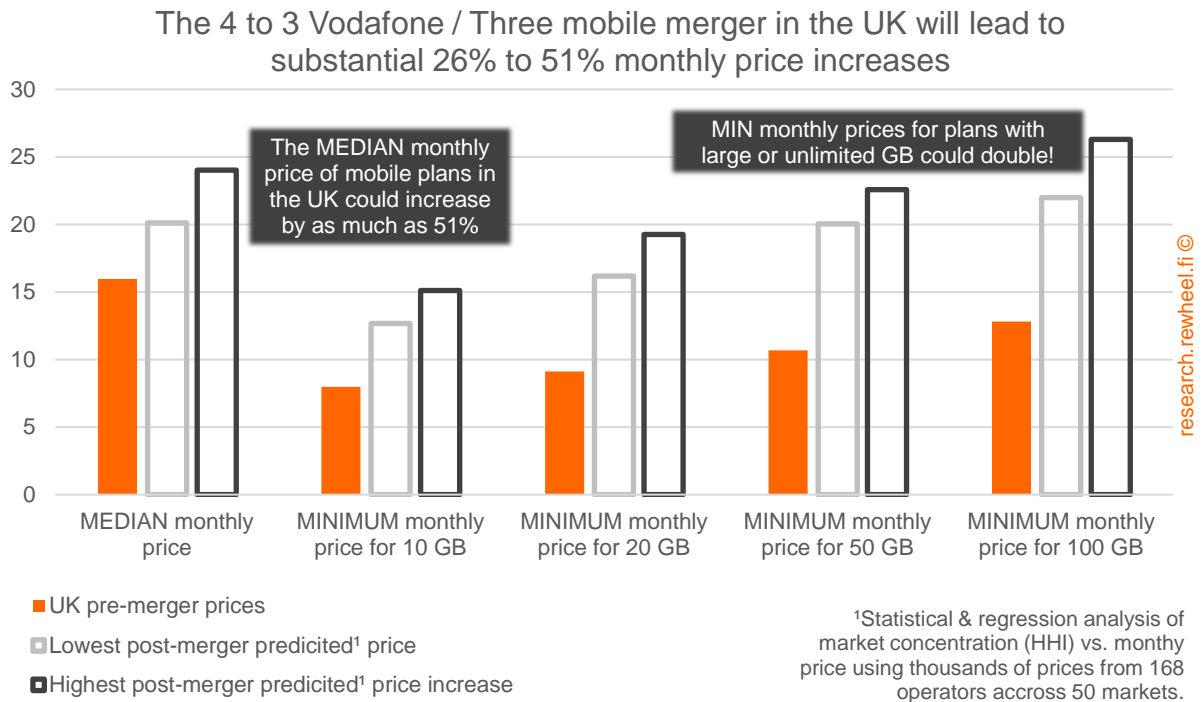


The 4 to 3 Vodafone / Three mobile merger in the UK will lead to substantial 26% to 51% monthly price increases

if the merger is approved without the upfront creation of a new 4th mobile network operator

Consumers in the UK could see their monthly bills rise by 26% to 51% in average. Those that subscribe to mobile plans with large or unlimited data could see their monthly cost double after the expiration of their current contracts.

Rewheel research PRO study – February 2024



The post-merger predicted prices increases are the outcome of statistical and regression analysis on thousands of monthly prices from 168 operators in 50 European and OECD countries. This latest analysis re-affirmed the statistically significant dependency – 99.5% confidence interval – of mobile monthly prices upon mobile market concentration.

The analysis showed that mobile monthly prices are substantial higher in mobile markets with higher concentration such as in markets where fewer (3 versus 4) mobile network operators are present.

