

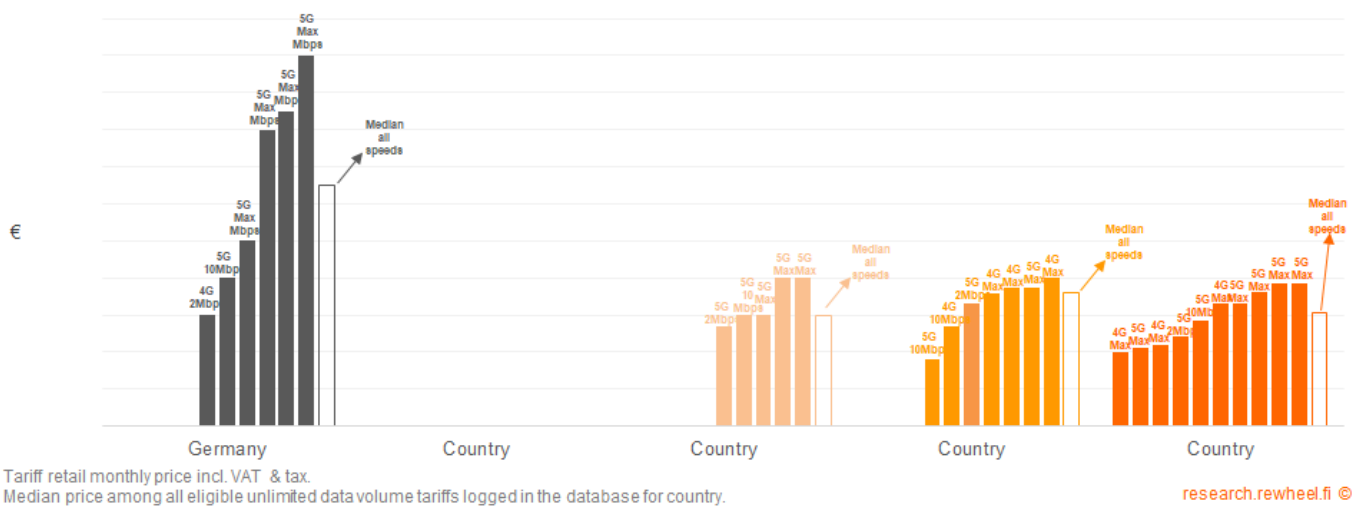
4G&5G prices in Germany, Italy, France, Spain and UK – June 2020

Monthly prices of plans with unlimited data volume and as well gigabyte prices of plans with data caps continue to be significantly higher in the 3-MNO German versus the 4-MNO Italian, French, Spanish and UK markets.

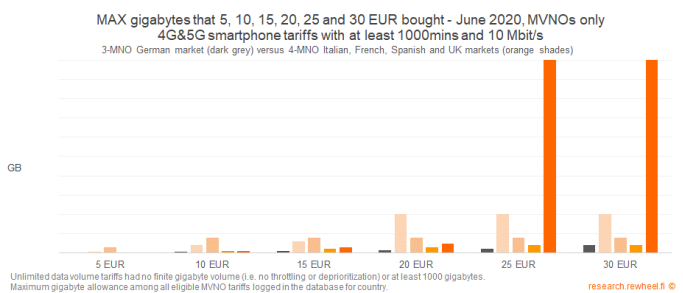
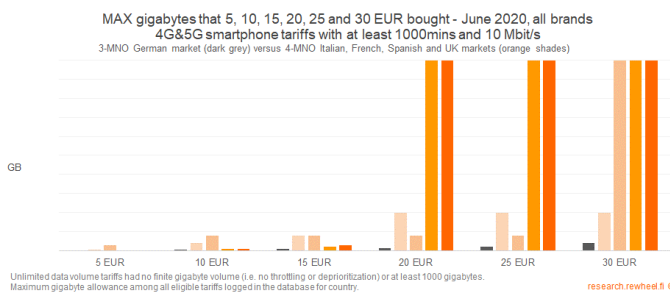
Rewheel research PRO study, June 2020

-  3-MNO German market: Fewer gigabytes for higher monthly prices.
 -  4-MNO Italian market: Large gigabyte allowances for very low monthly prices. Unlimited data at affordable monthly price.
 -  4-MNO French market: Large gigabyte allowances for very low monthly prices. No unlimited data at affordable monthly price.
 -  4-MNO Spanish market: Unlimited data volume at very affordable monthly price during June 2020.
 -  4-MNO UK market: Unlimited data volume at very affordable monthly prices.
- The median monthly price of 4G&5G smartphone plans with unlimited data volume in the 3-MNO German market was ~2x higher than the median monthly price of unlimited plans in EU's larger 4-MNO markets.

