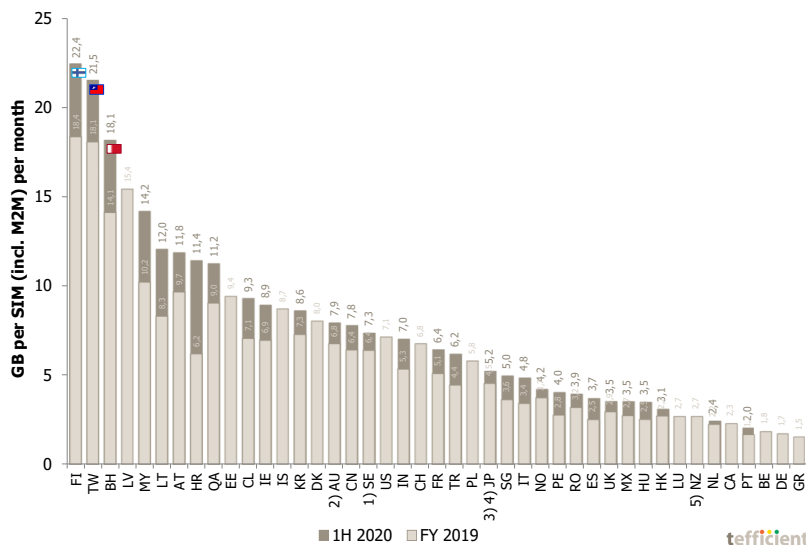


Industry analysis #4 2020

Mobile data – first half of 2020 (updated 11 Dec)

The growth in mobile data wasn't stopped by a pandemic

But growth is unevenly distributed and few countries could grow ARPU



Tefficient's 29th public analysis of the development and drivers of mobile data compares 44 countries from all regions of the world.

Although a pandemic hit the world in 1H 2020, usage grew in every single country. But the growth was unevenly distributed – some countries grew faster than before while others grew slower than before.

And as a likely consequence of the pandemic, few countries were capable of turning usage growth into ARPU growth? Read on.

Finland, Taiwan, Bahrain and Latvia lead the world in average data usage per subscription. But it is Croatia that leads the world in usage growth; 128% between the first half of 2019 to the first half of 2020. The Netherlands, Australia and Norway had the slowest growth.

Data-only continues to define the average mobile data usage although the share of base is limited. In all but two reported markets, data-only's share of total traffic grew – a trend that started in 2019, before Corona. We attribute this to FWA.

Using mobile data has never been cheaper but the erosion in the revenue per gigabyte varies a lot between markets. Croatia had the fastest erosion, 58%, and India (!) the slowest, 13%.

Data usage is still growing in every single country

Figure 1 shows the development of mobile data usage for 44 countries where regulators¹ report mobile data traffic. The usage is shown per SIM per month – and in Figure 1 we are including all² SIMs, also M2M/IoT SIMs.