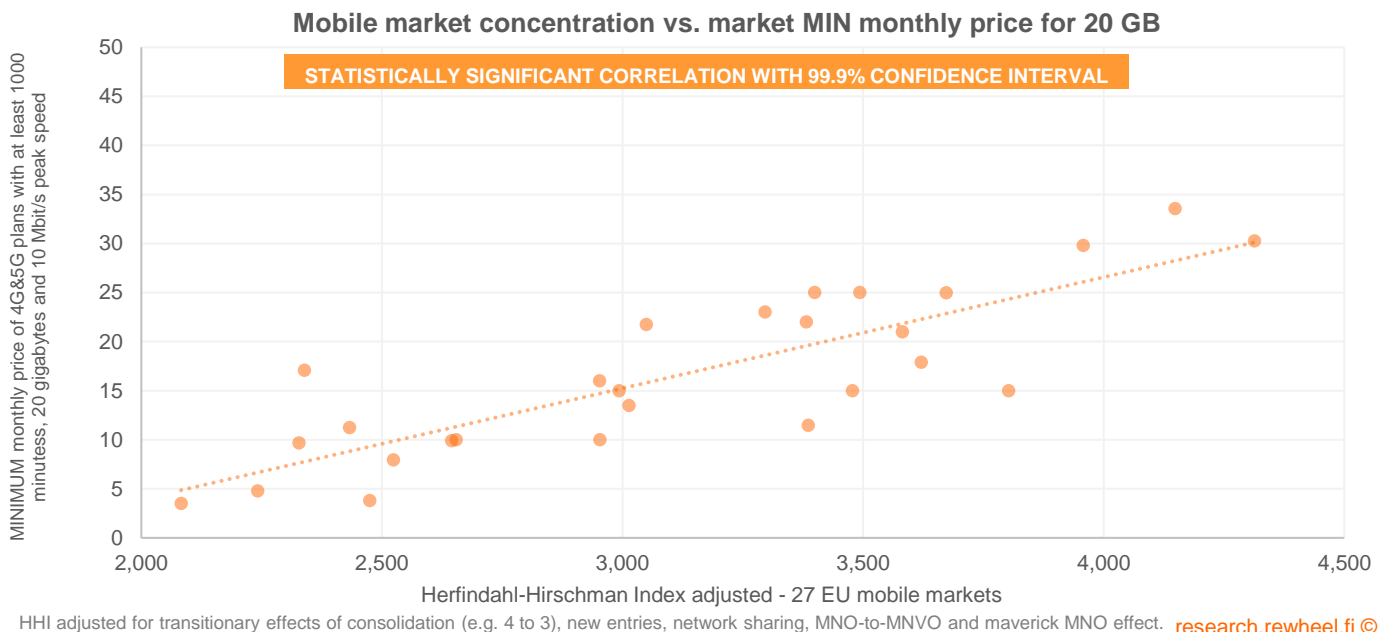


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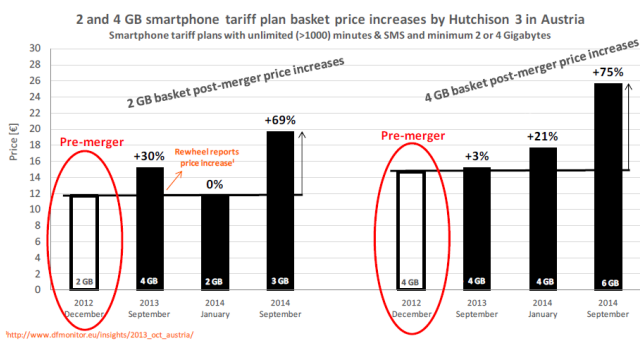
1 Study context

Will the 4 to 3 Vodafone / CK Hutchison (Three UK) mobile merger in the UK lead to ‘substantial lessening of competition’ and higher prices? Yes, it will, if the merger is approved without the upfront creation of a new 4th mobile network operator (MNO).

There were five 4 to 3 mobile mergers approved by the European Commission in EU the last 11 years. In four out of five markets (Austria, Ireland, Germany and Netherlands) the approval led to either direct price increases or to an equivalent competition impediment i.e., slower decrease in prices. The European Commission explained in its 2016 decision¹ that prohibited the 4 to 3 mobile merger between Telefonica and Three UK that “...price increases...should be understood as also encompassing a slower decrease in prices than would occur absent the Transaction...”.

The 4 to 3 mobile mergers in Austria, Ireland and Germany were approved by the European Commission with ineffective² remedies (i.e., MVNO based wholesale access remedies) while the 4 to 3 mobile merger in the Netherlands was unconditionally approved. In all those consolidated mobile markets, prices increased post-merger and consumers were harmed.

Rewheel during the last 12 years documented in many studies and research³ notes the prices increases and/or slower decreases in prices in the 4 to 3 consolidated Austrian, Irish, German and Dutch mobile markets.



For example, in Austria the monthly prices of plans with 2 and 4 gigabytes increased⁴ by 69% and 75% respectively one and a half year after the merger approval. By February 2015 the monthly price for a plan with 2 gigabytes had double!

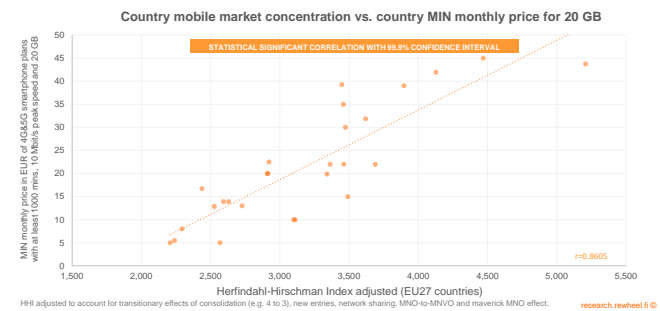
¹https://ec.europa.eu/competition/mergers/cases/decisions/m7612_6555_3.pdf
²https://research.rewheel.fi/downloads/Effectiveness_MVNO_wholesale_access_remedies_25012016_PUBLIC.pdf
³<https://research.rewheel.fi/insights/>
⁴https://research.rewheel.fi/insights/2014_sept_premium_austria/
⁵https://research.rewheel.fi/downloads/liad_4th_mno_venture_into_italy_PUBLIC.pdf

On the contrary in Italy where the European Commission approved the 4 to 3 mobile merger between WIND and Hutchison Three by mandating an effective remedy – the upfront creation of a new 4th mobile network operator – monthly prices fell⁵ off a cliff when Iliad, the new 4th MNO, entered the market in 2018.

The upfront creation of a new 4th mobile network operator – divested spectrum and radio network infrastructure and a competitive national roaming agreement deemed essential – is the only effective^{6,7} remedy that has the potential to counteract both the short- and long-term serious competition concerns in 4 to 3 mobile mergers.

