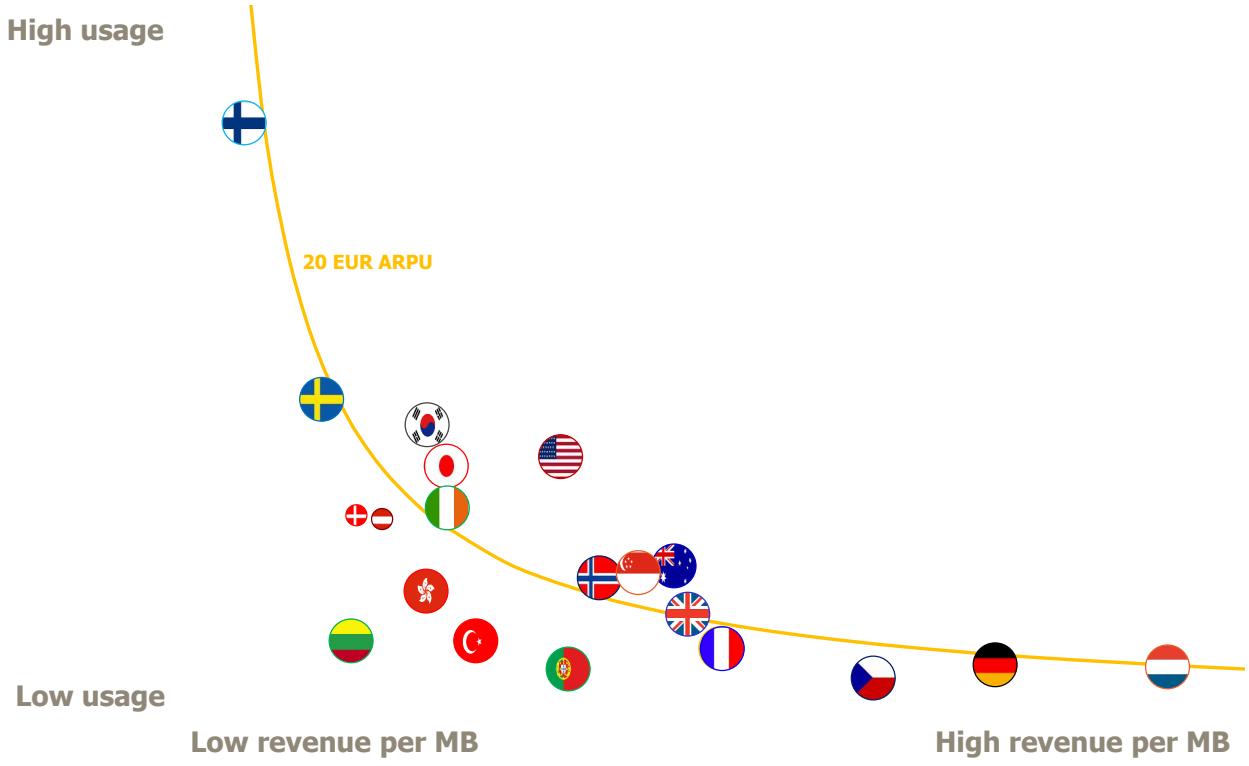
tefficient

Industry analysis #3 2016

Mobile data usage 2015 – preliminary

USA and Finland surprise: High and quickly growing mobile data usage



This is tefficient's 13th public analysis on the development of mobile data usage and effective revenue per Mbyte.

Data usage continued to grow, but the growth rate varied between markets.

Certain Asian markets – Singapore, Hong Kong and, to some extent, Japan – showed signs of saturation whereas some European markets like Portugal and Germany couldn't grow as fast as other low usage countries. In contrast, USA, Finland, Czech Republic and Turkey demonstrated a rapidly increasing appetite for mobile data.

The effective revenue per Mbyte matters: In Finland, average usage was 12 times that of the Netherlands – where operators effectively charged 15 times more for a megabyte than in Finland.

This is a preliminary, shortened, version without 2015 data for Denmark, Austria, Estonia, Latvia, Switzerland, Poland and Belgium. We expect to issue the final analysis in July – including missing countries if they have reported by then. The final analysis will also contain the usual – and much-wanted – operator top list.

The average Finnish SIM card used 5 GB per month in 2015

Figure 1 shows the development of mobile data usage for 26 countries where regulators[1] report mobile data traffic.