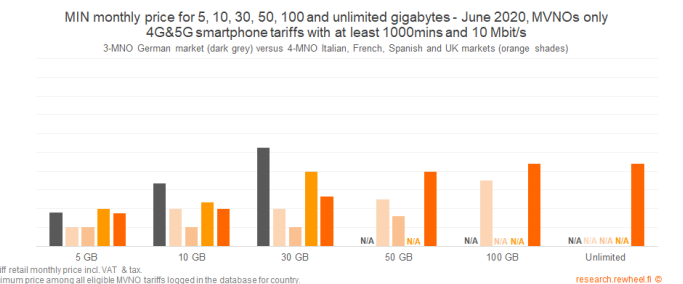
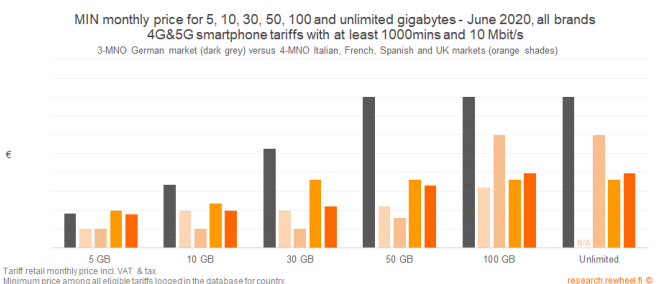
Monthly price for UNLIMITED data in Germany, Spain, France, Italy and the UK - June 2020
4G&5G smartphone tariffs with at least 1000mins



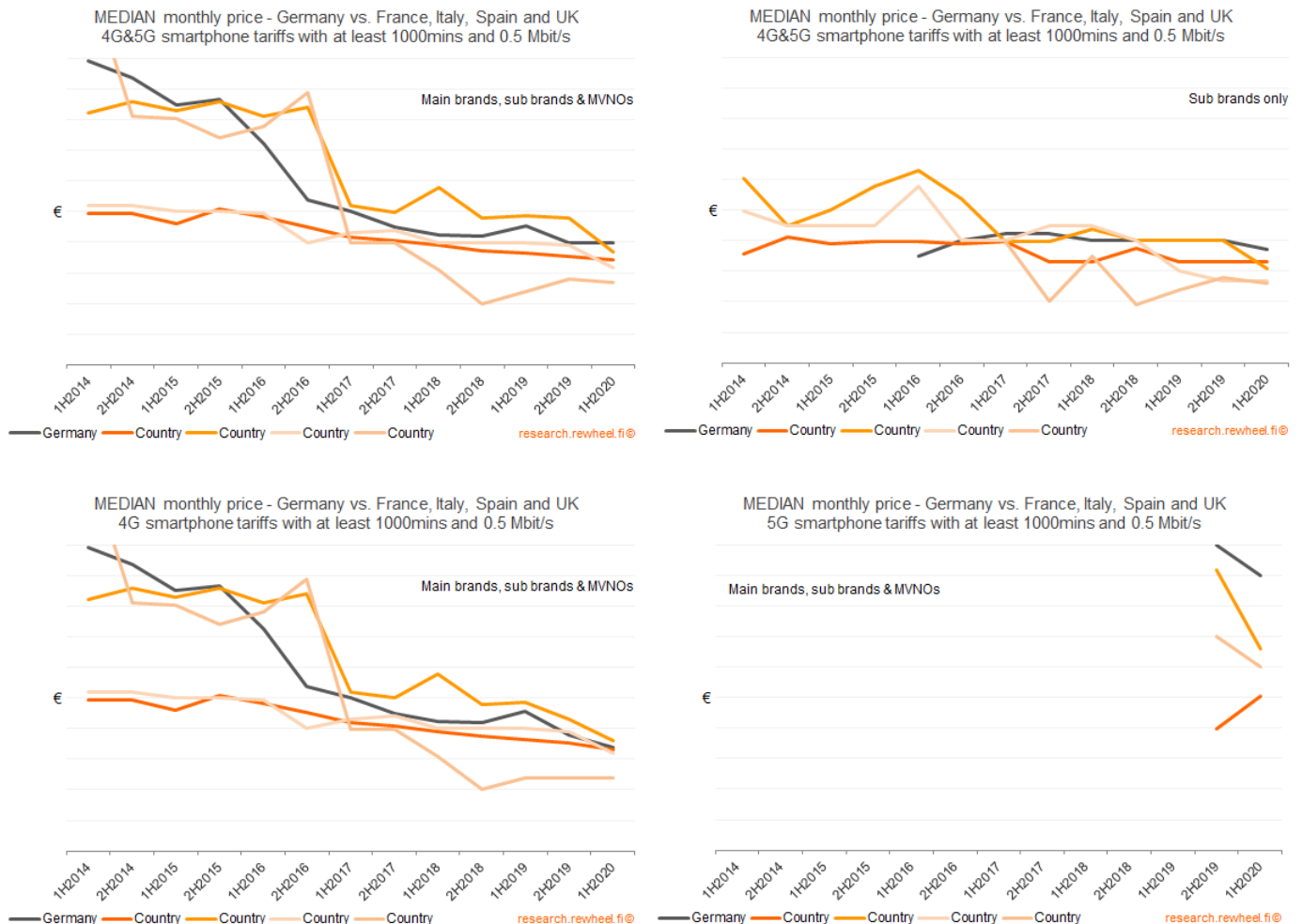
- In the German 3-MNO market 5, 10, 15, 20, 25 or 30 EUR per month bought during June 2020 much fewer gigabytes – in 4G&5G smartphone plans with at least 10 Mbit/s – than in the 4-MNO Italian, French, Spanish and UK markets.
- This was the case both when plans from all brands (operator main brands, operator sub brands and MVNOs) were taken into account and as well when only MVNO plans were considered.



