2.3% compared to 2015, while in the EU-27 wireless telephony prices in December 2021 have fallen by 5.6% compared to 2015, with a record decline in the Netherlands at 47%.

In the Czech Republic, prices for mobile services are therefore falling from the highest levels in the EU-27 and at the same time at half the rate of the EU-27 average.

Since the KPMG survey and the subsequent analytical processing of its results showed that respondents perceive mobile voice and SMS services as very similar and the main differences in offers are observed mainly in mobile data services, it is necessary to describe the development of mobile data services separately.

A KPMG study has shown that with the dynamic development of "smart" mobile phones, a significant part of Internet activity is moving to mobile data services. The specific findings of this study are as follows:

- About a third of respondents use mobile data services to watch movies, TV and TV series;
- More than half of respondents use mobile data services for shopping, payments and internet banking;
- More than three quarters of respondents use mobile data services for online communication, information search and social networking activities.

Of the 1,000 respondents surveyed, 637 have an active data package with an average consumption of 4 GB (on a SIM with active data). Less than 9% of dating users have unlimited data and the reason most often given is that they do not want to constantly monitor their consumption. Up to 63% of respondents who have unlimited packages said that their limited packages were no longer enough and up to 59% said that they use data on their mobile as a substitute for a fixed connection.

In this context, the KPMG study states that the propensity to switch mobile operators increases with data consumption. While 9% of respondents who do not use data on their mobile plan to change, this figure is almost double for respondents with a package of over 1GB, at 17%.

At the same time, however, the study found that approximately 20% of the Czech population does not have access to mobile data services because of their cost, and that the price of mobile data and the sheer volume of data available are important aspects in the decision to purchase a mobile data product for more than 80% of respondents.

These conclusions are confirmed by analysis from Cable.co.uk, an independent UK-registered company that has operated a global comparison engine for over a decade comparing the terms and conditions of broadband, TV, fixed and mobile bundled products from leading UK and global broadband, TV, phone and mobile providers.

The "Worldwide Mobile Data Pricing 2021" analysis mapped the price of mobile data services in 230 countries using the following methodology:

- All the data collected on mobile data pricing applies to SIM card tariffs that include mobile voice and SMS services, as well as pure data tariffs for tablets or laptops;
- In a first step, all mobile data service providers' offers were aggregated individually for each country, and then an average product was determined from this data for each country;

- where a mobile data service provider offers identical products but with different add-ons and promotional offers, or where different price levels were identified by region within a country, the cheapest version of the product was included in the aggregation;
- Only mass market (household) products were included in the comparison;
- Offers for corporate customers were excluded on the grounds that most products for corporate customers are negotiated individually;
- For the same reason, tourist offers and offers that allowed for quantity discounts or discounts for using multiple types of services from one provider were not included in the product summary;
- where offers for mobile data service products were not publicly traceable and providers offered them in person, by telephone or by email, they were approached by the implementer of this analysis by personal enquiry;
- the maximum number of products per country was 60, and offers above this number are likely to have had a negligible impact on the determination of the average product;
- prices of products were recorded in their advertised currency and then converted to US dollars (USD) to achieve comparability of results;
- for unlimited data packages, the price per 1 GB of data was set as a ratio of the average mobile data consumption in the country and the price of the product;
- Mobile data consumption averages were calculated as the median of all recorded products with data caps;
- Product price conversions from local currency to US dollars have been converted at the exchange rate in effect on March 23, 2021;
- For the avoidance of doubt, the data supporting the analysis includes specific data to obtain the necessary data on a particular mobile data services product;
- The average price per GB of data per month is calculated as the average of the cheapest and most expensive gigabyte of data in each country;
- The price of the average product for a specific country per month is calculated on the basis of one GB of data;
- The average price per GB of data per month for each country is calculated as the median of the prices of the recorded products for that country.

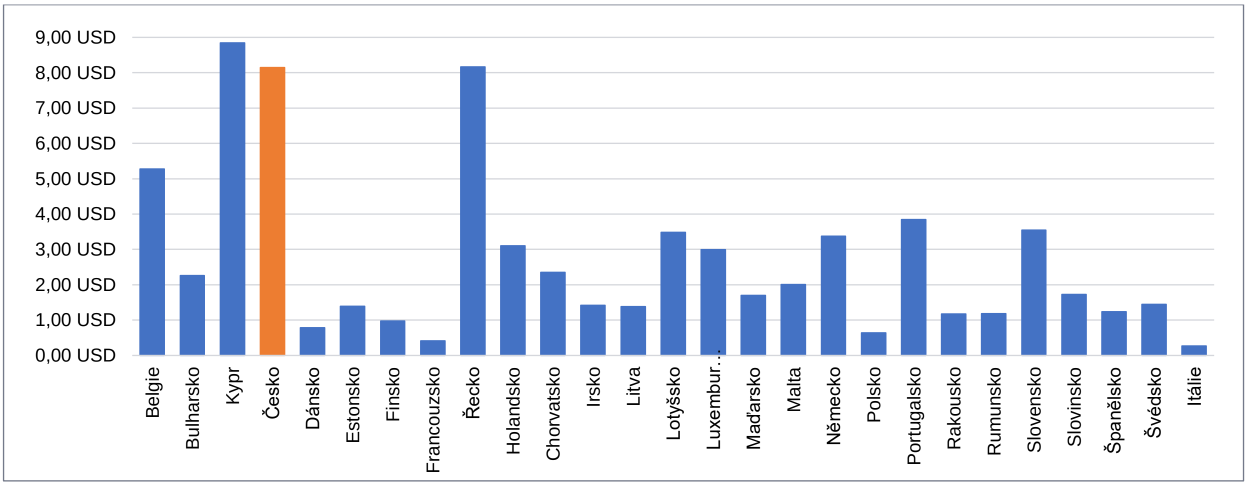


Chart 66: Average price of 1 GB of data on mobile data services in USD
Source: cable.co.uk, Worldwide Mobile Data Pricing 2021

According to the above analysis by Cable.co.uk, mass market customers in the Czech Republic pay up to the third highest prices for mobile data services in the EU. Specifically, the price for 1GB of mobile data in the Czech Republic is 200% higher than the EU average and almost six times higher than the average of the other V4 countries.

Further information on international comparisons is provided in section C.3 of this document.

Partial conclusion on international comparison:

KPMG's study "Czech Digital Household - Operator of the Future" has shown that voice and SMS services are perceived as a given by end customers, which means that the availability of mobile services is no longer primarily defined as the availability of voice and SMS services, but as the availability of voice, SMS and data services.

The international comparison of mobile data prices "Worldwide Mobile Data Pricing 2021" showed that the price of mobile data in the Czech Republic is the third highest in the EU, while at the same time it is 200% higher than the EU average and almost six times higher than the average of other V4 countries.

A similar conclusion can be seen in an international comparison of price levels for voice and SMS services, prepared by the OECD, which showed that the Czech Republic is among the 40% of countries with the highest prices for these services worldwide, while an OECD survey in 2020 showed that it is among the 32% of countries with the highest prices for mobile voice and SMS services in the world. Moreover, the decline in prices for these services is lower than the OECD average, as evidenced by the price comparison of consumer baskets in the 2021 OECD survey, where the Czech Republic's position has deteriorated even further.

These international comparisons indicate that there is no effective competition in the relevant retail market, as the market does not generate prices for mobile services, in particular prospective data services, that are in line with the EU average in terms of current prices as well as in terms of purchasing power parity.

2.2 Assessment of the level of competition in the retail market

In accordance with the Guidelines and the Relevant Market Analysis Methodology, the level of competition in the defined relevant retail market was subsequently assessed.

First, a competitive analysis was carried out in terms of market shares, as set out below. In addition, other market facts were taken into account when assessing the degree of competition.

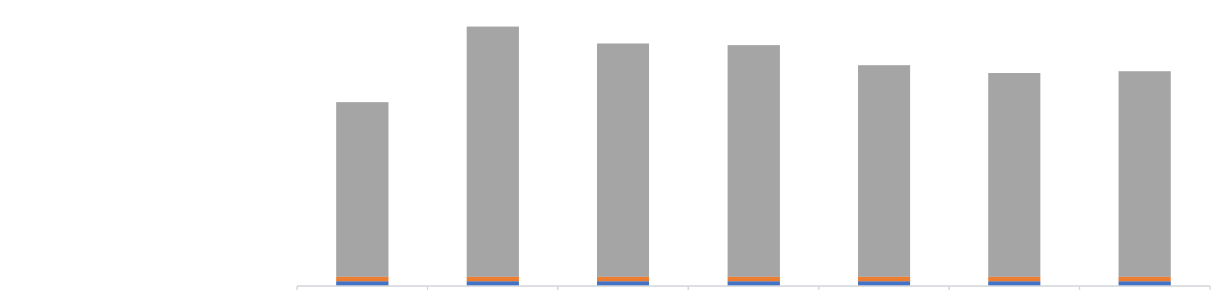
A comparison of retail list prices in the Czech Republic shows that virtual operators do not have the influence to influence the price level favourably in favour of consumers, especially for mobile tariffs with high data volumes.

A comparison of the market share dynamics of the individual market players shows a significant difference between the two customer segments compared, to the detriment of the household segment.

Last but not least, a comparison of mobile data service offers according to the operators' price lists in EU countries is crucial, as the Czech Republic is rated as one of the most expensive EU countries in this respect.

The relevant retail market in the Czech Republic consisted of a total of 139 entities at the end of 2020, of which 3 entities are network operators, 3 entities are MVNOs linked with MNOs by ownership (O2 Family, Tesco Mobile and COOP Mobil) and 133 independent MVNOs. The ownership interconnectedness of the three MVNOs means that the network operators own a share of the assets of the MVNOs. It should also be noted that, for the purposes of this analysis, the MVNOs that are financially independent from the network operators include Nordic Telecom 5G, a.s., which previously provided the mobile internet services in question via its mobile CDMA network.

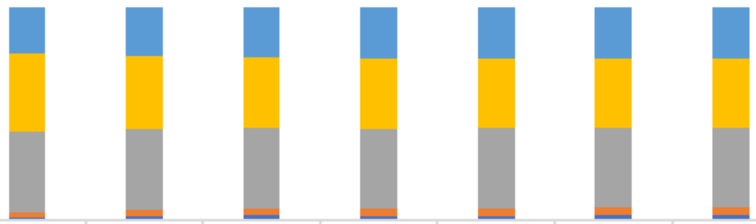
In terms of the evolution of the number of players in the relevant retail market over time, the number of network operators and the number of MVNOs linked with MNOs by ownership is stable. A dynamic element in the market is the decreasing number of independent MVNOs. Since 2015, which saw a massive entry of new MVNOs into the market, the number of non-connected MVNOs has been declining at an average rate of 4% per year.



	2014	2015	2016	2017	2018	2019	2020
MVNOs not linked by property	113	162	151	150	137	132	133
MVNOs linked by property	3	3	3	3	3	3	3
network operators	3	3	3	3	3	3	3

Chart 67: Evolution of the number of mobile operators in the relevant retail market in the Czech Republic
Source: the CTU, 2022

Market shares in terms of aggregate revenues represent a qualitative view of the concentration of the retail mobile market. The calculation of the shares for aggregated revenues from mobile services activities shows that the market shares of network operators have been relatively stable over the long term.



	2014	2015	2016	2017	2018	2019	2020
MNO 1	21,95%	23,25%	23,75%	24,36%	24,32%	24,11%	24,44%
MNO 3	36,41%	34,02%	32,96%	32,74%	32,54%	32,48%	32,52%
MNO 2	38,39%	37,98%	38,24%	37,79%	37,67%	37,61%	37,18%
MVNO majetkově prepojení	2,35%	3,09%	3,13%	3,28%	3,74%	3,82%	3,91%
MVNO majetkově neprepojení	0,89%	1,67%	1,92%	1,83%	1,72%	1,97%	1,95%

Chart 68: Market shares of supply-side players in the relevant retail market - aggregated revenues from mobile services activities
Source: the CTU, 2022

In addition to the declining number of MVNOs and other aspects mentioned in this chapter, the fragmentation of the market and lack of competition is also evidenced by statements made by some MNOs. For example, the managers of PPF Group, the owner of the operator O2, explicitly made the following statement at the presentation of the economic results in March 2020, which shows that competition in the market in the Czech Republic is suppressed and the market is divided between the existing three MNOs:

*"...We do not see any probable triggers for the competition to intensify... Competition in all our telco markets is **muted** to manageable, **mobile markets are distributed among 3 main players** and market shares have principally stabilised. **None of our relevant existing competitors is unreasonably aggressively competitive,** nor we are challenged by **any new entrant or 4th mobile operators which would be material threat to market stability**..."*[61] "

According to the aforementioned study "Virtually Mobile: What drives MVNO success"[62], the market share of MVNOs in developed markets reaches 10-40%, with a significantly lower number of MVNOs than in the Czech Republic.

[61] The statement can be heard at the following link from approximately minute 12: https://www.ppftelecom.eu/files/fr07-2020303-ppftelecom-group-investor-call-fy2019-20b.mp3.
[62] Source: https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/Telecoms/PDFs/February%202015%20-%20Recall%20papers/Virtually_Mobile_2014-06.ashx

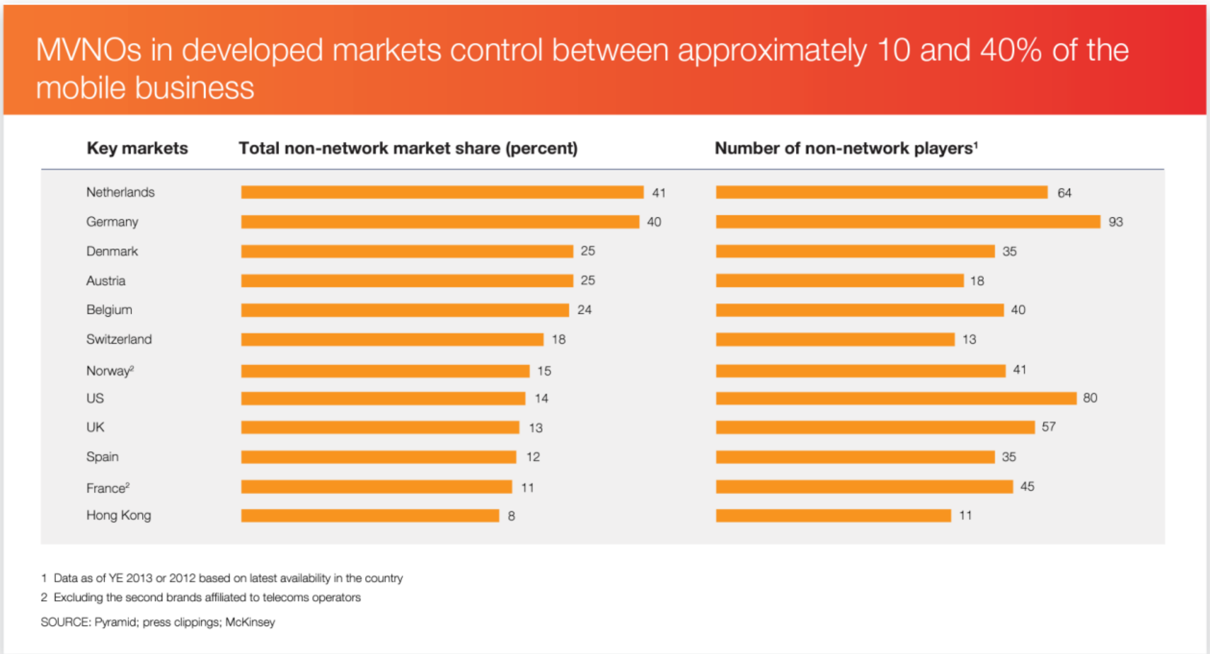


Image 21: Overview of MVNO position in mature markets
Source: study by Virtually Mobile: What Drives MVNO Success by McKinsey&Company

Game theory was also used to demonstrate the low level of competition in the retail market in Section C.7.

Partial conclusion on the assessment of the level of competition in the defined retail market:

On the basis of the analysis carried out, including the application of game theory, and the above assessment of the retail market situation, it can be concluded that the retail market for mobile services shows signs of a lack of effective competition. Therefore, in accordance with the Guidelines and the Methodology for the Analysis of Relevant Markets, it is necessary to proceed to the definition of the upstream wholesale market for mobile services.

In the retail market for mobile services, the supply is predominantly made up of network operators, with a minority share of virtual operators. The market shares of network operators have remained balanced over the long term and the market structure has not changed.

2.3 High profits of network operators in the Czech Republic at the expense of consumers

The market situation described above leads to high long-term profits of MNOs from the Czech market. The MNOs realise these profits due to the economically unjustified high retail and wholesale price levels, thus to the detriment of end-users.

This fact is evident, for example, from a comparison of the operating profit (EBITDA) achieved in individual EU countries and the position of the country in the EC international price comparison.

Country	**Number of MNOs on the market**	**Population**	**The country's position in the price cf. EU (2021)**	**% change compared to EU average** 5 GB of data and 300 free minutes	**% change compared to EU average** 5 GB of data and endless calls	**% change compared to EU average** 20 GB of data	**% change compared to EU average** 10 GB of data and 900 free minutes	**DT (T-Mobile) EBITDA AL margin**	**Vodafone EBITDA AL margin**	**PPF Telecom (O2) EBITDA AL margin**
Poland	4	37 840 001	3.	-60,54%	-69,79%	-68,20%	-70,98%	26,98%	-	-
Italy	5	59 236 213	4.	-56,49%	-66,68%	-70,22%	-68,00%	-	37,14%	-
Romania	4	19 201 662	2.	-71,26%	-68,13%	-83,72%	-57,64%	20,73%	-	-
Austria	3	8 932 664	8.	-41,97%	-53,09%	-40,08%	-54,95%	36,05%	-	-
United Kingdom	4	67 025 542	-	-34,84%	-50,10%	-19,27%	-52,08%	-	20,88%	-
Germany	3	83 155 031	14.	7,07%	-18,01%	21,66%	-8,44%	39,40%	42,08%	-
Spain	4	47 398 695	22.	20,53%	-1,73%	58,22%	2,56%	-	21,29%	-
Croatia	3	4 036 355	13.	-16,67%	-100,00%	-13,23%	9,40%	39,10%	-	-
Slovakia	3	5 459 781	28.	86,89%	43,12%	113,21%	37,46%	41,39%	-	40,68%
Bulgaria	3	6 916 548	19.	47,39%	-	16,54%	57,58%	-	-	45,23%
Hungary	3	9 730 772	23.	105,58%	57,42%	69,30%	89,43%	30,30%	-	38,87%
Czech Republic	3	10 701 777	26.	87,30%	43,43%	88,39%	90,94%	41,10%	28,85%	35,29%
Greece	3	10 678 632	27.	54,94%	500,05%	71,29%	214,50%	41,10%	-	-
Total (average) for the international group								35,20%	32,96%	43,93%

Table 7: International comparison of profitability and price levels of selected MNOs
Source: websites and annual reports of IOs, European Commission (https://digital-strategy.ec.europa.eu/en/library/mobile-and-fixed-broadband-prices-europe-2020)

The relatively high profitability of MNOs in the Czech Republic, combined with the high prices of retail mobile services, which are among the highest in Europe, especially in the very promising market for data services, indicates room for increased competition in the retail market in the Czech Republic. More information on the pricing of mobile services in the Czech Republic and its international comparison is provided in section C.3.

2.4 Relationship between retail and wholesale markets

2.4.1 Systematic time delays in the wholesale offer of MNOs compared to their retail offer

The above described focus on the retail market and the reduced incentive to serve the wholesale market is also documented in the mechanism of operation of the wholesale contracts concluded between MNOs and MVNOs.

Commercial wholesale services currently provided by MNOs in the Czech Republic on the wholesale market for MVNOs are usually based on predefined packages of voice, SMS and services that the MNO prices for the MVNO based on the definition and requirement of the MVNO. Change management, i.e. the technical and commercial launch of new packages by the MNO for MVNOs typically takes 6-12 months from request to deployment[63], with the launch condition being an agreement between the MNO and MVNO on the commercial and technical parameters of the package, which cannot be contractually enforced. In practice, this means that MVNOs do not have the flexibility to adapt their offer to the latest offers from MNOs,

[63] Source: analysis of wholesale contracts and MVNO responses to CTU questions from 7/2021, prepared by IstroAnalytica Advisory s.r.o.

which have a "head start" of those 6-12 months with respect to MVNO offers. This is evident when analysing the data tariff offerings that are currently key in the market competition for customers in the retail market (see Tables 1 to 3).

The MNO wholesale service mechanism also does not contain a "proactive" element that would allow the MVNO to respond to the MNO's service offer (or specific campaigns) in the retail market from "point 0", i.e. to launch a competitive offer to the customer at the same time as the MNO and starting from the same cost conditions. Thus, it is not possible for MNO campaigns to be replicated in the retail market at the same time for MVNOs.

2.4.2 Lack of competition and unilateral setting of wholesale contract terms by MNOs

The MVNOs have no bargaining position in negotiating the terms of wholesale cooperation and the terms of these wholesale contractual relationships are unilaterally determined by the MNOs. It cannot be assumed that this situation will change by the end of 2024 without regulatory intervention.

In the wholesale market, MNOs do not compete with each other. According to the CTU, MNOs do not seek to acquire MVNOs as customers on the wholesale market on the basis of competitive offers. MVNOs have to rely in most cases only on the offer of one MNO, in relation to which they have no bargaining position and therefore have to accept whatever conditions that MNO demands. The contracts between the MNO and the MVNO thus contain unfavourable terms for the MVNO, imposed by the MNO, which would not be accepted by a normal trading partner in a balanced commercial negotiation in an effectively competitive wholesale market.

For example, in July 2021, T-Mobile terminated wholesale contracts with 12 MVNOs without giving any reason, based on enforced extremely short notice periods that did not allow the MVNOs to secure replacement wholesale supply from other MNOs. It was only after the intervention of the CTU that T-Mobile extended the notice periods. Although information about the termination of the contracts was widely available in the media, according to the CTU's findings, none of these MVNOs received an offer of wholesale cooperation from competing wholesale providers, i.e. neither O2 nor Vodafone. Even MVNOs that proactively approached O2 or Vodafone themselves did not receive an offer from these theoretically competing operators that would have allowed them to switch wholesale providers within the notice period known from the media. Following the intervention of the CTU and mediation negotiations, the access contracts between T-Mobile and the MVNOs were concluded.

A significant number of these MVNOs were and are integrated operators, also offering fixed telecommunications services in the retail market. Without a new wholesale contract for mobile services, these MVNOs would not only be unable to operate in the retail market for mobile services, but also, given the increasing popularity of bundled mobile and fixed services, their position in the retail market for fixed services would deteriorate. These operators are thus forced to accept whatever wholesale cooperation conditions are required by the MNOs.

2.5 Wholesale market definition

For the purposes of defining the upstream wholesale market, it is necessary to rely on the product definition of the retail market.

In defining the market (retail and wholesale) in accordance with the Guidelines, the current state of network and service development was taken into account and a forward looking approach was applied, as emphasised in point 2.1 of the Explanatory Memorandum and Guidelines.

In determining the basic service (focal product), both the current development and the expected future development were taken into account, especially with regard to the market representation of the individual types of services, market shares and the potential for further growth.

The assessment of substitutability took into account the development of 4G and 5G mobile networks. It also took into account the continuous decline in the importance of 2G or 3G networks for the provision of mobile data services during the period under review.

Based on the definition of the relevant retail market, the definition of the wholesale market for access to mobile services includes mobile voice calls, SMS services and mobile data services. The wholesale market definition therefore only includes the service offerings that are subject to the relevant retail market definition and which are provided on the basis of wholesale contracts (with MNOs or MVNEs) or by MNOs themselves.

A wholesale market is defined as a single wholesale market for access to all mobile services that are offered under a single wholesale contract. The wholesale market should allow MVNEs/MVNOs to purchase mobile services and then allow MVNOs to sell them on the downstream retail market. This market includes services for both full MVNE/MVNOs and other levels of MVNE/MVNOs.

In the defined wholesale market, mobile network operators (MNOs) and, to a limited extent, wholesale mobile virtual platform providers (MVNEs) operate on the supply side. These wholesale service providers (MNOs and MVNEs) provide services in the defined mobile market on the basis of contracts that can be described as wholesale access contracts and other wholesale contracts between electronic communications undertakings that govern the provision of mobile services. The wholesale mobile access contracts in question do not contractually differentiate the wholesale services provided by customer segment into residential and business services. In this respect, the wholesale market has not been segmented by the type of end customer and is defined as the wholesale market for access to the above-mentioned mobile services (voice, SMS and data services), on the basis of which virtual operators can provide and bundle these mobile services on the retail market. Based on commercially negotiated contracts, MVNOs are typically able to offer services to both residential and business customers.