The top countries of the world based on FY 2015 stats are **Finland**, **Sweden**, **Korea**, **USA**, **Japan** and **Ireland**. [We expect Estonia, Latvia, Denmark and Austria to change this order once their FY 2015 stats are in, but not to challenge Finland's No 1 position]. In 2015, USA, Australia, Norway and Hong Kong all joined the gigabyte club for the first time.

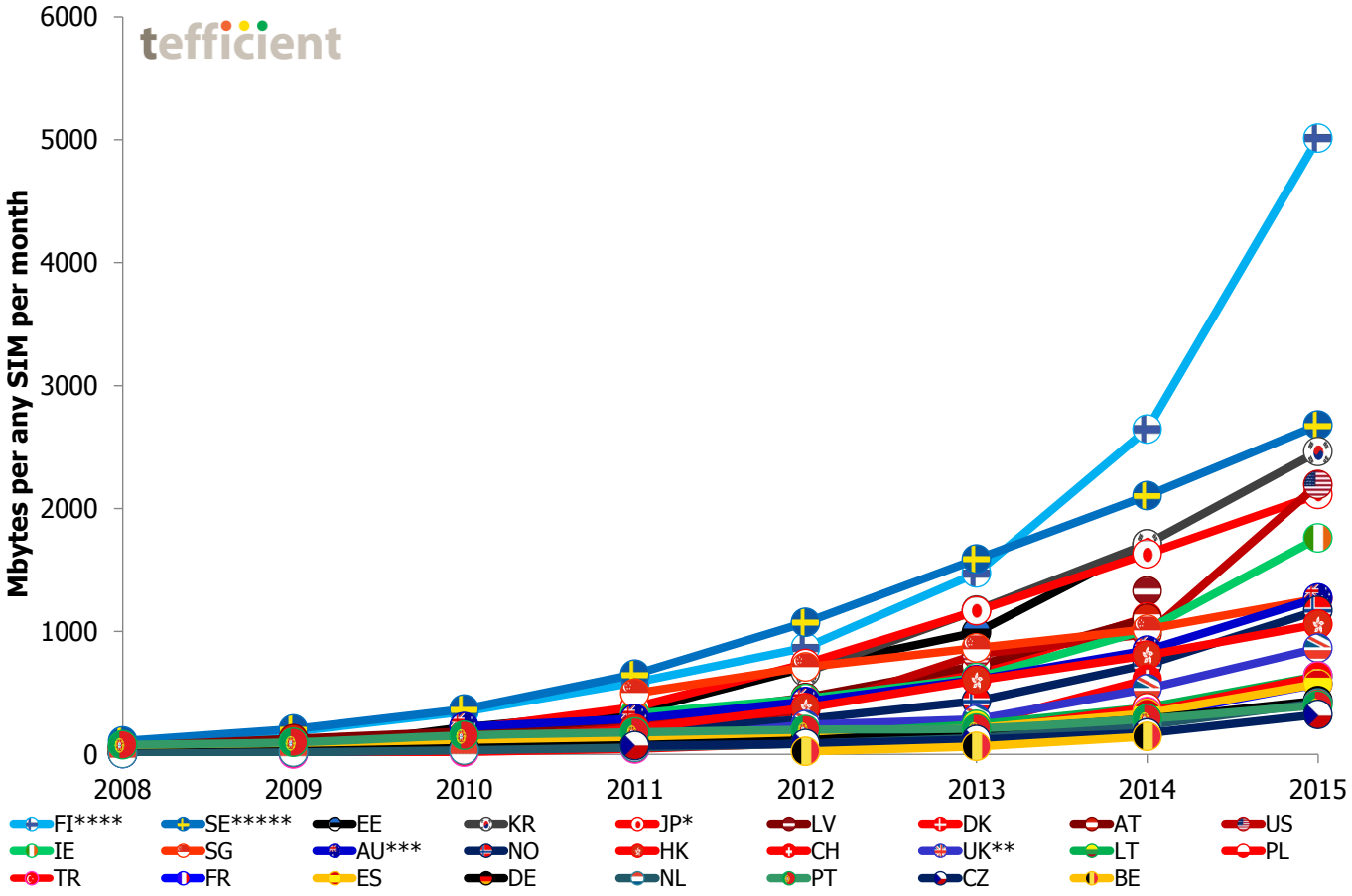


Figure 1. Development of mobile data usage per any SIM per country

With **5 GB** per month per any SIM, **Finland** continues to leave the rest of the world behind in usage. It's almost 2x the current number 2 (Sweden). 45% of the Finnish SIMs (incl. M2M) had **unlimited data** in December 2015: Monetisation in Finland is effectively based on throughput tiers and not on volume. Even though some operators like e.g. Swisscom, Salt, Sunrise, Sprint, T-Mobile USA

[1] Exception: USA, where data is from industry body CTIA

and '3' in the UK and Austria offer unlimited options, Finland is still the only market which can be claimed to be de facto unlimited.