- In the German 3-MNO market the minimum monthly price for 4G or 5G smartphone plan with at least 5, 10, 30, 50, 100 or unlimited gigabytes and 10 Mbit/s was in June 2020 much higher than in the 4-MNO Italian, French, Spanish and UK markets.
- This was the case both when plans from all brands (operator main brands, operator sub brands and MVNOs) were taken into account and as well when plans from MVNOs only were considered.



- The median monthly price of 4G&5G smartphone plans in Germany was 9% to 50% higher than the median price in the Italian, French, Spanish & UK 4-MNO markets while the median included gigabyte allowance in Germany was 2 to 7 times smaller.
- Commercial MVNOs in the 4-MNO Italian, French, Spanish and UK markets – without having access to merger mandated so called ‘capacity wholesale deals’ i.e. 1&1 Drillisch – sell more gigabytes at lower prices than MVNOs in Germany.
- While 5G plans were generally sold at premium over 4G, overall monthly prices continue to fall across the board.
- During June 2020, the median monthly price of 5G plans across Germany, Italy, France, Spain and UK was ~2x higher than the median monthly price of 4G plans. 5G plans packed in average ~7x more gigabytes than 4G plans in those 5 countries.
- Surprisingly though, some operators priced their 4G unlimited data volume plans more expensive than their competitors 5G unlimited data volume plans.
- Moreover, as we reported in April 2020 in DFMonitor’s 13th release¹, the median monthly price of 4G&5G smartphone plans continue to fall across most EU & OECD markets including Italy, France, Spain and the UK.



The 4G&5G smartphone plans of the following mobile network operators, main brands, sub brands and MVNOs have been included in this study: T-Mobile-DE, Vodafone-DE, O2-DE, Movistar-ES, Vodafone-ES, Orange-ES, Yoigo-ES, Orange-FR, SFR-FR, BouyguesTelecom-FR, FreeMobile-FR, TIM-IT, Vodafone-IT, Windtre-IT, Iliad-IT, EE-UK, O2-UK, Vodafone-UK, 3-UK, T-Mobile, Vodafone, O2, Movistar, Orange, Yoigo, SFR, BouyguesTelecom, FreeMobile, TIM, Windtre, Iliad, EE, 3, Amena, Blau, BT, Congstar, Fonic, giffgaff, Ho, Kenamobile, Llamaya, Masmovil, O2, Otel, Pepephone, RedbySFR, Republicamovil, Simyo, Smarty, Sosh, TescoMobile, Verymobile, Voxi, 1&1, 1Mobile, Cdiscount, Fastweb, FreenetMobile, Hitsmobile, idmobile, IONmobile, Klarmobil, Lapostemobile, Lebara, Lowi, Lycamobile, Mobilfree, NRJmobile, ntmobile, Postemobile, Prixtel, Simply, Sky, Smartmobil, Soymovil, Spusu, Symamobile, Talkmobile, Virginmedia and Yourfone.

