

Consolidated tight oligopolies versus competitive mobile markets – Digital Fuel Monitor fourth release, 2H2015

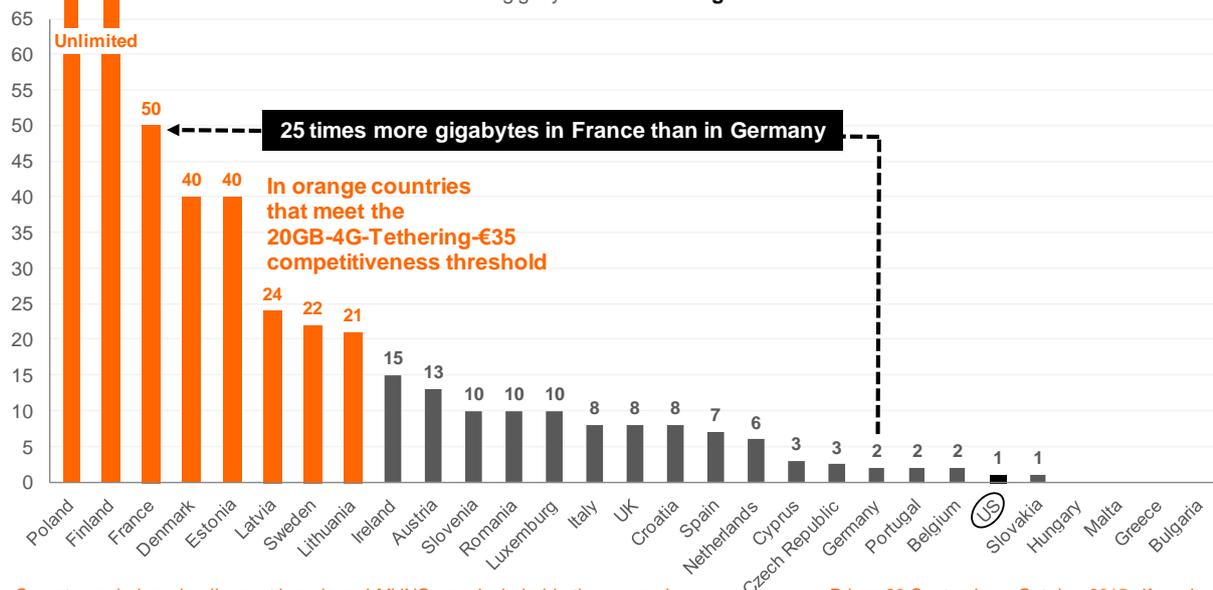
Welcome to the fourth Digital Fuel Monitor release, launched on the 9th November 2015, Rewheel's premium subscription service that comprehensively monitors and analyses competitiveness of mobile internet access in EU and OECD countries.

Get prepared for the mobile data transformation. Digital Fuel Monitor is an invaluable resource for market insight, strategy, pricing and regulatory teams navigating through the murky waters of in-market consolidation, vertical integration of mobile internet access with content/services and effective MVNO and network sharing 4G wholesale access pricing models.

Key market developments

How many 4G LTE smartphone gigabytes €35 buys in EU28 & US

4G LTE SIM-only unlimited (>1,000 minute & SMS smartphone tariff per country that for €35 or less includes the most gigabytes and **tethering** for the entire volume



Operator main brands, discount brands and MVNOs are included in the comparison

Prices 20 September - October 2015 dfmonitor.eu

Note: correction for Slovenia, 10.11.2015. €35 buys only 10 4G LTE gigabytes including tethering instead of 20 as shown initially.

- **Denmark: Back to normal!** The prohibition¹ of the Telenor and Telia Sonera 4 to 3 merger restored effective competition and sparked a new round of volume cap increases and lower gigabyte prices.
- **UK: Falling behind!** Has the planned 4 to 3 consolidation of Hutchison Three and Telefonica o2 in the UK, now in Phase II investigation², already pulled the breaks on effective competition? For the first time UK does not meet the competitiveness threshold and is now coloured grey in the charts.
- **Italy: Elvis has left the building!** Has the planned 4 to 3 consolidation of Hutchison Three and Vimpelcom Wind already turned the Italian market to a tight oligopoly?
- **Germany: Competition no more!** After the 4 to 3 merger approval, currently contested in EU courts as unlawful, German consumers experience the full force of excessive mobile internet access prices. The German 3-MNO tight oligopoly is fully controlled by three of EU's 5 big telecom groups Deutsche Telekom, Vodafone, Telefonica, Orange and Telekom Italia also known as the E5. Just two days after the EU adopted toothless net-neutrality rules the CEO of Deutsche Telekom "demanded startups to pay a share of their revenue to get good internet service"³. Vodafone agreed!
- **France: In the 4-MNO market competition is thriving!** €35 buys in the French 4-MNO competitive market 25 times more open mobile internet gigabytes than in the Germany.
- **US: Sky-high prices and laggard in LTE speeds!** US mobile internet access prices resemble prices charged in effective duopolies (e.g. Cyprus, Greece) and its LTE speeds those of developing markets⁴.
- **Israel: Only nonEU-OECD market with competitive prices!** Infrastructure based competition (5 mobile network operators) is fuelling very affordable consumer prices and a hostile environment for market coordination. Will the planned⁵ in-market 5 to 4 consolidation put all these in jeopardy?