Sweden is number 2 with 2.7 GB per month and **Korea** number 3 with 2.5 GB. **USA**, which had a disappointing usage growth of just 20% in 2014 makes a strong comeback in 2015 (from <1 GB to 2.2 GB), passing **Japan** (2.1 GB). Also **Ireland** (1.8 GB) had strong usage growth in 2015.

In the bottom, the **Netherlands** passed **Portugal** – a country which back in 2008-2009 was a leader in mobile data usage. **Czech Republic** has been added to our analysis and is preliminary bottom-ranked in usage. In the Netherlands, Portugal and Czech Republic, public **Wi-Fi is widely available** through hot- and homespots[2] – not only provided by cablecos like **Ziggo**, **NOS** and **UPC** but in the Netherlands and Portugal also by the incumbents **KPN** and **MEO**.

Table 1 shows the list of countries for where FY 2015 data currently is available.

Position	Country	Mbytes per any SIM and month 2015	Mbytes per any SIM and month 2014
1	Finland	5012	2644
2	Sweden	2678	2104
3	Korea	2463	1711
4	USA	2193	979
5	Japan	2113 March+June+September+December figures times 3	1631 March+June+September+December figures times 3
6	Ireland	1760	1014
7	Australia	1271 Q to December+Q to June times 2. Download only, but data over satellite on the other hand included.	847 Q to December+Q to June times 2. Download only, but data over satellite on the other hand included.
8	Singapore	1213	1017
9	Norway	1170	731
10	Hong Kong	1057	806
11	UK	863 Month of June 2015 times 12	534
12	Lithuania	637	380
13	Turkey	637	348
14	Spain	573	333
15	France	572	325
16	Germany	435	289
17	Netherlands	417	239
18	Portugal	399	290
19	Czech Republic	323 Preliminary	172

Table 1. Mobile data usage per any SIM and month – values visualised in Figure 1

[2] Using the home modems of customers to transmit dual SSIDs: One private for the home and one public for guests and passers-by

Low usage = high growth? Not that simple.

When operators implement tighter control over mobile data usage – through controlled bucket sizes or increased prices – the growth of the mobile data usage is of course affected.

Looking at Figure 2 – which compares the usage level with its 2014 to 2015 development – we can see two corners of the chart with atypical behaviour: **Finland** and **USA** (upper right), represents one. The Finnish mobile data usage grew **90%** in spite of the world's highest data usage. Is this where the rest of the world would be if mobile data was unlimited?

In the US, data usage growth was even faster – **124%**. Since none of the largest four US operators report data traffic there's little guidance on where it came from, but bucket sizes have generally been expanded in 2015. Another driver might be **zero-rating**; T-Mobile introduced and expanded on its Binge On proposition in 2015. It allows customers on mid-priced plans to consume video from a large number of providers without any data being deducted from their buckets. In January 2016, AT&T re-introduced unlimited smartphone data in combination with TV from DirecTV or U-verse. It hasn't affected these 2015 numbers, but could mean that mobile data usage will show strong growth in the USA also in 2016.

