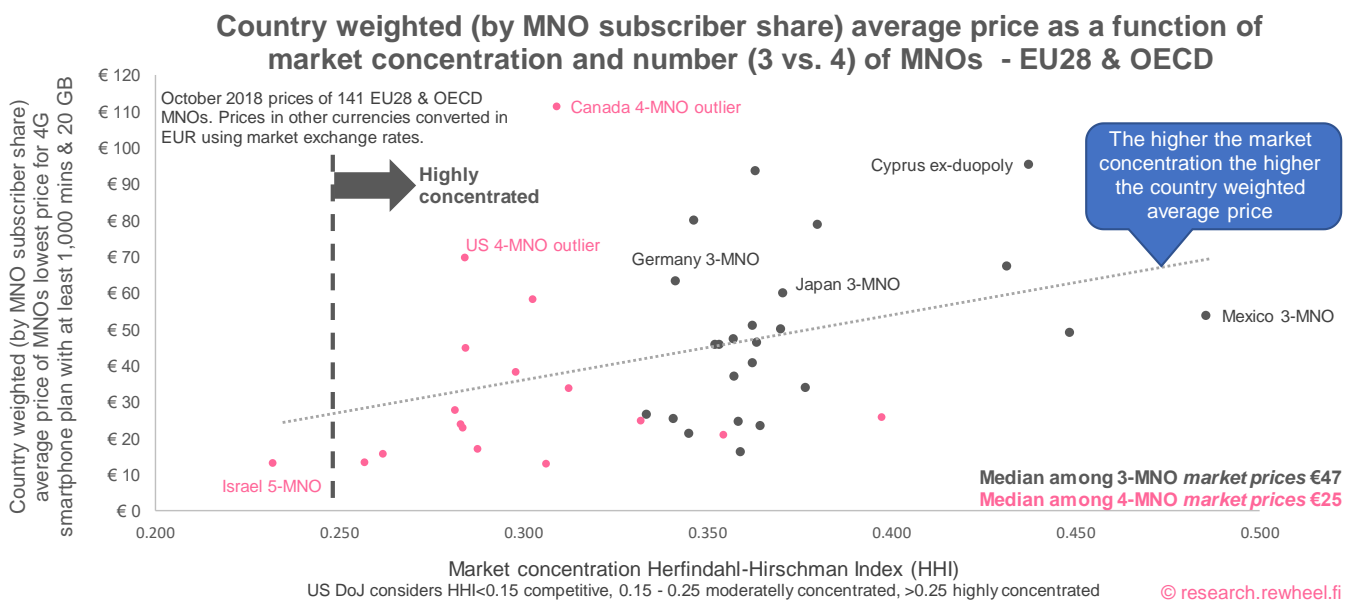


4G prices as a function market concentration, number of MNOs, operator subscriber share, position, group affiliation and country general price level

- The less (3 versus 4) mobile network operators present in a market the higher (2x) the *market price*
- The higher the mobile market concentration the higher the *market price*
- The higher the subscriber share of the largest or 2 largest mobile operator/s the higher the *market price*
- The higher the mobile network operator subscriber share the higher its price
- The higher the mobile network operator market position (1st vs. 2nd vs. 3rd vs. 4th) the higher its price
- The less (3 versus 4) mobile network operators present in a market the higher the price operators charge
- The bigger the operator group size the higher the price charged by its local subsidiaries
- 4G prices are in average slightly lower in the 21 most expensive versus the 20 cheapest EU28 & OECD countries 🤔