¹ http://europa.eu/rapid/press-release_STATEMENT-15-5627_en.htm

² http://europa.eu/rapid/press-release_IP-15-5956_en.htm

³ <http://www.euractiv.com/sections/digital/deutsche-telekom-chief-causes-uproar-over-net-neutrality-319028>

⁴ <https://opensignal.com/reports/2015/05/state-of-lte-q2-2015/>

- **Finland: The most mature data market in the world!** According to TeliaSonera CEO, Johan Dannelind, Finland is ‘*the most mature data market in the world*’⁵. Affordably priced truly unlimited open mobile internet smartphone (€25) and data-only (€19) 4G LTE plans with tethering are increasingly used to substitute fixed broadband access for many customer segments (youth, students, single parents, etc.). During the 1H2015 mobile data consumption per capita exceeded 9 gigabytes per month and the penetration of fixed-broadband subscriptions has started to decrease.
- **Austria: No longer a competitive market!** 4 to 3 consolidation has turned Austria from being one of the most competitive EU mobile markets in 2012 to rank below average among EU28 countries in 2015.
- **Poland: In the 4-MNO Polish market competition is thriving!** Play, an independent fourth entrant challenger mobile-only operator has organically captured over 22% of the market by offering affordable unlimited volume smartphone plan, with tethering, for less than €20 and a 100 gigabyte mobile broadband plan for less than €22.

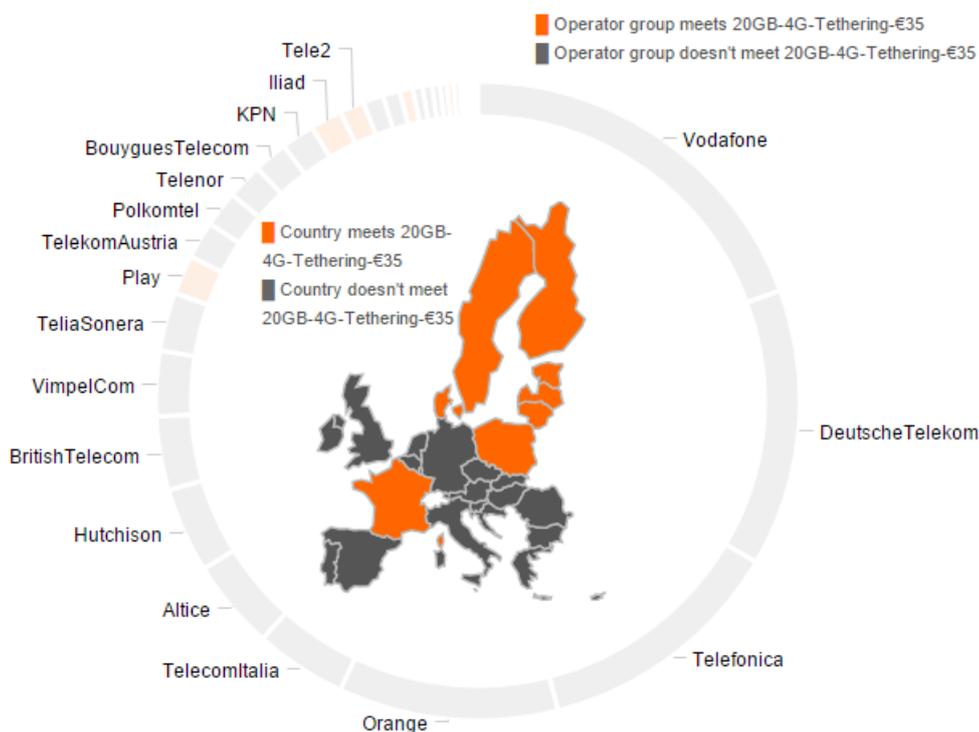
2H2015 competitiveness threshold: 20GB-4G-Tethering-€35

In order to keep pace with the fast increasing consumer demand in this fourth release, 2H2015, we have changed the colour code for labelling the competitiveness of countries and operator groups compared to the colour code of the 1H2015 third release. In EU’s competitive markets i.e. Nordics, Baltics, France, Poland, effective competition is thriving. Mobile operators that do not already offer unlimited gigabyte volume are continuously increasing, often doubling year-on-year, volume caps for the same or lower price.