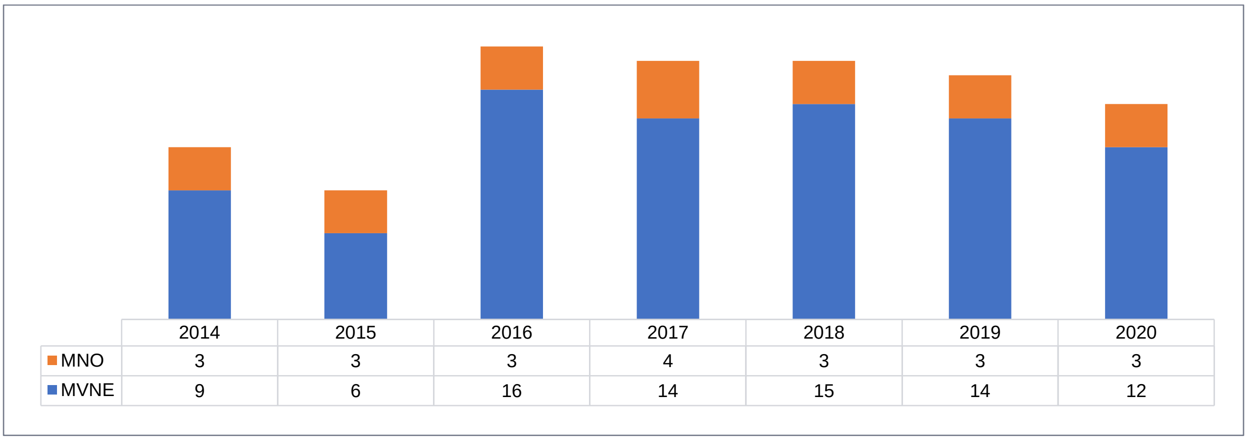
Wholesale market means the market for access to networks (network elements and associated facilities) and services used to provide publicly available electronic communications services in the full range of services (including data, voice, SMS).

As regards the geographical and time definition of the relevant wholesale market, CTU adopt the conclusions from the definition of the relevant retail market, namely that:

- the geographical scope of the relevant wholesale market is geographically limited to the territory of the Czech Republic;

- the timeframe for the definition and analysis of the wholesale market is set at a period from now until 31 December 2024 at the latest.

The relevant wholesale market in the Czech Republic on the supply side is currently made up of 3 network operators (MNOs) and 12 wholesale mobile virtual platform providers (MVNEs). Most of the wholesale MVNEs are also operating as virtual operators that are not linked to network operators by ownership. According to the information submitted to the CTU in the course of the data collection, only 3 operators operate as pure MVNEs on the relevant wholesale market. The number of entities on the supply side of the relevant wholesale market has been relatively stable since 2016.



	2014	2015	2016	2017	2018	2019	2020
MNO	3	3	3	4	3	3	3
MVNE	9	6	16	14	15	14	12

Chart 69: Number and structure of players on the supply side of the relevant wholesale market
Source: CTU, 2021

On the relevant wholesale market, 1.1 million SIM cards are currently sold by network operators, with up to 66 % of the SIM cards sold being Internet-enabled SIM cards.

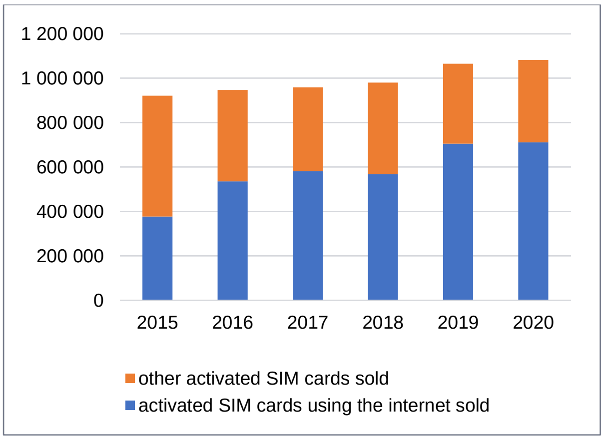


Chart 70: Number of SIM cards sold by type - network operators
Source: CTU, 2021

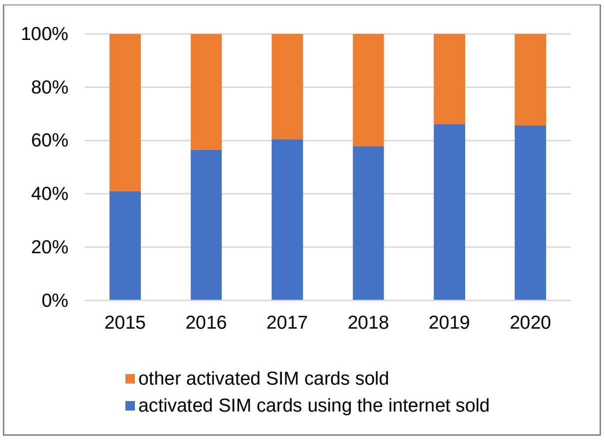


Chart 71: Structure of SIM cards sold by type - network operators
Source: CTU, 2021

The number of SIM cards sold on the relevant wholesale market by network operators is increasing slightly at an average annual rate of 1.6%. As the number of SIM cards sold increases, the structure of SIM cards sold by type is also changing. While in 2015 the share of SIM cards sold without internet access capability by network operators was as high as 59%, it is now only 34%.

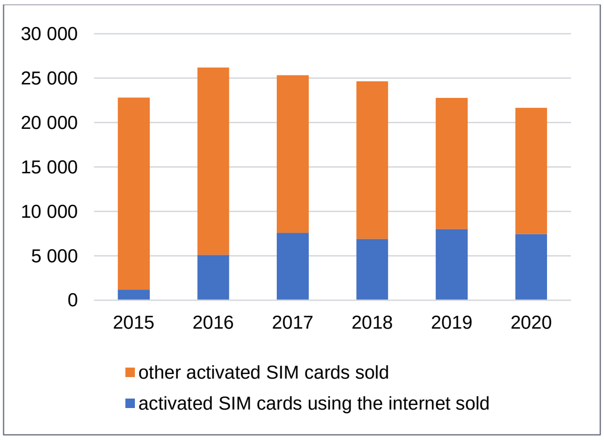


Chart 72: Number of SIM cards sold by type - MVNE
Source: CTU, 2021

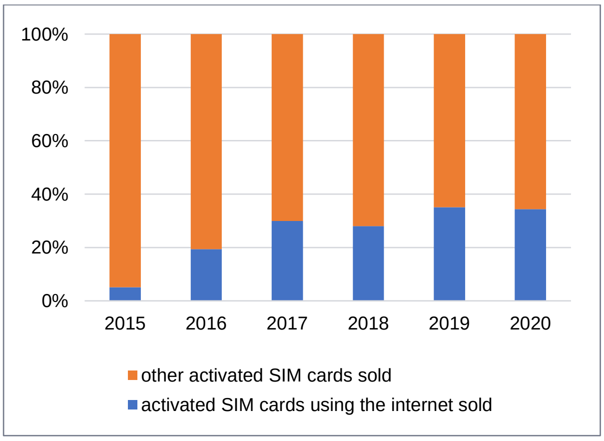


Chart 73: Structure of SIM cards sold by type - MVNE
Source: CTU, 2021

The number of SIM cards sold on the relevant wholesale market by MVNEs is declining slightly at an average annual rate of 0.72 %. The structure of SIM cards sold by type is also changing as the number of SIM cards sold is declining. While in 2015 the share of SIM cards sold without data by MVNEs was as high as 95%, it is currently only 66%.

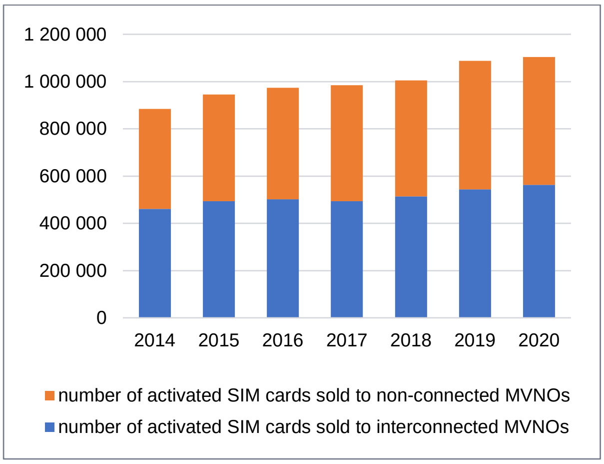


Chart 74: Number of SIM cards sold by interconnection per MNO
Source: CTU, 2021

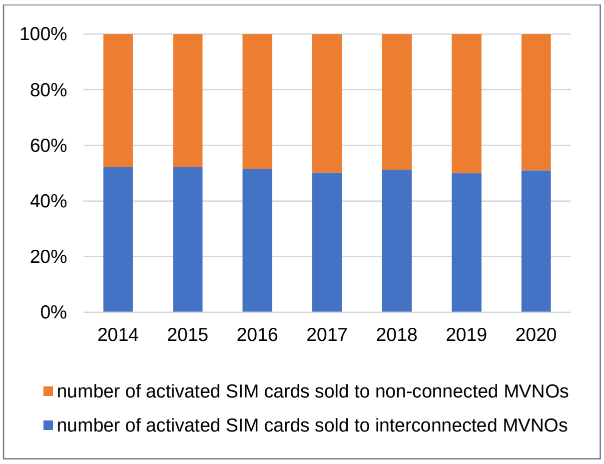


Chart 75: Structure of SIM cards sold by MNO connectivity
Source: CTU, 2021

Despite declining SIM card sales by MVNEs, aggregate SIM card sales in the relevant wholesale market are increasing slightly. As sales increase, the structure of demand from wholesale market players in terms of their ownership links to network operators is also changing. The share of SIM cards sold to independent MVNOs is cautiously approaching the 50% threshold.

Voice services are sold almost exclusively by network operators. MVNEs are of only marginal importance. In terms of demand for voice services, this is predominantly from MVNOs with ownership links to network operators, with the structure of demand for voice services remaining virtually unchanged.

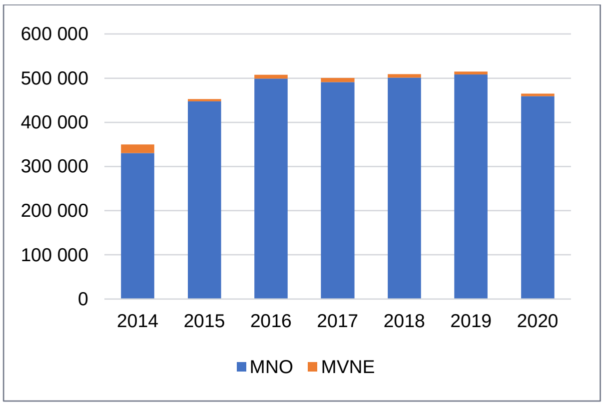


Chart 76: Sales volume of SMS services by type of selling entity in thousands of SMS messages
Source: CTU, 2021

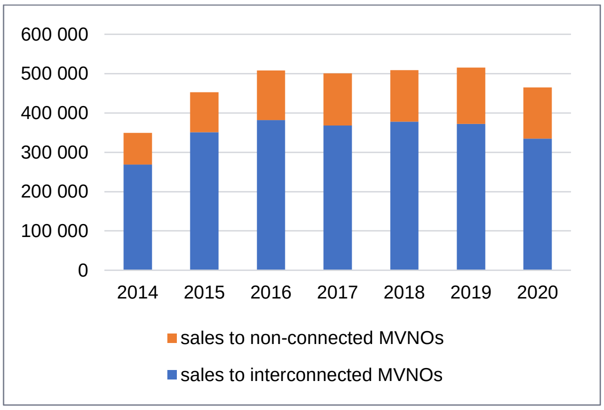


Chart 77: Sales volume of SMS services by type of buying entity in thousands of SMS messages
Source: CTU, 2021

A similar development as for voice services has been observed in the case of SMS services, for which network operators are the almost exclusive sellers. The structure of demand for SMS services has also remained almost unchanged since 2015. The only difference with voice services is the decline in the supply of SMS services on the relevant wholesale market, which, however, corresponds to the development on the relevant retail market.

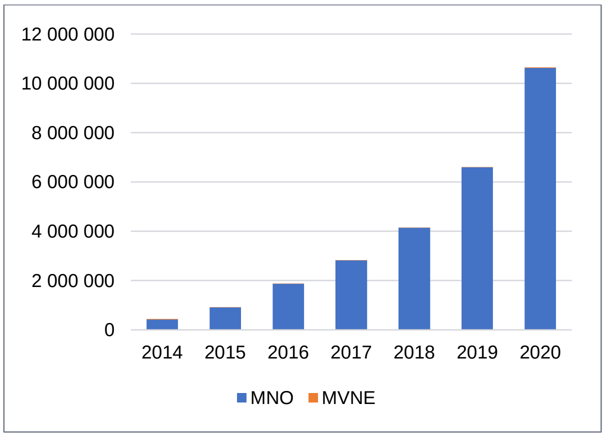


Chart 78: Sales volume of data services by type of selling entity in GB
Source: CTU, 2021

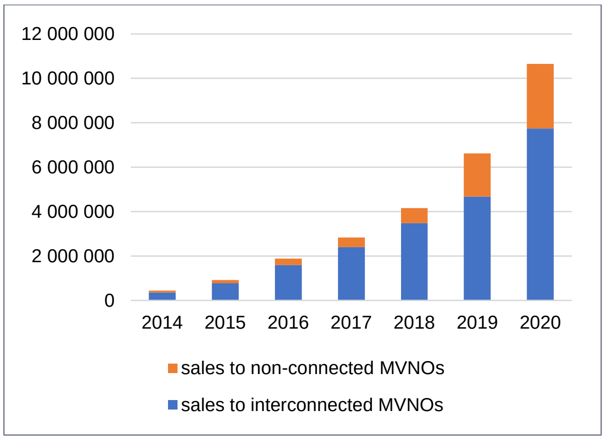


Chart 79: Sales volume of data services by type of buying entity in GB
Source: CTU, 2021

The situation on the supply side of the relevant wholesale market for data services is similar to the situation for voice and SMS services, with the difference that the volume of data offered and its dynamics over time hardly reflect the current evolution of demand on the retail market. The volume of data offered in the relevant wholesale market is growing at an average of 72 % per year[64] , which is, however, only one third of the growth seen on the demand side of the relevant retail market.

Conclusion on the definition of the wholesale market:

A well-functioning wholesale market is crucial for effective competition in the retail market.

The definition of the wholesale market for access to mobile services included only service offerings that are subject to the definition of the retail market for mobile services and that are provided on the basis of wholesale contracts (with MNOs or MVNEs) or by MNOs themselves in the form of self-supply.

The relevant supply on the wholesale market is made up of the supply of network operators, who have no market incentive to create it. The supply of network operators on the wholesale market is therefore dependent on the volume of voice, SMS and data services that network operators are unable to place through their sales channels on the retail market with the required added value.

The European Commission has been consulted on the market definition in the context of the 3C test consultation and has not commented on the market definition.[65] The European Commission also did not comment on the definition of the relevant market as a result of the notification of the draft of analysis of relevant market No 3 at the end of 2021.

3. Three criteria test

Following the definition of a wholesale market that is not one of the relevant markets listed in Commission Recommendation (EU) 2020/2245 of 18 December 2020 on relevant

[64] This is the average of the year-on-year percentage increases in cumulative annual data service volumes
[65] https://www.ctu.cz/sites/default/files/obsah/stranky/223526/soubory/cz-2019-218920adoptedcsredacted.pdf

product and service markets in the electronic communications sector eligible for ex ante regulation under Directive (EU) 2018/1972 of the European Parliament and of the Council establishing a European Electronic Communications Code, it is necessary to proceed to an assessment of the so-called three criteria test (hereinafter also referred to as "T3C").

The three criteria test is based on settled regulatory doctrine. A relevant market is considered susceptible for ex ante regulatory intervention if it cumulatively meets the following criteria:

1. significant and not temporary structural, legal or regulatory barriers to entry are present;
2. there is a market structure that is not conducive to effective competition over a given time horizon, taking into account the state of competition in terms of infrastructure and other factors behind barriers to entry;
3. competition law is inadequate in itself to adequately address the market failures identified.

CTU therefore proceeded to an assessment of the individual criteria in order to assess whether the defined relevant market is susceptible for ex ante regulatory measures.

The assessment is based on the 2017 T3C, the conclusions of which were fully confirmed by the updated data at the end of 2020. The 2017 T3C conclusions and assessment are therefore hereby fully referenced and adopted, with the addition, update and refinement of these conclusions below.

3.1 Criterion 1: Significant and not temporary structural, legal or regulatory barriers to market entry

Assessment of the European Commission and BEREC: The CTU first notes that the Commission stated in its decision of 17 February 2022 that in its view criterion 1 is not met. It based this conclusion in particular on the basis that a national roaming obligation would lead to the removal of barriers to effective entry and operation in the market. BEREC also agrees with the Commission in this assessment and considers that national roaming will reduce barriers to entry. In this respect, the CTU states that it is carrying out this analysis only for the time horizon up to the expected implementation of national roaming. In particular, the expected implementation of national roaming has been complemented by the CTU's analysis of the technical requirements for the implementation of national roaming and updated market research, as described in more detail in Chapters C.6, C.8 and 2.1. Therefore, in other respects, the analysis of compliance with criterion 1 has not been supplemented and has been taken from the original analysis submitted to the Commission in 2021. For further details on the individual Commission comments, the CTU refers to the summary table at the end of Chapter C.0.

The market for electronic communications and mobile services is characterised by high investment intensity of market entry, where the construction of a nationwide mobile network represents an investment of tens of billions of crowns (CZK). The high upfront investment is linked to the need to acquire a critical mass of customers (assumed to be in the order of millions of customers), which, however, in a situation of very high penetration of mobile services (well over 100% of the population), is only possible by acquiring customers of existing operators, which represents another major barrier to successful market entry.

But the availability of the frequency band needed to build a mobile network is absolutely crucial. In the last spectrum auction, held at the end of 2020, no new operator won spectrum in the 700 MHz band. All suitable frequencies in the sub-1 GHz band (the 700, 800 and 900 MHz bands) are held by existing operators, and no further suitable sub-1 GHz spectrum will be available in the time horizon of this analysis.

The CTU notes that there were 133 independent MVNOs and 3 MVNOs linked by ownership to MNOs operating in the defined retail market at the end of 2020, from which it could be incorrectly assumed at first glance, without further analysis, that there are no significant, and not temporary, structural barriers to entry. However, such an inference would be incorrect, as the mere number of MVNOs does not mean that they can profitably operate in the market in the long term and therefore enter the market effectively. Even with a seemingly large number of players, financially independent MVNOs only achieve a negligible market share of around 2 %[66] of the market. Although MVNOs can formally enter the market, they cannot effectively compete with any MNO on the market, as is evident from the next criterion of the 3C test and the conclusions presented in this analysis. This is also demonstrated by the evolution of the number of active independent MVNOs and their aggregated market share in recent years, where the market share in terms of number of active SIM cards has been stagnant at 3.7% for a long time, showing high volatility in the number of MVNOs with a significantly higher exit from the mobile market by independent MVNOs prevailing, reducing the number of MVNOs from 165 in 2015 to 136 in 2020. In addition, the terms of wholesale relationships are in many cases enforced by MNOs, which allow MNOs to terminate these wholesale relationships at any time without giving any reason, and MNOs are exercising this right in practice.

Effective market entry involves not only entering a defined retail market, but also staying in the market with the ability to operate profitably. The reduced efficiency of market entry by MVNOs can be demonstrated by the high volatility of MVNO entries and exits from the defined retail market. The highest number of players on the supply side of the market was recorded in 2015, with up to 162 independent MVNOs operating in the market, in addition to 3 MNOs and 3 MVNOs linked to MNOs by ownership. The lowest number of independent MVNOs is recorded in 2019 and 2020, when only 132 and 133 independent MVNOs were operating in the market respectively. On average, up to 27% of the independent MVNOs in the market renewed annually between 2015 and 2020. In total, up to 110 independent MVNOs left the market in the 2015-2020 reporting period, up to 85% of the current 133.

[66] Measured by sales volume.

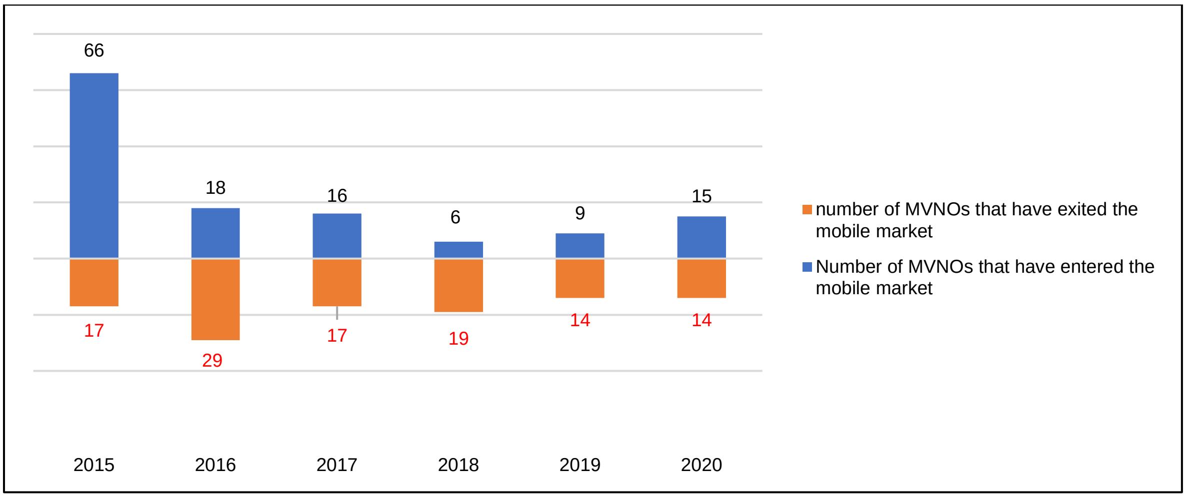


Chart 80: Volatility of the number of independent MVNOs in the period under review
Source: CTU, 2021

The common features of independent MVNOs that exited the market in the 2015-2020 period were: a low number of active SIM cards and relatively high unit prices, especially for SMS and data services. The MVNOs that exited the market were only able to activate on average 36% of the average number of SIM cards attributable to an independent MVNO in the reference period and their average unit prices for SMS were 96% higher and for data services 118% higher than the average of independent MVNOs. Given the high price sensitivity[67] of customers in the defined retail market, it is highly unlikely that the MVNOs that have exited the market are charging such relatively high prices for any reason other than inappropriately high wholesale prices.

The absolute number of independent MVNOs with active SIM cards in the Czech mobile market grew only in the very early stages after the first enabling of MVNOs to enter the mobile market by MNOs, i.e. until the first half of 2015. The number of independent MVNOs with active SIM cards began to decline almost immediately, starting in the second half of 2015 and continuing to this day. Over the past six years, there has been a cosmetic upward correction in the number of independent MVNOs with active SIM cards in only three periods, namely in the first half of 2017 (growth in the number of independent MVNOs by one entity), in the first half of 2019 (growth in the number of independent MVNOs by three entities) and in the first half of 2020 (growth in the number of independent MVNOs by two entities). With each of these increases in the number of independent MVNOs with active SIM cards, there was a significant drop in the number of independent MVNOs with active SIM cards in the immediately following period. Moreover, since the second half of 2015, when there has been a systemic decline in independent MVNOs with active SIM cards, MVNO entry has been almost exclusively limited to service providers rather than full MVNOs.