¹http://research.rewheel.fi/downloads/The_state_of_4G_5G_pricing_DFMonitor_13_release_1H2020_PUBLIC.pdf

Table of Contents

1	Study context.....	6
2	4G&5G prices in the 3-MNO German vs. 4-MNO Italian, French, Spanish & UK markets – June 2020.....	8
2.1	Germany: From 4 down to 3 mobile network operators and soon back to 4.....	8
2.2	3-MNO German market: 4G&5G smartphone plans with at least 1000 national minutes – June 2020	12
2.3	4-MNO Italian market: 4G&5G smartphone plans with at least 1000 national minutes – June 2020	17
2.4	4-MNO French market: 4G&5G smartphone plans with at least 1000 national minutes – June 2020.....	20
2.5	4-MNO Spanish market: 4G&5G smartphone plans with at least 1000 national minutes – June 2020	23
2.6	4-MNO UK market: 4G&5G smartphone plans with at least 1000 national minutes – June 2020.....	27
2.7	Gigabytes that 5, 10, 15, 20 25 and 30 EUR bought in Germany, Italy, France, Spain and UK – June 2020.....	33
2.8	Minimum price for 5, 10, 30, 50, 100 or unlimited gigabytes in Germany, Italy, France, Spain and UK – June 2020	36
2.9	4G&5G smartphones plans with unlimited data volume in Germany, Italy, France, Spain and UK – June 2020.....	38
2.10	Historic (2014-2020) development of mobile data prices in Germany, Italy, France, Spain and UK.....	40
3	Germany vs. Italy, France, Spain and UK vs. all other EU & OECD markets	45
3.1	Median monthly price.....	45
3.2	Median gigabyte allowance.....	46
3.3	Median gigabyte price.....	46
3.4	Minimum monthly price for unlimited data.....	47
3.5	Median monthly price for unlimited data	48
3.6	Maximum gigabytes that 20 or 30 EUR bought	49
3.7	Minimum monthly price for 10 or 50 gigabytes.....	49

About Rewheel

*New radio spectrum bands, 4.5G and 5G technology, unlimited mobile data plans and the Internet of Things radically change mobile network operators' cost, revenue and profitability dynamics. **Rewheel's mission is to help operators prepare for the paradigm shift in network and spectrum strategy, spectrum valuation, network sharing, M&A, MVNO economics and mobile data pricing.***

Founded in 2009, Rewheel is a Finland based boutique management consultancy. Our clients are mainly European mobile network operators, telco groups, MVNO groups, sector regulators, competition authorities, governments, global internet firms, mobile data-centric start-ups, PE and VC investors.

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

The following authorities have acquired access to our 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, Netherlands, Finland, etc.

Rewheel's mobile data technology, 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.

Since 2010 we have been supporting a number of European challenger mobile operators in multiband (700, 700 SDL, 800, 900, 1400 SDL, 1800, 2600, 3.5 GHz) auctions with spectrum valuation and strategic advisory services.

Network economics metrics

For comprehensive data usage, spectrum usage and capacity utilisation metrics in EU28 and OECD markets visit

⇒ <http://research.rewheel.fi/networkeconomics/>

Recent Rewheel research PRO-reports

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/

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

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

⇒ http://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/

For further research reports visit research.rewheel.fi To learn more about our consultancy's profile visit www.rewheel.fi or please contact us at research@rewheel.fi or +358442032339.