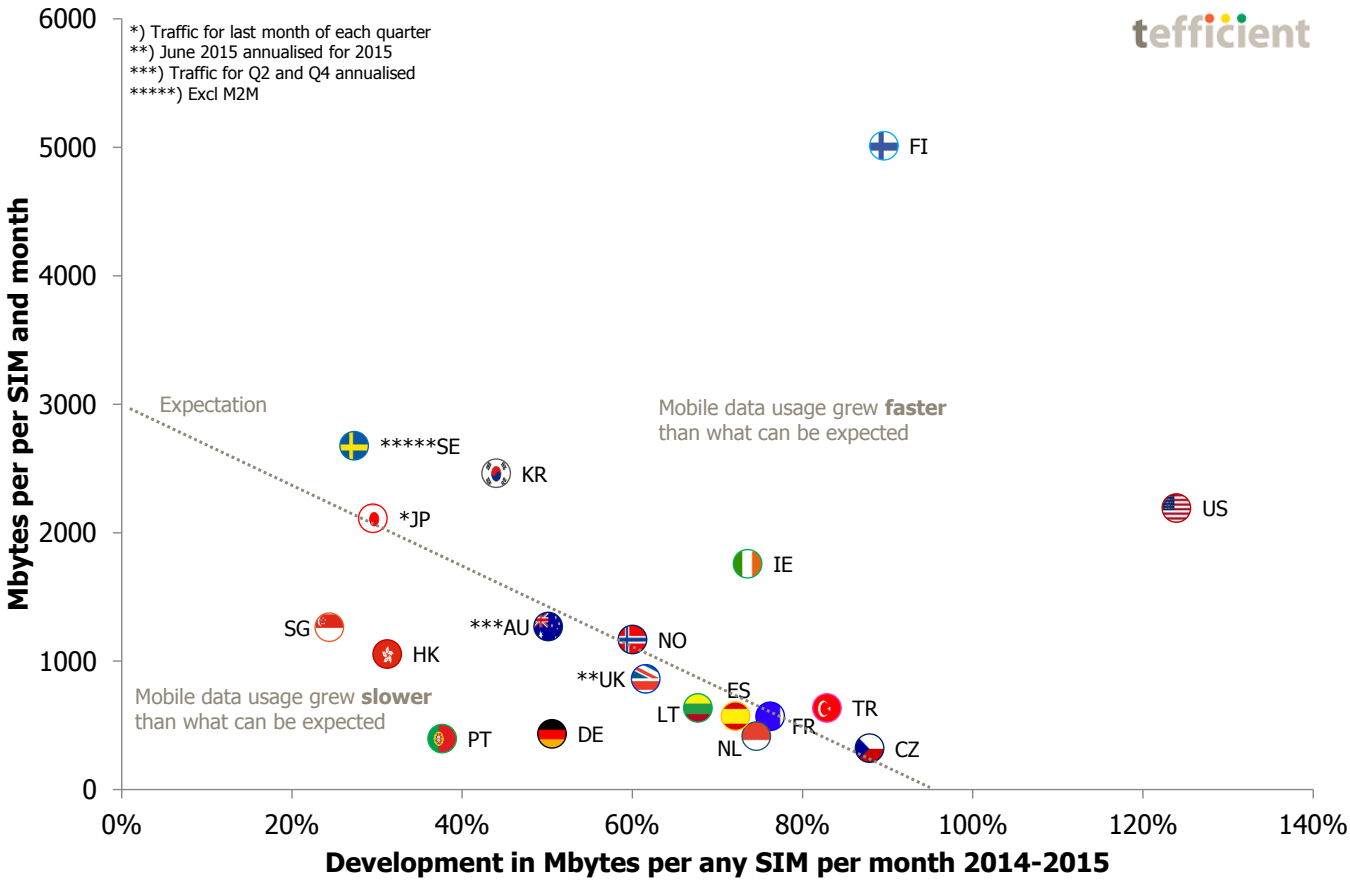


Figure 2. Mobile data usage vs. its development from 2014

The other atypical corner is represented by **Portugal**, **Singapore**, **Hong Kong** and **Germany** – lower left. In Singapore and Hong Kong we observe signs of saturation: Mobile data usage only grew 24% (Singapore) and 31% (Hong Kong). The explanation to the low growth rate in Singapore and Hong Kong is to be found in operators' ambition to earn more on mobile data – while they at the same time build large Wi-Fi networks to offload cellular traffic. This doesn't mean that paid traffic is substituted by free traffic; many of these operators are charging for Wi-Fi.

When it comes to Portugal and Germany it's hardly saturation which explains the low usage growth – since usage is so low. **Portugal** has had a weak development in mobile data usage for a long time. In their case it's driven by fewer data-only subscriptions – and even if data-only just represented 3.4% of the SIMs in December, 65% of the mobile data traffic was still carried by these SIMs. There's not much wrong with Portugal's smartphone penetration – Vodafone reported 59.4% for March 2016 – but the Portuguese simply seem to avoid using mobile data on their smartphones. As mentioned, Wi-Fi plays a role here.

We will in an upcoming graph show that German operators have very high effective revenue per Mbyte (albeit not the highest) which more than anything else explains **Germany**'s weak usage development in 2015. It should be a disturbing fact for the European Commission that in 2014 approved a merger between O2 and E-plus, leaving Europe's largest market with just three mobile operators. The consolidation happened in October 2014.

In Figure 3, we have ranked the mobile data usage development in 2015 (i.e. the x-axis from Figure 2).