2 Study background & methodology

Herein, we set out to re-examine and re-determine by performing statistical and regression analysis, the dependency of mobile prices upon competition related factors – using the latest 2023 data set of operator subscriber shares and mobile prices – with the dual aim of re-validating the findings of our previous studies (mobile prices are higher in markets with higher concentration) and predicting the price increases from the 4 to 3 Vodafone / Three UK mobile merger. This study should be read in conjunction with all our previous related studies which we present and briefly discussed below.



In January 2022 in a study⁸ titled ‘Mobile prices are 2x to 5x lower in markets with 4 or more MNOs’ we showed that market concentration (Herfindahl-Hirschman Index, HHI) has a statistically significant and causal effect on mobile prices. The lower the market concentration the lower price. The number of mobile network operators (MNOs) – which is another measured of market concentration – has an even stronger statistically significant effects on mobile prices. The higher the

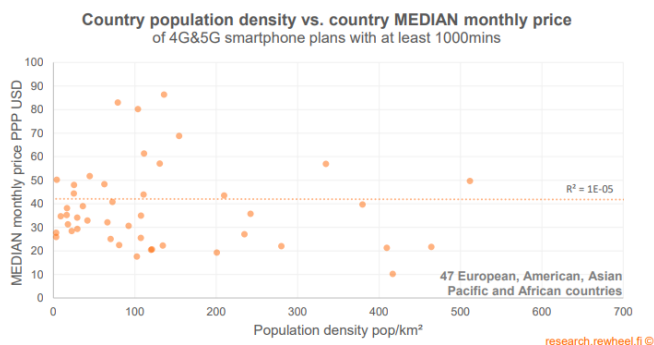
⁶https://research.rewheel.fi/downloads/T-Mobile_Tele2_4_to_3_mobile_merger_effective_remedies_REDACTED_PUBLIC.pdf
⁷https://research.rewheel.fi/downloads/Hutchison_WIND_merger_Italy_remedies_01092016_PUBLIC.pdf
⁸https://research.rewheel.fi/downloads/Mobile_prices_2_to_5_times_lower_in_markets_with_4_MNOs_PUBLIC_VERSION.pdf

number of MNOs the lower the price. The presence of a maverick (disruptive firm) has as well a significant lowering effect on mobile prices.

Having earlier established the dependency of mobile prices upon competition related factors, in our January 2022 study, we re-examined the relationship of mobile prices upon competition related and non-competition related factors using the latest data sets available (e.g., World Bank, OECD and Eurostat comparative price level data sets and mobile prices from 50 countries), a broader set of non-competition related factors (e.g., share of rural population) and a refined data analysis methodology. The statistical analysis presented therein reaffirmed all our previous findings.

Back in December 2020, in a study⁹ titled '4G&5G prices are 2x to 4x lower in markets with four MNOs', we showed that market concentration measured by the Herfindahl-Hirschman Index (HHI) has a statistically significant effect on mobile prices. The higher the market concentration the higher the price. In the same study we showed that the number of mobile network operators (MNOs) present in a mobile market has an even stronger statistically significant effect on mobile prices. The higher the number of effective MNOs the lower the price. The presence of a maverick MNO (a disruptive firm such as Iliad in France and Italy) was also shown to have a quantifiable significant lowering effect on mobile prices.

In our December 2020 study we further showed that there is no link between the country general price level (Price Level Index, PLI), the country population, the country land area, the country population density, the country average mobile network download speed and mobile prices. All the above non-competition related factors do not systematically and significantly affect mobile prices.

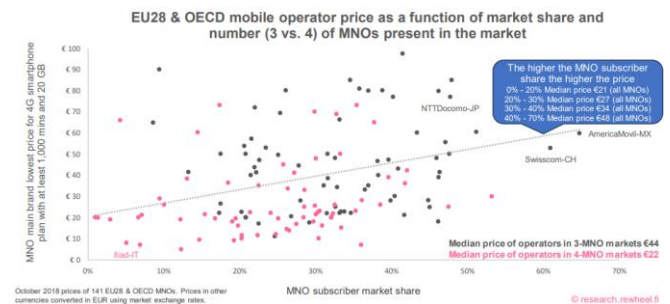


⁹https://research.rewheel.fi/downloads/4G_5G_prices_2x_to_4x_lower_in_markets_with_4_MNOs_PUBLIC.pdf
¹⁰http://research.rewheel.fi/downloads/Rewheel_EU27_smartphone_tariff_competitiveness_report_December_2012_HIGHLIGHTS.pdf
¹¹http://research.rewheel.fi/downloads/Tight_oligopoly_mobile_markets_EU28_04012016_PUBLIC.pdf

Our December 2020 study was not our first study that concluded that mobile prices are predominantly determined by competition related factors and are not linked to other exogenous economic or geo-population factors such as the country general price level, GDP per capita, disposable income, population density, etc.

Our first study¹⁰ that showed that mobile prices are predominantly determined by the degree of effective competition (i.e., number and type of mobile network operators present in a market) was released twelve years ago, in December 2012.