In the 1H2015 release we used the 10GB-4G-€35 rule (4G LTE smartphone plan with unlimited >1,000 minutes and SMS and minimum 10 gigabytes for equal or less than €35) to determine if a country or an operator group will be designated the ‘*competitive*’ label and appear with orange colour in the charts.

In the latest 2H2015 release we now use the **20GB-4G-Tethering-€35** threshold: 4G LTE smartphone plan with unlimited >1,000 minutes and SMS and minimum 20 gigabytes for equal or less than €35 including tethering functionality (sharing the smartphone connection with other devices such as PCs and tablets by creating a WiFi hotspot) for the entire volume.

Countries where at least one mobile network operator met the competitiveness threshold have been labelled orange. Countries where no mobile operator met the competitiveness threshold have been labelled dark grey. An operator (part of a group) met the 20GB-4G-Tethering-€35 competitiveness threshold if any of its brands sold a 4G LTE smartphone tariff with unlimited minutes & SMS and at least 20 gigabytes of mobile internet access volume including tethering functionality for the entire volume for €35 or less. The operator groups present in the European Union and OECD member countries have been labelled to two mutually exclusive clusters: the operator groups that did not meet the 20GB-4G-Tethering-€35 competitiveness threshold in more than half of the countries where they are present (dark grey label) and the operator groups that did meet the 20GB-4G-Tethering-€35 competitiveness threshold in at least half or more of the countries where they are present (orange label).



⁵ <http://www.haaretz.com/israel-news/business/.premium-1.682450>

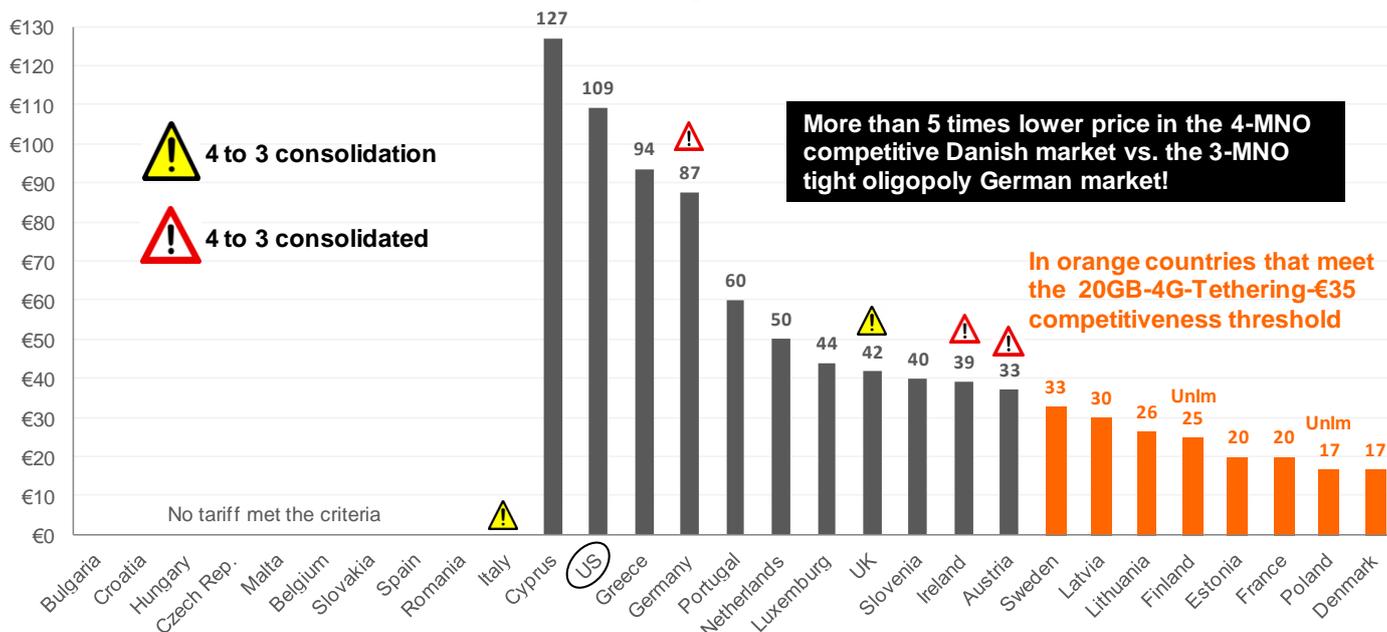
⁶ http://cloud.magneetto.com/teliasonera/2015_1020_q3_2015/view

The EU28 countries that met the 20GB-4G-Tethering-€35 competitiveness threshold were the Nordic and Baltic countries (Denmark, Finland, Sweden, Estonia, Lithuania and Latvia) and as well two other 4-MNO markets (France and Poland). Israel's 5-MNO market was the only non-EU OECD country that met the competitiveness threshold. The map above visualises the EU28 countries that meet the 20GB-4G-Tethering-€35 competitiveness threshold. The chart (on the dfmonitor.eu website) presents additional information when the mouse is over a country or an operator group. When readers click on a country or an operator group they will be directed to the country or operator group page where they can explore data in more depth.