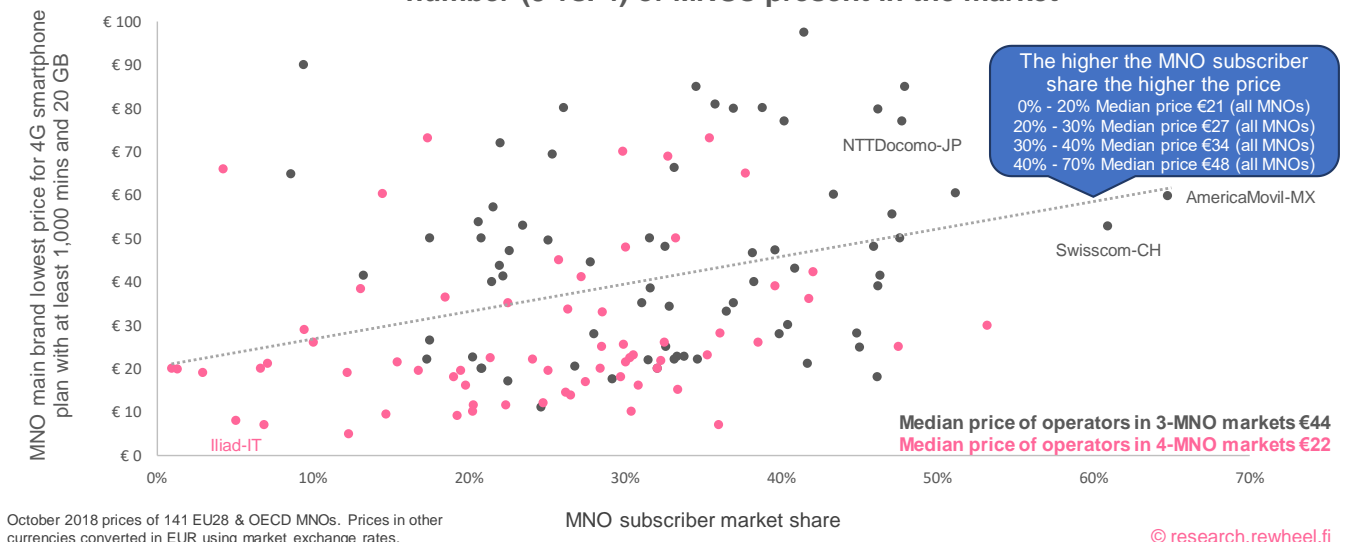
Rewheel research PRO study, 29th January 2019



Highlights

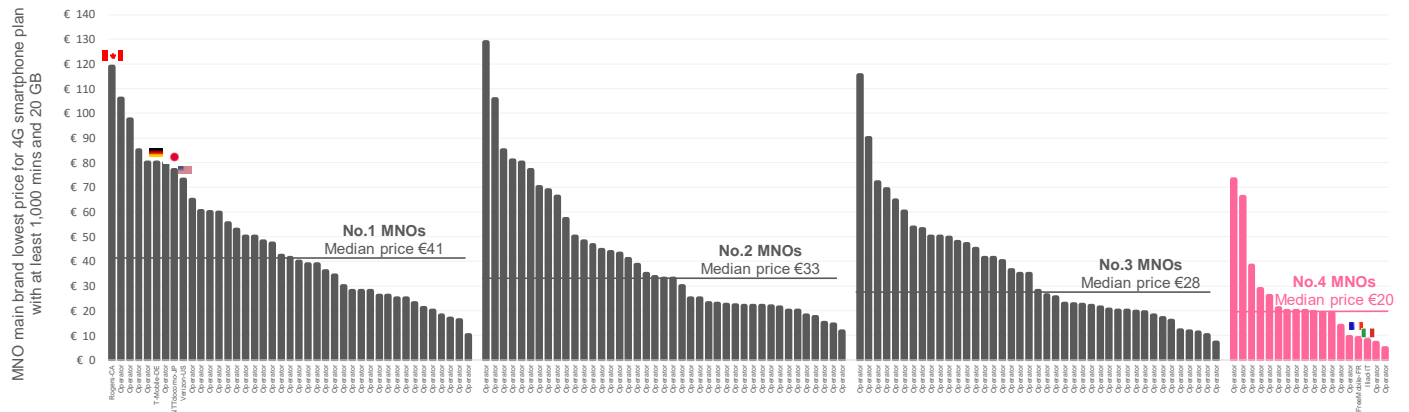
- The higher the market concentration the higher the country weighted (by MNO subscribers) average price for 20 GB 4G plan
- The higher the market share of the largest or 2 largest operator/s the higher the country weighted average price for 20 GB
- The higher the mobile operator subscriber share the higher the price it charges for a 20 gigabyte 4G plan
- Operators with less than 20% subscriber share charge a median price of €21, operators with a market share of 20% to 30% charge a median price of €27, operators with a market share of 30% to 40% charge a median price of €34 and operators with more than 40% market share charge a median price of €48