The dependency of mobile prices upon effective competition (i.e., number and type of MNOs present) was reaffirmed in our 'Tight oligopoly mobile markets' 2015¹¹ and 2016¹² studies and in our January 2019 study¹³ titled '4G prices as a function market concentration, number of MNOs, operator subscriber share, position, group affiliation and country general price level'.

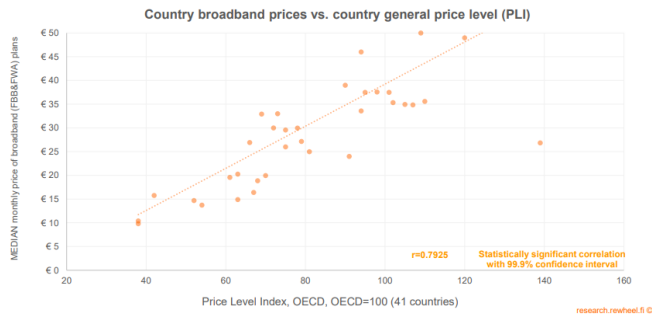


When presented with studies (e.g., Ofcom's UK econometric 2015 study¹⁴) showing that mobile prices are higher in markets where fewer mobile network and/or no maverick operators are present the industry often claims that mobile prices are higher in some markets not as a result of weaker competition but due to the higher country general price level, higher taxes, higher costs of building and maintaining mobile networks due to large population, higher share of rural population, large land area, challenging terrain, low population density, high population density (paradoxically), higher average mobile network speeds, more robust and better network performance, etc.

We have repeatedly and consistently invalidated all these unsubstantiated claims in our research studies. We have found no apparent link between the country's mobile price level and non-competition economic or geo-population related factors.

¹²http://research.rewheel.fi/downloads/Tight_oligopoly_mobile_markets_EU28_2016_PUBLIC.pdf
¹³http://research.rewheel.fi/downloads/4G_prices_vs_number_MNOs_position_share_concentration_PUBLIC.pdf
¹⁴https://www.ofcom.org.uk/_data/assets/pdf_file/0019/74107/research_document.pdf

Moreover, in June 2023 in a study¹⁵ titled 'The state of broadband (FBB&FWA) pricing – 1H2023' that examined the dependency of broadband and mobile prices upon the country general price level and the dependency of mobile prices upon competition related factors we showed that while there is no link between mobile prices and the country general price level (Price Level Index, PLI) there is a strong statistically significant correlation (99.9% confidence interval) between broadband prices and the country general price level.



While mobile prices are driven by competition related factors such as market concentration (number of MNOs present, HHI) and the presence or absence of a maverick operator broadband prices are driven by the country general price level. Broadband prices are higher in countries where the general price level is higher (expensive countries) while mobile prices are not. Mobile prices are higher in countries where the markets are more concentrated i.e., in countries where fewer (3 versus 4) MNOs are present. The market shares of MNOs in markets with 3 MNOs are in average significantly higher (~9 percentage points) than in markets with 4 or more MNOs yielding a higher market concentration but as well a market where all MNOs present have relatively high market shares.

Now some will argue that "correlation does not prove causation". In a general context that is of course true. However, as far as mobile markets and mobile prices are concerned competition related factors such as market concentration (number of MNOs present and HHI) is causally linked with prices.

We have tested the dependency of mobile prices upon competition related factors over a span of 12 years using monthly prices for the most popular plans that consumers bought. In the early years of 4G most consumers in EU subscribed to plans that included few (1 to 10) gigabytes. Today most consumers subscribe to plans that include much larger data volumes (10 to 100 or unlimited gigabytes).

We have tested the dependency of mobile prices upon competition related factors in three groups of countries. Across all 50 European & OECD mobile markets where we have been tracking prices annually or bi-annually for twelve years, across the 27 EU countries that share a common regulatory framework and across the 19 to 21 EU countries that share both a common regulatory framework and a common currency (Euro).

We have tested the dependency of mobile prices upon market concentration using both the Herfindahl-Hirschman Index and a Herfindahl-Hirschman Index adjusted to account for transitional effects of consolidation (e.g. 4 to 3 mergers), new entries, network sharing, MNO-to-MNVO transitions and maverick MNO effect.

We have tested the dependency of mobile prices while the subscriber shares of the ~170 operators across the 50 mobile markets have been changing, while the prices have been changing (prices fell faster before the introduction of 5G, 5G slowed down the price decline), while gigabyte allowances that consumers bought have been getting larger and while the exchange rates for non-Euro countries have been fluctuating (we have also tested the dependency using PPP prices).

And despite all those changes we consistently observed statistically significant uniformly positive linear correlations with very high confidence intervals between mobile prices and mobile market concentration.

Market concentration has a statistically significant effect on mobile prices. The lower the market concentration (HHI) the lower the price. The number of mobile network operators (MNOs) has an even stronger statistically significant effects on mobile prices. The higher the number of MNOs the lower the price. The presence of a maverick (disruptive firm) has as well a significant lowering effect on mobile prices.

On the contrary during the last decade, we have found no statistically significant link between mobile prices and non-competition related factors such as the country general price level (Price Level Index, PLI), the country population, the country land area, the country population density, the country share of rural population, the country average mobile network download speed, the country average mobile network performance, etc.