The chart below ranks the EU28 countries and US based on the lowest price available for a 4G LTE smartphone tariff with unlimited minutes and SMS and at least 20 gigabytes of volume including tethering. As seen below US and German prices resemble excessive prices charged in the effective duopolies of Cyprus and Greece.

Lowest price of 20 gigabyte 4G LTE smartphone plans in EU28 & US

Lowest price 4G LTE SIM-only unlimited (>1,000) minute & SMS smartphone tariff per country with at least 20 gigabytes and **tethering** functionality included for the entire volume



Operator main brands, discount brands and MVNOs are included in the comparison

Prices September - October 2015 dfmonitor.eu

Note: correction for Slovenia, 10.11.2015. The minimum price for a 4G LTE smartphone tariff with 20 gigabytes including tethering is €39.95 instead of €25 as shown initially.

For more on the importance of tethering functionality (unrestricted device neutral mobile internet access) please see our premium research note titled "Affordably priced 100 or unlimited gigabyte 4G LTE smartphone plans with tethering – Trouble is brewing for cable and fixed-line operators"⁷.

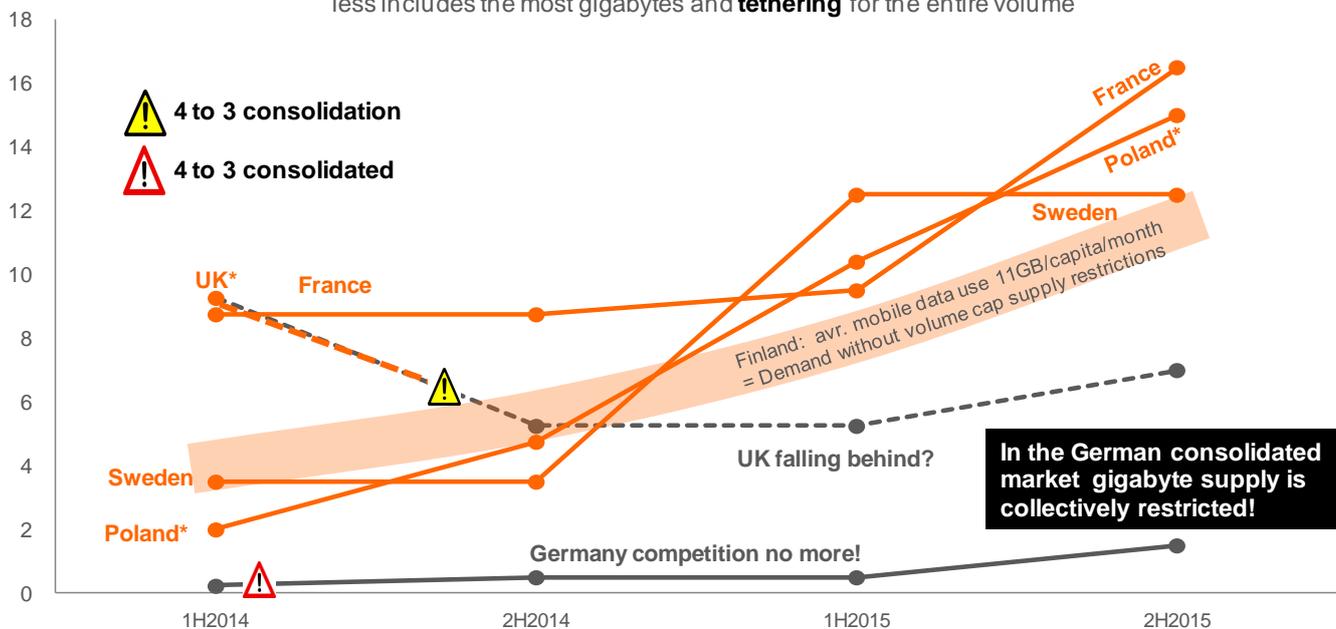
⁷ http://www.dfmonitor.eu/insights/2015_june_premium_tethering/

In consolidated 3-MNO tight oligopolies the supply of mobile internet gigabytes is collectively restricted

While competition is thriving in 4-MNO competitive mobile markets (e.g. Denmark, France, Poland, Sweden) in the consolidated German 3-MNO tight oligopoly the supply of mobile internet gigabytes is collectively restricted.