[67] For example, in the aforementioned study Czech Digital Household 2021 by KPMG

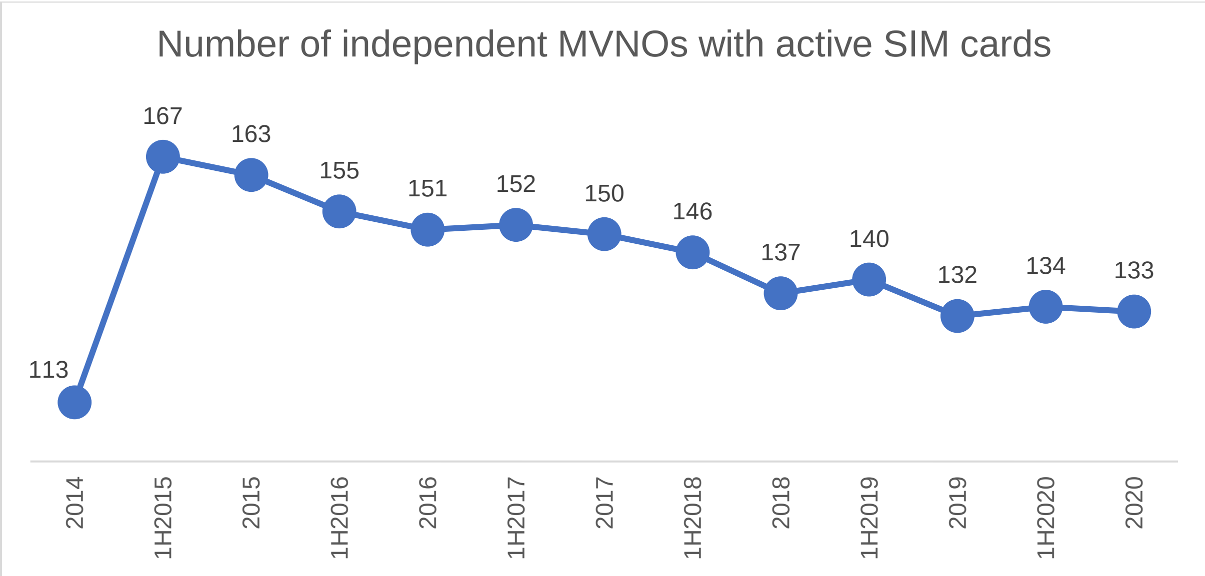


Chart 81: Decline and stagnation in the number of independent MVNOs in the period under review
Source: the CTU, 2022

This is evidenced by the conservative status of the ratio of mobile revenue per SIM card for independent MVNOs, MVNOs linked with MNOs by ownerships and MNOs. As of the second half of 2015, mobile service revenues per SIM registered with an independent MVNO account on average for only 53% of revenues per SIM registered with an MNO and 55% of revenues per SIM registered with an MVNOs linked with MNOs by ownership (in chart labeled as “interconnected MVNOs”).

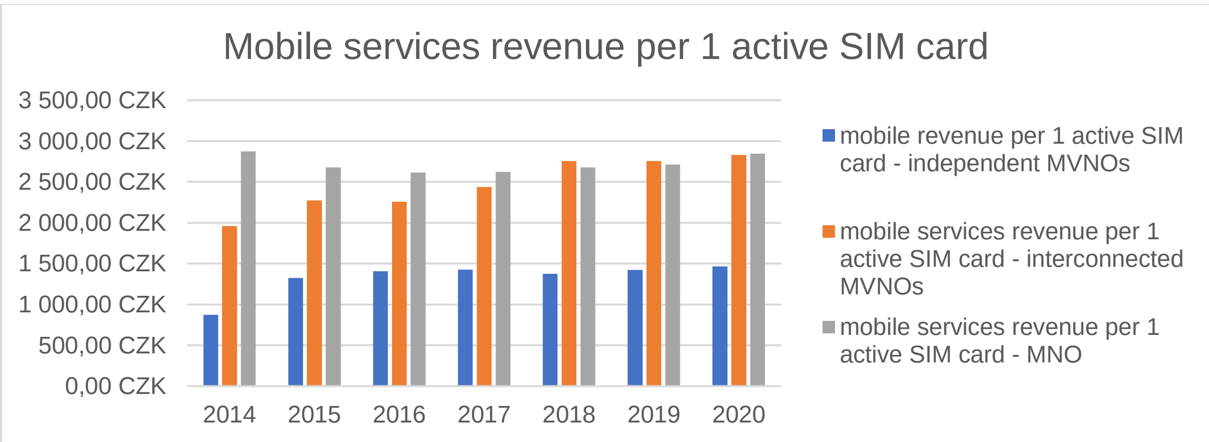
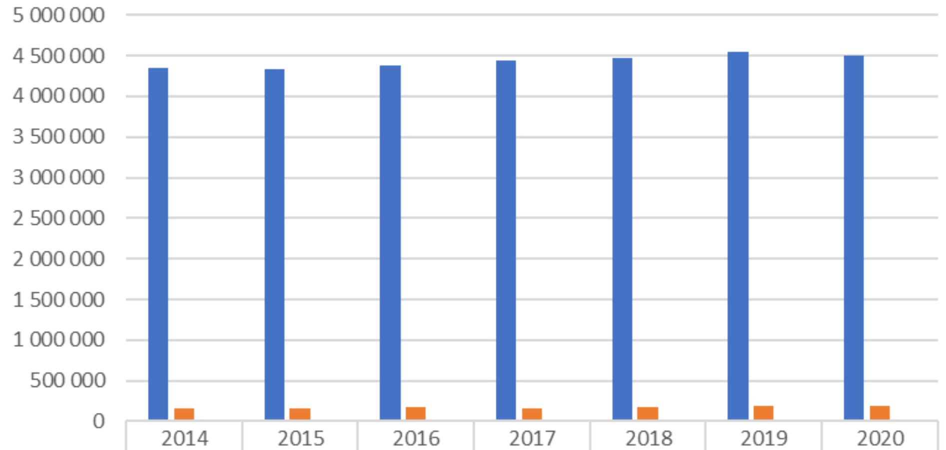


Chart 82: Development of revenues from mobile services per active SIM card
Source: the CTU, 2022

At the same time, the development of revenues for mobile services per SIM card shows that after a decline from 2014 to 2016, in the case of MNOs, they have been continuously leveling off between 2017 and 2020. At the same time, revenues for mobile services per 1 active SIM card in the case of MVNOs linked with MNOs by ownerships have almost equaled those of MNOs per one active SIM card. These facts may point to the existence of strong coordination between MNOs and their MVNOs linked with MNOs by ownerships, as well as the crowding out of independent MVNOs from the market by MNOs - stopping the growth of revenues per SIM card for independent MVNOs and their gradual exit from the mobile services market since the second half of 2015.



	2014	2015	2016	2017	2018	2019	2020
MNO	4 347 125	4 326 643	4 384 471	4 439 254	4 468 774	4 541 329	4 497 779
MVNO majetkově propojení	155 028	165 316	167 416	164 941	171 794	181 060	187 747
MVNO majetkově nepropojení	3 515	2 836	3 273	3 141	3 473	4 120	4 086

Chart 83 Evolution of the average number of active SIM cards per subject
Source: the CTU, 2022

Independent MVNOs are losing their growth potential in the market and the growth in the average number of active SIM cards per independent MVNO is only 2/3 of the average growth in the number of active SIM cards per MVNOs linked with MNOs by ownership. Not to mention that the absolute number of active SIMs per entity for independent MVNOs is at around 2% of the average absolute number of active SIMs for MVNOs linked with MNOs by ownerships.

In addition to the high volatility of entries and exits of independent MVNOs from the defined market, it is also necessary to assess the overall level of market share that MVNOs can achieve in the market in order to assess the possibility of efficient entry. According to the McKinsey study "Virtually mobile: What drives MVNO success"[68] , MVNOs in developed markets control a mobile market share of between 10% and 40%. In the Czech Republic, the market share of independent (not linked to MNOs by ownership) MVNOs is far below this threshold. McKinsey cites negotiating and maintaining a quality wholesale contract with an MNO as one of the key factors for MVNO success in the market. In particular, they mention as factors of the quality of the wholesale contract the easy possibility of renegotiating the contract, the flexible possibility of migration to another MNO, the adaptability of the contract to new services (data services are mentioned), or the transparency of the contract in case of changes in the wholesale parameters. Also specifically mentioned as key is the contractually built-in protection against price-cutting campaigns on the retail side of the MNO, i.e. ensuring the replicability of the MNO's retail offer by the MVNO. On the basis of an assessment of the contractual relations of independent MVNOs in the Czech Republic with MNOs, it can be concluded that their wholesale contracts do not fulfil these key parameters at all or only to a very small extent.

The market share of independent MVNOs has oscillated since 2016 around 3.5% in terms of the number of active SIM cards and around 1.95% in terms of mobile revenue.

[68]Source:https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/Telecoms/PDFs/February%202015%20-%20Recall%20papers/Virtually_Mobile_2014-06.ashx

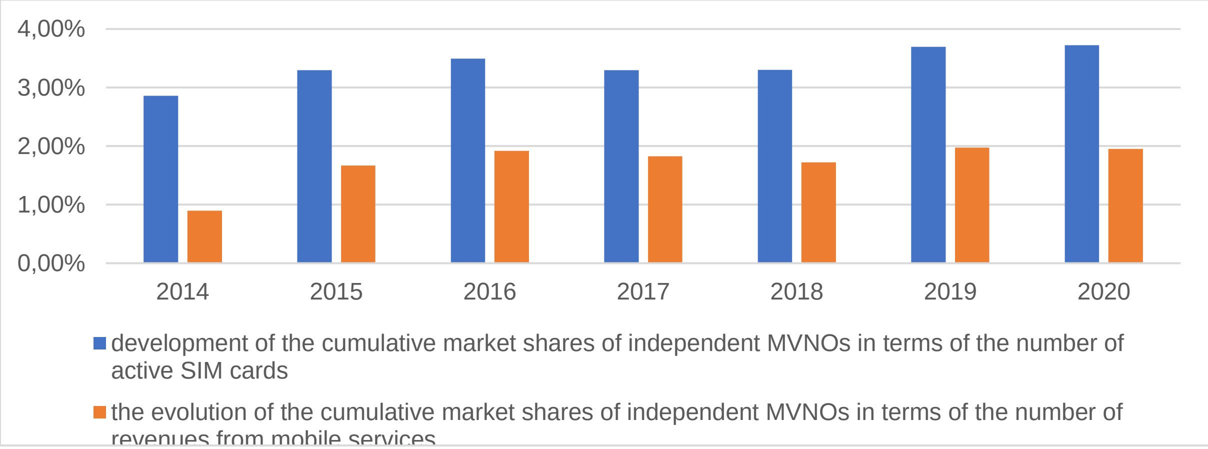


Chart 84: Evolution of the market share of independent MVNOs
Source: the CTU, 2022

On the other hand, the market shares of MVNOs linked with MNOs by ownerships in terms of revenues and the number of active SIM cards have been growing continuously. It should be noted that the market shares in terms of mobile revenues and active SIM cards are balanced, unlike for independent MVNOs.

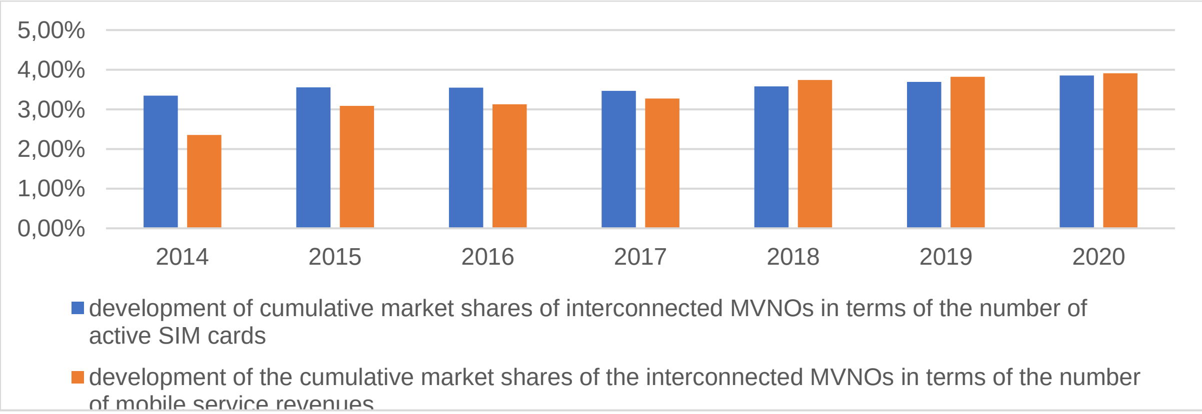


Chart 85: Evolution of the market share of MVNOs linked to MNOs
Source: the CTU, 2022

To illustrate: in terms of MNO market shares, there has been a slight correction over 2014-2020, both in terms of the number of active SIM cards and in terms of revenues from mobile services, but mainly due to the growth in the cumulative market share of MVNOs linked with MNOs by ownerships.

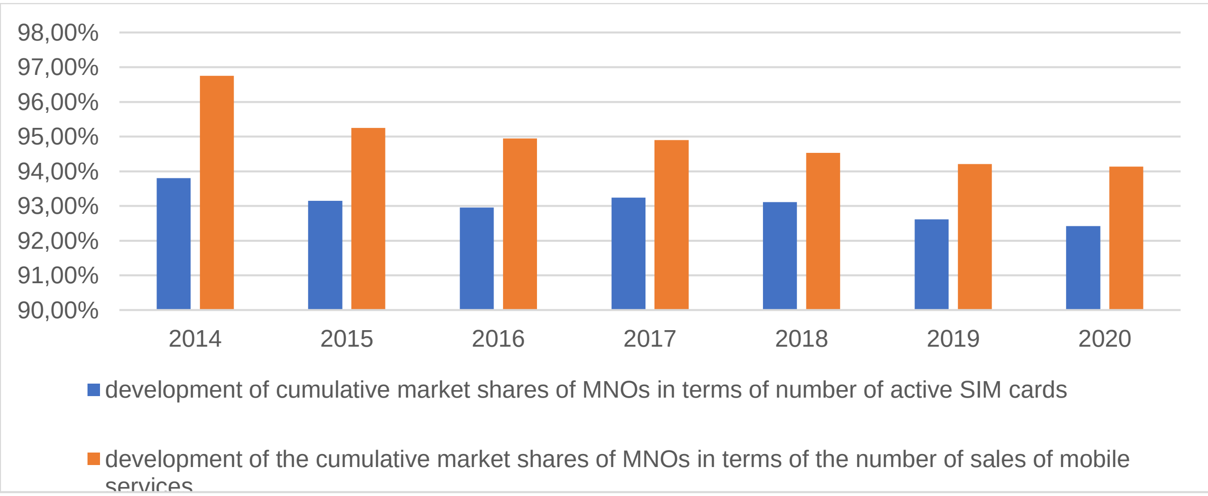


Chart 86: Evolution of the market share of MNOs

Source: the CTU, 2022

It follows from the above that there are significant, and not temporary, structural barriers to **effective** MVNO market **entry**.

The CTU further states that the commitments made by the selected spectrum holders (mobile network operators) in the 2020 5G auction are not able to limit barriers to entry within the timeframe of this analysis. Although a national roaming commitment can be expected to have a positive effect on the level of competition in the mobile market, this positive effect will only occur once an eligible national roaming bidder meets the conditions for national roaming eligibility (i.e. in particular builds up coverage on its own network, etc.), enters into an access contract with a national roaming provider and subsequently builds relevant wholesale and/or retail products on the basis of national roaming that can be marketed. Only wholesale services that an eligible bidder would choose to provide further to MVNOs on the basis of the use of national roaming can play the role of lowering barriers to entry in the mobile market. Without such wholesale services, the barriers to entry will remain similar to today, as radio frequencies will continue to be needed for effective entry into the mobile market, which in turn are even more limited than before after the 5G auction. Moreover, it is not even possible to predict whether eligible bidders will choose to access national roaming for wholesale offers, so the impact of national roaming in reducing barriers to efficient entry in the mobile market for MVNOs is rather hypothetical. On the time-lag effect of the 5G auction commitments, we refer further to the chapter 2.1.6 on the time definition of the retail market review.

Moreover, in the context of the Czech mobile market, it is necessary to add that the absolute majority of MVNOs entered the market in 2013 and 2014, when MNOs and other wholesale players (some of which were subsequently integrated into MNOs after acquisition) temporarily released access to their networks to MVNOs.

The vast majority (approximately 80%) of these MVNOs are very small operators with a customer base of less than 1,000 SIM cards. In particular, MVNOs with a customer base of at least 10,000 SIMs, of which there are 7 in the market (i.e. approximately 5% of all MVNOs) and which have an MVNO market share by number of SIM cards exceeding 90% of the total MVNO market, can be considered as pro-market. Out of these 7 major MVNOs, 2 are linked with MNOs by ownership and only 5 are financially independent of MNOs.

Where new MVNOs have entered the market in recent years, they have done so almost exclusively to protect their customers from other markets, typically fixed operators that offer mobile services to their customers in addition to fixed services so as not to lose those customers, or MVNOs that consider mobile services to be a complementary service to their non-telecommunications customers, typically Tesco Mobile (retailer) or Sazka (lottery company). In this context, it is therefore necessary to add that in recent years, MVNOs have hardly entered the market to operate purely in the mobile market, and if they have, it has been at the profit of an extremely low customer base. Conversely, MVNOs are not entering the market, with the exception of MVNOs with the aim of protecting their existing customers from another telecommunications or completely different market. The CTU considers this to be a manifestation of significant barriers to entry.

Limited frequency spectrum

Technically, access to spectrum on a nationwide basis, i.e. for the whole territory of the Czech Republic, is necessary for the provision of services on the defined wholesale market by MNOs, and, given the nature of wholesale services, also for MVNE-type operators. [69] [70]

Frequency spectrum is a limited resource which, due to the technological principles of 2G, 3G, 4G and 5G[71] networks, can only be made available as a frequency allocation to a limited number of applicants. To illustrate, the ITU recommends a bandwidth of 100 MHz[72] per 1 operator[73] to fully exploit the potential of 5G networks. Too much atomization of spectrum into too small allocations limits the quality of mobile telecommunication services provided, especially data services (speed, latency, etc.).

Six companies currently hold allocations for the provision of mobile telecommunications services throughout the country[74] :

1. CentroNet, a.s.
2. Nordic Telecom 5G, a.s.
3. O2 Czech Republic, a.s.
4. PODA a.s.
5. T-Mobile Czech Republic, a.s.
6. Vodafone Czech Republic, a.s.

Due to the limitations of the spectrum resource and its potential economic output, the Czech Republic, represented by the CTU, required a price for the allocation of spectrum, which was usually maximised by auction. To illustrate: in the case of the last auction for frequency allocations in the 700 MHz and 3400-3600 MHz frequency bands, the total price for frequency allocations exceeded CZK 5.5 billion.[75] . Given the level of spectrum investment required, only those entities with a large retail and/or wholesale customer base can achieve an economic return on such investment through the provision of mobile telecommunications services.

It is clear from the above that the limited spectrum for the provision of mobile telecommunications services in the defined wholesale market constitutes a major structural barrier to entry in the defined wholesale market for technological and long economic payback reasons.

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[69] MVNEs provide their wholesale services on the basis of the services they purchase through a wholesale contract from the MNO, or from another MVNE or Mobile Network Enabler (MNE) entity.
[70] Based on the market data in the Czech Republic, the role of MVNEs in the market is currently a minority one - there are only 12 MVNEs operating in the market, of which only 3 are pure MVNEs, and their share in the defined wholesale market is 3% (measured by SIM). Therefore, it can be concluded that the role of MVNEs in the defined wholesale market has been taken over by MNOs.
[71] E.g. minimum technologically usable bandwidth, avoidance of interference, etc.
[72] The possibility of using "carrier aggregation" in 5G networks, i.e. combining different parts of the frequency spectrum.
[73] Source : https://www.gsma.com/spectrum/wp-content/uploads/2021/04/5G-Spectrum-Positions.pdf
[74] Source : www.ctu.cz
[75] https://www.ctu.cz/sites/default/files/obsah/ctu/oznameni-ceskeho-telekomunikacniho-uradu-o-vyhlaseni-vyberoveho-rizeni-za-ucelem-udeleni-prav-k/obrazky/20210304-zpravaoprubehuavysledcichvyberovehorizenisigned.pdf

High investment costs for network infrastructure and mobile telecommunications services

Investment in spectrum, mobile networks and other technologies and assets to achieve the ability to provide mobile telecommunications services in a defined wholesale market represents a significant part of the MNO's investment. As explained above, without these investments, which technically enable the provision of services, not only MNOs but also MVNEs or MNEs cannot provide their services in the defined wholesale market. To illustrate, MNOs in the country spent 8-13%[76] of their total revenues on investments in mobile network assets and electronic communications services in 2020[77] . The cumulative investments of the three MNOs in this area in 2020 exceeded CZK 7.4 billion. It should be noted that due to technological development, i.e. replacing technological equipment with new generations, replacing them due to wear and tear, investments in the above range are not of a one-off nature, but of a continuous nature.

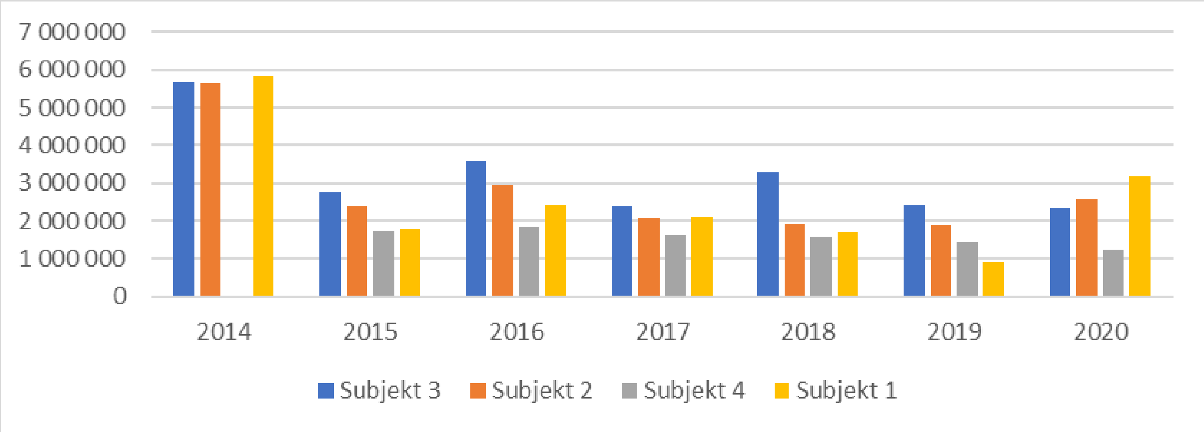


Chart 87: Total investment in mobile network assets and electronic communications services (in thousands CZK, VAT excluded)
Source: CTU, 2021

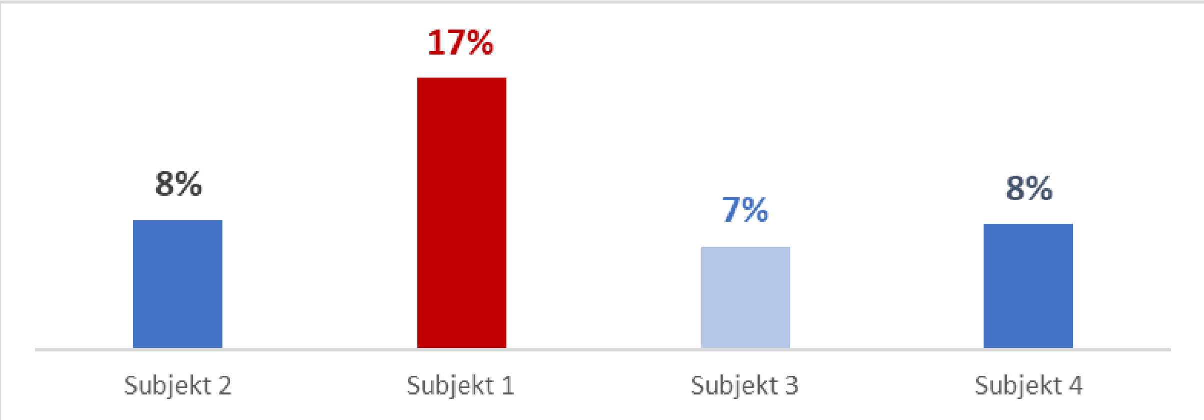


Chart 88: Share of investment costs of individual MNOs over time in total revenues of individual MNOs
Source: CTU, 2021

In view of the above, it can therefore be concluded that the required investment costs for network infrastructure and mobile telecommunications services constitute a significant structural barrier to entry in the defined wholesale market.

[76] Source: IstroAnalytica Advisory s.r.o. based on information from mobile operators' websites and information from the CTU (ESD)

[77] The total revenues for all 3 MNOs in the Czech market ([redacted]) also include revenues from fixed services. Thus, in reality, the % share of revenues is higher than the reported values.

Construction time of network infrastructure for mobile telecommunications services in the defined wholesale market

As has already been reasonably stated, in order to provide mobile telecommunications services, i.e. on the defined wholesale market, it is necessary to cover the entire territory of the Czech Republic with mobile telecommunications networks.