¹⁵[https://research.rewheel.fi/downloads/The_state_of_broadband_\(FBB_FWA\)_pricing_1H2023_PUBLIC_VERSION.pdf](https://research.rewheel.fi/downloads/The_state_of_broadband_(FBB_FWA)_pricing_1H2023_PUBLIC_VERSION.pdf)

3 Compass Lexecon's dubious meta review

Vodafone and Three UK citing a review¹⁶ of the evidence – a meta-study¹⁷ of twenty-five empirical studies carried out by Compass Lexecon – claimed that the five 4 to 3 mobile mergers in Europe and the one in the US “*have had little impact on prices, typically having no effect at all, or increasing prices for some customers for a short period only.*”

In its meta review Compass Lexecon included two Rewheel studies that examined and determined the dependency of mobile prices upon competition (e.g., market concentration, numbers of MNOs present) related factors. These two Rewheel studies also showed that there is no link between mobile prices and non-competition related factors (e.g., country general price level, population density, mobile network performance, etc.).

The two Rewheel studies included in Compass Lexecon's meta review were our January 2022 study¹⁸ titled ‘*Mobile prices are 2x to 5x lower in markets with 4 or more MNOs*’ and our December 2020 study¹⁹ titled ‘*4G&5G prices are 2x to 4x lower in markets with four MNOs*’. Rewheel's January 2022 and December 2020 studies cited by Compass Lexecon include statistical and regression analysis of thousands of prices from hundreds of operators in 50 European and OECD countries.

These two Rewheel studies are studies that can be used to predict the likely prices increases from 4 to 3 mobile mergers. There are tens of other studies and research notes that Rewheel has carried out the last 12 years that documented the actual price increases in the 4 to 3 consolidated Austrian, Irish, German and Dutch markets. Why did Compass Lexecon omit all those studies from its review?

Moreover, what is not clear from Compass Lexecon's review of Rewheel's January 2022 and December 2020 studies is the following; did Compass Lexecon review the full studies or only the public summaries of the studies that are listed in Rewheel's research website?

Compass Lexecon meta review is not independent – Compass Lexecon has been representing European operators in 4 to 3 merger proceedings – and hence it is

inherently biased. Many of the assertions made in the review are gross misrepresentations. The claim that prices fell after the mergers is not based on actual consumer prices but on so-called ‘*quality-adjusted*’ prices. Such adjustments are design to masquerade the actual post-merger price increases.

Rewheel's definition of post-merger factual price increases encompass a pre-merger monthly price listed in the operators' websites for a specific plan (e.g., a plan with unlimited minutes & SMS and 20 gigabytes of data volume), a post-merger price listed in the merged operator website for the same or equivalent plan and a simple percentage comparison of these two like-for-like prices. If the monthly price that consumers paid for a plan with 20 gigabytes increased post-merger from 10 to 20 Euro then the merger led to 100% increase in prices. Simple!

We deploy robust economic analysis in our studies unlike the dubious consolidation economics that underpin the so called ‘*quality-adjusted*’ prices. ‘*Quality-adjusted*’ prices, the dubious metric, Compass Lexecon used to claim that prices have fallen in 4 to 3 consolidated mobile markets – defined as “*average revenue per gigabyte of data*” – has in fact no relation to the actual price consumers pay every month.



The dubious consolidation economics of Frontier Economics

In its report ‘*Assessing the case for in-country mobile consolidation*’, prepared for the GSMA, Frontier Economics claimed “...that there is no evidence that prices increased following the merger” in Austria

According to Frontier's dubious methodology unit prices fall even when consumers are asked to pay more Euros every month to purchase the same amount of goods

The fact is that before the merger, in December 2012, Austrian consumers paid €11 to purchase a smartphone plan with at least 1,000 minutes/SMS and 2 gigabytes. By February 2015 the price has doubled to €22.

Rewheel / Digital Fuel Monitor flash premium research note, 30th March 2015

Compass Lexecon is probably unaware that Rewheel has already debunk this dubious metric introduced by Frontier Economics in a GSMA 2015 report²⁰. In our research note²¹ titled ‘*The dubious consolidation economics of Frontier Economics*’ we showed that according to Frontier's dubious metric, unit prices fall even when consumers are asked to pay more Euros every month to purchase the same monthly plan.

In its meta review Compass Lexecon also claimed – by citing GSMA's network performance index data – that “*Many four-to-three mergers appear to have led to higher quality*”. The most important word on Compass Lexecon's claim above is the word “*appear...to have led to higher quality*”.

¹⁶<https://vodafoneandthree.uk/news/4-to-3-mobile-mergers-a-review-of-the-evidence>

¹⁷<https://static1.squarespace.com/static/5f9288b7ef71962ed2eac3c3/t/656da7b27453d563a5a31a18/1701685174561/Four+to+three+mobile+mergers+meta+paper+%28Compass+Lexecon%29+-+November+2023.pdf>

¹⁸https://research.rewheel.fi/downloads/Mobile_prices_2_to_5_times_lower_in_markets_with_4_MNOs_PUBLIC_VERSION.pdf

¹⁹https://research.rewheel.fi/downloads/4G_5G_prices_2x_to_4x_lower_in_markets_with_4_MNOs_PUBLIC.pdf

²⁰https://www.gsma.com/publicpolicy/wp-content/uploads/2015/05/Assessing_the_case_for_in-country_mobile_consolidation.pdf