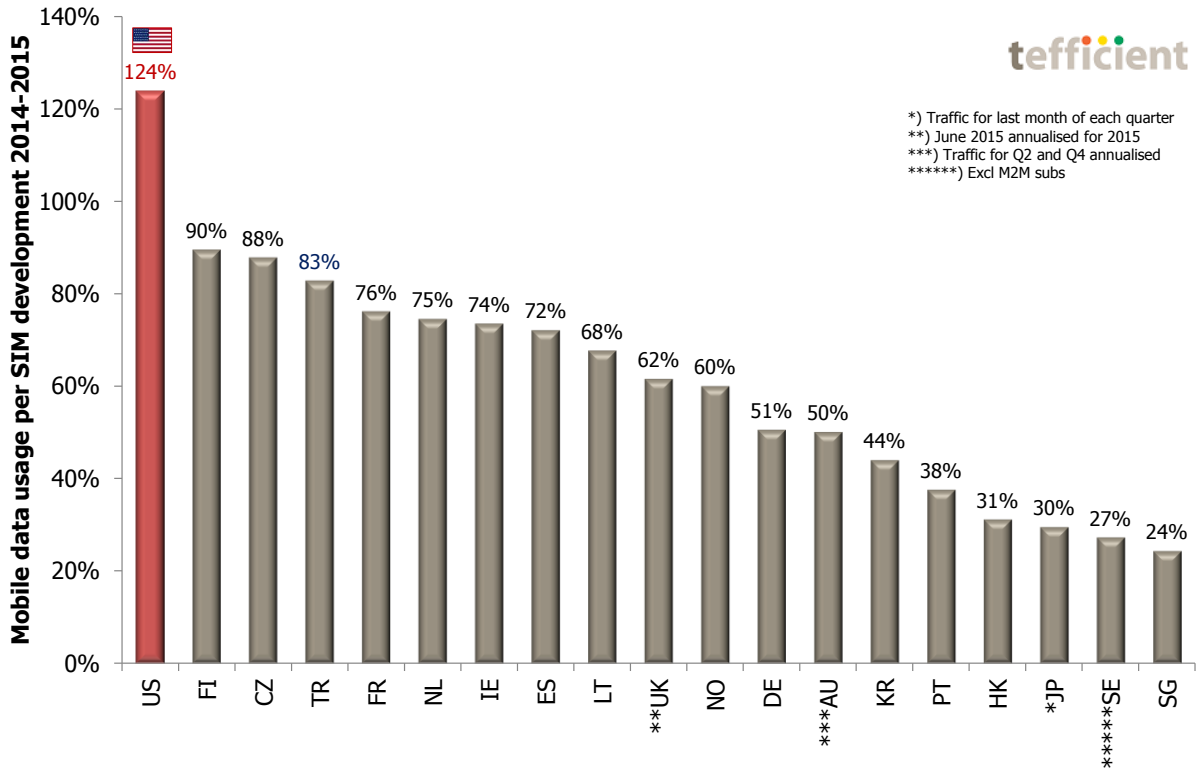


Figure 3. Mobile data usage development 2014-2015

USA leads with 124% usage growth in 2015. Since the number of SIMs grew 6% in 2015, the total data traffic grew even faster – 138%.

Finland – in spite of the world's highest usage already in 2014 – follows with **90%**. The total traffic grew 93% with a modest SIM base growth of less than 2%.

Average usage in **Czech Republic** and **Turkey** grew more than 80%.

Sweden is now in the bottom of the growth ranking together with the mature Asian markets **Singapore**, **Japan** and **Hong Kong**.

Is data-only important for usage?

The bigger the screen, the higher the data consumption – right? Figure 4 gives support for this.

Generally speaking, countries with a high penetration of **data-only SIMs** – sitting in e.g. tablets, PCs, modems – have much higher data usage than countries with a low data-only penetration. With 20% of SIMs being data-only, **Finland** has the highest data usage in the world. **Australia** is, however, at 19% with just 1.3 GB per SIM and month, but seems to be the exception.