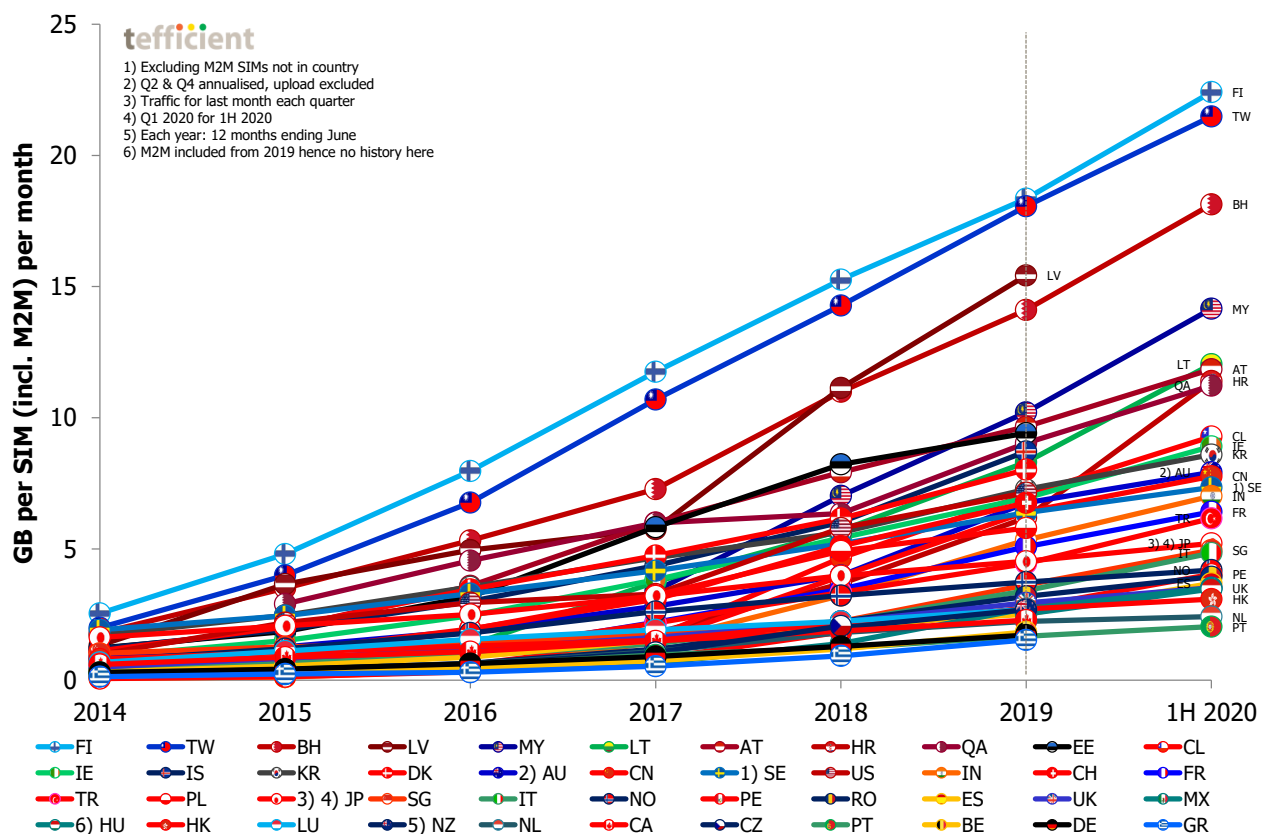


Figure 1. Development of mobile data usage per SIM (incl. M2M) per month – the legend shows the ranking³

Starting from the top of the chart, **Finland** and **Taiwan** are defending the number one and two positions in the world when it comes to mobile data usage. The average Finnish SIM card carried 22.4 GB of data per month in 1H 2020. **66%** of the Finnish SIMs (M2M included) had **unlimited data volume** in June 2020. If excluding M2M, 78%. If excluding also voice-only SIMs, 84%. No other country is as unlimited as Finland.

The average Taiwanese SIM carried 21.5 GB per month. Unlimited is behind **Taiwan's** usage development as well. The Taiwanese operators – there are five MNOs – have tried to cool off the market by attempting to

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

² All SIMs in a market included; even the SIMs that used no or little data. We think it provides a better comparison than usage per 'mobile broadband subscription' even if it lowers the average mobile data usage numbers somewhat.

³ Of the countries that will report 1H 2020, Denmark, Iceland and Greece have not yet reported. Japan has to date just reported figures for Q1 2020.

move the unlimited price points upwards while discontinuing unlimited for customers that have run out of binding, but the discipline isn't there – the usage grew as quickly as in Finland but ARPU is still in decline.

Bahrain and **Latvia** (only annual reporting) are shadowing the leader duo. **Malaysia's** data usage growth continues and its number 5 position was strengthened in 1H 2020.

The M2M reporting dilemma

Regulators' reporting of M2M/IoT SIMs continues to create a challenge for the comparability between countries. A growing problem is international M2M SIMs that are registered in one country but used somewhere else. Sweden is a good example. The country regulator, PTS, reports 15.9 million M2M SIMs in Sweden – a figure that doubles the total SIM base if added to the regular SIM base. We are therefore happy that PTS now reports the number M2M SIMs that are active in Sweden; 3.8 million, i.e. just 24% of the total M2M base. This has allowed us to recalculate a more representative mobile data usage figure for Sweden when including M2M.

The same issue emerges in Austria where Deutsche Telekom group registers many of its international M2M SIMs. The number of 'Austrian' M2M SIMs as reported by RTR grew 28% between June 2019 and June 2020 – to 5.5 million. Similar to how it was for Sweden previously, Austria's average mobile data usage per SIM thus looks lower when including M2M SIMs than what it realistically is. Luckily Austria's regulator is one of those breaking out M2M SIMs in its reporting allowing a like-for-like comparison of mobile data usage per *non-M2M* SIM, see Figure 2 and Figure 4.

Figure 2 is a variant of Figure 1 but with M2M SIMs *excluded*. As the M2M SIMs typically carry significantly less traffic than the regular SIMs, this makes the usage figures look higher.