²¹https://research.rewheel.fi/insights/2015_mar_premium_frontier/

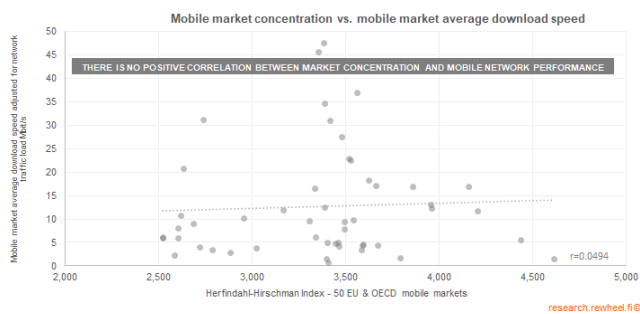
Compass Lexecon mobile network engineering experts are probably well aware that the average mobile network speed that users are experiencing is affected by countless technical and commercial factors/limitations.

Two of the most prominent factors/limitations are a) mobile network traffic data load i.e., how congested or empty is the radio network b) end-user speed restrictions i.e., speed tiers/caps etc. The more users are sharing the capacity of a radio cell the lower the average speed the users experience, since the radio cell capacity is shared among all served users.

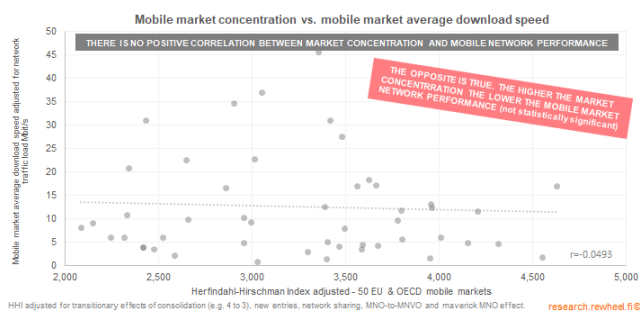
Hence, in mobile markets where monthly prices for plans with large or unlimited data are lower (more affordable) – less concentrated mobile markets such as 4-MNO markets or markets where a maverick MNO is present – average data usage is typically higher → average radio cell network traffic data load is typically higher → resulting in typically lower average end user download speeds; if all other things being equal.

Is mobile network performance higher in less concentrated or 4 to 3 consolidated markets? No, it is not!

As seen in the scatter plots below that depict the relationship of market concentration (measured by HHI and HHI adjusted) and mobile market average download speeds adjusted for network traffic data load there is no statistically significant positive correlation between market concentration and mobile network performance.



In fact, when HHI adjusted (HHI adjusted to account for transitional effects of consolidation) is used the relationship turns negative. The higher the market concentration the lower the mobile market average network performance.



Besides higher consumer prices, 4 to 3 mobile mergers may as well result in degradation of the 'quality-of-service' consumers enjoyed prior to consolidation.

On a final note, Compass Lexecon questioned Rewheel's statistical analysis findings by stating that the analysis "Ignores any price differences between the countries..." and "...simple comparison of prices and concentration will not capture many other factors which are relevant to consumers" and "Fails to control for factors that might influence both price and the level of concentration in a country, hence no basis for a finding that higher concentration drives higher prices."

Compass Lexecon's questions are perplexing. Have they read Rewheel's studies or was the intention simply to stitch up nebulous criticism?

Rewheel studies do take into account the general price level among the countries analysed where it is shown that there is an effect. As we stated above broadband prices are higher in countries where the general price level is higher (expensive countries). But mobile prices are not.

Contrary to what Compass Lexecon claims Rewheel's monthly price metrics incorporate all the service factors that are relevant to consumers. They incorporate a practically unlimited voice service with no out-of-bundle charges (i.e., plans with at least 1000 national minutes), broad service availability (4G plans with wide availability and 5G speedier plans with limited geographical availability), minimum download speed (at least 10 Mbit/s for seamless HD video streaming) and most importantly a wide range of data volume allowances ranging from 1 to unlimited gigabytes.

Compass Lexecon states that our analyses fail to control for factors that might influence both price and the level of concentration in a country. What are those mysterious factors that Compass Lexecon is referring to?

We have tested for all the known factors – having a reasonable causality hypothesis – that might have an effect on mobile prices and/or mobile market concentration.

If Compass Lexecon is implying that Rewheel studies could not – with 100% certainty – rule out the possibility that other mysterious factors (*Jupiter's orbit?*) might be the actual cause of higher mobile prices in concentrated mobile markets, we will be happy to test it if they can provide the reasonable causality hypothesis and the input data.

7 About Rewheel

Mobile data and broadband pricing, mobile operator competitiveness rankings, market modelling & analysis, competition analysis (consolidation, 4 to 3 mobile mergers, effective remedies, new market entries), MNO near-zero marginal data cost, MVNO economics, mobile capacity-only play, mobile centric convergence (MCC) pro-competitive strategies and 4th MNO business case.

Founded in 2009 and incorporated in Finland, Rewheel is a privately owned independent telecom research firm and boutique management consultancy. Our clients are mobile network operators, telco groups, MVNO groups, competition authorities, telecom sector regulators, governments, global internet firms, mobile data-centric start-ups, PE and VC investors.