How many gigabytes €35 buys in 4-MNO markets vs. in the consolidated German tight oligopoly

Country average 4G LTE unlimited min&SMS smartphone tariff per MNO (incl. MVNO) that for €35 or less includes the most gigabytes and **tethering** for the entire volume



* Tariffs with unlimited GB volume in the UK and Poland were conservatively assigned a finite volume (i.e. 20GB) for the averaging. 20GB was the highest finite volume offered in the UK and Poland

In the 4-MNO Swedish, Polish and French mobile markets consumers could buy in October 2015 for €35 or less (i.e. affordable) 4G LTE smartphone plans that included an average of 12.5, 15 and 16.5 gigabytes of data volume and had no tethering restrictions. In Denmark, where effective competition was restored after the prohibition of the Telenor and TeliaSonera 4 to 3 merger consumers could buy in average more than 20 gigabytes (tethering included) for €35 or less. In Finland, the most mature data market in the world, consumers could buy truly unlimited open mobile internet gigabytes in their smartphones including unlimited tethering for €25.

In Germany, where effective competition was essentially foreclosed by the 4 to 3 Telefonica o2 and E-Plus unlawful merger approval, consumers could buy in average a tiny 1.5 gigabyte of volume as of October 2015. Moreover, the gigabyte volume that German consumers could buy for €35 or less has hardly grown since 1H2014.

Just before the consolidation ripples reached the UK coast line, in 1H2014, UK consumers could buy in average more gigabytes than French, Swedish or Polish consumers. As shown above consolidation has pulled the breaks on effective competition and by October 2015 the UK has fallen behind other 4-MNO competitive markets. Ms. Vestager and the European Commission is now the last line of defence for preserving effective competition in the UK mobile market. And as Rewheel has shown⁸ effective competition in a 4 to 3 mobile consolidation will be significantly impeded without the entry of an independent new mobile network operator with adequate low and high frequency spectrum and a stand-alone mobile network covering substantial part of the territory.

In the chart above we have included the Finnish monthly mobile data consumption per capita that reached 9 gigabytes per month by July 2015 and it is expected to surpass 11 gigabytes by end of 2015 to illustrate how demand for open mobile internet access grows in market where supply is not artificially restricted by tight volume caps.

In tight oligopoly⁹ markets the few competitors are economically incentivized to inflate prices and profits by collectively restricting supply. For the last two years DFMonitor has been monitoring such potentially anti-competitive supply restriction practices in many of EU's tight oligopoly mobile markets e.g. Germany.

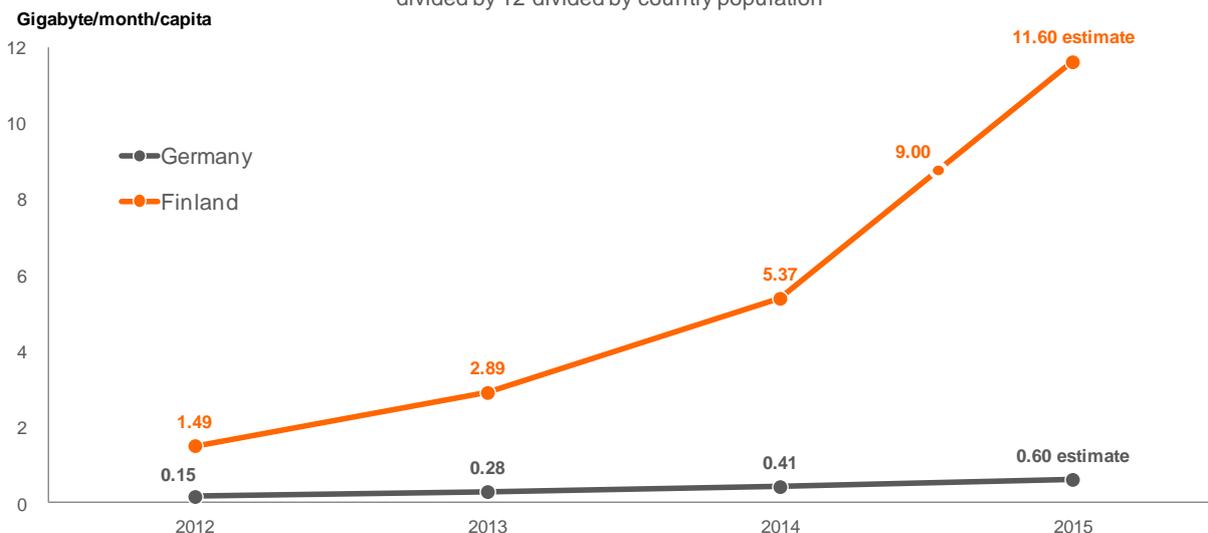
Unsurprisingly very restrictive volume caps heavily constrain mobile data consumption in Europe's consolidated 3-MNO tight oligopolies. The gap in the average mobile data consumption per capita between Finland and Germany is widening. By end of 2014 it had reached 13 times and by end of 2015 we estimate it will surpass 20 times. Mobile data consumption per capita in Finland exceeded 9 gigabytes per month in the end of 1H2015.