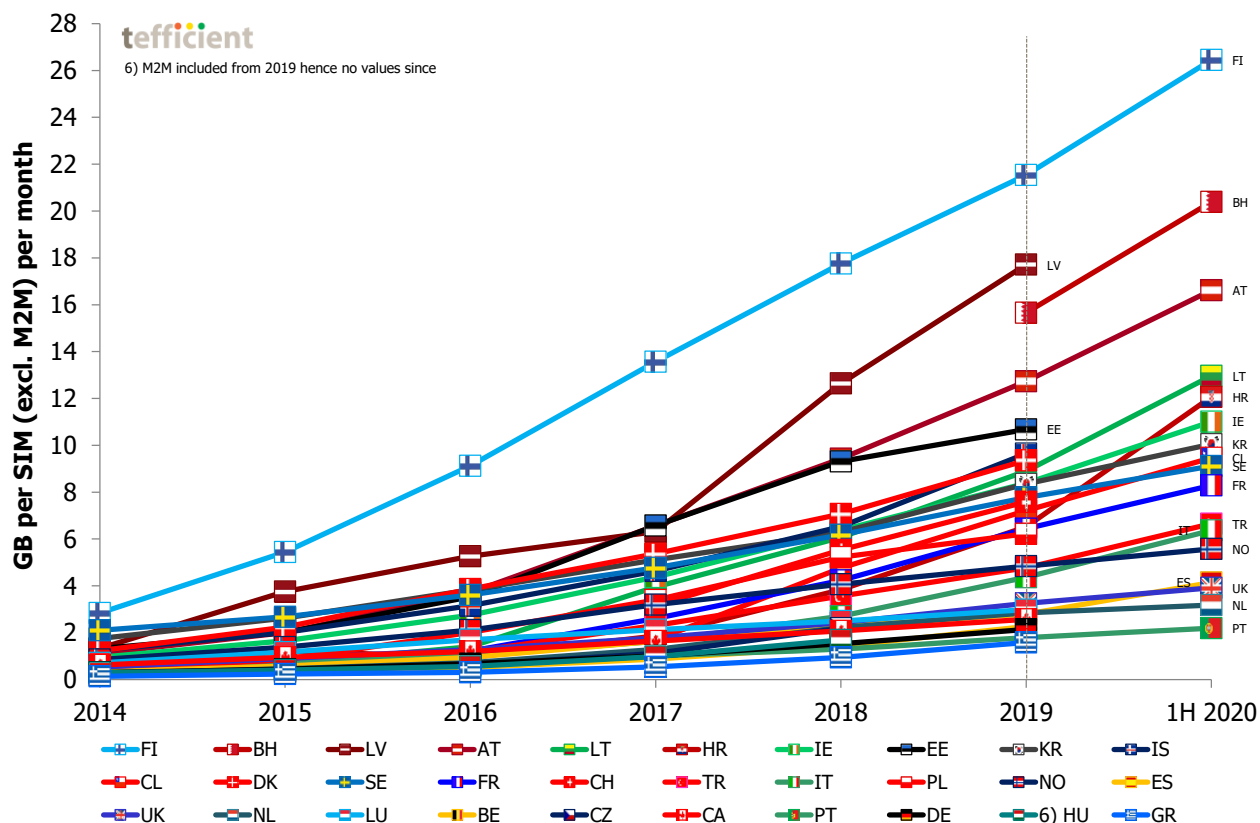


Figure 2. Development of mobile data usage per SIM (excl. M2M) per month – the legend shows the ranking⁴

Since only a fraction of the countries separate out the data traffic associated with M2M SIMs in their reporting (kudos to Norway, Sweden, Czech and Greece), the assumption for most of the countries in Figure 2 is that the M2M data usage is zero. This is of course not correct and as we expect M2M/IoT SIMs to carry significantly more traffic in future, we think that Figure 1 provides the most accurate comparison.

With **26.4 GB** per non-M2M SIM per month, **Finland** tops also Figure 2. Bahrain follows with **20.4 GB**. Taiwan and Malaysia have disappeared from the top five here as the M2M SIM number isn't broken out in these countries.

The legends of Figure 1 and Figure 2 show the ranking of the 44 studied countries. But since it's difficult to spot them all, Figure 3 and 4 offer an easier visualisation. First including M2M:

⁴ Countries for which the regulator doesn't break out the M2M SIMs have been excluded

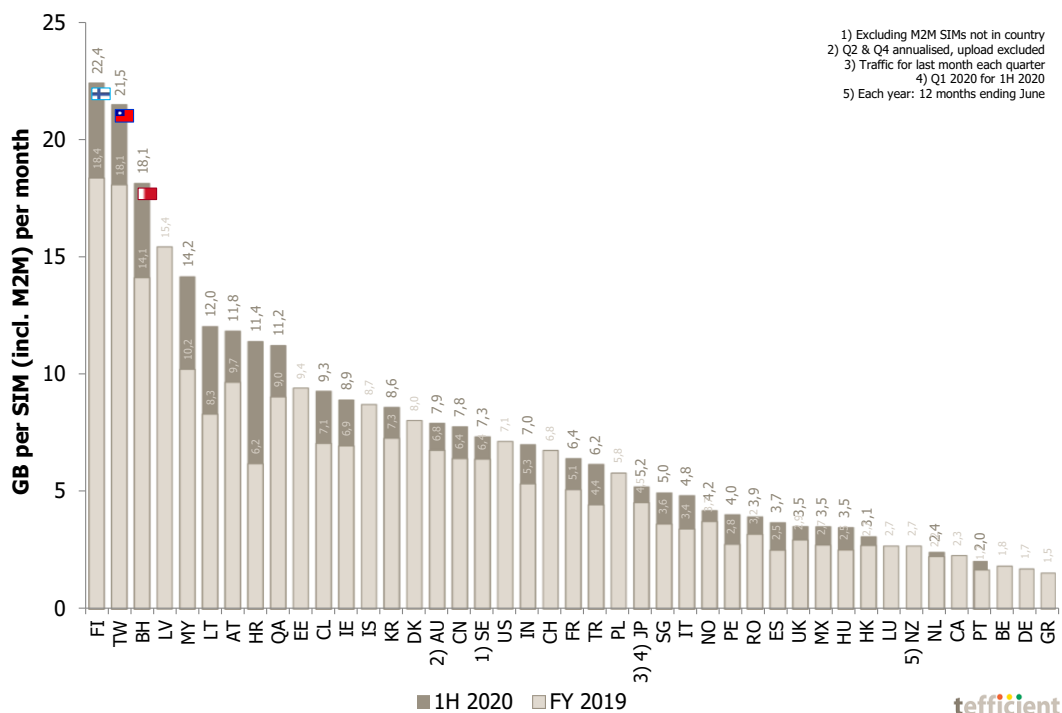


Figure 3. Mobile data usage per SIM (incl. M2M) per month, 1H 2020 and FY 2019

And in Figure 4 excluding M2M:

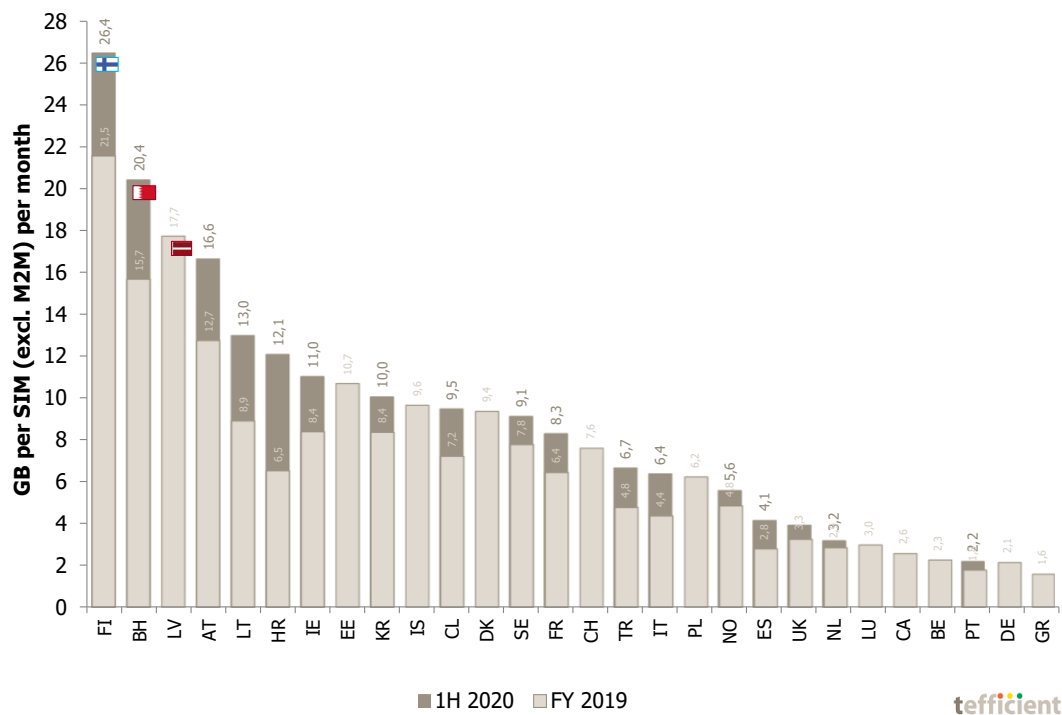


Figure 4. Mobile data usage per SIM (excl. M2M) per month, 1H 2020 and FY 2019

The countries with the lowest data usage in both Figure 3 and Figure 4 are **Greece, Germany, Belgium, Portugal** and **Canada**. The German, Belgian and Canadian regulators do not report traffic statistics half-yearly – whereas Greece's regulator will do, but it's not yet available.

Figure 5 is a zoom-in on the lower end of Figure 1.