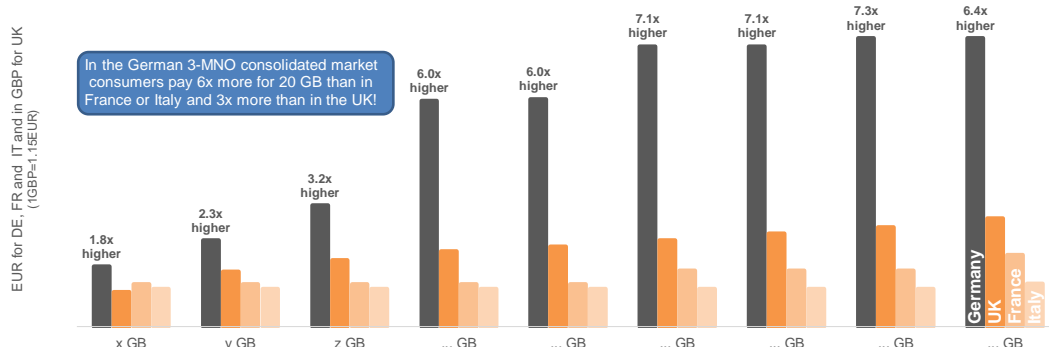
1 Study context

Six years ago, in June 2015, few months after Hutchison had announced its planned acquisition of O2 in the UK and ahead of another 4 to 3 merger in Italy between Hutchison and WIND, using pricing data from DFMonitor’s 3rd release 1H2015 we placed under the microscope² the 4G prices in the 4-MNO UK and French mobile markets versus the consolidated (in 2014) 3-MNO German market. Our analysis showed that 4G smartphone plan prices were up to 7 times cheaper in the UK and France compared to the 3-MNO consolidated German market. That was the case despite Drillisch’s entry as the merger mandated MVNO with the so-called ‘capacity access deal’. Back then we examined the prices of 4G plans that had at least 1,000 minutes & SMS and at least 2, 5, 10 or 20 gigabytes. The German average price for a 4G smartphone plan that had at least 2 GB was 53% higher than the UK average price and 84% higher than the French average price while for plans with at least 5 GB the German average monthly price were 75% higher than the UK average price and 118% higher than the French average price. The higher the gigabyte allowance the higher the price difference between the 3-MNO German market versus the 4-MNO UK and French markets.

A year later, in 2016, the European Commission under the helm of Margrethe Vestager blocked³ the UK 4 to 3 merger and conditionally approved⁴ the Italian merger subject to Iliad becoming the new 4th mobile network operator.

In January 2019, we took another in-depth look and compared the 4G prices in the 4-MNO UK, French and Italian markets against the 4G prices in the 3-MNO consolidated German market. Our January 2019 analysis showed⁵ that the differences, across all gigabyte (1, ...,100 and unlimited) or EUR (10, ..., 70 and 80) baskets between the 3-MNO German and the 4-MNO UK, French and Italian markets had grown considerably. German 4G prices were notably higher than UK prices and strikingly higher than French and Italian prices. Average monthly prices in Germany were during January 2019 – for most gigabyte allowances – 3 to 7x higher than in the UK, France or Italy while French, Italians and British consumers could buy 5 to 19x more gigabytes than German consumers when they spent 20 to 30 EUR as seen in the charts below.

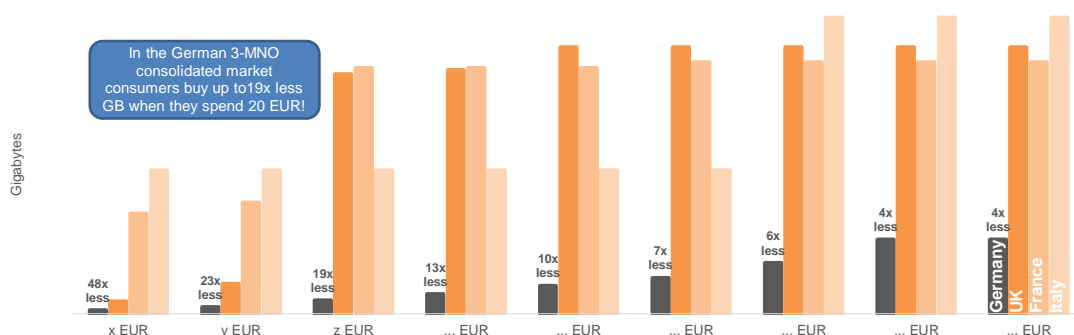
4G prices in the 3-MNO German vs. the 4-MNO UK, French and Italian markets
Country weighted average of operators lowest price for a 4G plan¹ with x, y, z, ... GB



¹The bars depict the country weighted (by MNO subscribers share) average of the 4 operators lowest price 4G plan with at least 1,000 mins, x,y,z,... GB and 3 Mbps speed for HD video at all times. For every operator we selected the highest gigabyte allowance sold by its main brand, sub-brands or any of its MVNOs. The merger mandated MVNO in Germany 1&1 Drillisch was treated as a stand-alone operator. Country weighted average = MNO_1 price x MNO_1 sub share + MNO_2 price x MNO_2 sub share + ...