⁸ http://dfmonitor.eu/downloads/Effectives_remedies_telecom_consolidation_PUBLIC.pdf

⁹ http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/5042-draft-berec-report-on-oligopoly-analysis-and-regulation

Mobile data consumption per capita - Finland vs Germany

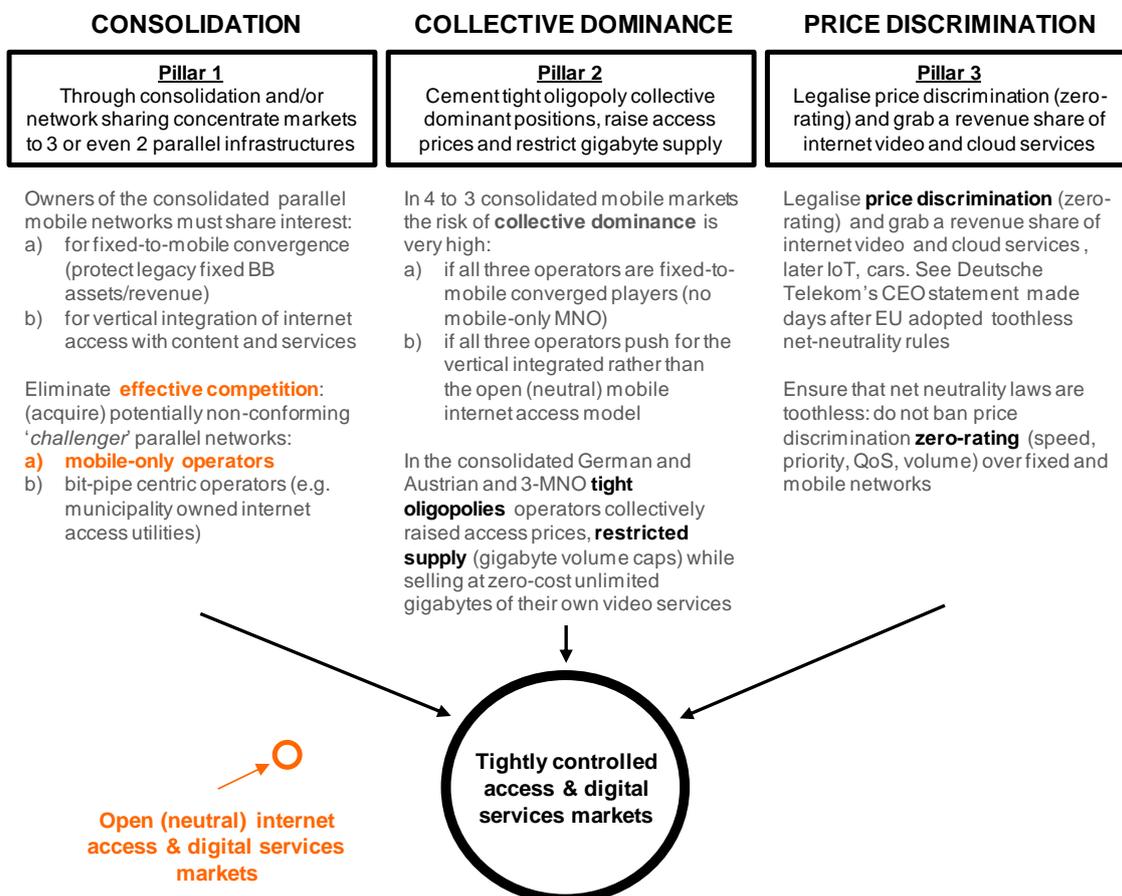
Annual total gigabyte mobile consumption (uplink + downlink, excluding WiFi) divided by 12 divided by country population



Source: Regulator websites

In-market consolidation increases the risk for collective dominance, price discrimination and sub-optimal tight oligopoly competition outcomes

In the figure below we illustrate the three pillars for creating tightly controlled access and digital services markets. First eliminate parallel infrastructures that are controlled by non-conforming owners through in-market consolidation and grow the share of the access pie revenues for remaining operators. Second cement collective dominant positions, restrict supply and raise access prices. Last but not least, having no challengers in tight oligopolies, inflate the revenue base by grabbing a share of the service and content business using price discrimination (zero-rating) and/or internet gatekeeper tolls (see Deutsche Telekom CEO statement¹⁰).



¹⁰ <http://www.euractiv.com/sections/digital/deutsche-telekom-chief-causes-uproar-over-net-neutrality-319028>

Over 100 times difference in gigabyte prices and included gigabyte volumes among EU28 and OECD countries

The striking differences in gigabyte prices and included gigabyte volumes among EU28 and OECD countries that Rewheel first exposed in early 2013 (see FT¹¹ and Reuters¹² stories) are unchanged. While in Germany, Belgium and many other countries consumers run out of their 1 or 2 gigabyte monthly volume allowance after watching an hour of mobile video in the Nordics, Baltics, France and Poland consumers get tens or truly unlimited amount of 4G gigabytes at affordable prices (€15 – €35) and enjoy worryless consumption of video and cloud services over their smartphones or laptops by using the included tethering functionality.