EU28 & OECD mobile operator price as a function of market share and number (3 vs. 4) of MNOs present in the market



- The higher the mobile operator market position (1st vs. 2nd vs. 3rd vs. 4th) the higher its 20 gigabyte 4G plan price
- No.1 MNOs charge a median price of €41, no.2 MNOs charge a median price of €33, no.3 MNOs charge a median price of €28 and no.4 MNOs charge a median price of €20

EU28 & OECD mobile operator price as a function of market position

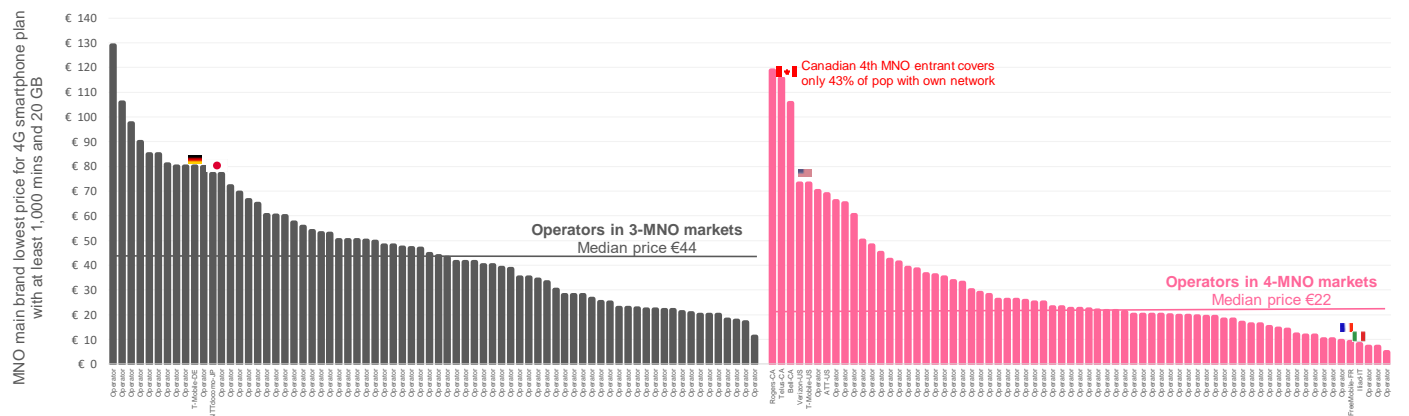


October 2018 prices of 141 EU28 & OECD MNOs. Prices in other currencies converted in EUR using market exchange rates.

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- The less (3 versus 4) mobile network operators present in a market the higher the price operators charge
- The median price charged by operators in 3-MNOs markets (€44) is 2x higher than in 4-MNO markets (€22)
- Prices charged by all MNOs are lower in 4-MNO markets not only those charged by the no.4 MNOs. If we exclude the no.4 MNOs the median price in 4-MNO markets is €25 vs. €44 in 3-MNO markets!

EU28 & OECD mobile operator price as a function of number of MNOs present in the market