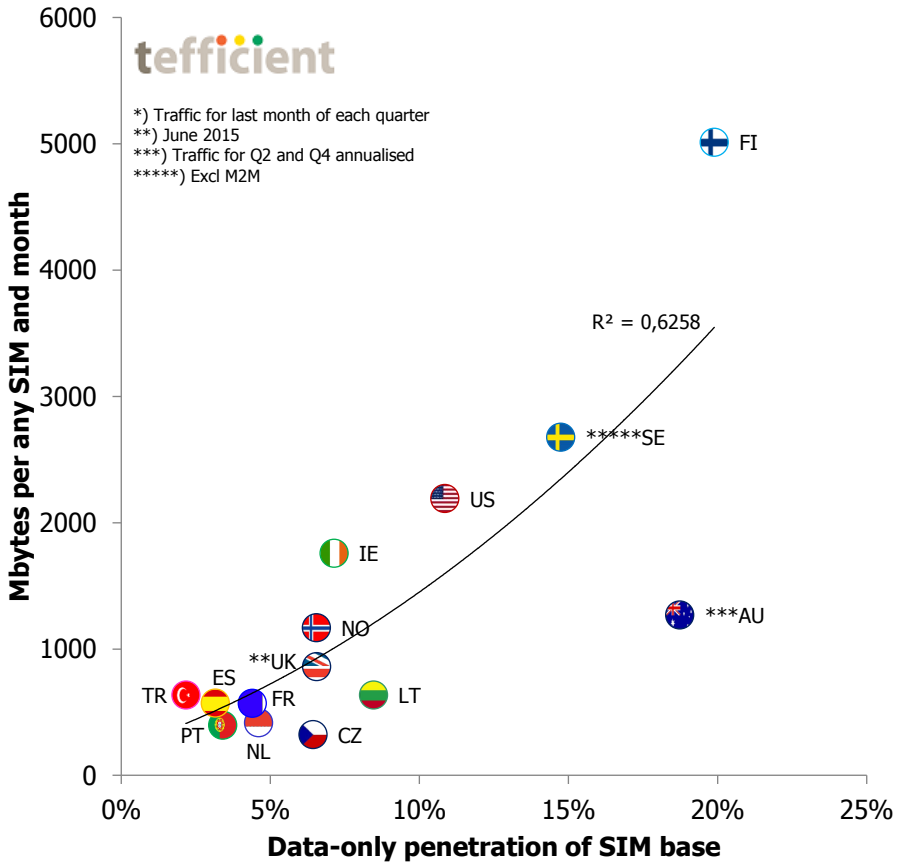


Figure 4. Mobile data usage vs. data-only penetration

If looking at the bottom-left corner we note that countries without a developed data-only market – **Turkey**, **Spain**, **Portugal**, **France** and the **Netherlands** – all experience average usage around 500 Mbyte per month. It would make sense for someone in these markets to start addressing and monetise the data-only segment soon.

Is 4G LTE adoption important for usage?

Three things are required to be an active 4G LTE customer:

1. A 4G LTE capable device
2. A subscription that supports 4G LTE
3. 4G LTE coverage

Maybe because of this complexity, few regulators report 4G LTE adoption. An attempt to correlate it with data usage is still done in Figure 5 below.