Rewheel has delivered management consultancy work for clients in the United Kingdom, United States, Germany, Ireland, Switzerland, Finland, Sweden, Belgium, Greece, Poland, Slovenia, Hungary, Russia, Romania.

The following authorities have acquired access to Rewheel's independent pricing, mobile market competitiveness, 4 to 3 merger analysis and remedy assessment research: The European Commission Directorate for Competition, the United States Department of Justice, the New York, California and many other US State Attorney General Offices, the national competition authorities of Canada, Australia, the Netherlands and Greece, the Ministry of Economic Affairs of the Netherlands, the Ministry of Industry and Trade of Czechia, the Korean Electronics and Telecommunication Research Institute, the sector regulators of the United Kingdom, Germany, France, the Netherlands, Ireland, Finland, Portugal, etc.

Rewheel's mobile data pricing, strategy, competition analysis, merger assessment, network economics, spectrum, profitability and competitiveness focused reports have been cited by OECD Economic Surveys, The Economist, The Financial Times, The New York Times, Reuters, Bloomberg, WSJ and publicly referenced by the UK telecoms regulator Ofcom, BIPT, Vodafone, Telefonica, Tele2, Elisa, DNA, GSMA, VPs of the EU Commission responsible for Competition, MEPs, IEEE, ITU.

Recent Rewheel research PRO-reports

Wireless market and operator competitiveness – 2023

⇒ https://research.rewheel.fi/downloads/Wireless_market_operator_competitiveness_2023_PUBLIC.pdf

The state of broadband (FBB&FWA) pricing – 1H2023

⇒ [https://research.rewheel.fi/downloads/The_state_of_broadband_\(FBB_FWA\)_pricing_1H2023_PUBLIC_VERSION.pdf](https://research.rewheel.fi/downloads/The_state_of_broadband_(FBB_FWA)_pricing_1H2023_PUBLIC_VERSION.pdf)

The state of 4G and 5G pricing, 1H2023 – Inflation edition

⇒ https://research.rewheel.fi/downloads/The_state_of_4G_5G_pricing_18_release_1H2023_PUBLIC_VERSION.pdf

The state of 4G and 5G pricing, 1H2022 – country rankings

⇒ https://research.rewheel.fi/downloads/The_state_of_4G_5G_pricing_17_release_1H2022_countries_PUBLIC_VERSION.pdf

Mobile data usage in 2021 and 4G & 5G operator capacity potential

⇒ https://research.rewheel.fi/downloads/Mobile_data_usage_2021_capacity_potential_170_operators_50_countries_PUBLIC_VERSION.pdf

Mobile prices are 2x to 5x lower in markets with 4 or more MNOS

⇒ https://research.rewheel.fi/downloads/Mobile_prices__2_to_5_times_lower_in_markets_with_4_MNOS_PUBLIC_VERSION.pdf

The Greek mobile market is the most expensive market in EU

⇒ https://research.rewheel.fi/downloads/The_3-MNO_Greek_market_is_the_most_expensive_market_in_EU_PUBLIC_VERSION.pdf

The state of 4G and 5G pricing, 2H2021 – operator rankings

⇒ https://research.rewheel.fi/downloads/The_state_of_4G_5G_pricing_16_release_2H2021_operators_PUBLIC_VERSION.pdf

The state of 4G and 5G pricing, 2H2021 – country rankings

⇒ https://research.rewheel.fi/downloads/The_state_of_4G_5G_pricing_16_release_2H2021_countries_PUBLIC_VERSION.pdf

Canada needs a new maverick mobile network operator

⇒ https://research.rewheel.fi/downloads/Canada_needs_new_maverick_mobile_network_operator_PUBLIC_VERSION.pdf

The state of 4G and 5G pricing, 1H2021 – operator rankings

⇒ http://research.rewheel.fi/downloads/The_state_of_4G_5G_pricing_15_release_1H2021_operators_PUBLIC_VERSION.pdf

Is Greece the most expensive mobile market in EU?

⇒ http://research.rewheel.fi/downloads/Greece_most_expensive_mobile_market_EU_PUBLIC_VERSION.pdf

Is Canada the most expensive wireless market in the world?

⇒ http://research.rewheel.fi/downloads/Canada_most_expensive_wireless_market_world_PUBLIC_VERSION.pdf

The state of 4G and 5G pricing, 1H2021 – country rankings

⇒ http://research.rewheel.fi/downloads/The_state_of_4G_5G_pricing_15_release_1H2021_countries_PUBLIC_VERSION.pdf

5G capacity potential—more than 500 gigabytes/sub/month

⇒ http://research.rewheel.fi/downloads/Capacity_utilization_2019_potential_169_operators_48_countries_PUBLIC_VERSION.pdf

1&1 Drilisch's 4th MNO entry in Germany – Will it work?