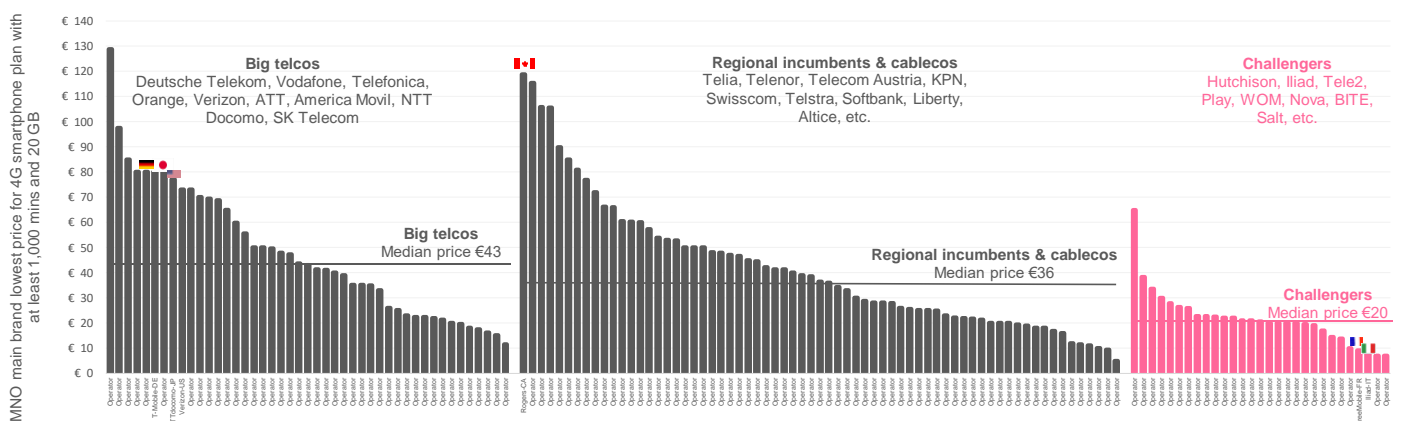


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- The bigger the operator group size the higher the price charged by its local subsidiaries for a 20 gigabyte 4G plan
- Mobile operators from big telco groups charge a median price of €43, mobile operators from regional incumbent and cableco groups charge a median price of €36 while mobile operators from challenger groups charge a median price of €20

EU28 & OECD mobile operator price as a function of telco group affiliation



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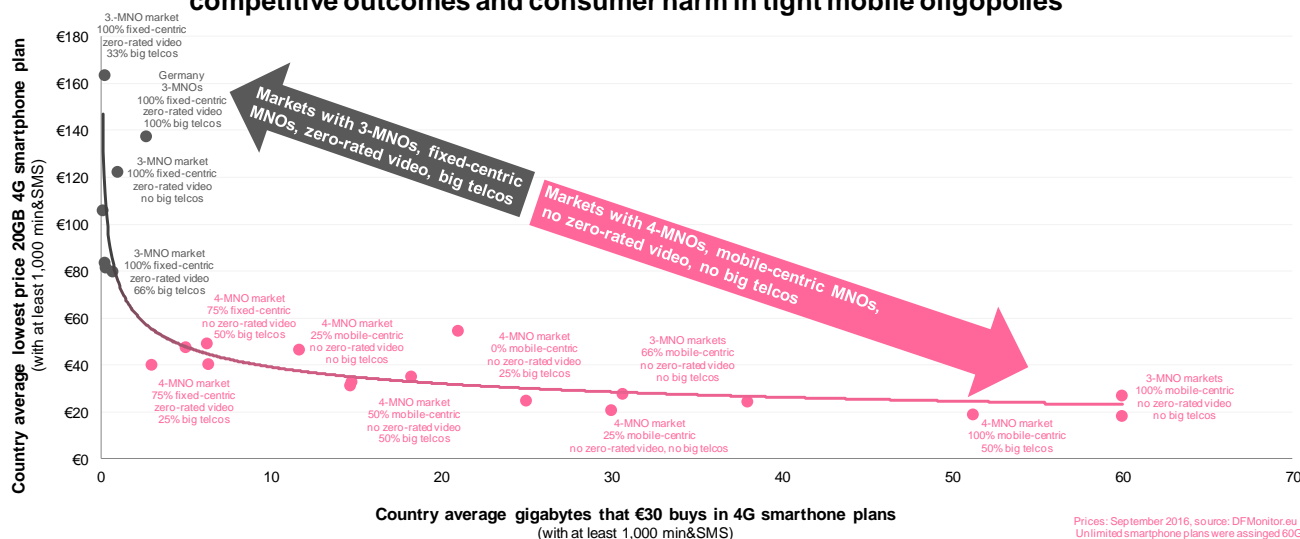
Context

What determines mobile operator prices and consequently the price level in a mobile market?