The process of setting up a mobile network infrastructure can be divided into the following steps:

1. Planning and projection;
2. Obtaining consent for the placement of linear structures;
3. Acquisition (purchase, lease) of sites for the deployment of mobile network technology;
4. Obtaining permits for the placement of technologies;
5. Procurement and construction of infrastructure
    a. Technology and other mobile network access devices;
    b. Technology and other backbone network equipment for mobile access network;
6. Testing and commissioning.

Based on the legislation in force for the placement and implementation of telecommunications line structures in the Czech Republic and relevant experience in the construction of mobile networks[78] , the duration of steps 1-6 for a single base station is usually 6-12 months.

In addition to the timing of network set-up, the generational evolution of networks also increases complexity. To illustrate: to fully exploit the potential of 5G networks, the density of 5G network base stations in high-density areas can reach five times the number of 4G network base stations[79] . Thus, it can be concluded that the complexity of network construction increases with generational renewal.

Another factor that is increasing with the number of base stations is the limited possibility of locating new base stations due to the lack of sites for their placement. To illustrate, as of 31 December 2020, LTE (4G) operators operated a total of 17 336 LTE base stations in the 800 MHz band[80] . This barrier can be partly overcome by existing and new network sharing agreements[81] or by sharing parts of the infrastructure (e.g. masts) in the Czech Republic. However, the possibility of deploying mobile telecommunications network technologies is not legally or otherwise guaranteed for market entrants and is subject to commercial agreements. Entities that have already built mobile telecommunications networks are at an advantage compared to new entrants, as space for next generation mobile network (5G) equipment can be made available by existing MNOs, e.g. by upgrading or switching off previous generations of networks, e.g. 3G in the case of the Czech Republic.

[78] Source: IstroAnalytica Advisory s.r.o.
[79] Source : https://www.newtec.eu/article/article/choosing-the-right-connectivity-for-5g
[80] Source: https://www.ctu.cz/sites/default/files/obsah/stranky/382551/soubory/vzctu2020.pdf (CTU Annual Report)
[81] Sharing networks in the Czech Republic is not without complications: https://www.lupa.cz/clanky/sdileni-siti-o2-a-t-mobilu-omezuje-hospodarskou-soutez-tvrdi-evropska-komise/.

Resistance from the population to the placement of additional base stations may also contribute to slowing down the mobile network build-out of a new entrant[82] .

Given the above influences and factors, it can be concluded that the time taken to build network infrastructure for mobile telecommunications services constitutes a major structural barrier to entry in the defined wholesale market. Based on the history of the construction of mobile telecommunication networks in the Czech Republic by existing MNOs and the above mentioned barriers to the construction of new networks, it can be concluded that the time required to build a new mobile telecommunication network to enable the provision of services in the defined wholesale market would exceed 5 years. This timeframe is valid assuming that the entity has the necessary spectrum and using network sharing with existing MNOs.

High investment in brand marketing

To effectively enter a defined retail market, a new entrant needs to invest in marketing, i.e. brand promotion, in addition to investing in spectrum and building a mobile network. Existing MNOs have a brand awareness of more than 90% of the population, whereas MVNOs, who are the most successful in the market in the country on this parameter, have a brand awareness of around 50%[83]. These are MVNOs who are associated with nationally known brands (ČEZ, Sazka, Tesco), i.e. so-called private brands.

Brand awareness has a significant impact on the ability to acquire customers. Jana Hamanová, director of research at SC&C, writes in Komora magazine, "*The ability to get a person who knows the brand to become a real customer who will buy the services in question is on average 15%.However, the big players do much better, they can approach up to 50% conversion rate, while private labels are the worst, their conversion rate is in the range of one percent.* " [84]

If an MVNO aspired to obtain the same high brand awareness as the MNOs in the Czech market, it would have to consistently invest hundreds of millions of CZK per year in its marketing for more than 5 years. For this reason, the marketing barrier to entry is one of the permanent barriers to entry in a defined retail market.

Inability to achieve economies of scale

Another major structural barrier to entry in the defined wholesale market is the inability of an MVNE-type provider to achieve economies of scale in using the wholesale offerings of MNOs operating in the defined wholesale market.

For the above reasons, the MVNE service offer is less attractive from the MVNO perspective compared to the MNO offerings and therefore underused.

Conclusion:

The defined relevant market is characterised by significant and not temporary structural barriers to entry and criterion 1 can be considered to be fulfilled.

[82]Source : https://zpravy.aktualne.cz/domaci/revolta-proti-5g-se-zatim-nesiri-jsme-v-hybridni-valce-rika/r~ceb1709ca4d211ea9c800cc47ab5f122/
[83] Source : https://www.businessinfo.cz/clanky/pruzkum-zakaznicke-spokojenosti-mobilni-operatori-a-poskytovatele-internetu/
[84] Source : https://www.businessinfo.cz/clanky/pruzkum-zakaznicke-spokojenosti-mobilni-operatori-a-poskytovatele-internetu/

3.2 Criterion 2: the market is not conducive to effective competition over a given time horizon

Assessment by the European Commission and BEREC: The CTU first notes that the Commission stated in its decision of 17 February 2022 that in its view criterion 2 is not met. It based this conclusion in particular on the basis that a national roaming obligation would lead to increased competition in the market. BEREC considers that criterion 2 is fulfilled. In this respect, the CTU states that it carries out this analysis only for the time horizon until the expected implementation of national roaming. In particular, the expected implementation of national roaming has been complemented by the CTU's analysis of the technical requirements for the implementation of national roaming and an updated market survey, as described in more detail in Chapters C.6, C.8 and 2.1.2. Therefore, in other respects, the analysis of compliance with Criterion 2 has not been supplemented and has been taken from the original analysis submitted to the Commission in 2021. For more detail on the Commission's individual comments, the CTU refers to the summary table at the end of Chapter C.0.

The analysis showed that in the period under review (2014-2020) the market shares of individual operators are stable and the MVNO market share is very low and stagnating.

As a result, the relevant market also exhibits a high degree of concentration throughout the period under review.

The analysis also showed that MVNOs have failed to establish themselves in the segment of tariffs in the band above CZK 300. The presence of MVNOs in the corporate segment is quite negligible.

In terms of the wholesale level of the market, the analysis showed a very low MVNE market share, with market dynamics such that the number of SIM cards sold by MVNEs has been declining since 2016.

The relevant market therefore shows no (or only negligible) development towards effective competition in the period 2014-2020. Taking into account the forward-looking analysis, no other development can be expected in the coming years.

Apart from the potential effect of the 2020 frequency auction, which gave the three holders of frequency allocations in the 3400-3800 MHz band the right to apply for national roaming access under certain conditions, but which cannot be expected before 2025 and therefore does not fall within the timeframe of this analysis, we are not aware of any potential factors that could change the current market dynamics.

The fulfilment of the second criterion of the 3C test, i.e. the existence of a market structure that is not conducive to effective competition, is also demonstrated by the practices of T-Mobile, which in 2021 unilaterally terminated wholesale contracts with 12 MVNOs without giving any reason, on the basis of enforced extremely short notice periods that did not allow the MVNOs to secure substitute wholesale supply from other MNOs. It was only after the intervention of the CTU that T- Mobile extended the notice periods. Although information about the termination of the contracts was widely available in the media, according to the CTU's findings, none of these MVNOs received an offer of wholesale cooperation from competing wholesale providers, i.e. neither O2 nor Vodafone. Even MVNOs that proactively approached O2 or Vodafone themselves did not receive an offer from these theoretically competing operators that would have allowed them to switch wholesale providers within the notice period known from the media.

Effective competition is defined, according to the Commission's Guidance on enforcement priorities in the application of Article 82 of the EC Treaty to abuses of dominant positions by undertakings that exclude other competitors from the market, set out in Commission Notice COM(2008) 832 of 5 December 2008, as a situation in which no single undertaking operating on the relevant relevant market has significant market power.

An undertaking shall be considered to have significant market power if, alone or jointly with other undertakings, it has a position of significant market power, i.e. economic power that allows it to behave to a significant extent independently of competitors, customers and end consumers.

Pursuant to paragraph 54 of the Guidelines on market analysis and the assessment of significant market power under the EU regulatory framework for electronic communications networks and services, as defined in detail in Commission Notice 2018/C 159/01 ('the Guidelines'), market shares can provide the national regulatory authority with a first useful indication of the market structure and relative importance of different operators operating in the market.

	2014	2015	2016	2017	2018	2019	2020
Herfindahl index of the number of active SIM cards	0,309	0,302	0,300	0,301	0,299	0,297	0,296
Herfindahl Voice Services Index	0,315	0,306	0,301	0,303	0,304	0,302	0,301
Herfindahl index of SMS services	0,315	0,302	0,303	0,306	0,302	0,297	0,294
Herfindahl Data Services Index	0,317	0,312	0,302	0,311	0,314	0,321	0,338
Herfindahl index by data revenue for mobile tariffs with ad hoc data	0,296	0,330	0,377	0,433	0,451	0,386	0,369
Herfindahl index by mobile internet data revenues	0,436	0,409	0,410	0,379	0,442	0,387	0,371
Herfindahl index by data revenue for mobile tariffs with flat-rate data	0,328	0,332	0,328	0,336	0,318	0,317	0,327

Table 8: Herfindahl index for the relevant retail market for mobile services
Source: the CTU, 2022

In the case of the wholesale market, the analysis showed that the supply of capacity for voice, SMS and data services is almost exclusively made up of network operators, with MVNOs offering only around 2% of voice, 2% of SMS and 1% of data services on the wholesale market. Network operators sell up to 97 % of all active SIM cards on the wholesale market and up to 99 % of active SIM cards using the internet. The shares of the wholesale supply of voice, SMS and data services correspond to the shares of revenues realised on the wholesale market.[85]

	2014	2015	2016	2017	2018	2019	2020
Herfindahl index of the number of active SIM cards	0,447	0,466	0,461	0,470	0,481	0,505	0,516
Herfindahl Voice Services Index	0,689	0,706	0,669	0,678	0,696	0,716	0,742
Herfindahl index of SMS services	0,680	0,722	0,696	0,688	0,710	0,728	0,745
Herfindahl Data Services Index	0,708	0,790	0,784	0,817	0,819	0,780	0,791

Table 9: Herfindahl index for the relevant wholesale market for mobile services
Source: the CTU, 2022

[85] Market concentration was calculated without the effect of self-supply in order to document the evolution of supply formation on the wholesale market.

The high concentration in the market, which corresponds to the structure of wholesale supply, is confirmed by the Herfindahl index, which has been increasing continuously year on year and converging towards 0.800 not only in terms of the number of active SIM cards sold, but also in terms of voice, SMS and data services. The Hefindahl index calculations included market shares by each indicator without self-supply, as the aim was to show the concentration of supply creation in the wholesale market. The interpretation is therefore clear, the wholesale market is highly concentrated in the three MNOs.

If we assess this situation from the perspective of the absence of real regulatory parameters for supply creation on the wholesale market, it is necessary to examine the market incentives for supply creation on the wholesale market from the perspective of network operators.

The first factor in the market motivation for supply creation in the wholesale market is the existence of demand, which is derived from demand in the retail market. Demand in the retail market is created by end customers.

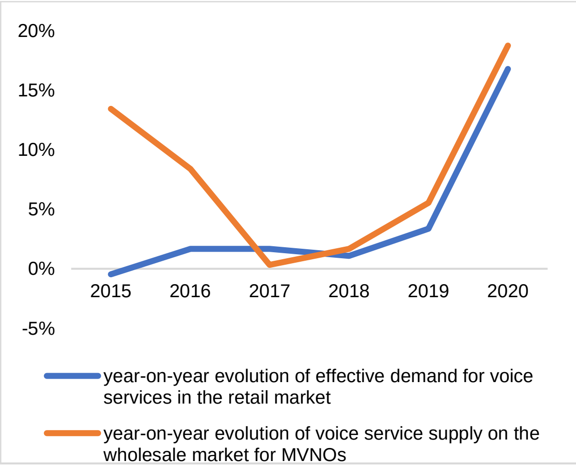


Chart 89: Evolution of the volume of voice services
Source: the CTU, 2022

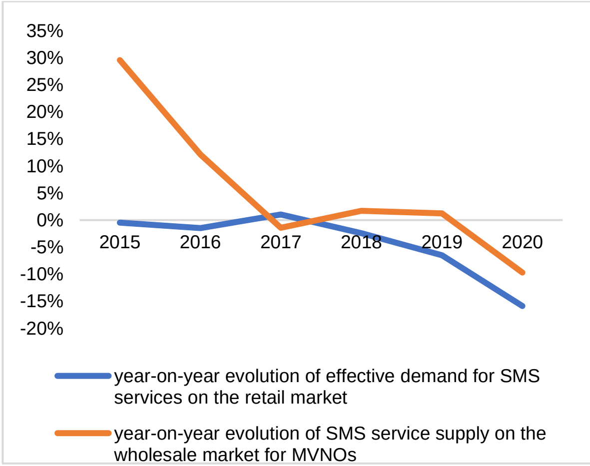


Chart 90: Evolution of SMS service volumes
Source: the CTU, 2022

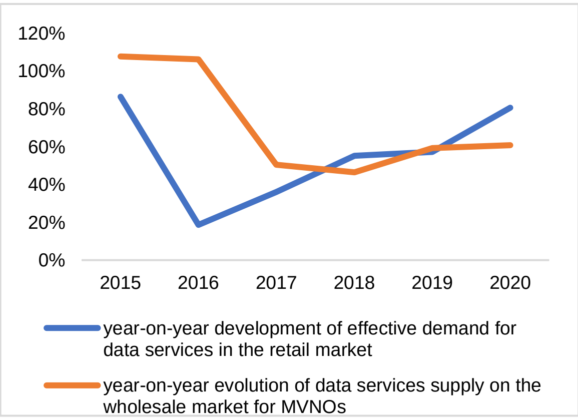


Chart 91: Evolution of data services
Source: CTU, 2021

Demand is increasing for voice and data services and decreasing for SMS services. While the wholesale supply reflects the evolution of demand on the retail market for voice and SMS services, the data services are experiencing a widening of the data gap on the supply side of the wholesale market relative to the volume of demand on the retail market.

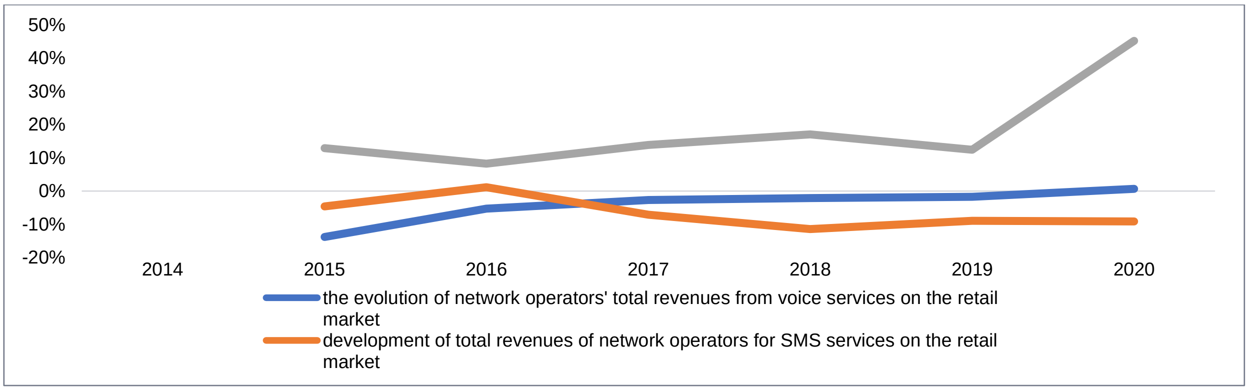


Chart 92: Comparison of total revenues by type of mobile service
Source: CTU, 2021

In examining the causes of this phenomenon, a focus on comparing network operators' retail revenues for different types of mobile services was applied to identify the possible market motivations of offer makers in the wholesale market.

Conclusion:

The relevant market has had an almost constant market share structure and a high degree of concentration throughout the period under review, while no factors are known or expected to lead the market towards effective competition within the timeframe of the analysis. Therefore, criterion 2 can be considered to be fulfilled.

3.3 Criterion 3: Competition law is insufficient in itself to adequately address the market failures identified

Assessment of the European Commission and BEREC: The CTU first of all notes that the Commission stated in its decision of 17 February 2022 that it leaves the question of compliance with criterion 3 open in view of the insufficient assessment of this criterion by the CTU. BEREC considers that criterion 3 is fulfilled, although it also noted that the evaluation carried out could be further developed. In its assessment of this criterion, the CTU insists that competition law alone is not sufficient to address the identified market failures, as repeatedly confirmed by the Office for the Protection of Competition (ÚOHS) In this respect, the CTU further states that it is carrying out this analysis exclusively for the time horizon up to the end of 2024. The expected application of national roaming has been complemented by the CTU's analysis of the technical requirements for the implementation of national roaming and the updated market survey, as described in more detail in Chapters C.3, C.6, C.8 and 2.1. Given the notoriously long duration of ex post competition proceedings, it is clear that competition law is not sufficient to address the identified problem in this perspective. For this reason, and taking into account the specific comments of the European Commission and BEREC on the assessment of this criterion, the CTU has supplemented its assessment with a more detailed assessment of the insufficiency of the application of competition law itself, as well as a justification for the difference in the assessment of this criterion compared to the results of the 3C test in 2016. For more details on the individual comments made by the Commission, CTU refers to the summary table at the end of Chapter C.0.

The purpose of the third criterion is to assess whether remedies (i.e. effective competition) cannot be achieved by competition law means in a market meeting the first two criteria. In the Recommendation on relevant markets on the third criterion, the European Commission states that the decision on whether a market is eligible for ex ante regulation should depend on an assessment of the sufficient capacity of competition law to address the market failure found in the assessment of the first two criteria.

Under the third criterion, the CTU considered whether remedies under competition law were sufficient to address the market failure in the defined market for mobile services. The CTU assessed whether the competition law could be considered insufficient (without a combination of ex ante regulation) or inadequate to address the identified market failures. For a more detailed interpretation of the third criterion, see the Commission's Explanatory Memorandum to the current Commission Recommendation on relevant markets of 18.12.2020[86] in Chapter 2.2 (pp. 14-15). Remedies under competition law may then be considered insufficient, for example, in situations where a necessary regulatory obligation to remedy the market failure through ex ante regulation (e.g. access obligations or specific cost accounting requirements) would be needed, where regulatory intervention to remedy the market failure entails extensive compliance requirements because it must be long term (e.g. The need for detailed accounting for regulatory purposes, cost assessments, monitoring of conditions including technical parameters, etc.), or where frequent and/or timely interventions are necessary, or where the creation of legal certainty is paramount (e.g. longer-term price regulation).

In the context of this criterion, the CTU considers it crucial to assess whether remedies under competition law are likely to be sufficient to remove obstacles to effective competition. Under the Competition Act[87] , the Competition Authority (ÚOHS) may assess the market for the possible existence of prohibited agreements (Section 3) or for the possible abuse of a dominant position (Section 11).

In the event of proof of the existence of a prohibited agreement, the ÚOHS will prohibit the parties to such an agreement from acting in accordance with the agreement and is entitled to impose a fine of up to 10% of the net turnover for the last completed accounting period. Thus, the powers of the ÚOHS in this case do not include imposing the necessary obligations to remedy the market failure. At the same time, the CTU considers it very difficult and unlikely to prove such an agreement, even if it actually existed, in particular in view of the burden of proof where such an explicit agreement would have to be found.

If an abuse of a dominant position (of one or more competitors) is proven, the ÚOHS may impose on the undertaking or undertakings in a dominant position all measures necessary to put an end to the infringement and to remedy the market failure. However, interventions under competition law presume that the abuse of a dominant position has already occurred. Thus, competition law cannot impose obligations or rules in advance that would lead to the timely elimination of actual or potential market problems that restrict competition in the market with a view to the future, followed by regular supervision and monitoring of the market.

Sector-specific ex ante regulation, on the other hand, is designed to mitigate or eliminate potential problems of restriction of competition in the relevant market in advance.

The CTU considers that, based on the assessment of barriers to entry in the first criterion and the direction towards effective competition in the second criterion, it can be concluded that there are market failures in the relevant market such that detailed obligations (network access, including possible obligations related to price regulation) need to be imposed in the form of specific ex ante regulation that cannot be imposed under competition law

86 https:/ec.europa.eu/newsroom/dae/document.cfm?doc_id=72442

87 Act No. 143/2001 Coll.

legislation. This would also ensure the necessary degree of predictability of regulatory intervention in the market. In the opinion of the CTU, it can also be assumed that the setting of the regulatory rules should lead to the conclusion of access agreements allowing the development of competition on the wholesale and retail markets in question, and thus to more effective competition on the market during the period under examination.

In evaluating the third criterion, the CTU also addressed the issue of the timeliness of intervention in addressing market failures, or reducing or eliminating their occurrence. The CTU took into account the current market situation and anticipated developments and concluded that ex ante regulation would respond more adequately and effectively to identified market problems compared to ex post regulation. Sector-specific ex ante regulation should therefore be considered an appropriate complement to ex post regulation in this case.

The above conclusions regarding Criterion 3 and the competition law options have been repeatedly consulted by the CTU with the Competition Authority (ÚOHS). In his opinions, the Chairman of the ÚOHS agreed with the conclusions presented, stating, inter alia, that: *"...Thus, while ex-ante regulation has tools that enable it to identify and mitigate even long-term structural market failures and to take ongoing measures and supervise the implementation of measures to remedy them, the main tool of competition law is the possibility to impose a one-off sanction on a specific person or persons for an identified breach of competition law, while it does not have tools that would enable it to address actual or potential structural market failures in a timely manner with a view to the future and with subsequent regular supervision and monitoring of the market." It then* concluded that "In view of the *above, competition law cannot be considered an appropriate or sufficient tool to address long-standing market failures, including those identified by the CTU in the Draft Analysis."*

The CTU also takes the view that in markets where large differences in bargaining positions between undertakings persist and where some undertakings rely on infrastructure/network operated by others to deliver their services, it is appropriate to establish a framework to ensure the efficient functioning of the market. Where commercial negotiations are not successful or do not improve the competitive situation in the market under current conditions, national regulatory authorities should have the power to ensure access, interconnection and interoperability of services on reasonable terms in the interests of end-users.

On the basis of the above, the CTU therefore concluded that the application of sector-specific ex ante regulation is necessary to achieve the desired objective of developing competition in the defined relevant market and that the application of competition law is not sufficient in itself to address the identified competition problems.

With regard to the EC's comments on the conclusions of the 2016 evaluation of the three criteria test in the mobile market, where the CTU reached the opposite conclusion, i.e. the sufficiency of competition law to address the identified market problems, the CTU provides the following explanation.

Firstly, it should be noted that the product definition of the mobile services market under review in 2016 differed from the current one, in particular in terms of the (non)inclusion of mobile data services. The market definition and the three-criteria test carried out in 2016 corresponded to the original market definition from 2012, when the CTU first started its analysis of the existence of SMP. The market defined in 2012 was the 'wholesale market for access and origination of calls on public mobile telephone networks' (as defined by the former relevant market No 15 defined by the EC), with a particular focus at that time on call and SMS services. Data services did not form such an important part of the offer at that time, given the limited coverage of 3G networks in the Czech Republic at that time. Mobile data services started to gain importance in the Czech Republic only after 2014 in the context of the development of 4G networks, following the auction of frequencies for 4G networks in 2013. The CTU thus based its market assessment, i.e. the examination of the three criteria test in 2016, on the previously formally defined and established market within the national list of relevant markets. The current definition of the relevant market No. 3 under examination is based on the previous market definition, but includes in particular mobile data services in the definition (from the examination in 2017-2019) and is newly called the "wholesale market for access to mobile services".