The controversial 4 to 3 merger approvals, courtesy of the previous European Commission and Joaquin Almunia to EU's incumbent telcos and the wave of planned mergers that follow those unlawful approvals exacerbated further this abnormal pattern by turning the ultra competitive Austrian and fairly competitive Irish markets to 3-MNO tight oligopolies. Moreover, the planned 4 to 3 merger in the UK has already pulled the breaks on effective competition and seriously threatens to turn the once very competitive UK mobile market to a consolidated tight oligopoly.

Upcoming in-depth premium research notes based on 2H2015 data set

In the next few months we will release, using the 2H2015 data set, a number of in-depth premium research notes. Drawing from our hands-on consulting experience in very challenging recent European in-market consolidation cases, active network sharing projects and effective MVNO data-centric wholesale access remedies assessments we intend to cover the following critical areas:

- **Tight oligopolies and the need for ex ante regulation**¹³. There are substantial empirical market evidences supporting the notion that close to half of EU's mobile markets exhibit tight oligopoly non- or sub-competitive market outcomes. We intend to publish '*tight oligopoly index*' rankings based on empirical market metrics
- **A set of effective commitments for the planned 4 to 3 mobile consolidation in the UK** between Hutchison Three and Telefonica o2 that is currently under in-depth investigation by the European Commission
- **A set of effective commitments for the planned 4 to 3 mobile consolidation in Italy** between Hutchison Three and Wind Vimpelcom that is currently planned
- **Effective data-centric MVNO wholesale access frameworks** Is there any wholesale access frameworks that could turn independent MVNOs into effective mobile data retail competitors in the short-term?
- **Network sharing (=infrastructure consolidation) instead of full merger**¹⁴. What types of active network sharing agreements do not raise anti-competitive effects? What are the pro-competitive forms of network sharing (rural only, country-wide, passive sharing, MOCN, MORAN, 2G-3G-4G-5G, frequency pooling) that could be approved by national and European regulators and competition authorities?
- **A comprehensive list of operator zero-rated (own) mobile video services**. The 2H105 data set besides prices includes a comprehensive list of all price discriminatory zero-rated video services launched by EU28 and OECD operators (operator own zero-rated mobile TV & on-demand film store services). Do such services restrict consumer choice and put competitors into a competitive disadvantage given that many of the operators that launch such services are collectively dominant?

¹¹ <http://www.ft.com/cms/s/0/3ba4a3ea-b128-11e3-9548-00144feab7de.html#axzz3qQcSV1rM>

¹² <http://www.reuters.com/article/2013/05/22/eu-mobile-pricing-idUSL6N0E34FM20130522>

¹³ http://www.dfmonitor.eu/insights/2015_aug_premium_tight_oligopolies/

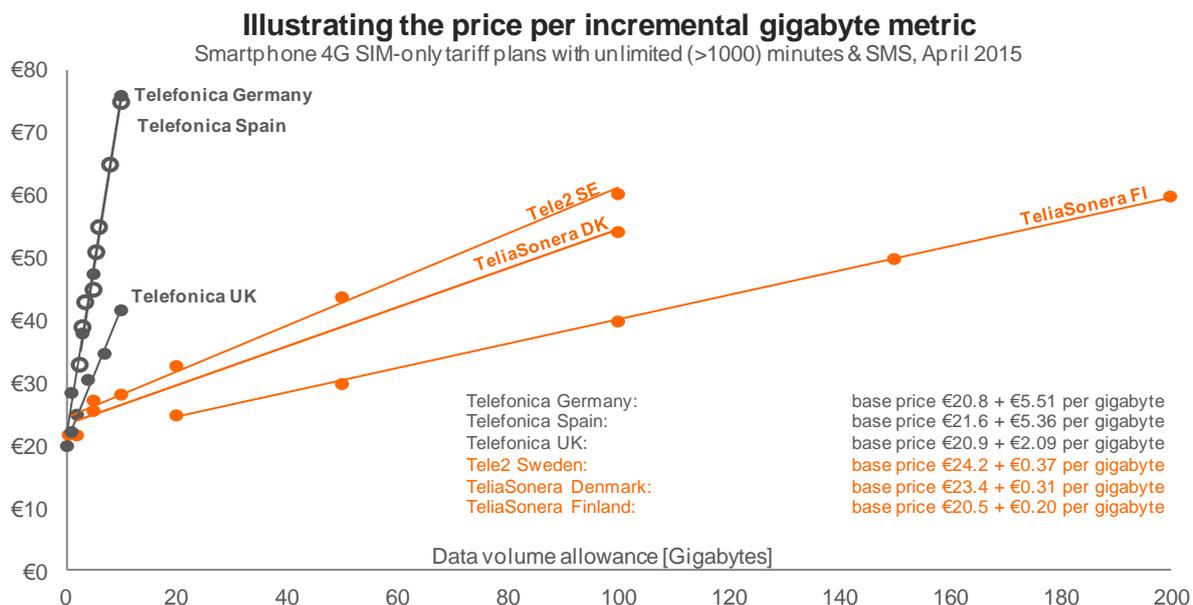
¹⁴ http://ec.europa.eu/commission/2014-2019/vestager/announcements/competition-telecom-markets_en