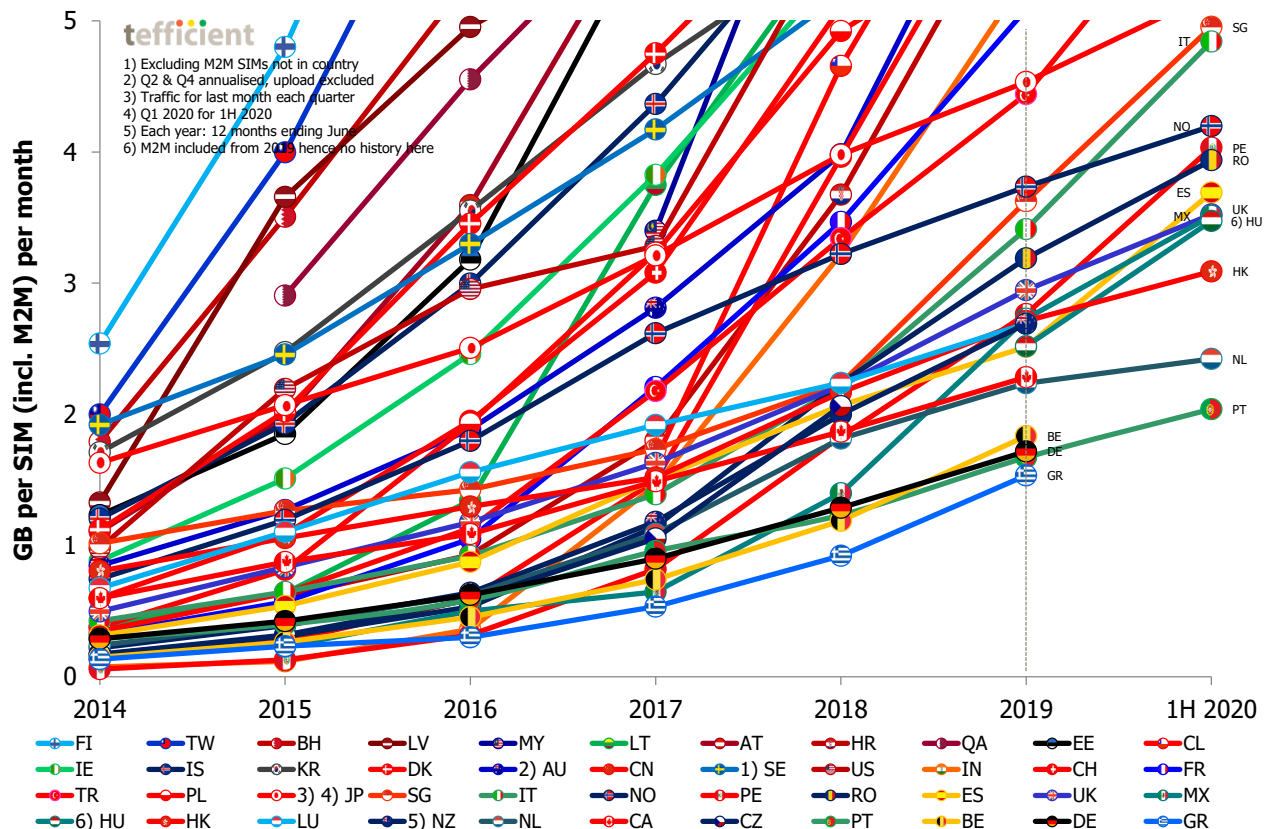


Figure 5. Development of mobile data usage per SIM (incl. M2M) per month [zoom-in on low end]

Singapore, Italy, Peru and **Spain** have demonstrated good usage growth in 1H 2020 whereas the **Netherlands** hardly had any.

Data usage growth fastest in Croatia – more than doubled y-o-y

Figure 6 shows the growth in average usage per SIM (incl. M2M) between 1H 2019 and 1H 2020.

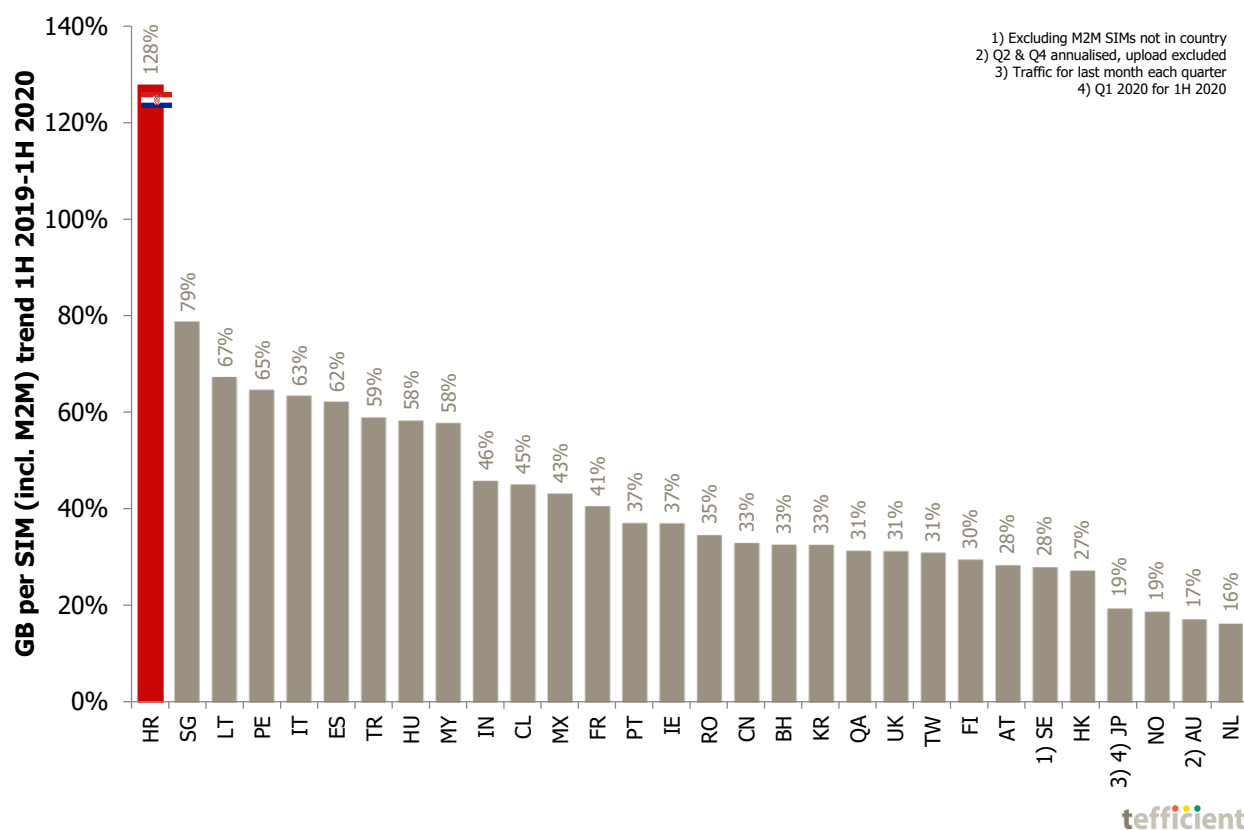


Figure 6. Development of mobile data usage per SIM 1H 2019-1H 2020

Croatia outpaced every other market in mobile data usage growth. The average Croatian SIM used 128% more mobile data in 1H 2020 than what it did in 1H 2019. **Singapore's** usage grew 79%, **Lithuania's** 67%, **Peru's** 65%, **Italy's** 63% and **Spain's** 62%. Previous growth powerhouses India, Mexico and China have had more modest growth rates this time.