Secondly, it is necessary to mention the factor of the entry of mobile virtual operators into the market in 2013/2014. These operators, following regulatory activities of the CTU such as the analysis of the above market in 2012 (which already at that time found the existence of joint significant market power of three MNOs), the auction of frequencies for the 4G network (in which a band was allocated for a new 4th operator), started to enter the market on the basis of commercially negotiated access agreements with individual MNOs. In this period, due to the above factors, in addition to the entry of MVNOs into the market, there was also a sharp decline in the prices of the services offered at that time - in particular, the first introduction of unlimited tariffs (with unlimited calls and unlimited SMS) into the mobile market in the country. In the period 2014-2016, there was a gradual development of MVNOs and their market share, as can be seen from the data presented in the evaluation of the previous criteria. The mobile market therefore appeared in a dynamic light in 2016 and the CTU expected it to move towards effective competition in view of these developments. The assessment of the last criterion, i.e. criterion 3 of the three-criteria test, was also influenced by the assessment of the previous two criteria, under which the CTU did not see a potential market failure in the future outlook - as it found that the market was moving towards competition and MVNOs were entering on commercial terms. Thus, the CTU expected that the market in question would continue to show sufficient competitive dynamics in the outlook, i.e. MVNO entry would be allowed, MVNOs would be allowed to develop in the mobile market (replicability of services), and prices would continue to fall. Thus, it found that potential market failures could be addressed by standard instruments through competition law. Even the Czech Republic's position in international comparisons of mobile prices improved markedly over the period in question. Unfortunately, this was only temporary.

Thirdly, the CTU states that unfortunately the above expectations about the market development have not been fulfilled in the following periods. After the initial entry and development of MVNOs, the market started to stagnate again, and the commercial terms of wholesale access contracts do not allow MVNOs to develop their market, especially with regard to mobile data services with higher data volumes. The competitive environment has started to lag behind and thus the position of the Czech Republic in international price comparisons for mobile services.

Finally, the CTU states that its original expectations in the forward-looking analysis have unfortunately not been reflected in the actual market development. The originally concluded commercial offers did not allow for adequate adjustment of the terms and conditions (including pricing) to take into account the development of the retail market and the offers of the MNOs themselves, as well as the negotiation of new contracts did not lead to the entry of significant and emerging competitors that would ensure the development of the market towards effective competition. Although a few dozen MVNOs have been allowed to enter the market, based on developments to date, the wholesale agreements with the MNOs cannot be found to have enabled them to compete effectively and to help lead the market towards the development of effective competition. The unsatisfactory current and prospective situation in the currently defined and examined market, as well as in the downstream retail market for mobile services, is then described in the chapters above and, where relevant, in the chapters below focusing on the examination of the existence of significant market power.

For a more detailed interpretation of the third criterion, see the Commission's Explanatory Memorandum to the current Commission Recommendation on Relevant Markets of 18.12.2020[88] in Chapter 2.2 (pp. 14-15). Ex ante regulation, according to the Commission's interpretation, comes into play in circumstances where the regulatory obligations necessary to remedy a market failure could not be imposed under competition law (e.g. access obligations or specific cost accounting requirements), where regulatory intervention to correct a market failure involves extensive compliance requirements because it must be long term (e.g. the need for detailed accounting for regulatory purposes, cost assessments, monitoring of conditions including technical parameters, etc.), or where frequent and/or timely interventions are necessary, or where the creation of legal certainty is paramount (e.g. longer term price regulation).

The analysis carried out and the market failures identified show that specific ex ante regulatory instruments need to be applied. The identified failures are long term and structural in nature and require effective and timely application of access and price regulation obligations, followed by ongoing regulatory oversight and the necessary cost accounting obligations. Ex post competition rules are not sufficient in themselves as they are aimed at sanctioning individual competition offences that have already been committed. By contrast, ex ante sectoral regulation has the tools to identify and mitigate even long-standing or impending market failures and to take continuous action and oversight to correct them. In the light of the barriers to entry and long-term failures in the wholesale mobile market described above, the application of ex ante regulatory instruments appears necessary.

Conclusion:

The CTU concludes that the third criterion is met. The application of competition law alone does not sufficiently ensure the removal of the identified market failures and therefore the defined wholesale market is susceptible for sector-specific ex ante regulation.

4. Assessment of (individual) significant market power

4.1 Market shares and their development on the wholesale market

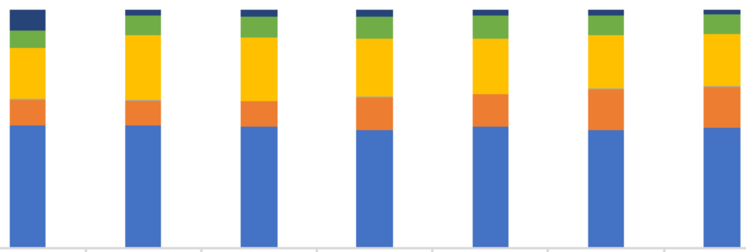
The largest SIM card provider in the wholesale market, including self-supply, was [redacted] with a market share of 39.4% as at 31 December 2020. The second largest provider was [redacted] with a market share of 33.2%. The third largest provider was [redacted] with a share of 27.2%. MVNEs, including self-supply at MNOs, had a market share of only 0.2%.

[88] https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=72442

	2014	2015	2016	2017	2018	2019	2020
MNO 2	39,5%	39,5%	39,2%	39,3%	38,9%	39,2%	39,4%
MNO 1	23,6%	25,2%	25,8%	26,5%	26,8%	26,9%	27,2%
MNO 3	36,4%	35,0%	34,7%	34,0%	34,2%	33,8%	33,2%
MVNE	0,6%	0,2%	0,3%	0,2%	0,2%	0,2%	0,2%

Chart 93: Development of wholesale market shares based on wholesale activated SIM cards sold, including wholesale resales including self-supply (as of 31 December 2020) Source: CTU, 2022

The next chart shows the wholesale market situation based on the total number of wholesale SIM cards sold, excluding self-supply, as of 31 December 2020. [redacted] was the largest provider with a market share of 67.8% (of which sales to independent MVNOs accounted for 17.1% and sales to MVNOs linked with MNOs by ownership accounted for 50.7%). The second largest provider on the basis of the number of SIM cards was [redacted] with a market share of 22.2% (of which sales to independent MVNOs accounted for 21.8% and sales to MVNOs linked with MNOs by ownership accounted for 0.3%). The third, [redacted], had 8.1%. In addition, MVNEs were also active in the market, with a total market share of 2% as of 31 December 2020.

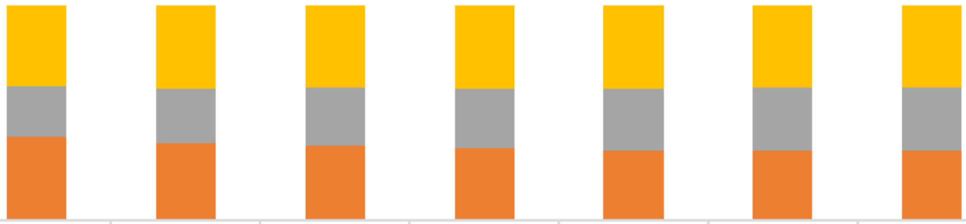


	2014	2015	2016	2017	2018	2019	2020
MVNE	8,7%	2,4%	2,7%	2,6%	2,5%	2,1%	2,0%
MNO 3 - prodej nezávislým MVNO	6,9%	8,2%	8,6%	9,5%	9,5%	8,6%	8,1%
MNO 3 - prodej propojeným MVNO	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
MNO 2 - prodej nezávislým MVNO	21,6%	27,0%	26,7%	24,4%	23,1%	22,2%	21,8%
MNO 2 - prodej propojeným MVNO	0,4%	0,4%	0,4%	0,4%	0,3%	0,3%	0,3%
MNO 1 - prodej nezávislým MVNO	10,6%	10,2%	10,4%	13,4%	13,7%	17,2%	17,1%
MNO 1 - prodej propojeným MVNO	51,7%	51,8%	51,2%	49,8%	50,9%	49,7%	50,7%

Chart 94: Development of wholesale market shares based on wholesale activated SIM cards sold, including wholesale resales without self-supply (as at 31.12.2020)
Source: the CTU, 2022

Next, the market shares in the wholesale market were analysed in terms of the individual services offered on mobile networks, as shown in the following charts.

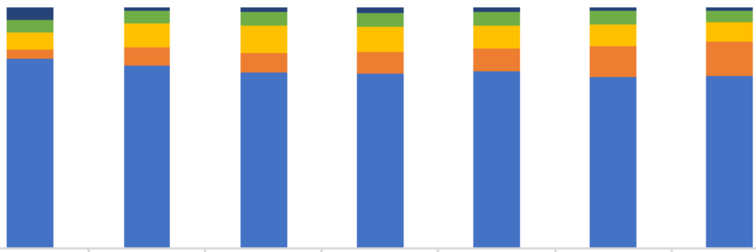
Including self-supply, based on the volume of originated minutes in the wholesale market as of December 31, 2020, [redacted] has the largest market share with 38.1%, followed by [redacted] with 32.5% and [redacted] with 29.2%, and MVNE with 0.2%.



	2014	2015	2016	2017	2018	2019	2020
MNO 1	37,4%	38,4%	37,9%	38,5%	38,7%	38,1%	38,1%
MNO 3	23,4%	25,4%	27,1%	28,0%	28,8%	29,5%	29,2%
MNO 2	38,9%	35,9%	34,6%	33,4%	32,4%	32,3%	32,5%
MVNE	0,3%	0,4%	0,3%	0,1%	0,1%	0,1%	0,2%

Chart 95: Evolution of wholesale market shares based on volume of originated minutes, including wholesale resales including self-supply (as of 31.12.2020)
Source: the CTU, 2022

Excluding self-supply, [redacted] was the largest provider with a market share of 85.6% (of which sales to independent MVNOs accounted for 71.5% and sales to MVNOs linked with MNOs by ownership accounted for 14.1%). In addition, [redacted] was active in the wholesale market with a market share of 8.2% (of which sales to independent MVNOs accounted for 8.1% and sales to MVNOs linked with MNOs by ownership 0.1%), followed by [redacted] with 4.7% and MVNEs with 1.5% market share.



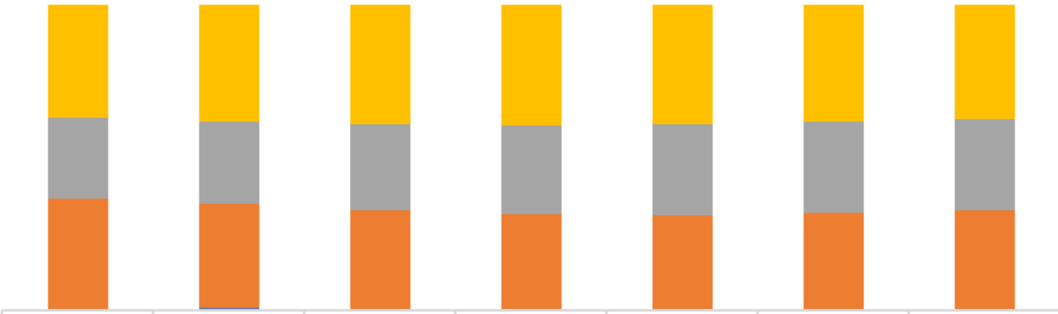
	2014	2015	2016	2017	2018	2019	2020
MVNE	5,3%	1,6%	2,1%	2,4%	2,0%	1,7%	1,5%
MNO 2 - prodej nezávislým MVNO	5,1%	5,0%	5,5%	5,9%	5,8%	5,3%	4,7%
MNO 2 - prodej propojeným MVNO	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
MNO 1 - prodej nezávislým MVNO	7,1%	9,9%	11,4%	10,1%	9,4%	9,0%	8,1%
MNO 1 - prodej propojeným MVNO	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
MNO 3 - prodej nezávislým MVNO	3,9%	7,5%	7,9%	9,0%	9,4%	12,7%	14,1%
MNO 3 - prodej propojeným MVNO	78,5%	75,8%	72,9%	72,5%	73,3%	71,3%	71,5%

Chart 96: Evolution of wholesale market shares based on volume of originated minutes, including wholesale resales without self-supply (as of 31.12.2020)
Source: the CTU, 2022

Between 2014 and 2020, a significant drop in the MVNE share can be noticed, which was due to the fact that until 2014, GTS Czech s.r.o. was still operating as an MVNE on the market, which was dissolved by the merger with T-Mobile on 2 January 2015, and also due to the rapidly increasing volumes of wholesale sales directly from MNOs to new MVNOs. In this context, particular mention can be made of the entry into the market of MVNOs linked by ownership to O2, i.e. Tesco Mobile and O2 Family, in 2013 and 2014 respectively.

[redacted] had the largest market share in the wholesale market, in terms of number of SMS sent, including self-supply, at 31 December 2020, with a share of

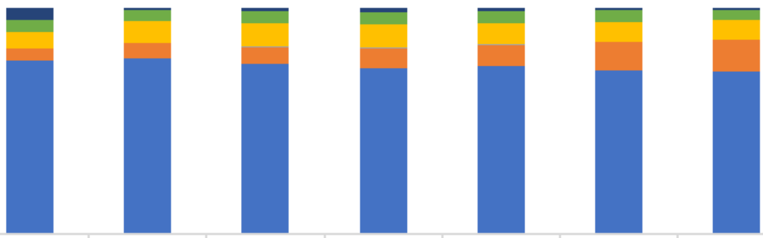
37.4%, followed by [redacted] with a share of 32.7% and [redacted] with a share of 29.6%. MVNE's market share was 0.3%.



	2014	2015	2016	2017	2018	2019	2020
MNO 3	37,2%	38,2%	39,0%	39,7%	39,0%	38,2%	37,4%
MNO 2	26,0%	26,9%	28,0%	28,8%	29,7%	29,7%	29,6%
MNO 1	36,5%	34,1%	32,8%	31,4%	31,2%	31,9%	32,7%
MVNE	0,2%	0,8%	0,2%	0,1%	0,1%	0,1%	0,3%

Chart 97: Evolution of wholesale market shares based on the number of SMS sent, including wholesale oversupply including self-supply (as of 31.12.2020)
Source: the CTU, 2022

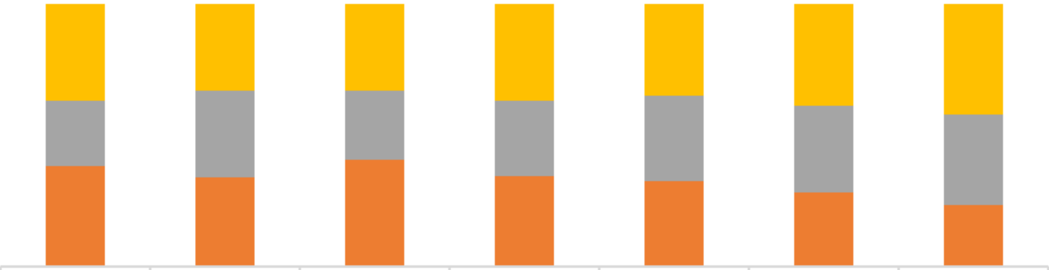
Excluding self-supply, [redacted] had the largest market share at 85.8% (of which sales to independent MVNOs accounted for 13.9% and sales to MVNOs linked with MNOs by ownership accounted for 71.9%). This was followed by [redacted] with a share of 8.7% (of which sales to independent MVNOs accounted for 8.6% and sales to MVNOs linked with MNOs by ownership 0.1%). Next in order was [redacted] with a share of 4.3%. MVNEs had a market share of 1.2%.



	2014	2015	2016	2017	2018	2019	2020
MVNE	5,6%	1,2%	1,7%	1,9%	1,5%	1,3%	1,2%
MNO 2 - prodej nezávislým MVNO	5,2%	4,8%	5,1%	5,3%	5,2%	4,9%	4,3%
MNO 2 - prodej propojeným MVNO	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
MNO 1 - prodej nezávislým MVNO	7,2%	9,5%	10,6%	10,6%	9,6%	8,9%	8,6%
MNO 1 - prodej propojeným MVNO	0,2%	0,2%	0,2%	0,2%	0,1%	0,1%	0,1%
MNO 3 - prodej nezávislým MVNO	5,0%	6,9%	7,5%	8,7%	9,5%	12,6%	13,9%
MNO 3 - prodej propojeným MVNO	76,8%	77,3%	75,0%	73,4%	74,0%	72,1%	71,9%

Chart 98: Evolution of wholesale market shares based on the number of SMS sent, including wholesale resales without self-supply (as of 31.12.2020)
Source: the CTU, 2022

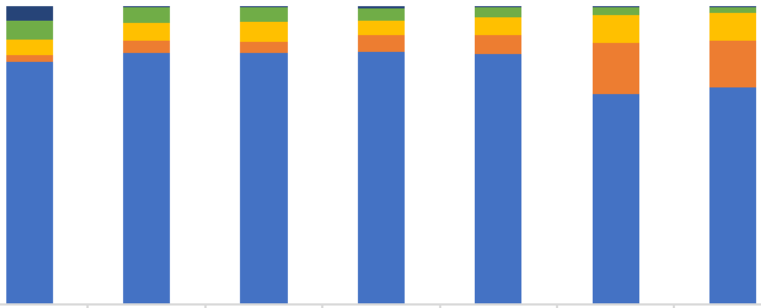
Based on the volume of data transferred, including self-supply, [redacted] has the largest market share of 42.1%, followed by [redacted] with a share of 34.6% and [redacted] with a share of 23.4%. MVNE have a share of 0.01%.



	2014	2015	2016	2017	2018	2019	2020
MNO 1	36,8%	32,8%	32,9%	36,8%	35,1%	38,7%	42,1%
MNO 3	24,8%	33,0%	26,6%	29,0%	32,5%	32,9%	34,6%
MNO 2	38,3%	34,1%	40,5%	34,2%	32,5%	28,3%	23,4%
MVNE	0,08%	0,01%	0,02%	0,02%	0,01%	0,01%	0,01%

Chart 99: Evolution of wholesale market shares based on the volume of data transferred in GB, including wholesale resale including self-supply (as of 31.12.2020)
Source: CTU, 2021

Based on the volume of data transferred, excluding self-supply, the largest provider is [redacted] with a market share of 88.4% (of which sales to independent MVNOs account for 15.7% and sales to MVNOs linked with MNOs by ownership account for 72.7%), followed by [redacted] with a share of 9.2%, and [redacted] with a share of 2.1%. MVNEs achieved a market share of 0.2%.



	2014	2015	2016	2017	2018	2019	2020
MVNE	4,9%	0,3%	0,5%	0,6%	0,4%	0,3%	0,2%
MNO 3 - prodej nezávislým MVNO	6,2%	5,5%	4,8%	4,3%	3,3%	2,6%	2,1%
MNO 3 - prodej propojeným MVNO	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
MNO 2 - prodej nezávislým MVNO	5,2%	5,6%	6,5%	4,9%	6,0%	9,3%	9,2%
MNO 2 - prodej propojeným MVNO	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
MNO 1 - prodej nezávislým MVNO	2,3%	4,2%	3,7%	5,3%	6,4%	17,2%	15,7%
MNO 1 - prodej propojeným MVNO	81,4%	84,3%	84,5%	84,8%	83,8%	70,6%	72,7%

Graph 100: Evolution of wholesale market shares based on data volumes transmitted, including wholesale resales without self-supply (as of 31.12.2020)
Source: CTU, 2021

To achieve a comprehensive assessment of the evolution of retail market shares, it is necessary to describe the evolution of data demand and supply in both the wholesale and retail markets and compare the trends. Wholesale data supply grew at an average rate of 72 % per year over the period under review. At the same time, demand in the retail market, as measured by the evolution of the volume of data transferred by end-customers, grew at an average rate of 56 % per year. This increased demand is mainly met by network operators as their supply on the retail market grew at the same average rate as demand. The same trend has been observed in the development of data supply by MVNOs with ownership links to network operators. On the other hand, the data supply of independent MVNOs grew at an average rate of only 40% per year. Thus, developments in the retail market indicate a gradual squeezing out of independent MVNOs.

If the development of demand and supply of data is viewed from the perspective of the last three years, a significant deterioration of the position of independent MVNOs is evident, especially on the wholesale market. Independent MVNOs have been able to increase their data capacity through the wholesale market at an average rate of only 48 % per year, while MVNOs linked with MNOs by ownership have been able to increase their data capacity through the wholesale market at an average rate of 98 % per year.

4.2 Price development on the wholesale market

Section C.6 of this document also describes the price development on the retail and wholesale markets. For the purposes of the market power assessment, the conclusions of that chapter apply, i.e. that, in terms of price dynamics in the wholesale and retail mobile markets and their comparison with each other, it can be concluded that prices per unit of voice service have fallen faster in the retail market than in the wholesale market. As regards SMS, the evolution of prices on the retail and wholesale markets provides sufficient scope for value added for all players on the supply side of the retail market. However, the evolution of the wholesale data price is a concern as the price is falling quite significantly on the retail market but stagnating on the wholesale market at a level an order of magnitude higher than the current retail price, which has a significant impact on the competitive position of market players in terms of the attractiveness of their products to end customers. At the same time, the analysis shows that virtual operators are not able to replicate the offers of network operators, especially for products above CZK 300, i.e. for products with higher data volumes.

4.3 Other criteria

In addition to the assessment of market shares and their evolution, other criteria were assessed on the basis of which it is possible to assess the potential independent significant market power of entities operating on the wholesale mobile market.

In terms of the overall size of the companies, measured by criteria such as the number of customers (or SIM cards), revenues from mobile services sold, vertical integration, other service offerings (fixed, TV, etc.), radio frequencies used (for providing mobile networks), financial strength, number of employees, it can be stated that all three network operators - i.e. T-Mobile, O2 and Vodafone are at a comparable level and it cannot be said that any of them has disproportionately greater advantages over their competitors, such as greater returns on scale and breadth of range, greater network capacity, greater purchasing power, etc.

At the same time, all three network operators have comparable, not easily duplicated infrastructure necessary for the provision of mobile services that is not available to competitors (e.g. MVNEs) on the wholesale market. The assessment of each network operator's mobile network also fails to identify any technological advantage or superiority that would give it preferential or exclusive access to advanced technologies to which other operators would not have access. This is also evidenced by the comparable structure of investment costs incurred by individual network operators over time, as shown in the following graph.

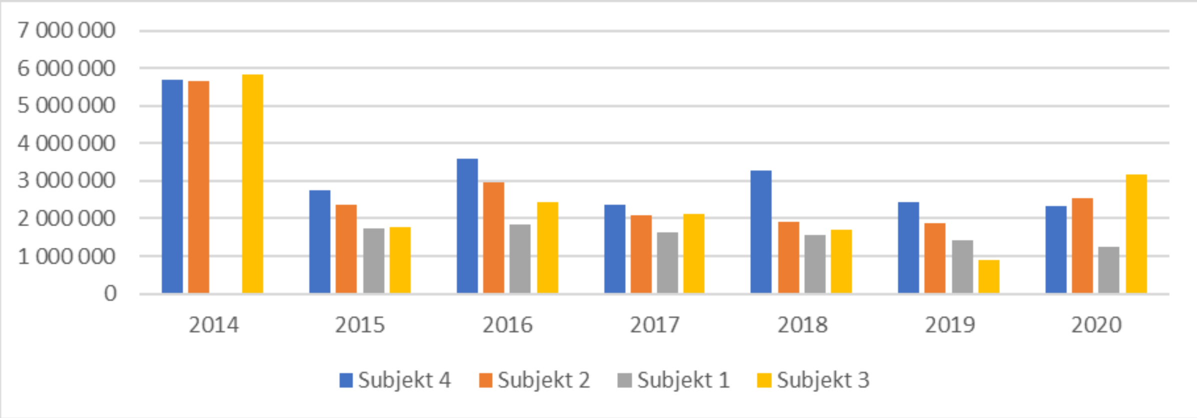


Chart 101: Total investment in mobile network assets and electronic communications services (in thousands CZK, VAT excluded)[89]
Source.

Following an assessment of the criteria for the assessment of independent significant market power, no such entity was found to be present on the wholesale market for mobile services in the Czech Republic that would individually be in a position to behave to a significant extent independently of other competitors or customers and consumers.

4.3.1 Declining elasticity of the cost structure of MNOs and the resulting lower incentive to provide wholesale services

Based on an analysis of the financial statements of MNOs in the Czech Republic, but also in other countries, it is possible to conclude that the elasticity of costs with respect to the change in the number of customers served is very low for all types of costs, except for the cost of commissions to sales channels. This means that MNOs are not able to reduce costs in these categories flexibly if they do not achieve the planned business results. This is also true for marketing costs in the retail market, as if these are reduced, the MNO reduces its 'visibility' in the market and thus jeopardises its future business performance. In the event that business results exceed the plan, given the economies of scale on the part of the MNO, these costs (with the exception of sales channel commissions) do not increase substantially. It can therefore be concluded that these types of costs are more fixed in nature.

Given the fact that the cost of the sales channel represents 2 to 6 times the monthly revenue (ARPU) of an acquirer or retention customer in the Czech market[90] , MNOs are forced to look for cost savings in these activities given the size of their customer base in the retail market. The underlying trend of this shift is a move to digital (online, mobile apps) sales and retention and customer care channels and the associated reduction in the cost of customer activities[91] .