Why is the DFMonitor methodology so powerful?

The most important competitiveness metric in this "mobile-first and cloud-first world" is the price of open mobile internet access gigabytes: how much do consumers have to pay to watch mobile video or use cloud services worryless on their smartphones or on the PCs and tablets connected through the smartphone's WiFi mobile hotspot.

The DFMonitor methodology allows for the straightforward separation and reliable approximation of the price of incremental mobile internet access gigabytes in unlimited minute & SMS smartphone and data-only tariff plans. We apply linear regression line fitting to the raw data points (volumes plotted against prices) and separate the gigabyte price (slope of the linear trend line) and the base data traffic independent price (zero gigabyte price including the built-in minute & SMS allowance). This simple operation reveals the calculated average mobile internet usage (gigabyte) price charged by every operator.

Besides calculating the incremental gigabyte and base prices for each operator DFMonitor automatically calculates a variety of Euro (e.g. €25, €35, €60) and gigabyte (e.g. 1, 5, 10, 20, 50, 100) baskets. The Euro basket comparison directly highlights the amount of mobile internet access gigabytes included by each operator for a given (affordable) basket of Euros. Non-premium subscribers can try the interactive charts on the EU-OECD competitiveness overview and country and operator specific DFMonitor pages and analyse the outdated prices of 1H2014.



The DFMonitor methodology exposes:

- The huge price difference (over 100 times) of gigabytes among competitive and protected/consolidated markets
- The huge price difference (over 100 times) of gigabytes among operators and operator groups
- The telcos' potentially anti-competitive own zero-rated video and cloud services (open mobile internet gigabytes sold at €5-€10 while telco's own zero-rated gigabytes sold at €0)
- The post merger price hikes in 4 to 3 consolidated markets

Monitoring competitiveness from the Finnish perspective

The Digital Fuel Monitor service is managed by the Finnish boutique management consultancy Rewheel that specialises into advising European operators, investors, sector regulators and competition authorities on competition analysis, merger remedies assessment, mobile internet-centric business models, pricing analysis, spectrum auctions, network sharing and infrastructure investments.

Finland has the lowest mobile internet usage prices among EU28 and OECD countries, the highest mobile data consumption per capita (estimated to 11 gigabytes per person per month or 20 times higher than Germany's by end 2015) and the highest mobile broadband population penetration (2014). All mobile operators in Finland abide by strict net neutrality principles and none of them vertically price discriminate (e.g. zero-rating) any of its own or third party services or content. Finland is the most mature mobile data market in the world, the penetration of fixed-broadband subscriptions has started to decrease¹⁵ in the first half of 2015.

Despite the mass-affordable open mobile internet truly unlimited volume offers and very heavy mobile data traffic the Finnish telecom sector generates healthy returns for its investors (e.g. 16% ROCE reported by Elisa, the leading Finnish operator).

¹⁵ https://www.viestintavirasto.fi/attachments/toimialatieto/Toimialakatsaus_3_2015_FI.pdf

Get prepared for the mobile data transformation

Digital Fuel Monitor is an invaluable resource for market insight, strategy, pricing and regulatory teams navigating through the murky waters of the mobile data transformation.

The most typical situations where our MNO, MVNO, regulator, competition authority, digital services and investor clients required access to our premium subscription and insights:

- Preparing retail pricing strategy as MNO, MVNO
- Preparing strategies for vertical integration of mobile data access and services, as MNO, MVNO
- Preparing for vertically integrated mobile data and services markets as global digital services company
- Preparing for in-market consolidation as an initiator or target MNO
- Preparing for in-market consolidation as an MVNO in the market
- Preparing for in-market consolidation as sector regulator
- Preparing for in-market consolidation as competition authority
- Preparing for network and spectrum sharing as an initiator MNO
- Preparing for spectrum acquisition (700 MHz) as an MNO

DFMonitor subscription has become an indispensable resource for many leading operator groups, telecom regulators, competition authorities and various players of the digital economy and mobile cloud and IoT ecosystem in Europe and the US. The telecom and tech investor community also shows a great interest in our research - DFMonitor data has been cited in many investor presentations.