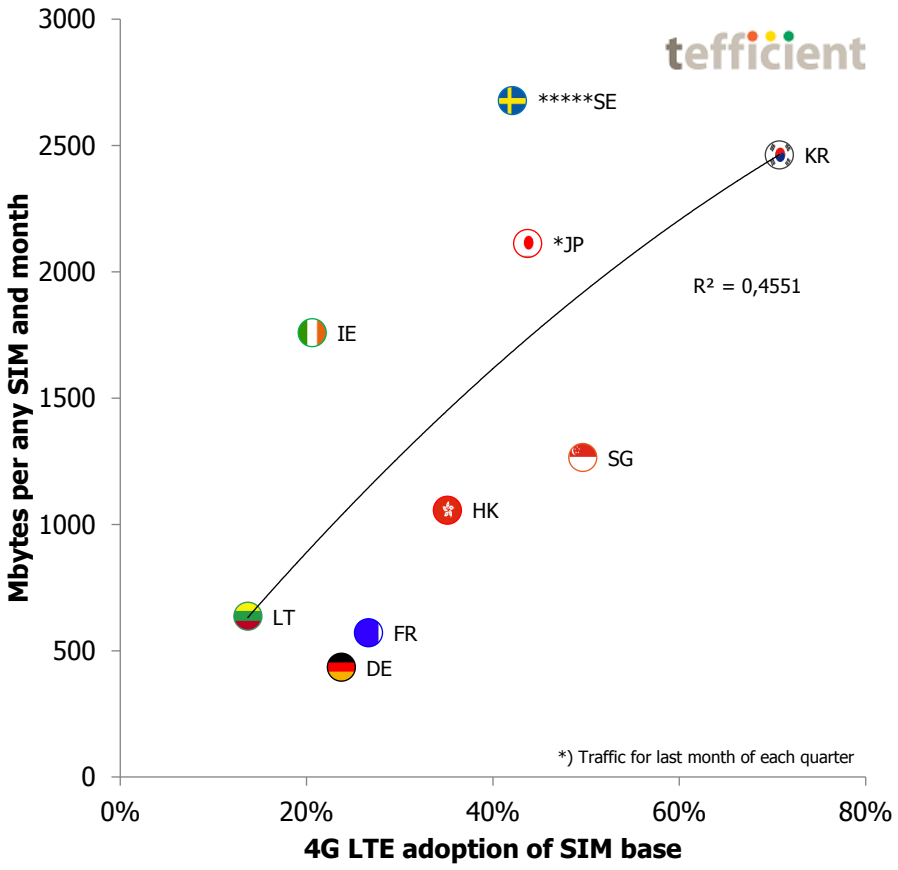


Figure 5. Mobile data usage vs. 4G LTE adoption

Ireland, Sweden and Japan have high data usage without particularly high 4G LTE adoption. Germany and France are having higher 4G LTE adoption than Ireland, but still much lower data usage.

Table 2 shows the few countries that currently break out the 4G LTE *traffic* in their reporting:

Country	4G LTE adoption of SIM base	4G LTE share of data traffic
Korea	70.7%	97.2%
Sweden	42.1%	57.3%
Netherlands	n/a	58.7% Q2-Q4

Table 2. 4G LTE adoption of SIM base vs. 4G LTE share of traffic

The sample is very small, but suggests that 4G LTE SIMs in general carry a disproportionately high share of the data traffic. It both Korea and Sweden, 4G LTE SIMs generate **1.4x** the traffic of any SIM. That factor isn't much if compared to data-only, though: In Sweden a data-only SIM generates **3.8x** the traffic of any SIM, in Portugal 19x – but in France just 1.6x.

Figure 5 still suggests that 4G LTE adoption – too – is a factor that explains data usage. Finland is however missing out in Figure 5. Though not reported, we believe that the 4G LTE adoption in Finland is below 40%. Having also Finland (with 5 GB per month) in the graph would make the correlation yet weaker.

Effective revenue per Mbyte vs. usage

Finally to the chart which many readers find the most interesting.

Figure 6 plots the *total* mobile service revenue per Mbyte[3] against the average mobile data usage per country. To populate the graph more, awaiting the final version of this analysis, we have two times series in the graph: The bigger markers indicate FY 2015 whereas the small indicate 1H 2015.