Most economists argue that the price level in a given market is determined by both endogenous factors such as concentration, number of effective competitors, the presence of a maverick firm and as well exogenous factors such as GDP per capita or country general price level.

However, we have shown as far back as December 2012 in our first comparative analysis¹ of EU27 smartphone tariff prices in a landmark study titled 'EU27 smartphone tariff competitiveness report' and as well in our tight mobile oligopolies 2016² and 2015³ studies that the price level in EU28 mobile markets is predominantly driven by the degree of effective competition rather than the country general price level or other exogenous factors. Mobile prices in EU28 mobile markets are driven both by the number (3 vs. 4) of operators present but as well by the type (fixed-line broadband centric vs. mobile-centric big telco affiliated vs. challenger group, etc.) of operators present. Mobile data prices in EU28 countries do not correlate with the general price level or any other macroeconomic factor. Actually, our previous studies suggested that the opposite is true. Mobile data prices tend to be higher in EU28 countries where the general price level is lower. Effective competition and not the country general price level leads to lower mobile data prices.

Factors that give rise to unilateral anti-competitive effects leading to non-competitive outcomes and consumer harm in tight mobile oligopolies



In this study we take a broader look by examining both the operator and *market price* (i.e. country weighted by MNO subscriber share average price) across all EU28 and OECD markets, 41 countries in total. Using Digital Fuel Monitor's 10th release⁴ October 2018 smartphone plan tariff data from 141 mobile network operators present in the 41 EU28 and OECD countries we investigate the relationship of mobile network operator prices as a function of subscriber market share, market position (1st vs. 2nd, vs. 3rd vs. 4th), number of MNOs present in the market (3 vs. 4) and group affiliation (big telco group vs. regional incumbents and cablecos vs. challenger groups). We further examine the relationship of *market price* as a function of market concentration, largest operator subscriber share, number of MNOs present in the market (3 vs. 4 or 5), and country general price level.

Once again, we conclude that the single most important factor that leads to significantly lower prices is neither the country general price level nor the market concentration but rather the presence of a 4th mobile network challenger operator from a maverick operator group such as Iliad, Hutchison, etc.

¹http://research.rewheel.fi/downloads/Rewheel_EU27_smartphone_tariff_competitiveness_report_December_2012_HIGHLIGHTS.pdf

²http://research.rewheel.fi/insights/2016_dec_pro_tightoligopoly/

³http://research.rewheel.fi/insights/2016_jan_premium_tightoligopoly_eu28/

⁴http://research.rewheel.fi/insights/2018_oct_pro_2h2018_release/

Table of Contents

1	Methodology and input data	6
1.1	Mobile network operator data	6
1.2	Country data	9
2	Dependency of operator prices on market share, market position, number of MNOs present in the market and telco group affiliation	10
2.1	Dependency of operator prices on subscriber market share	10
2.2	Dependency of operator prices on market position (1 st vs. 2 nd vs. 3 rd vs. 4 th)	12
2.3	Dependency of operator prices on number (3 versus 4) of MNOs present in the market	13
2.4	Dependency of operator prices on telco group affiliation (big telcos vs. regional incumbents vs. challengers)	15
3	Dependency of <i>market price</i> on market concentration, largest/s operator market share, number of MNOs present in the market and country general price level	17
3.1	Dependency of <i>market price</i> on market concentration (Herfindahl-Hirschman Index, HHI)	17
3.2	Dependency of <i>market price</i> on largest and two largest operator/s subscriber market share	21
3.3	Dependency of <i>market price</i> on number (3 versus 4 or 5) of MNOs present in the market	26
3.4	Dependency of <i>market price</i> on country general price level (CPL)	28

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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, 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. Buyers of our research reports and related strategic workshops include many companies and authorities across Europe and worldwide.

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

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