As we touched upon already in our [FY 2019 analysis](#), Singapore went from a growth laggard to a growth leader as a direct consequence of a change in the competitive landscape. Singapore now has a fourth MNO, **TPG**. As shown in Figure 7, TPG launched its first commercial product – a plan with 50 GB for 10 SGD – as late as 31 March 2020, but TPG launched a free, **unlimited** data, trial service in December 2018. It had an immediate effect on the total mobile data traffic of Singapore – a parallel to how Jio's initially free proposition totally changed the mobile data consumption of the Indian market. It will be interesting to follow if Singapore's growth in mobile data traffic continues now that the free trial is over.

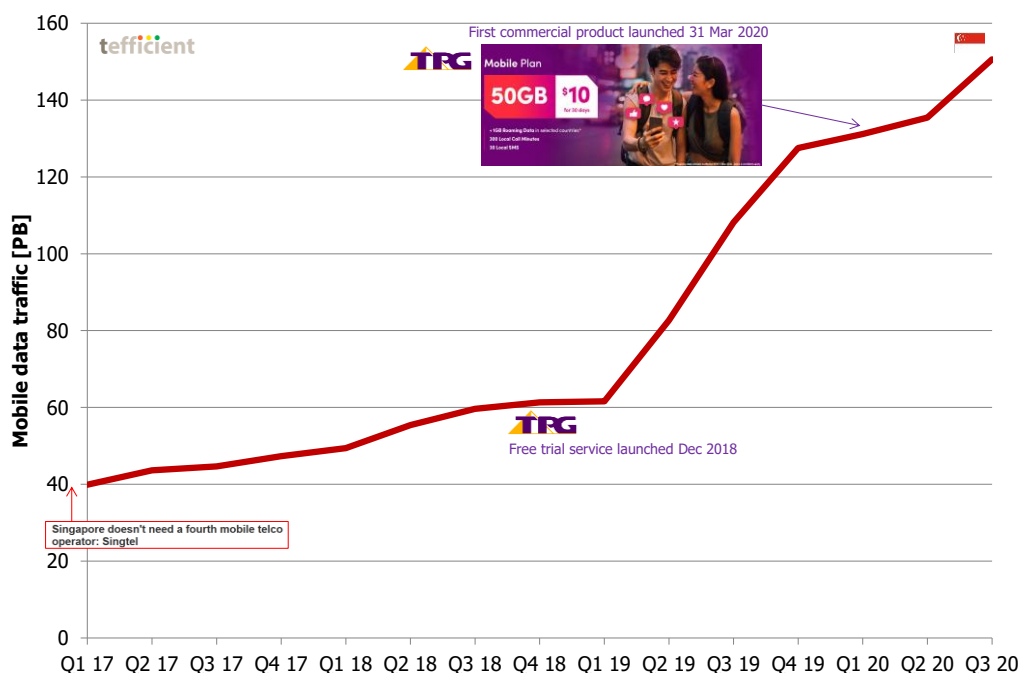


Figure 7. Development of mobile data traffic per quarter – Singapore

The growth laggards in Figure 6 are the **Netherlands** (16%), **Australia** (17%) and **Norway** (19%⁵). Although COVID-19 measures might have influenced, we need to mention that the two MNOs that drove unlimited into the Dutch market – T-Mobile and Tele2 – merged in January 2019. Also Australia had a merger – between Vodafone and TPG in July this year after long preparations – and although TPG wasn't a MNO, it had been quite successful as MVNO so the merger concentrated the mobile market a bit further. In Norway, no mergers between MNOs happened, but the market was effectively a duopoly for a long time until the third MNO, Ice, started its mobile operation in 2015.

The Netherlands, Australia and Norway had the slowest usage growth

⁵ We don't mention Japan as only Q1 2020 traffic statistics are available yet and we believe the launch of Rakuten Mobile in April could have had an effect on the mobile data usage growth

Data-only rarely more than 20% of base, but defines usage

Although **fixed wireless access** seems to experience a renaissance with 5G, using mobile networks to substitute fixed broadband is hardly something new. In some markets, like Finland and Austria, this has been around for long. The take-up can be significant if the FWA/data-only offers are reasonably charged and without usage caps. It also helps if the fixed broadband offering is weak with much DSL is the mix.

Since Q4 2017, the regulator RTR publishes the fixed data traffic of **Austria**. If we compare it to the mobile data traffic, it's obvious how important the mobile networks have become for the overall internet of the country: In the second quarter of 2020, the mobile data traffic was **60%** of the fixed data traffic.