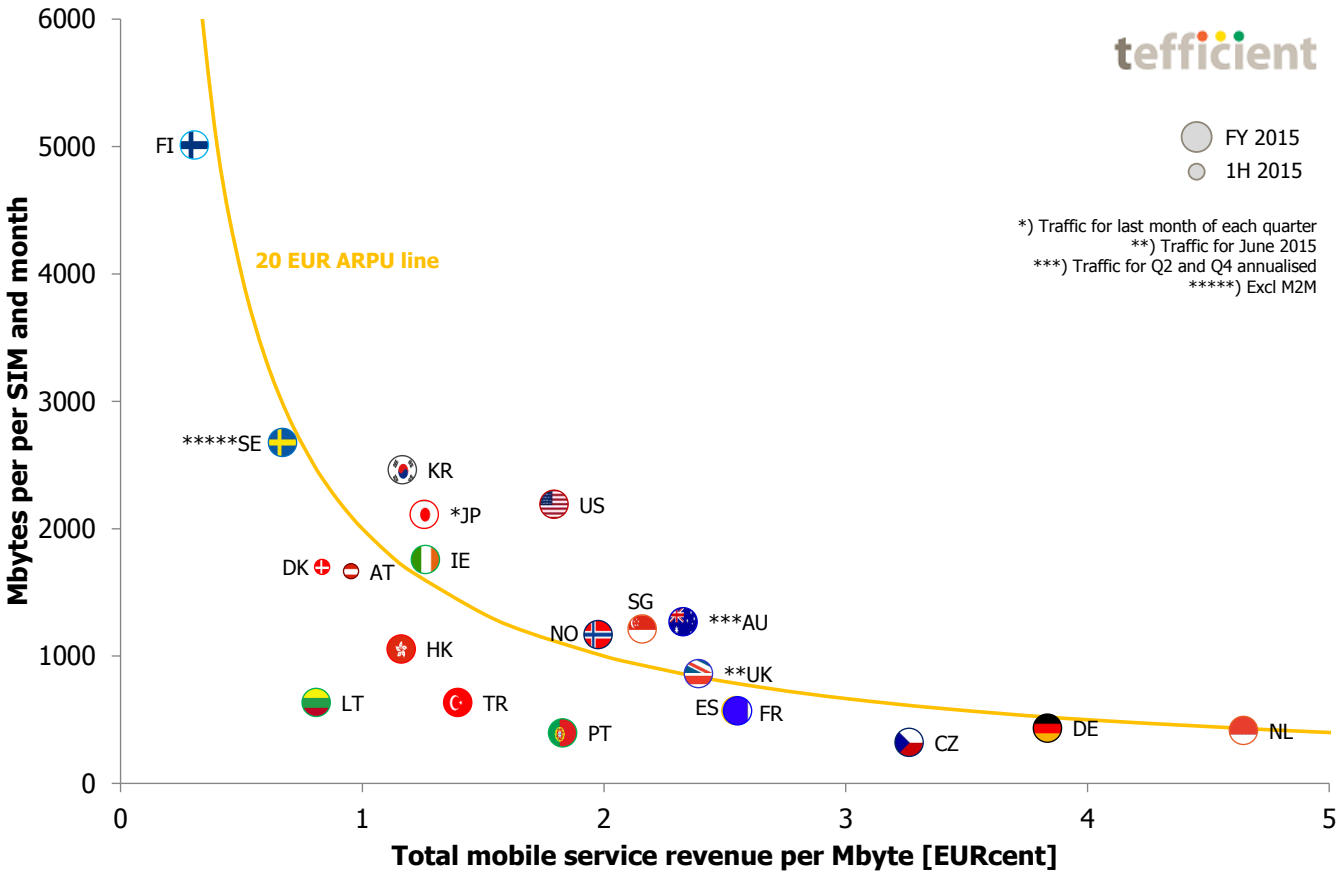


Figure 6. Comparing total mobile service revenue per Mbyte with mobile data usage

The amber line isn't a trend line – it's showing where **20 EUR of ARPU** is earned. Countries below it had an ARPU lower than 20 EUR; countries above an ARPU higher than 20 EUR. USA had the highest ARPU (39 EUR) and Lithuania the lowest (5 EUR).

Netherlands had, also in 2015, the highest effective revenue per Mbyte – **15 times** higher than in **Finland** that had the lowest. Also **Germany** and **Czech Republic** have very high effective revenues per Mbyte.

[3] Attributing zero value to voice and messaging – which is also how most mature operators have priced service bundles when voice and messaging are unlimited, but data capped on volume

Based on Figure 6 we can conclude – as in all our previous analyses on this topic – that the key explanation for high mobile data usage is low effective revenue per Mbyte: **Bigger data buckets lead to lower revenue per Mbyte – which increases usage**. At least if customers can use big buckets on data-only devices; see Figure 4.

Conclusion

We are still waiting for a few countries to report, but preliminary it is the operators in **Finland**, **Sweden**, **Korea**, **USA**, **Japan** and **Ireland** (in that order) that have the customers with the highest mobile data usage in the world.

In most markets, usage continues to grow at high speed; the average usage growth was **61%** in 2015 compared to 2014. **USA** tops with 124%.

At the same time **Singapore**, **Sweden**, **Japan**, **Hong Kong** and **Portugal** show significantly slower usage growth – in Singapore's case just 24%.

With a monetisation model predominantly based on data volume, it is tempting for operators to make sure that every Mbyte costs and brings in good margin by keeping bucket sizes down and prices up. Customers aren't without alternatives, though. Cablecos are e.g. providing their customers with access to **public Wi-Fi** and free-to-use Wi-Fi calling apps in most of our studied markets. In addition, there are a few **Wi-Fi first** services being introduced for mobile – like Republic Wireless or Google's Project Fi.

The strong revenue and EBITDA growth figures reported by Finnish operators could suggest that it was wrong to walk away from the unlimited model elsewhere – at least if unlimited comes with a price premium. But regardless of the model we believe operators need to **become more generous when it comes to bucket sizes** – also on lower price points – to avoid that their customers develop a Wi-Fi first behaviour. Alternatively, if mobile data is seen as too expensive to produce in significant volumes, incorporate the operator's own public Wi-Fi as an integral, but not necessarily free, element in every mobile data plan.