Given the above, then, in the illustrative case of a retail customer switching from an MNO to an MVNO using the wholesale services of the same MNO, the MNO would lose some margin because the MNO would not be able to compensate for the loss of margin in the retail market by reducing costs in a linear fashion.

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[89] CETIN, a.s., although it is not an MNO, was included in the overview because it significantly participates in the operation of the mobile network of O2 Czech Republic, a.s.
[90] Source: survey IstroAnalytica Advisory s.r.o.
[91]For example, "Higher satisfaction at lower cost: digitizing customer care", McKinsey 2016: https://www.mckinsey.com/~/media/mckinsey/industries/technology%20media%20and%20telecommunications/telecommunications/our%20insights/lessons%20from%20digital%20telcos%20five%20initiatives%20to%20improve%20business%20performance/higher_satisfaction_at_lower_costs_digitizing_customer_care.pdf

Conclusion on (individual) significant market power:

On the basis of the analysis, no individual significant market power was found to exist for any of the MNOs on the wholesale market.

When assessing the situation in the wholesale market as a whole, i.e. including the self-supply of network operators, it is clear that none of the incumbent providers individually achieves a market share that would allow it to behave to a significant extent independently of competitors, customers and consumers. When assessing the market situation on the basis of market shares excluding self-supply by network operators, it is apparent that the significant provider of services at the wholesale level at the end of 2020 is O2 Czech Republic a.s., whose market share in terms of wholesale SIM cards, minutes sold, SMS and mobile data is between approximately 65 % and 86 %. However, these relatively high figures are only indicative of a small part of the market (corresponding to the aggregate market share of virtual operators), as they do not include the aforementioned self-supply of network operators.

The stability of market shares of individual providers was also assessed. The above charts show that, although the market shares in terms of wholesale minutes, SMS and data generally vary over time for individual providers, it is also clear that the dynamics of wholesale SIM card sales in terms of market shares are relatively small and that shifts between providers do not indicate developed competition. The market share of MVNEs, even in terms of its evolution, is negligible and in the order of tenths of a percent.

5. Assessment of joint significant market power

Having found no single entity with significant market power in the Czech Republic on the defined wholesale market for mobile services, the market was analysed for possible joint significant market power consisting of multiple entities, namely the joint significant market power of all three network operators - O2, T-Mobile and Vodafone.

A prerequisite for the examination of joint significant market power is that several undertakings which are legally and economically independent of each other may have joint significant market power, provided that they present themselves or co-operate in a particular market as a collective entity from an economic point of view.

The existence of an agreement or other legal relationship is not necessary for the finding of joint significant market power. Such a finding may be based on other criteria and depends on an economic assessment, in particular an assessment of the market structure. In order to confirm or refute the existence of SMP (i.e. the existence of tacit collusion), it is necessary to apply the economic test laid down by the European Court of Justice (ECJ), which is based on a test of the three market characteristics:

- Transparency;
- Sustainability;
- External factors.

Assessment of the European Commission and BEREC: The CTU first notes that the Commission stated in its decision of 17 February 2022 that in its view the so-called Airtours criteria for demonstrating SMP are not met. The CTU has added additional explanation and clarification to some of the Commission's comments, and in particular game theory, which again led it to conclude that there is tacit collusion between the 3 MNOs in the market. Thus, the CTU considers that the Commission's reservation to the conditions for tacit collusion and the demonstration of SMP for the purposes of this analysis has been dropped. For further details on the Commission's individual comments, the CTU refers to the summary table at the end of Section C.0.

5.1 Market Eligibility for Tacit Collusion and Market Transparency

First, it was assessed whether the defined market for mobile services in the Czech Republic is eligible for tacit collusion or is sufficiently transparent. For this purpose, the following criteria were assessed.

The essence of this criterion is that each member participating in the colloquium must be able to know the behaviour of the other members and to determine whether the other participating members have adopted the same strategy and are applying it. Therefore, there must be sufficient market transparency to be able to assess the way in which competitors' market behaviour is evolving with sufficient accuracy and speed.

This has also been demonstrated through the application of game theory in Section C.7 of this document.

Existence of a focal point

At this point, the possible existence of at least one focal point (parameter) on the basis of which the actors involved in a tacit collision could orient and coordinate their actions without explicitly agreeing was evaluated. Thus, the focal point must be sufficiently significant for the common strategy to be able to restrict or otherwise affect effective competition on the basis of it, and at the same time it must be sufficiently simple and easily identifiable.

The possible existence of a focal point was assessed, inter alia, in the related retail market.

The CTU considers that there is at least one such focal point in the retail market for mobile services in the Czech Republic, which is the price of mobile services, which also reflects the price of mobile services on the wholesale market. Although it can be assumed that the individual network operators do not know each other's wholesale offers, it is clear that they can monitor them indirectly through the retail market for mobile services in the offers of individual operators - both virtual operators and other network operators offering retail services on a self-supply basis.

The price of mobile services on the retail market was also found to be a focal point in view of the fact that the deviation from coordinated behaviour (in the context of tacit collusion) can be realised, in addition to wholesale sales to virtual operators (at an uncoordinated price), also by the behaviour of MNOs themselves on the retail market, where they can offer mobile services themselves at a price that other competitors would already assess as a deviation from a coordinated strategy.

The focal point, i.e. the price of mobile services, is also influenced by the number of SIM cards of the tacit collocation participant or its market share on the retail market. Network operators have the possibility to monitor the number of SIM cards both through the National

Reference Database of ported numbers in the mobile environment, in which they can monitor in detail and more or less directly the transfer of telephone numbers between operators, and through the quarterly and annual reports of the operators themselves. At the same time, however, it must be borne in mind that the actual transfer of customers between operators, or changes in market shares, does not give the MNOs a specific reason for the change, which must then be analysed in the retail market through the offers currently available to customers.

The fact that there are a greater number of tariffs offered on the market does not mean that MNOs do not have an overview of these tariffs and cannot navigate them very well. Although there are multiple tariffs and packages with different parameters on the market, it is quite clear that multinationals with thousands of employees and teams dedicated to monitoring the market and competition are able to monitor the market situation quite easily. Although there are different tariffs and packages on the market, they are always a combination of data, voice and SMS, data speed, FUP and price, i.e. homogeneous services. The simplicity and identifiability of retail price monitoring is made possible by the comparison tool operated by the CTU under its statutory obligation under Section 66a, which evaluates individual tariffs and ranks them according to the retail price according to the user's consumption. In addition to the price, the comparison tool also contains accompanying parameters that add information on the characteristics of the tariff. All service providers are required to enter up-to-date information on mobile service offers to consumers in this tool. Non-public retention offers by MNOs also exist in the market, but their representation is insignificant and decreasing over time.

Last but not least, the CTU adds that MNOs themselves present their 'flagship' products in the form of television, print or other advertisements, and these products serve to facilitate orientation in the mass offers of MNOs. The CTU considers that retail prices act as a focal point around which entities with significant joint market power are able to coordinate. On the basis of the above, the CTO considers that the market under examination is sufficiently transparent for MNOs in terms of the retail prices applied to monitor and maintain a common strategy.

Non-public prices, which are on the decline in the Czech Republic, are not relevant for the purpose of defining the focal point. Minority non-public offers of individual operators are not only irrelevant due to their low representation, but also these offers are publicly known. Therefore, instead of the term "non-public" offer, the term "non-publicly communicated" offer is more appropriate. In principle, there are 2 types of "non-public" offers:

1. The offer that the operator has in its published price list is not actively promoted by the operator through marketing and sales channels, but can be easily traced, for example, on the operator's sales channel website; or

2. An offer that the operator does not have in its published price list and cannot be found by a potential customer on any of the operator's marketing and sales channels.

Information on both types of offers can be commonly found, e.g. https://mobilenet.cz/clanky/t-mobile-nabizi-novy-podpultovy-tarif-za-375-kc-vsak-nenadchne-41868, http://zpravy24.online/2022/02/vodafone-nabizi-podpultovy-tarif-jen-za-297-kc-mesicne/, or https://mojeretence.ictx.cz/. Therefore, 'non-public' offers are not a barrier to retail market transparency, even in terms of availability of information about them.

MVNOs hardly offer non-public prices in the market. At the same time, according to the statistics on the number of ported numbers, switching between MNOs (probably on the basis of non-public offers) occurs at a relatively low rate and the evolution of MNO market shares shows that there is no systematic shift of customers to one of the MNOs that would offer such attractive non-public offers and to such an extent that this would be reflected in the market share of one of the MNOs.

The CTU further states that coordination between MNOs on the basis of list prices has historically occurred several times. It can be expected that a possible fundamental change in the behaviour of an MNO in the wholesale market (e.g. if one of the MNOs in the wholesale market offered a favourable offer to MVNOs on the basis of which MVNOs could replicate the MNOs' offers, including tariffs with large or unlimited data packages) would necessarily have to be reflected in the retail market, in particular in the retail price level.

The CTU therefore considers that bundle prices (prices for mobile tariffs incl. voice, SMS, data services) are a focal point that makes the market transparent and eligible for tacit collusion. This is evidenced not least by the historical behaviour of MNOs, where it was the change in retail list prices of selected tariffs that was the main focal point by which MNOs oriented themselves.

The parameter that was considered as a possible additional focal point is the quality of service provided, specifically the parametric limitation of the maximum transmission speed. Monitoring of this parameter would again be possible through retail offers by virtual operators. However, in view of the low preference of customers for this parameter compared to the price of service parameter, data rate as a focal point has not been evaluated. The irrelevance of this parameter is also evident from the operators themselves, as they do not use the speed of the mobile service as a differentiator for most tariffs. The CTU does not rule out the importance of this parameter in the future, but does not expect this to be the case at the time defined in this analysis.

In terms of the parameters applied at the same time relating to the quality of the service provided (e.g. upload, delay, jitter, or reliability of call set-up, call set-up time, etc.), these qualitative indicators cannot be considered capable of significantly influencing the decision-making of end-users and thus potentially competition on the market. Moreover, these parameters are not usually included in published price lists or terms and conditions of the services offered, which is an obstacle to their easy monitoring, and are thus unlikely to serve as a focal point.

In addition, the value of FUP limits in MNOs' offers for mobile data and mobile internet tariffs was considered as a focal point, but the price of mobile services as mentioned above was assessed as a more appropriate parameter. This is firstly because the price (and the recalculated unit price) already reflects the volume of units purchased (i.e. the FUP limit for mobile data services), and secondly because of the considerable range of FUP limits applied by MNOs, where offers containing only tens or hundreds of MB can be found on the retail market, as well as offers containing unlimited data. Thus, setting a threshold that would be indicative for MNOs in terms of monitoring deviation from a coordinated strategy would be difficult to establish and therefore unlikely.

On the basis of the above mentioned, the existence of a focal point - the price of mobile services in the retail market - was found to be a basis on which MNOs could

orient and coordinate their behaviour in setting conditions in the wholesale market without explicitly agreeing. That sub-criterion therefore indicates the eligibility of the market for tacit collusion, as it found the existence of a focal point as well as sufficient market transparency.

Symmetrical position

In this criterion, it was assessed whether the position of the undertakings concerned in relation to the relevant market is symmetrical, as this is an indication that a joint strategy based on tacit collusion is then easier for the undertakings concerned. The assessment of the symmetrical position of the parties includes an evaluation of the following criteria.

Within the meaning of paragraph 81 of the Guidelines, the demonstration of the achievement of a minimum level of market share symmetry must be assessed in the light of national circumstances and the relevant market, taking into account the need to promote efficient entry. The Annex to Commission Recommendation 2009/396/EC of 7 May 2009 on the regulation of fixed and mobile termination rates in the EU, to which paragraph 81 of the Guidelines refers, provides that a range of 20 % of market share is recommended in determining the minimum effective range for the purposes of taking market shares into account.[92]

The calculation of market shares from a quantitative perspective (total number of active SIM cards) and from a qualitative perspective (total revenues from mobile services) showed that T-Mobile Czech Republic a. s. achieves the maximum individual shares in both aspects. Furthermore, this calculation has shown that, despite the fact that there are currently 139 players on the supply side of the mobile services market, only three players have a market share above 20 % and only two players in terms of the number of active SIM cards and one player in terms of total revenues have a market share above 30 %. Conversely, in terms of total revenues, up to 136 operators have a cumulative market share of 6% and up to 133 operators have a cumulative market share of 2%. In terms of total active SIM cards, 136 operators have an 8% market share and 133 operators have a 4% market share.

On the basis of these calculations, the symmetric market share of[93] , i.e. the market share corresponding to 1 player in the market if all players on the supply side of the mobile market had the same share, is 0.72%.

The recommended range of symmetry of market shares on the market for mobile services in the Czech Republic, i.e. the difference between the actual shares achieved and the symmetric market share of 20%, is exceeded by 3 entities, namely T-Mobile Czech Republic, a.s., O2 Czech Republic, a.s. and Vodafone Czech Republic, a.s., in both aggregated indicators.

The structure of the market for mobile services was further assessed by means of the Herfindahl index, an ancillary indicator used in competition to measure the market concentration of the sector under assessment. It is a tool for measuring competition in a

[92] See chap. Market shares and their development on the wholesale market.
[93] BREZINA, I.; ORŠULOVA, A.; PEKÁR, J.: Analysis of absolute concentration of a selected industry using the Herfindahl-Hirschman index; Economic Journal; Slovak Academy of Sciences, 2009; p. 85; Available online at: https://www.sav.sk/journals/uploads/0920140601%2009%20Brezina%20a%20kol.pdf.

particular sector and is defined as the sum of the squares of the market shares of all firms in the market.

	2014	2015	2016	2017	2018	2019	2020
Herfindahl index of the number of active SIM cards	0,309	0,302	0,300	0,301	0,299	0,297	0,296
Herfindahl Voice Services Index	0,315	0,306	0,301	0,303	0,304	0,302	0,301
Herfindahl index of SMS services	0,315	0,302	0,303	0,306	0,302	0,297	0,294
Herfindahl Data Services Index	0,317	0,312	0,302	0,311	0,314	0,321	0,338
Herfindahl index by data revenue for mobile tariffs with ad hoc data	0,296	0,330	0,377	0,433	0,451	0,386	0,369
Herfindahl index by mobile internet data revenues	0,436	0,409	0,410	0,379	0,442	0,387	0,371
Herfindahl index by data revenue for mobile tariffs with flat-rate data	0,328	0,332	0,328	0,336	0,318	0,317	0,327

Table 10: Herfindahl index for the relevant retail market for mobile services
Source: the CTU, 2022

The calculation of the Herfindahl index on the basis of three different market power indicators has clearly shown that in each year and in each market indicator under review it takes on a value above 0.18, which means that the relevant retail market has reached a very high market concentration since at least 2014. In addition, market concentration increases in particular in the case of data services and in the case of data revenues for mobile tariffs with ad hoc data.

In terms of the market share of individual network operators on the overall mobile services market, represented by the total number of SIM cards, it is apparent that there have been no significant changes in market shares, the market shares of the three network operators, measured by the number of SIM cards sold on the wholesale market (including self-supply), have not changed significantly over the past few years and the individual network operators have broadly maintained their market share.

The same can be seen in terms of market shares by mobile revenue - i.e. individual network operators roughly maintain their market share and this does not change significantly over time.

In this context, the CTU also evaluated market shares only on the wholesale market (without self-supply). However, as this is an almost negligible part of the market in terms of SIM cards sold on the wholesale market over a period of several years, the CTU does not consider this view to be sufficiently indicative of the position of individual MNOs on the defined wholesale market for mobile services.

As part of its assessment of the symmetrical position of individual MNOs on the mobile market, the CTU also considered the possible effects of mobile network sharing in the Czech Republic, in which two MNOs have a sharing agreement and one MNO does not participate in mobile network sharing. However, in view of the significant profitability of all MNOs (i.e. including the MNO that does not participate in sharing) in the Czech market, as discussed in Section 2.3 High profits of network operators in the Czech Republic at the expense of consumers, the CTU does not consider the potential cost savings of two MNOs sharing the radio access part of the mobile network to be a factor undermining the incentive and ability of the non-sharing MNO to follow the common strategy of the remaining MNOs regarding conditions (including pricing) in the wholesale market.

In relation to the time definition of this analysis and the proposed measures, the CTU further considers that the market position of the individual MNOs can be found to be sufficiently similar from the perspective of symmetry. The timeframe of this analysis covers the period up to 31 December 2024 and the CTU is convinced, based on its knowledge and market information, that no new entrants will enter the mobile market (retail and wholesale) within this period that could change the current market situation. The possible entry of at least one of the three entities (Nordic Telecom, Centronet/Nej.cz and PODA) into the mobile market on the basis of O2's national roaming commitment resulting from the last 5G frequency auction in 2020 is highly unlikely in the period. The possible effects of the auction in question cannot therefore be considered as a factor that would have an impact on the market conditions under assessment. Even taking into account O2's commitment from the last auction in question, O2's position can be considered sufficiently similar and symmetrical with the other two MNOs in the period considered. Thus, O2's incentive to follow a common strategy with the other two MNOs with respect to the defined mobile market is not affected during this limited period. Given the expected date of possible entry of a new operator on the basis of O2's national roaming entitlement, which is estimated in the optimistic scenario to be towards the end of 2024, O2's position and behaviour during the period will not be affected by the tools available to the CTU to enforce the obligation.

As all three network operators have been allocated and use similar spectrum bands that will remain available for a defined period, they have the same opportunities to develop similar service offerings in terms of scope, quality and for the same customer segments. In this respect, they are also in a symmetrical position.

On the basis of the above assessment of market shares (the market shares of the MNOs are sufficiently similar), their evolution over time (market shares are stable) and other factors, it can be concluded that this sub-criterion is in favour of a symmetric position and thus indicates the market's eligibility for tacit collusion.

Vertical integration

This criterion assessed the level of the supply chain at which the entities concerned (T-Mobile, O2 and Vodafone) are located. In general, a sustainable common strategy, and possibly joint significant market power, between competitors is generally indicated by the fact that the entities concerned are at the same level of the supply chain, since if the entities are in the same position as a vertically integrated operator, they are also in the same position to control their costs and capacity.

On the basis of the available information, it is possible to state that the companies in question - T-Mobile, O2 and Vodafone - operate at the same level of the supply chain, i.e. on both the mobile retail and wholesale markets in the Czech Republic. It can therefore be concluded that these mobile network operators are in the same position as vertically integrated network operators.

From the point of view of the assessment of vertical integration, it was not assessed as material that O2 uses an outsourced mobile network after the voluntary separation was completed on 1 June 2015, whereby CETIN was created by a spin-off from O2, to which ownership of the data centres, the fixed public communications network and the physical infrastructure of the public mobile communications network, such as antenna masts, transmission systems including associated assets, excluding mobile exchanges, was transferred. The frequency allocations in the 450, 700, 800, 900, 1800, 2100 and 2600 MHz bands for the operation of mobile networks and the resulting individual authorisations continued to be used by O2. As the above frequency allocations and mobile exchanges remain in O2's ownership, O2 is still the operator of the public mobile communications network. O2 also enters into wholesale contractual relationships with MVNOs and in this sense the wholesale mobile market is not affected by the voluntary separation. At the same time, it is clear that all MNOs have roughly the same allocation of nationwide radio frequencies currently used and suitable for the provision of mobile services (both at wholesale and retail level).

Taking into account the fact that all three MNOs operate on the market as vertically integrated operators (i.e. they operate both at the retail and wholesale level of the market at the same level of the supply chain), it can be concluded that this sub-criterion indicates the eligibility of the market for tacit collusion.

Homogeneity of services

In assessing possible tacit collusion, a comparison was also made as to whether the undertakings concerned (T-Mobile Czech Republic a.s., O2 Czech Republic a.s. and Vodafone Czech Republic a.s.) offer similar products and services. In this case, the main issue is the homogeneity of the product/service in terms of use by the end user and, consequently, its eligibility for monitoring on the basis of a single focal point.

Service homogeneity itself is examined as one of the criteria in assessing market eligibility for tacit collusion. In assessing the homogeneity of services, the technical parameters of the services, their availability, the way they are used, including terminal equipment, and last but not least the price of the services and their structure are evaluated.

Having defined the retail market (see chapter Market definition and assessment for analysis purposes), the offers of basic mobile services, i.e. mobile voice calls, SMS services and mobile data services, of the operators T-Mobile Czech Republic a.s., O2 Czech Republic a.s. and Vodafone Czech Republic a.s. and all virtual operators were compared, it can be concluded that in terms of their use by end-customers they show a high degree of similarity in terms of technical parameters, availability, coverage and other important parameters.

The assessment of the above criteria takes into account the fact that network operators offer the same portfolio of basic services, including roaming and international calls, in both post-paid and pre-paid formats. They offer these services to both residential and business customers. In addition, they offer two identical options for subscription contracts - either for an indefinite period or for a fixed period (24 months), with fixed-term contracts being priced at a premium compared to contracts concluded for an indefinite period. Network operators also have a comparable retail sales network, implemented through their own stores and external partners (e.g. franchising).

From the point of view of the assessment of price as one of the key parameters - both on the supply side and on the demand side - it can be stated that the retail offers of the above services are to some extent homogeneous. On the other hand, the different composition of the different offers (tariffs) and the way they are charged for reduces price homogeneity. Nevertheless, the user-defined consumption-based price (and quality) comparison tool developed by the CTU this year (i.e. 2021) strengthens price transparency and comparability.

The fact that there are a greater number of tariffs offered on the market does not mean that MNOs do not have an overview of these tariffs and cannot navigate them very well. Although there are multiple tariffs and packages with different parameters on the market, it is quite clear that multinationals with thousands of employees and teams dedicated to monitoring the market and competition are able to monitor the market situation quite easily. Although there are different tariffs and packages on the market, they are always a combination of data, voice and SMS, data speed, FUP and price, i.e. homogeneous services.

Overall, the CTU assesses the compared retail services as substantially homogeneous - in particular in terms of technical parameters, availability of these services and the way they are used (including compatibility of terminal equipment across mobile networks in the Czech Republic) and prices. This sub-criterion thus suggests that the market is capable of tacit collusion.

Advantage of tacit collision in terms of long-term profit

Economic theory itself suggests that it is economically more advantageous for competitors in an oligopolistic market to use a coordinated strategy, whether in contractual or tacit form, because they achieve higher prices (and thus sales and revenues) than if they were competing on price.

The analysis therefore assessed whether or not coordinated tacit collusion would be beneficial to the network operators T-Mobile, O2 and Vodafone in the long term.

The profitability of the hypothetical tacit collusion in terms of long-term profit could have been model-tested in the mobile services market in the Czech Republic in the past, namely since 2013.

The hypothetical tacit collision, whereby the network operators maintain the same price level for comparable services for individual pragmatic reasons, may continue at present, as this would be more profitable for the parties involved than attempting to compete significantly on price and thus increase their market share. This is confirmed by the game theory analysis of the benefits of tacit collusion (see lines 820 to 1071).

As the cases of price convergence (see below) show, when the company that is the first to reduce prices or introduce new tariffs (such as O2 in 2013), due to the immediate reaction of competitors, practically nothing is gained (market shares remain stable) and the only effect is to stabilize the offer at the new level.