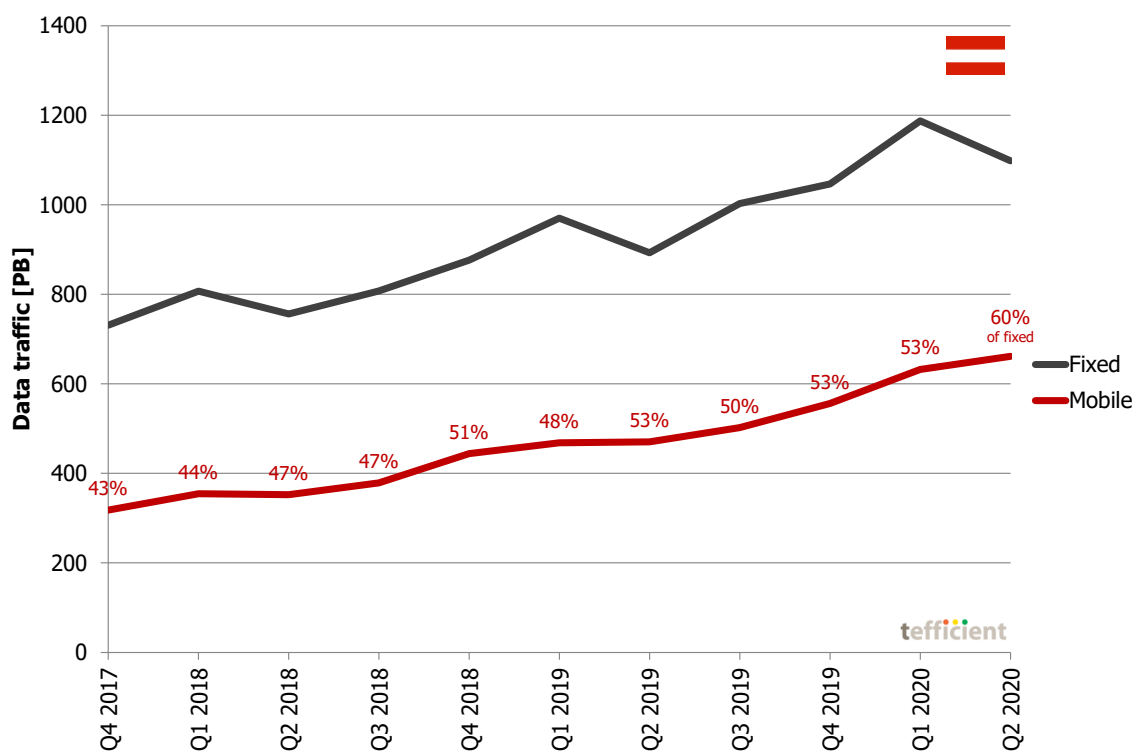


Figure 8. Development of fixed and mobile data traffic in Austria

This takes us to Figure 9. It plots the average data usage per SIM vs. the data-only share of a country's SIM base.

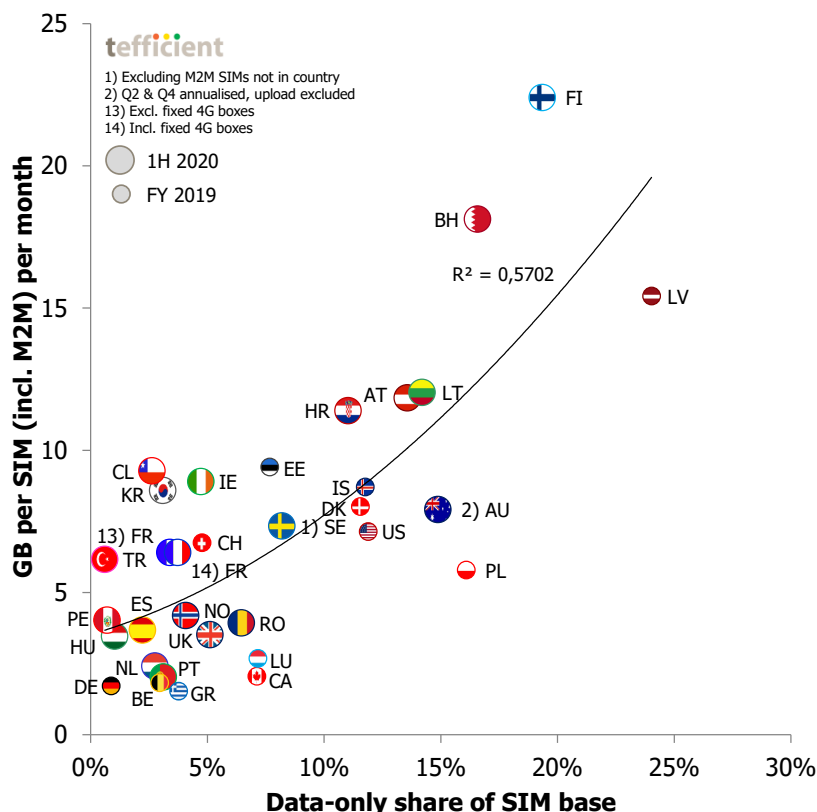
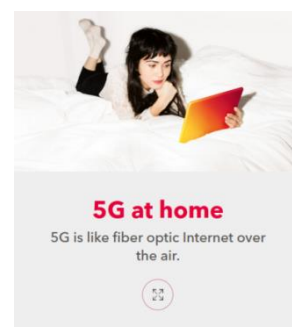


Figure 9. Mobile data usage vs. data-only share

In December 2019, **24%** of the SIM base in Latvia was data-only. Although June 2020 isn't reported, it certainly looks as if **Latvia** is the leader in data-only share of base – and the average mobile data usage was also high. In **Finland** data-only represented 19% of the base in June 2020 but usage was even higher than in Latvia. Also **Bahrain** had a high data-only share – 17%. There are ten countries forming a central cluster between 8% and 16%: Estonia, Sweden, Croatia, Denmark, Iceland, USA, Austria, Lithuania, Australia and Poland.