⇒ http://research.rewheel.fi/downloads/1&1_Drilisch_4th_MNO_entry_Germany_PUBLIC_VERSION.pdf

4G&5G prices are 2x to 4x lower in markets with four MNOs

⇒ http://research.rewheel.fi/downloads/4G_5G_prices_2x_to_4x_lower_in_markets_with_4_MNOs_PUBLIC.pdf

4G&5G connectivity competitiveness 2020

⇒ http://research.rewheel.fi/downloads/4G_5G_connectivity_competitiveness_2020_PUBLIC_VERSION.pdf

The state of 4G&5G broadband pricing – 2H2020

⇒ http://research.rewheel.fi/downloads/The_state_of_4G_5G_pricing_DFMonitor_14_release_2H2020_PUBLIC.pdf

The state of 4G&5G pricing in Latin America, August 2020

⇒ http://research.rewheel.fi/downloads/The_state_of_4G_5G_pricing_LATAM_EU_OECD_2020_PUBLIC_VERSION.pdf

4G & 5G prices in Germany, Italy, France, Spain and UK – June 2020

⇒ http://research.rewheel.fi/downloads/4G_5G_prices_Germany_Italy_France_Spain_UK_June_2020_PUBLIC.pdf

The state of 4G & 5G pricing, 1H2020

⇒ http://research.rewheel.fi/downloads/The_state_of_4G_5G_pricing_DFMonitor_13_release_1H2020_PUBLIC.pdf

Review of mobile data connectivity competitiveness in Greece within the wider context of digital economy competitiveness

⇒ http://research.rewheel.fi/downloads/Greek_mobile_data_connectivity_competitiveness_review_March2020_PUBLIC.pdf

Unlimited mobile data – Why Finland is different

⇒ http://research.rewheel.fi/downloads/Unlimited_mobile_data_Finland_different_PUBLIC.pdf

3.6 GHz 5G spectrum valuation in Poland

⇒ http://research.rewheel.fi/downloads/3.6GHz_5G_spectrum_valuation_Poland_PUBLIC.pdf

The state of 4G & 5G pricing, 2H2019: more-for-less

⇒ http://research.rewheel.fi/downloads/The_state_of_4G_pricing_DFMonitor_12th_release_2H2019_PUBLIC.pdf

2018 capacity utilization and 5G capacity potential of mobile operator existing macro cell site grids

⇒ http://research.rewheel.fi/downloads/2018_capacity_utilization_potential_macro_site_grids_PUBLIC.pdf

Root cause of weak competition in the Canadian wireless market

⇒ http://research.rewheel.fi/downloads/Root_cause_weak_competition_Canada_wireless_market_PUBLIC.pdf

4G era – Who got the most out of it?

⇒ http://research.rewheel.fi/insights/2019_may_pro_4G_who_got_most_of_it_revenue_growth/

The state of 4G pricing – 1H2019 – Digital Fuel Monitor 11th release

⇒ http://research.rewheel.fi/insights/2019_apr_pro_1h2019_release/

4G prices as a function market concentration, no. of MNOs, subscriber share, position, group affiliation and country general price level

⇒ http://research.rewheel.fi/insights/2019_jan_pro_4G_prices_as_a_function_of/

liad's 4th MNO venture into Italy – Will it pay off?

⇒ http://research.rewheel.fi/insights/2019_jan_pro_liad_italy/

T-Mobile and Tele2 4 to 3 mobile merger in the Netherlands – Competition concerns, efficiencies and effective remedies

⇒ http://research.rewheel.fi/insights/2018_nov_pro_tele2_t-mobile_nl/

The state of 4G pricing – 2H2018 – Digital Fuel Monitor 10th release

⇒ http://research.rewheel.fi/insights/2018_oct_pro_2h2018_release/

Capacity utilization and fixed-to-mobile broadband substitution potential with existing macro site grids – 2017

⇒ http://research.rewheel.fi/insights/2018_sep_pro_capacity/

The 4 to 3 consolidation effect – Ahead of the Commission's merger ruling Tele2 increased prices in the Netherlands

⇒ http://research.rewheel.fi/insights/2018_july_pro_T-mobile-Tele2_Netherlands/

The state of 4G pricing – 1H2018 – Digital Fuel Monitor 9th release

⇒ http://research.rewheel.fi/insights/2018_may_pro_1h2018_release/

Gigabyte price development in 4 to 3 consolidated versus 4-MNO European markets – September 2013 to March 2018

⇒ http://research.rewheel.fi/insights/2018_apr_pro_4to3_consolidation_vs_4MNO/

The state of 4G pricing – 2H2017 – Digital Fuel Monitor 8th release

⇒ http://research.rewheel.fi/insights/2017_nov_pro_2h2017_release/

Unlimited mobile data and near zero marginal cost – a paradigm shift in telco business models

⇒ http://research.rewheel.fi/insights/2017_sep_pro_near_zero_marginal_cost/

O2 – Ready to disrupt the German tight oligopoly market

⇒ http://research.rewheel.fi/insights/2017_apr_pro_o2_germany_turnaround/

Capacity utilization and fixed-to-mobile broadband substitution potential – A study of 64 European operators

⇒ http://research.rewheel.fi/insights/2017_mar_pro_network_utilisation_mimo/

Effective structural remedies for Hutchison-WIND 4 to 3 Italian mobile merger

⇒ https://research.rewheel.fi/insights/2016_sept_premium_italy_hutch_wind_merger/

Telenor Denmark – Turnaround strategy

⇒ http://research.rewheel.fi/insights/2016_apr_premium_telenor_denmark_turnaround/

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