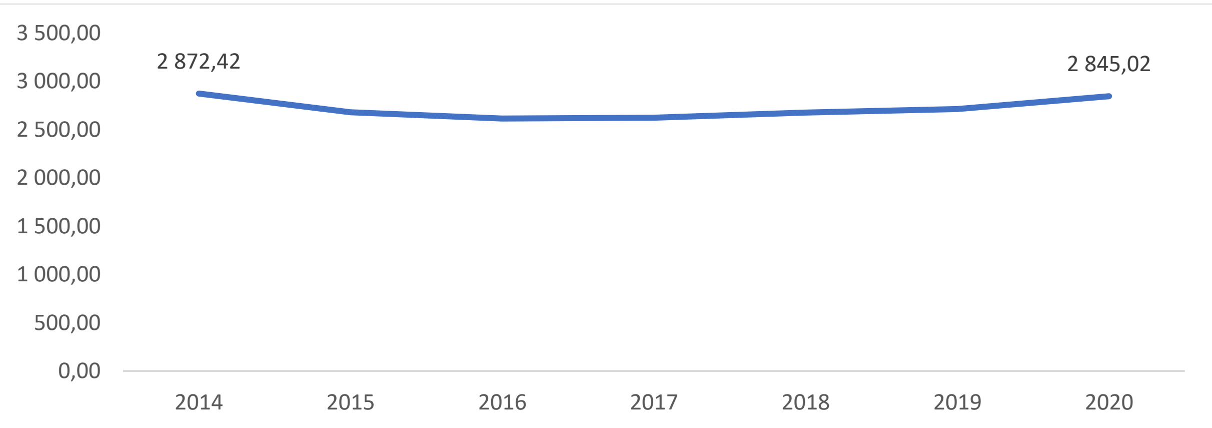

Chart 102: Revenue from mobile services per active SIM card in CZK excluding VAT
Source: analysis by CTU

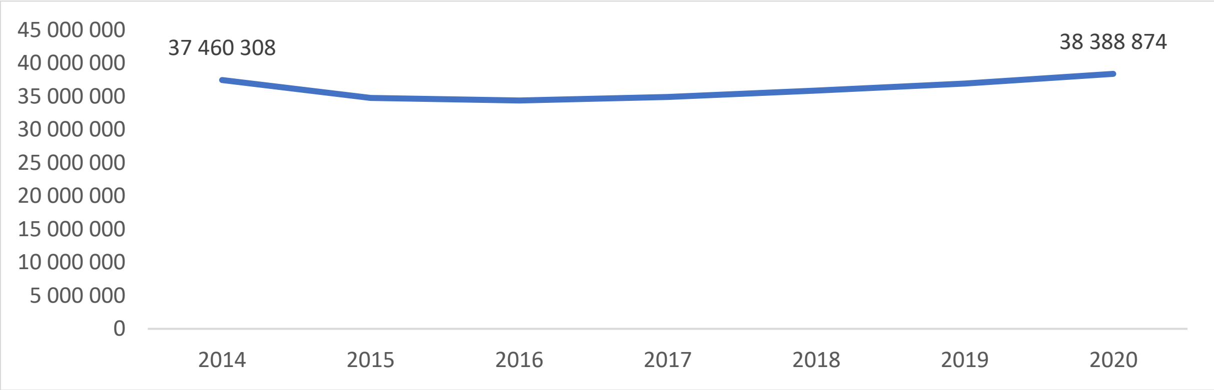

Chart 103: Revenues from mobile services of MNOs in the Czech Republic in thous. CZK without VAT
Source: analysis by CTU

From the above charts, it can be observed that after the introduction of unlimited voice and SMS tariffs in the Czech Republic at the turn of 2013/2014, which was also the year when the first MVNOs started to enter the market, there was both a decline in total revenues for MNOs and a decline in the average revenue per SIM card. These facts were also related to the auction of frequencies for 4G networks, in which a band was set aside for a potential new MNO. As the public consultation on the draft analysis in 2021 and the comments of the MNOs also showed, this decrease was related to the potential entry of a new MNO into the market. However, further developments between 2016 and 2020 show that MNOs have been able, over time, to operate in the market at similar or even higher levels of revenue and average revenue per SIM as in 2014. In the opinion of the CTU, the above illustrates and demonstrates the benefits of tacit collusion and the motivation of individual MNOs to participate in a common strategy and not compete with each other in the mobile market - both at the retail and wholesale level. Without significant peer competitive pressures, MNOs are able to increase their total revenues and unit revenues per customer over the long term.

In terms of the overall market eligibility for tacit collusion, it can be concluded that, according to its overall assessment, the market for mobile services in the Czech Republic shows eligibility for tacit collusion. In assessing the market's capacity for tacit collusion, the preliminary assessment took into account, in particular, the identification of a focal point, the sufficiently symmetric position of the individual competitors as measured by market shares in the defined market which do not show significant changes over time, the vertical integration of all the main competitors in the mobile market, the prevailing homogeneity of services and also the perceived advantage of following a common strategy.

Price policy convergence

Market transparency also results from the pricing policy of MNOs and their mutual behaviour on the retail market, including their real ability to adapt to changes in offers (including prices) of other operators on the market.

In terms of retail price tariffs, a long-term trend can be observed on the Czech market, whereby a change in the tariff structure of one of the existing mobile operators results in a close mutual takeover of both the structure and the level of new retail prices by the remaining two operators within a very short period of time. This situation has occurred several times in recent years, most extremely in the following cases:

- In April 2013, O2 - followed within 2 months by the other two operators - launched new and at that time revolutionary tariffs with unlimited calls, SMS and a mobile internet package. The starter tariff with unlimited calls and SMS to its own network was offered by all three existing operators for the same price of CZK 249, the middle package with unlimited SMS and minutes to other networks (120/120/130 minutes) and a comparable mobile internet package (200/150/150 MB) was offered by all operators for the same price of CZK 499 and the highest tariff with unlimited calls and SMS to all networks and a mobile internet package (1.5/1/1.5 GB) for CZK 749/749/699 (T-Mobile/O2/Vodafone). These tariffs remained virtually unchanged until 2017.

- In 2017, there was a slight differentiation of tariffs and an increase in data packages to 4/6/7 GB for the price of CZK 799/849/777 (T-Mobile/O2/Vodafone), or to 16/20/20+2 GB for CZK 1499/1699/1777.
- In the second half of 2019, operators launched tariff offers with unlimited mobile internet (including unlimited calls and SMS) in a 3-month period, either with a limit of CZK 1,075/1099/1099 (T-Mobile/O2/Vodafone) or without a limit of CZK 1,575/1599/1799.

Price competition is therefore suppressed in the market and all three mobile operators have the same pricing strategy and maintain very close price levels for key services. This market situation has been in place for at least the last 7 years.

Strong price alignments for mobile services over a long period of time has not been demonstrated either by market players with market shares above 20 % or by other market players on the supply side of the mobile market. However, this is only a subsidiary criterion if the main criterion could not be demonstrated.

Conclusion from the examination of the first criterion for the assessment of joint significant market power

According to the overall assessment, the mobile services market in the Czech Republic is eligible for tacit collusion. In assessing the market's capability for tacit collusion, it is necessary to take into account in particular the finding of a focal point, the sufficiently symmetric position of individual competitors as measured by market shares on the defined market which do not show significant changes over time, the vertical integration of all main competitors on the mobile market, the prevailing homogeneity of services and also the perceived advantage of following a common strategy. The transparency of the market was also demonstrated by several instances of immediate reactions of competitors to changes in the pricing policies of other competitors.

The conclusions of the CTU were also confirmed by BEREC in its opinion, where it stated that "market transparency may in principle be sufficient to meet the Airtours criteria". This is particularly true in the defined time period until the end of 2024, when the CTU did not find the impact of the 5G auction commitments relevant.

5.2 Economic test criterion - sustainability

The essence of this criterion is that the situation of tacit collusion lasts for a certain period of time, which means that the actors involved in the tacit collusion have an incentive not to deviate from the common policy in the market. All can only benefit if they all exercise parallel behaviour. The concept of punitive measures in response to behaviour that deviates from the common policy is thus inherent in this situation. In order for a situation of tacit collusion to be sustainable, there must be adequate disincentives to ensure that the incentive not to deviate from the common policy persists, meaning that a highly competitive action by one participant aimed at increasing its market share would provoke the same reaction from the others, so that its initiative would not bring it any benefits.

The specific test of this criterion is to demonstrate the existence of a credible threat of punitive measures that deters deviant behaviour.

The hypothetical retaliatory mechanism, as mentioned above for price convergence, has been demonstrated in the Czech mobile services market conditions in 2013, 2017 and 2019 when there were immediate reactions from network operators to a price change after an unexpected and significant tariff change by one of the MNOs. These cases, which have shown in practice that a possible deviation from a common strategy can be immediately punished by an immediate reaction from other players, and thus not lead to a market advantage for the one who deviated from the collusive strategy, can still act as an effective preventive retaliatory mechanism for the affected players to take into account. In this context, it can be assumed that there may not have been mere price following, where there was only price matching, and the customer may otherwise have benefited from non-price competition (e.g. from a different mix of services in the same price offer).

Price reductions triggered by one operator and followed by other operators may be considered a standard element of competition in the market, and therefore it is necessary to examine the circumstances under which the price reductions occur and whether the price reductions and changes in supply are not taking place under the threat of possible regulation or an impending auction and the related setting of conditions associated with the allocation of tendered frequencies. In such a case, it makes no sense to examine the retaliation mechanism.

Assessing the existence of a retaliatory mechanism makes sense if the deviating operator is not driven to do so by the threat of regulation, but has a genuine interest in gaining a larger market share and thus profits at the expense of its competitors through more intense competition. The motivation for this behaviour of the deviating operator is influenced by the expected reaction of other competitors. The assessment of this expected reaction of other competitors is likely to be influenced not only by the magnitude of the change (tariffs) but also, and above all, by the subjective assessment on the part of the deviating operator.

According to the European Commission Guidelines on the assessment of the existence of significant market power, the most effective deterrent is one that does not have to be used. The mere existence of an effective deterrent mechanism is in principle sufficient, resulting in a static market with no significant dynamic changes and thus no market competition. This does not necessarily mean that there is no price change in such a market. Price reductions may be triggered by the threat of regulation as mentioned above and may not be linked to market competition.

Although the application of the above price reductions has not resulted in prices returning to their original level, this does not mean that such price reductions can automatically be regarded as a standard element of competition. As repeatedly noted in this analysis, mobile prices in the Czech Republic have long been among the highest in the EU. At the same time, mobile prices have been declining over the long term. If the participants in a tacit collusion, after applying the price reductions, were to suddenly raise prices to their previous level, the price of mobile services would be so high in the EU benchmark that it would clearly give rise to suspicions not only of tacit collusion but also potentially of a competition law infringement. The common strategy of keeping prices at reduced levels, especially when these are the highest prices in terms of international comparisons, is a logical strategy for the tacit collusion participants. Moreover, a gradual increase in prices by one of the participants in the tacit collusion could lead to customer churn by that participant and, in turn, to customer churn by the other two participants. Finally, the CTU notes that the revenues of the tacit collusion participants are clearly increasing in absolute terms and in average revenues per SIM despite the price reductions, which further supports the conclusions on tacit collusion. Should any MNO decide to change its strategy in the wholesale market and allow MVNOs onto its network to a relevant extent, at pricing conditions that would allow MVNOs to compete on price with MNO offerings in the retail market in all the different tariff categories, from cheap to expensive ones with large data packages and high added value, there is no doubt that by lowering retail prices (the focal point), other MNOs could react very effectively to such a departure from the common strategy, as they would force the deviating MNOs to They would make such a move almost or completely unprofitable for both the MNO and the deviating MNO. Indeed, this strategy was disclosed by the MNOs themselves in their comments in the public consultation, where they stated that the retail price convergence in 2013, 2017 and 2019 was a concerted response by the MNOs to an external threat that the MNOs perceived at the time in the form of a potential new operator from the auction or from market regulation. In doing so, the MNOs are *de facto* admitting that protection from potential risk is to reduce prices in the retail market as a strategy to reduce the incentive for a new player (or other external factor) to enter the market and gain market share with high margins.

In its decision of 17 February 2022 to withdraw the previous draft relevant market analysis, the European Commission questioned the plausibility of the willingness of mobile network operators to use a retaliatory mechanism in response to a deviation from a common strategy by one of the participants in the wholesale market tacit collusion. According to the European Commission, retaliation in the form of price reductions would have serious negative effects on mobile network operators and lead to lower profitability and limited growth in retail market share. However, according to the CTU, such a comment does not call into question the sustainability of the tacit collusion situation described in the analysis, as it describes in principle the behaviour of mobile network operators in a situation where there would be no actual deviation from the common strategy. In such a case, the use of a retaliation mechanism would obviously not be appropriate. The CTU does not consider that any change in the terms of the wholesale contracts, nor any reduction in wholesale prices for MVNOs, constitutes a deviation from the common strategy, after which the other participants in the collusion should resort to the use of the retaliation mechanism. It would undoubtedly be up to the individual assessment of all participants in the tacit collusion as to whether the change that has taken place has the potential to significantly alter (increase) the level of competition and therefore disrupt the tacit collusion or jeopardise the existing profitability arising from it. The CTU agrees that if a wholesale price reduction, even a theoretically significant one, were to occur by a player (MVNO) without the incentive, means or ability to significantly increase its retail market share, the impact of such a move on the level of competition would be limited and the use of a retaliatory mechanism unnecessary. Conversely, the impact of the same step on an entity

(MVNO) possessing all of the above attributes, including but not limited to the means for adequate publicity and marketing, would be significantly different and the collusive players would have no choice but to apply the retaliation mechanism in an effort to protect their market share. According to the CTU, the use of the retaliation mechanism cannot be seen as a self-inflicted act, which the operator approaches primarily with the aim of punishing the entity deviating from the tacit collusion, but as a tool serving, under the given conditions, to fulfil its own business objective, which is still profit maximisation. The use of this instrument is thus subject to the same economic cost-benefit considerations as any other business decision. In other words, its use cannot be made without knowing and assessing the impact of the amount of change in the competitive environment that has occurred in the market. Further, according to the CTU, it is not reasonable to expect that the use of a retaliatory mechanism automatically entails a return to the state of affairs to the starting point before the departure from the tacit collusion. Paradoxically, such a retaliatory mechanism would lack its deterrent effect if its use resulted in the restoration of the original state of affairs, including the original price level and profit level. Rather, it is the knowledge of a permanent and painful change for all collusive participants (resulting from a lower price level and profit level after the application of the retaliatory instrument) that has the real potential to deter collusive participants from changing their joint strategy.

The analysis of the retail market for mobile services has shown that mobile operators' product offerings are dominated by mobile internet services, which, combined with voice and SMS services, account for up to 95% of the value added achieved as measured by the share of mobile internet revenues and aggregated services for all mobile service activities. The analysis of the wholesale market for mobile services shows that the relevant supply in the wholesale market is made up of the supply of network operators, which have no market incentive to create it.

The supply of network operators in the wholesale market is therefore dependent on the volume of voice, SMS and data services that network operators are unable to place through their sales channels in the retail market with the required added value. This characteristic of wholesale supply formation has been in place since at least 2014, with no partial modification over time.

In terms of a deeper assessment of common motivation, the first factor in the common market motivation for supply creation in the wholesale market is the existence of demand, which is derived from demand in the retail market. Demand in the retail market is made up of end customers, i.e. households and business customers.

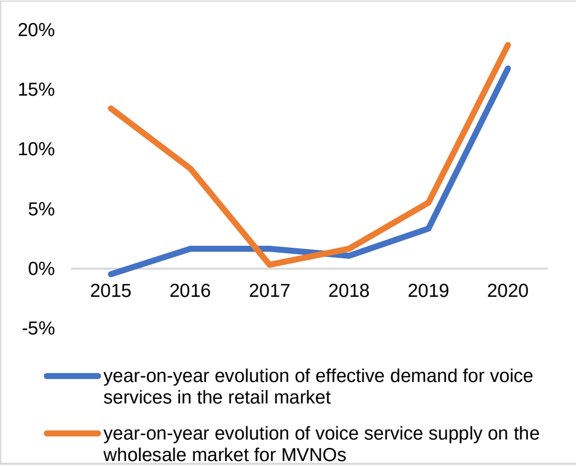

Chart 104: Evolution of the volume of voice services
Source: the CTU, 2022

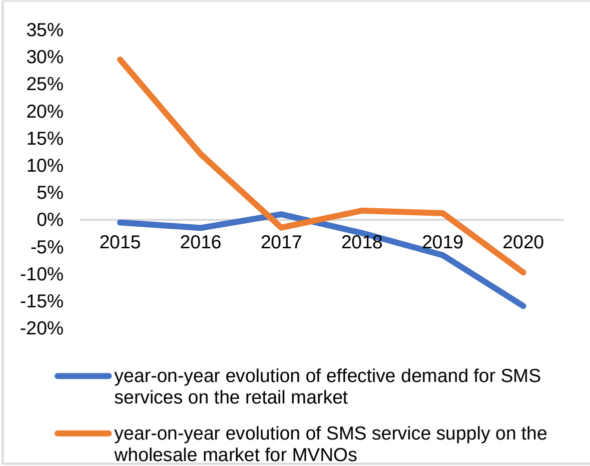

Chart 105: Evolution of SMS service volumes
Source: the CTU, 2022

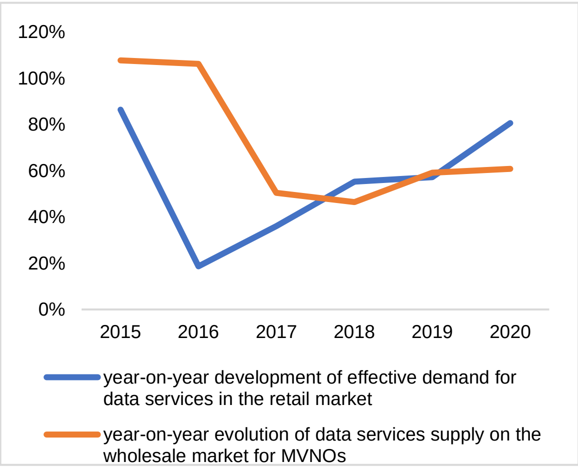

Chart 106: Evolution of data services
Source: the CTU, 2022

Demand is increasing for voice and data services and decreasing for SMS services. While the wholesale supply reflects the evolution of demand in the retail market for voice and SMS services, there is a widening of the data gap on the supply side of the wholesale market relative to the volume of demand in the retail market for data services. In examining the causes of this phenomenon, a focus on comparing network operators' retail revenues for different types of mobile services was applied to identify possible market motivations of supply-side market makers in the wholesale market.

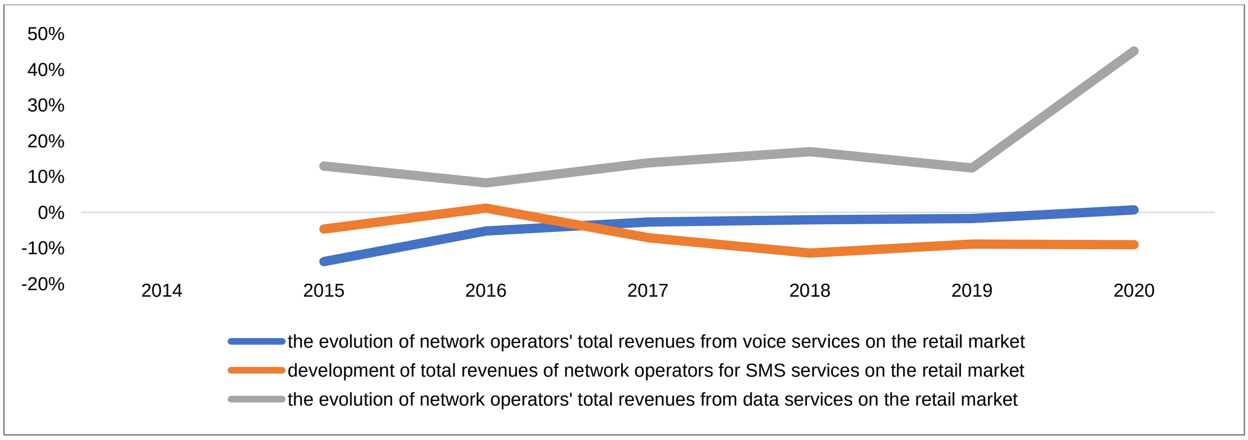

Chart 107: Comparison of total revenues by type of mobile service
Source, CTU, 2022

The above review and analysis of the relevant retail and wholesale market clearly shows that network operators are creating wholesale offerings in those types of services that are stagnating in value added, their demand is declining and the declining usage of these services does not allow them to maintain the level of economies of scale achieved in the long term. Conversely, the growth in the volume of wholesale supply by network operators is declining in data services, which are experiencing average annual revenue growth of around 60 %.

In terms of the sustainability of the tacit collusion of MNOs in the market, the time definition of this analysis and the proposed measures must also be taken into account. Furthermore, from a forward-looking perspective of this analysis, given the timeframe to 31 December 2024, the CTU considers that O2's commitment from the last frequency auction in 2020 to provide national roaming to 3 eligible bidders is unlikely to be implemented by this time. Thus, within this limited period, O2 will not be hindered by the commitment in question in its incentives and ability to maintain a common strategy with the other two MNOs in the market under review. Thus, any effects of the auction in question cannot be considered as a factor affecting the sustainability of the tacit collusion in view of the above. Thus, O2's behaviour and the sustainability of the tacit collusion will not be affected by the tools available to the CTU to enforce the obligation in question during the defined period.

Conclusion from the examination of the second criterion for the assessment of joint significant market power

Examining the fulfilment of the essence of 'sustainability' presupposes that the situation of tacit collusion lasts for a certain period of time, which means that participants in the tacit collusion have an incentive not to deviate from the common policy in the market. There must also be adequate disincentives to ensure that the incentive not to deviate from the common policy persists.

These two aspects are interlinked, and there can be considered to be a demonstrated market incentive for network operators to pursue a common policy in the market. The essence of this common policy is not to create a relevant volume of supply and not to compete with each other in the wholesale market. Since network operators also have a position in the retail market that allows them to efficiently place mobile services through their retail sales channels, the decision on how to sell mobile services depends primarily on the value added achieved. It has been shown that network operators create a wholesale offer that reflects the demand in the retail market for voice and SMS services, i.e. only those types of services that are stagnating in value added and for which the volume of demand in the retail market is declining or stagnating. Conversely, the supply on the wholesale market by network operators is declining and at the same time its price is increasing compared to the retail price in data services, which are experiencing an average year-on-year increase in retail market revenues of around 60 %.

The existence of retaliatory mechanisms was further demonstrated in the mobile services environment by the actual convergence of pricing policies in 2013, 2017 and 2019, where a deviation from the tacit collusion policy by one of the participants (in the form of a price cut or a change in tariff structure) did not lead to a

significant increase in market share. In the wholesale services environment, tacit collusion is evidenced by, among other things, the conduct of the participants described in the section "Lack of competition and unilateral setting of wholesale contract terms by MNOs".

At the same time, the CTU did not find the possibility of obstacles to the sustainability of the tacit collusion of the three MNOs arising from the existence of O2's national roaming commitment from the 2020 frequency auction, primarily with respect to the time period defined in this analysis.

The CTU considers the second criterion to be fulfilled.

5.3 Economic test criterion – external factors

Under this criterion, it was assessed whether individuals (undertakings) standing outside the joint MNOs strategy could jeopardise its results.

Barriers to market entry

In general terms, barriers to entry are generally high in the electronic communications sector, in the case of the mobile market in particular due to the scarcity of radio frequencies and also due to high upfront investment and sunk costs.

In the Czech Republic, as noted in the first criterion of the 3C test, infrastructure control is a significant and permanent barrier to entry into the mobile services market for new network operators due to limited natural resources (frequencies).

It is therefore clear that the strength of this barrier has so far been significant for potential new network operators, and for this reason, the threat to existing stakeholders in a potential tacit collusion, which currently have roughly the same allocation of radio frequencies currently in use and suitable for the provision of mobile services, is relatively small.

Although the 5G radio frequency auction in 2020 and the new entrants have been awarded radio frequency capacity allocations, similar to the two new entrants in 2017, when they were awarded allocations in similar bands, it can be anticipated, as defined in the timeframe of the relevant market definition, that the potential effect of these entrants will only become apparent beyond the time horizon of this analysis. As already mentioned above, the potential effect of the commitments resulting from the 5G auction in question, including O2's commitment to provide national roaming to three eligible bidders (Nordic Telecom, Centronet/Nej.cz, PODA), will not have an impact within the timeframe of this analysis.

Under this criterion, and also in relation to the findings of the three-criteria test that preceded this analysis, it can be concluded that there are significant, and not temporary, barriers to entry in the defined market that impede the development of competition.

Market power on the demand side

This criterion assesses whether the buyers have such countervailing power that they could influence the offer to such an extent that they would achieve the determination of the asking price, as this price is generally lower than the price offered by the cooperating entities (under the tacit collusion).

Buyers in the wholesale market are MVNOs, sellers are MNOs, except for a small share of MVNEs. As can be seen from the analysis above (e.g. conclusions regarding the non-replicability of MNO offers or the degree of competition on the wholesale market), it can be concluded that the compensatory power on the MVNO side is very low or zero, and MVNOs are fully dependent on MNO offers.

This is also evidenced by market information. MNOs do not seek to acquire MVNOs as customers in the wholesale market on the basis of competitive bids. In most cases, MVNOs have to rely on the offer of a single MNO against which they have no bargaining position and therefore have to accept whatever conditions the MNO demands. The contracts between the MNO and the MVNO thus contain unfavourable terms for the MVNO, imposed by the MNO, which would not be accepted by a normal trading partner in a balanced commercial negotiation in an effectively competitive wholesale market.