Prices 28th January 2019
research.rewheel.fi ©

4G gigabytes in the 3-MNO German vs. the 4-MNO UK, French and Italian markets
Country weighted average of operators highest gigabyte allowance sold in 4G plans¹ for x, y, z, ... EUR



¹The bars depict the country weighted (by MNO subscriber share) average of the 4 operators highest gigabyte allowance sold in 4G plans with at least 1,000 mins and 3 Mbps speed for HD video at all times. For every operator we selected the highest gigabyte allowance sold by its main brand, sub-brands or any of its MVNOs. The merger mandated MVNO in Germany 1&1 Drillisch was treated as a stand-alone operator. Country weighted average = MNO_1 gigabytes x MNO_1 sub share + MNO_2 gigabytes x MNO_2 sub share + ...

unlimited = 250 GB

Prices 28th January 2019
research.rewheel.fi ©

²http://research.rewheel.fi/downloads/UK_FR_4_operator_markets_vs_consolidated_DE_market_PUBLIC.pdf

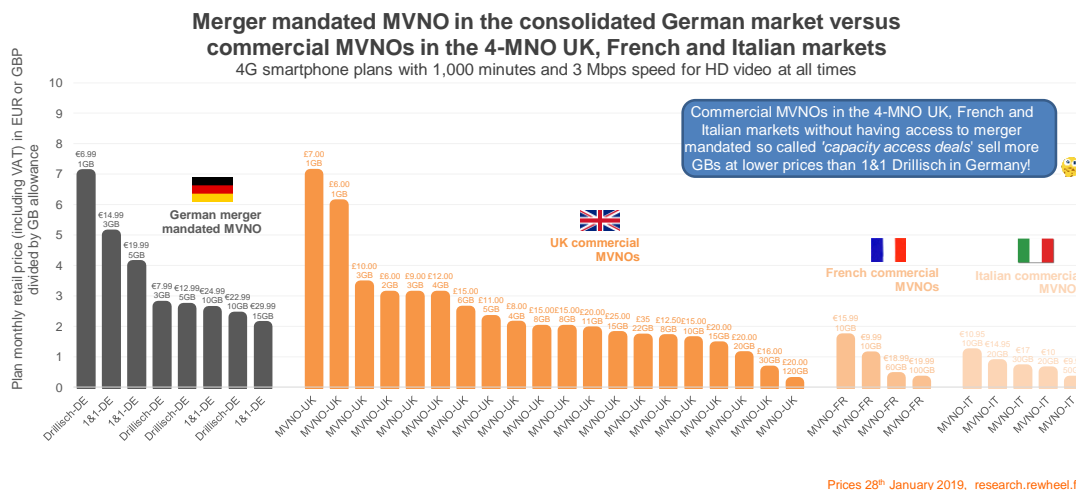
³http://europa.eu/rapid/press-release_IP-16-1704_en.htm

⁴http://europa.eu/rapid/press-release_IP-16-2932_en.htm

⁵http://research.rewheel.fi/downloads/4G_prices_Germany_UK_France_Italy_PUBLIC.pdf

In our January 2019 study we also showed that 1&1 Drillisch, the merger mandated MVNO in Germany, did not become an effective competitor. 1&1 Drillisch had an immaterial impact on the German market mainly because it's so called merger mandated '*capacity wholesale access deal*' was in essence a retail-minus deal that allowed it to compete effectively only in the data-light segment (i.e. plans with tiny or small gigabyte volumes 1-10 gigabytes).

Moreover, commercial MVNOs in the 4-MNO, Italian, French and UK markets – without having access to merger mandated so called '*capacity wholesale access deals*' – sold more gigabytes at lower prices than the merger mandated MVNO in Germany during January 2019 as seen in the chart below.



Triggered by 1&1 Drillisch's decision to acquire 3600 & 2100 MHz spectrum in the German 5G 2019 auction and become the 4th licensed mobile network operator in Germany – 1&1 Drillisch is planning to launch service with its own network during 2021 – we took another in-depth look herein and compared the June 2020 4G&5G smartphone plan prices in the 3-MNO consolidated German market versus the 4-MNO Italian, French, Spanish and UK markets.

Has anything changed since January 2019 or are prices in the 3-MNO German market still notably higher than UK prices and strikingly higher than French and Italian prices? And what about prices in the 4-MNO Spanish market, are Spanish 4G&5G smartphone plan prices also significantly lower than 4G&5G prices in the 3-MNO German market?