For example, in July 2021, T-Mobile terminated wholesale contracts with 12 MVNOs without giving any reason, based on short notice periods that did not allow the MVNOs to secure replacement wholesale supply from other MNOs. It was only after the intervention of the CTU that T-Mobile extended the notice periods and, after almost half a year, completed the process of concluding new contracts. For more details on this, we refer to the chapter **"Lack of competition and unilateral setting of wholesale contract terms by MNOs".**

This is also confirmed by the state of the related retail market. As already described in relation to customer segmentation in the definition of the relevant retail market, the situation in the Czech Republic in the mobile market in terms of compensating power is diametrically opposed to that of business customers and households (i.e. consumers), to the detriment of households. This different position is then reflected in the price differentials, with households paying significantly higher prices than business customers. In recent years, consumers have attempted to increase their bargaining power, and through various consumer organisations or municipalities have several times joined together to form larger units equivalent in volume to large corporate customers. Their aim has been to obtain similar offers to large corporate customers. However, these efforts have not yet found a response from mobile operators, especially network operators.

Although some consumers are able to individually negotiate more favourable pricing terms compared to list rates, consumers remain in a weaker position vis-à-vis operators and are thus unable to achieve demand-driven pricing as is the case with large business customers.

On the basis of the assessment of the above criterion, it can therefore be concluded that there is no sufficiently strong countervailing force on the demand side of the defined market to defeat the joint strategy of the participants in the tacit collusion. As evidenced by the significantly higher price level of services of residential customers relative to business customers or the higher price level in the Czech Republic and in international price comparisons.

Potential competition

In the retail market, the current position of competitors of network operators, i.e. virtual operators, in the mobile market is not - due to their wholesale dependence on MNOs as vertically integrated operators - such that it could threaten the sustainability of a potential tacit stakeholder collusion (MNO). In this respect, it is unlikely that any virtual operator could become a significant competitor of the current MNOs within a defined time period.

Currently, and with a prospective view of the timeframe of the analysis, there is no other real potential competition - either in the form of a new full-fledged network operator or over-the-top (OTT) service provider(s) - that could disrupt the potential existence of a tacit collusion.

In examining the existence of potential competition, the CTU also focused on the possible use of the access obligation for all versions (types) of MVNOs, and the related reference offers for network access based on the terms of the 2020 frequency auction (700 MHz band). This obligation applies to all three MVNOs, as all three have been awarded frequency allocations in the band in the auction in question. In this respect, it can be noted that, according to the terms of the auction, the reference offer for MVNO access will only apply to access to services in the 700 MHz band and will therefore only apply to the provision of data services, and only with limited capacity (10 MHz channel in the band). In relation to the definition of the market under examination, where service packages including both data, call and SMS services are part of the market, the possible impact of this reference offer on the competitive situation in the mobile market cannot be expected even with a forward-looking perspective, inter alia, in the case of the mobile market. According to the market definition, stand-alone data services can be considered more as a complement to mobile services enabling both voice and SMS services.

For example, although T-Mobile's published wholesale reference offer for access to the 700 MHz band mentions in its terms and conditions the possibility of bundling with other wholesale services (e.g. on the basis of a commercial agreement including access to voice and SMS services), in view of the experience to date and the development of the market in the Czech Republic, the CTU does not consider it likely that this combination of wholesale contracts will actually be allowed and whether the terms of both contracts (including the commercial one) will enable the access seekers concerned or the current MVNOs to operate effectively on the downstream retail market and thus contribute to the development of competition. This possibility cannot, of course, be completely ruled out, but the CTU, based on its past experience with the terms of the commercial agreements and experience with the behaviour of MVNOs, as well as the current state of competition in the wholesale market under analysis, does not consider this option to be a likely outcome. In fact, there is currently, and historically there has never been, a contract between an MNO and an MVNO that combines regulated access to data based on auction commitments and unregulated access to other electronic communications services. And according to the CTU, there is no reason to believe that such a possibility will arise in the future, although T-Mobile does not explicitly exclude it in one of its reference offers. But what T-Mobile's reference offer for MVNOs of the 'Light MVNO' type does restrict in Article 3, point 3.5 is the entry of MVNOs into the wholesale market: 'OLO shall not be entitled to offer and/or provide OLO's services on its own behalf and for its own account, or through a third party, to wholesale partners (i.e. other providers of electronic communications services) without the prior written consent of TMCZ'.[94] , which restricts these smaller companies from entering the wholesale market.

[94] Source : https://www.t-mobile.cz/dcpublic/RAO_LMVNO.pdf

The CTU carried out a theoretical analysis of replicability based on both published reference offers of T-Mobile's mobile data services[95] . In the opinion of the CTU, replicability is not realistic because the conditions for combining multiple wholesale contracts to enable the use of full mobile services (voice and SMS in addition to data) on a single SIM are not clear. Even under the notional assumption that the combination of multiple wholesale contracts is possible (which the CTU does not foresee) and there is no increase in fixed costs for MVNOs due to the combination of these contracts, so:

1. In the case of the reference offer for 'Light MVNOs' (i.e. the vast majority of non-owned MVNOs), 100% of tariffs are not replicable in combination with other wholesale contracts[96] , i.e. 100% of MNO products cannot be replicated by MVNOs; and

2. in the case of the reference offer for 'full MVNO', 73% of tariffs are non-repeatable in combination with other contracts.

With regard to the above theoretical calculation, the CTU states that replicability of data products only (without voice and SMS) is not excluded, but in this analysis it did not examine it, given the definition of a focal product that includes both voice and SMS, and thus irrelevance.

With regard to potential competition from holders of allocations in the 3400-3800 MHz band, the CTU states that, in view of the available market information and based on the experience from abroad with the process and effect of introducing national roaming for a new operator, it can be concluded that this entry is unlikely to take place within the timeframe of this analysis, i.e. In this respect, even considering the existence of the commitments from the 5G frequency auction in 2020, the existence of potential competition for the current three MNOs cannot be found to exist in the given period.

Conclusion on the third criterion for assessing the existence of joint significant market power

On the basis of the sub-criteria assessed above for assessing the ability of outsiders (third parties) to disrupt the joint strategy under consideration in a tacit collusion, it has been found that there are significant barriers to entry for another network operator and, at the same time, that neither the demand side nor the (current or potential) competition of potential tacit colluders have the strength to disrupt a potential tacit collusion. The CTU did not find the existence of other potential competition to be likely or relevant in relation to the current 3 MNOs in the defined timeframe. This criterion can therefore be considered to be fulfilled.

Conclusion to the assessment of joint SMP:

The assessment of the individual sub-criteria, namely the eligibility of the market for tacit collusion, the possibility of monitoring deviation from the terms of the common strategy, existence of effective retaliation mechanisms and the response of entities standing outside the common strategy, indicates the existence of joint significant market power of the mobile

[95] Source: https://www.t-mobile.cz/dcpublic/RAO_LMVNO.pdf and https://www.t-mobile.cz/dcpublic/RAO_4G_5G_01092021.pdf
[96] Based on the application of the average market price for 1 min and 1 SMS.

network operators T-Mobile Czech Republic a.s., O2 Czech Republic a.s. and Vodafone Czech Republic a.s.

6. Proposed remedies

6.1.1 Regulatory measures

The relevant market that is the subject of this analysis is newly identified and defined and there are no existing ex ante remedies in place. By its nature, therefore, existing ex ante remedies cannot be assessed.

The commitments voluntarily made by radio frequency holders in the 4G and 5G auctions must be taken into account. Although these are commitments taken by radio frequency holders under a completely different regulatory mechanism (auction conditions) than ex ante regulation, from a market investigation perspective it can be noted that they partly relate to wholesale access to mobile services and cannot be ignored without further consideration in the context of the remedy setting in this market.

Under the 4G and 5G auctions, the radio frequency holders have been committed to wholesale 4G and 5G data services, including a commitment to publish a reference offer for Full MVNO and Light MVNO (for 5G data services), at prices determined on the basis of a margin compression methodology. On the basis of this commitment, the MVNOs can obtain access from the spectrum holders (i.e. MNOs) to data services operating on the technology (i.e. 4G and 5G respectively) and on the radio frequencies auctioned in the auctions in question, but not to all data services on technologies or using radio frequencies that were not subject to the auctions in question and to which the commitments therefore do not apply. The wholesale bid commitments from the auctions give entitlement to access to data services, but not to all wholesale inputs that would allow virtual operators to provide mobile services in the retail market, including both data, voice and SMS services. The commitment to wholesale bids for both 4G and 5G data services is time-limited until 24 February 2026. In the 5G auction, O2 has assumed a national roaming commitment that also includes access to wholesale inputs for data, voice and SMS services, but the eligible bidders are not MVNOs, but only operators that have gained access to radio capacity over the last few years, on which they are obliged to build their own mobile network according to defined development criteria. For the purposes of imposing remedies in this relevant market, the national roaming obligation, unlike the wholesale supply obligation, cannot be considered relevant. This is particularly the case when this analysis is directed towards measures just before the national roaming obligation is expected to become effective in the market.

In addition, the impact of the commitments made in the auctions, particularly the 2020 5G auction, will be time-lagged and can be expected not to be reflected in the time horizon of this analysis, as described in more detail in Section 2.1.6 of the analysis as well as in Section C of this analysis.

6.1.2 Market Failure

On the basis of the market analysis carried out, market problems have been identified in the context of which appropriate remedial measures need to be determined. The market problems are described throughout this analysis (see e.g. Part D of Chapters 2.2, 2.3, 2.4 and the assessment of the individual 3C test criteria in Chapters 3.1, 3.2 and 3.3) and are further summarised later in this chapter.

The CTU also identified the risk of termination of wholesale contracts by network operators when there is currently no alternative in the form of regulatory measures. If the risk were to materialise, it would effectively liquidate the wholesale market in the Czech Republic and lead to the disappearance of MVNOs, whose existence is generally considered to have some potential for developing a competitive environment and reducing prices for end-users in the retail market. The CTU assessed this risk as real, as a massive termination of contracts by one of the network operators has already occurred in 2021. This situation has raised concerns in the Czech market about such a real threat of termination of existing contractual relationships for many MVNOs. Massive termination of contracts did not take place, among other reasons, due to the intervention of the CTU. In the light of recent experience, the CTU takes this threat very seriously and notes that there is no guarantee that similar activity by network operators will not occur again.

In the event of the termination of commercial wholesale contracts, there should potentially be a regulated wholesale offer in the market for MVNOs from the 5G auction, but this offer includes data only. Thus, there is a complete lack of wholesale regulated access to inputs to create the bundled services including data, voice and SMS that are a prerequisite to operate in the retail market. Since network operators are only obliged to provide this offer when they themselves start providing services using frequencies from the 700 MHz band, this alternative cannot be considered sufficient to prevent the demise of MVNOs, even given the time definition of the analysis, since at the time of this analysis only T-Mobile and O2 had published a reference offer. And only T-Mobile mentions a possible combination of a regulated reference offer with a commercial offer for voice and SMS services. Thus, MVNOs would not be able to gain access to adequate wholesale services so that they could continue to operate in the retail market.

The CTU identified another real risk as the threat of MVNOs being forced out of the retail market due to disproportionately high wholesale prices, which would not allow MVNOs to replicate the offers of network operators. The CTU's analysis shows that network operators are squeezing MVNOs' margins on the market or eliminating margins altogether. These unfavourable pricing conditions are further supported by the unreasonable contractual conditions applied by network operators to MVNOs. These include, for example, the very high upfront and fixed fees paid by MVNOs to network operators at the start of their cooperation and paid regularly thereafter. The high investment made at the time of entry into the retail market, or the risk of losing this investment, can often be a reason for MVNOs to continue to operate in the market even at unreasonable pricing conditions that do not allow them to realise margins on mobile services. However, operating under these conditions is not sustainable in the future and MVNOs could withdraw from the market after a certain period of time, even at the cost of losing their initial investment.

Each of these risks, even in isolation, could lead to the complete demise of the wholesale market, which would likely have a negative impact on the retail market.

The situation in the wholesale market is reflected in the retail market with the highest mobile prices in the EU.

Although data, call and SMS prices have been falling steadily in the EU for at least 15 years, the Czech Republic has seen the slowest decline of any EU country. The CTU believes this is directly due to the lack of an efficient wholesale market.

If the CTU does not impose measures to provide a safety net for MVNOs until the positive effects of the auction commitments are felt, e.g. through the negotiation of national roaming on O2's network for eligible bidders (or the achievement and implementation of a commercial national roaming agreement), there is a high risk of irreversible changes in the wholesale market. This will also have an impact on the retail market by further sharply worsening the situation of end-users, in particular consumers. Under certain conditions, this could even lead to price increases in a segment where prices have been falling steadily across the EU.

6.1.3 Proposed obligations to remedy identified market failure

It is proposed to impose obligations on undertakings with significant market power under Section 51(6)(a), (b), (c), (d) and (f) of the Act:

a) transparency pursuant to Section 82 of the Act, publish information regarding access to the extent defined in paragraph (d);

b) non-discrimination under Section 81 of the Act,

1. apply equivalent conditions in equivalent circumstances to other businesses,
2. provide services and information to other businesses on the same terms and conditions and to the same quality as it provides for its own services;

c) separate cost and revenue records in accordance with Section 86 of the Act so that:

1. there is evidence of unjustified cross-financing in pricing at retail and wholesale level,
2. supporting documents were available to verify the costs and revenues for each service.

d) access to and use of specific network elements and associated resources pursuant to Section 84 of the Act, namely the obligation to meet the reasonable requests of all undertakings entitled to apply for access under the Act for access to wholesale electronic communications services as defined in the product definition of the relevant market, i.e. services including data services, voice services and SMS services,

e) related to price regulation under Sections 56 and 57 of the Act, in that wholesale prices for services will be set on the basis of the principle of prohibition of margin squeeze.

6.1.4 Justification of the proposed remedies

In the light of the examination in the analysis, it can be concluded that the existence of undertakings with joint significant market power has been demonstrated in the relevant market.

The analysis also showed that the position of undertakings with significant market power allows them to behave independently of other market participants. This could also result in a negative impact on setting unreasonably high prices in the related retail market and the associated negative impact on end-users.

In line with the conclusions of the analysis, it would be appropriate to impose transparency, non-discrimination, access and price regulation obligations on all undertakings with SMP.

In accordance with the principle of proportionality, the CTU has chosen the least intrusive way to address the above market problems identified in the market analysis. In assessing the remedies set out below, the CTU has considered whether other forms of remedy would not be sufficient to address the identified problem in the interests of end-users, as well as the appropriateness, proportionality and objectivity of the remedies set out below.

The proposed access obligation measure addresses the risk of unilateral termination of wholesale contracts by network operators. The existence of the proposed measure should prevent unilateral termination of wholesale contracts by MNOs, since it is the introduction of a 'safety net' for MVNOs that limits potential aggressive termination moves by network operators.

The proposed measure also addresses the risk of crowding out MVNOs from the market due to unreasonable pricing and contractual conditions by guaranteeing access on reasonable pricing terms for MVNOs on the basis of a prohibition on margin squeeze.

Without price regulation as proposed, the remedies could not lead to a remedy, as it is the excessive wholesale prices that prevent MVNOs from replicating the retail offerings of MNOs. The CTU concludes that remedies under Section 51(6)(a), (b), (c) and (d) of the Act would not remedy the identified problem of inability to obtain relevant wholesale inputs that would enable MVNOs to replicate MNO offers in the retail market, and therefore proposes price regulation. The CTU considers that properly set wholesale prices will allow MVNOs to develop retail offers to compete with MNOs and enhance the development of competition in the retail market. Given the methodology used to prohibit margin squeeze, which is based on high retail prices, it will ensure that the wholesale price will cover costs at the least and ensure a return on investment.

The CTU's approach to the regulation of the relevant market analysed in the light of the conclusions reached is to enable the expansion of product offerings on the downstream retail market for end-users and to ensure that end-user prices are in line with the EU average.

6.1.5 Transparency Obligation

Companies with significant market power will be obliged to be transparent in the form of disclosure of information in accordance with the requirements set out in Section 82(4) of the Act.

The transparency obligation thus imposed will increase the level of awareness of both entities wishing to enter the market and those already operating on the market. This will have a positive impact on the ability to provide retail services using wholesale inputs from this relevant market.

Undertakings with significant market power that are subject to the access obligation will also be required to publish a reference offer pursuant to Section 84(4) of the Act. Mandatory reference offers should ensure that access seekers have sufficient and reasonable notice periods in view of the problem identified in the analysis of the existence of short notice periods for some contractual relationships (e.g. 3 months).

6.1.6 Obligation of Non-Discrimination

It can be assumed that the absence of regulatory intervention would result in discrimination against some MVNOs by undertakings with significant market power in relation to the provision of wholesale services, in particular for the purpose of possible vertically integrated undertakings providing mobile services in the retail market. In addition, there could be withholding and non-disclosure of sufficient information and favouring of the MNO's own retail channel in terms of wholesale inputs over wholesale inputs provided by the MVNO, or favouring of property-linked MVNOs over property-independent MVNOs.

The obligation of non-discrimination should be imposed on all undertakings with significant market power so that equivalent conditions are applied in equivalent circumstances to other undertakings and services and information are provided to those other undertakings on the same terms and to the same quality as for their own services.

6.1.7 Obligation to keep separate records of costs and revenues

This obligation is closely linked to price regulation and will allow for its enforcement. It will provide evidence of compliance with the obligations and provide evidence to verify the costs and revenues of individual services in the retail and wholesale markets for voice, SMS and data. The purpose of imposing this obligation is to provide evidence to verify that there is (or will be) no unjustified cross-financing by SMP operators operating in the relevant market between wholesale and retail services, which would potentially have the greatest negative impact on the level of competition in the related retail market.

6.1.8 Obligation of access to wholesale inputs

The significant market power of all three network operators leads to disproportionately high wholesale prices for mobile services and discriminatory pricing policies by undertakings with significant market power to favour the market position of their own retail services or those provided by vertically integrated undertakings. Significant market power allows operators to set prices and other terms and conditions of wholesale relationships independently of other market players, such as MVNOs, whose bargaining power is essentially negligible in the current situation. This is leading to a steady increase in barriers to entry in the wholesale market and to the squeezing out of players operating in this market. The obligation to allow access to specific network elements and associated resources is imposed in order to allow MVNOs to operate in the retail market.

The obligation to allow access is specified, in line with the analysis, for the wholesale inputs enabling tariff formation as defined in the retail market definition above. These wholesale inputs provided may be used by the MVNO for the subsequent provision of its own services corresponding to tariffs including data, voice and SMS.

The obligation to provide access to a public communications network or network facilities operated by an undertaking with significant market power shall be imposed in such a way as to enable those seeking access to provide services including data, voice and SMS services on the retail market on reasonable terms.

Although the wholesale supply obligations from the 4G and 5G auctions relate to access to data services (internet access) operated using radio frequencies allocated in the auctions in question, the access obligation will apply to wholesale inputs enabling virtual operators to access all wholesale inputs necessary to provide services in the defined retail market. While the CTU is aware that the draft remedies overlap in substance with the obligations from these auctions, limiting the access obligation only to wholesale inputs enabling the creation of retail voice and SMS services or, conversely, only to data services cannot remedy the market failures identified in this analysis. On the contrary, in order to remedy the identified market failures, there is a need to allow MVNOs access to wholesale services that allow them to replicate tariffs including voice, SMS and data services.

As part of the remedies, the CTU considers it necessary to ensure access to the bundles of services that are the subject of the defined market, i.e. to the bundle of wholesale inputs comprising data, SMS and voice, regardless of the technology or radio spectrum through which these services are provided by the MNOs. The CTU believes that if the individual components of the bundles are separated into different commitments or remedies, their usefulness and hence their effectiveness and ability to remedy the identified market failure will be limited. The proposed remedies are not in conflict with the auction commitments, nor are they duplicative of the same remedies; rather, they are complementary remedies without which the market failure would risk continuing.

The partial overlap between the auction commitments and the remedy under this analysis is consistent with the principle of proportionality, given the different points in time at which each remedy takes effect in the relevant market. The specific terms and conditions of wholesale access to these services will be determined in a similar way to the auction commitments, i.e. including setting price conditions based on a margin squeeze methodology.

6.1.9 Price regulation under Sections 56 and 57 of the Act

The analysis has shown that the market is experiencing unreasonably high prices on the wholesale market and consequently to the detriment of end-users. Wholesale prices under this remedy will be set by the margin squeeze pricing methodology published by the CTU.

The purpose of setting prices on the basis of the methodology set out in the preceding sentence shall be to ensure that they are appropriate to the extent of the infrastructure operated by the SMP undertaking and used by the access seeker for the purposes of the services it provides, that they do not act as a barrier to the development of competition and that they enable access seekers that are as efficient as the relevant SMP undertaking to provide the services that are the subject of the wholesale offer in the downstream market or markets on similar terms to the relevant SMP undertaking.

If price regulation obligations are not imposed on all undertakings with significant market power, it can be assumed that some of these (unregulated) undertakings will apply asymmetric and disproportionately high prices that do not allow replication of commonly used services/tariffs with a consequent negative impact on the end user. The analysis has already identified that wholesale prices exceed retail prices and without remedies, it cannot be expected that there will be a fundamental change in the market that would lead to a substantial increase in the level of competition and an adjustment of the terms of wholesale relationships to allow MVNOs to operate profitably in the retail market. Conversely, the current situation can be expected to deteriorate further, with negative effects on the retail market and end-users, as well as possibly on other relevant markets where MNOs increase their market shares due to their joint significant market power in the mobile market. If the CTU were to impose price regulation only on some undertakings, other (non-price regulated) entities with significant market power might not be willing to voluntarily agree to regulated prices and might instead charge higher prices. Therefore, the CTU proposes to apply price regulation to all undertakings with significant market power in this relevant market, related to the defined market problem in the retail market. In view of the market problem defined above, where MVNOs are not able to achieve sufficient margins and successfully develop in the related retail market for residential customers, the CTU considers a margin squeeze obligation to be reasonable and appropriate. It is this obligation that should remedy the inadequacy of margin and the inability of MVNOs to compete with MNOs and the lack of competition in the related retail market where the level of competition and the charging of high retail prices have been found to be insufficient.

The CTU concludes that the remedies under Section 51(6)(a), (b), (c) and (d) of the Act have failed to remedy the identified problem of inability to obtain relevant wholesale inputs to replicate the MVNOs' offers in the retail market and therefore proposes price regulation. Given the margin squeeze prohibition methodology used, which is based on high retail prices, this will ensure that the wholesale price will at least cover costs and ensure a return on investment.

Part E - Consultation with the Office for the Protection of Competition

Pursuant to Section 130(3) of the Act, the CTU consulted the text of the draft *general measure of market analysis No. A/3/XX.2022-X, Market No. 3 - wholesale market for access to mobile services* with the Office for the Protection of Competition.

Part F - Settlement of comments from the public consultation

*On xxxxx, the CTU carried out a public consultation on the draft general measure of a market analysis No A/3/XX.2022-X, Market No 3 - Wholesale market for access to mobile services (hereinafter referred to as the '**draft analysis**').*

Definitions and abbreviations used

CTU - Czech Telecommunications Office

EC - European Commission

EU - European Union

Methodology of relevant market analyses - Methodology of relevant market analyses of the CTU, published on the CTU website: https://www.ctu.cz/sites/default/files/obsah/ctu/metodika-analyz-relevantnich-trhu/obrazky/metodikaanalyzrelevantnichtrhu.pdf

MNO or **incumbent operator** or **mobile network operator** or **network operator - a** mobile network operator holding an allocation of radio frequencies in the 700, 800 and 900 MHz bands.

MNOs - Mobile Network Operators

MVNE - provider of a wholesale virtual mobile platform.

MVNO or **virtual operator** or **mobile virtual operator - an** entity that is not a mobile network operator and operates in a defined retail market on the basis of wholesale inputs.

MVNOs - virtual operators

Guidance - Communication from the Commission - Guidance on market analysis and the assessment of significant market power under the EU regulatory framework for electronic communications networks and services (2018/C 159/01).

ÚOHS - Office for the Protection of Competition

127/2005 Coll., on Electronic Communications and on Amendments to Certain Related Acts (Electronic Communications Act), as amended. References to specific provisions of the ECT may become obsolete after the publication of this analysis due to the expected amendment of the ECT. In the event that some of the references to specific provisions of the ECT contained in the analysis become obsolete after its publication, these references should be considered to refer to provisions of the ECT that are substantively identical to the provisions under the existing references.