The adherence to the regression line is relatively strong. As in all previous reports we therefore conclude that **data-only penetration is a significant driver of the average mobile data usage**.

The easiest way for low-usage countries to grow data usage and expand the mobile market would be to **start addressing and monetising the data-only segment**. This seems to be effective particularly in markets where fast fixed broadband networks (FTTH, FTTB or HFC) aren't already available to a substantial share of the households. The US wireless market leader **Verizon** launched its first **5G** branded service in 2018 to support a fixed wireless access (FWA) use case. Operators such as Optus in Australia, 3 in the UK, Sunrise in Switzerland (right), 3 in Austria and DNA & Elisa in Finland have all followed Verizon into **5G-based FWA**. Figure 9 shows that even a relatively low share of such data-only subscriptions could lift the average data consumption significantly.



Some of the countries in Figure 9 are also reporting the data-only traffic. For these countries, we can compare the data-only penetration of the SIM base to its share of the total mobile data traffic, see Figure 10.

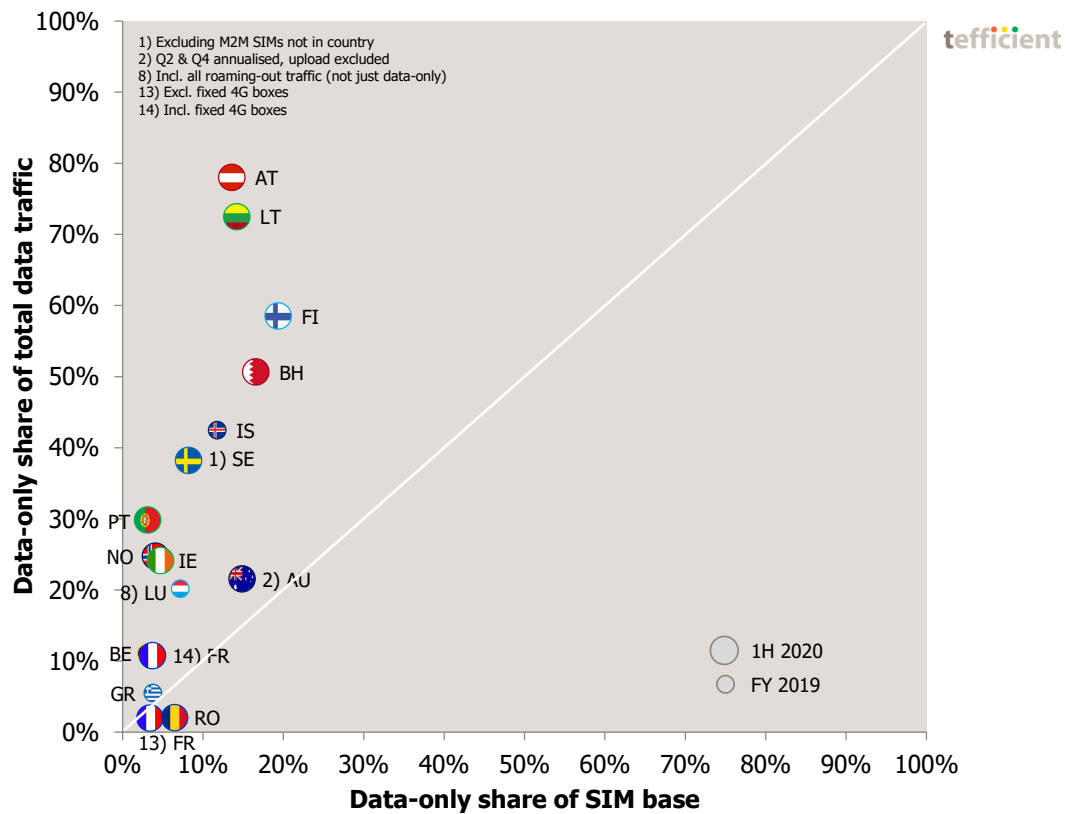


Figure 10. Data-only share of total traffic vs. data-only share of SIM base

With the exception of Romania, data-only SIMs carry a disproportionately high share of the data traffic:

- Portugal **9.6x** higher traffic per data-only SIM vs. any SIM
- Norway **6.1x**
- Austria **5.8x**
- Lithuania **5.1x**
- Ireland **5.1x**
- Sweden **4.7x**
- Belgium **3.8x**
- Iceland **3.6x**
- Bahrain **3.1x**
- Finland **3.0x**
- France (incl. fixed 4G boxes) **2.9x**
- Luxembourg **2.8x**
- Australia **1.5x**

- Greece **1.5x**
- Romania **0.3x**

In addition to the countries in Figure 10, there is one which does not report data-only SIM base, but data-only's share of traffic: In China, only 3% of mobile data traffic wasn't carried over regular mobile phones.

For the countries that are reporting both data-only traffic and the number of data-only subscriptions, we can compare the average usage per *data-only* subscription, see Figure 11.

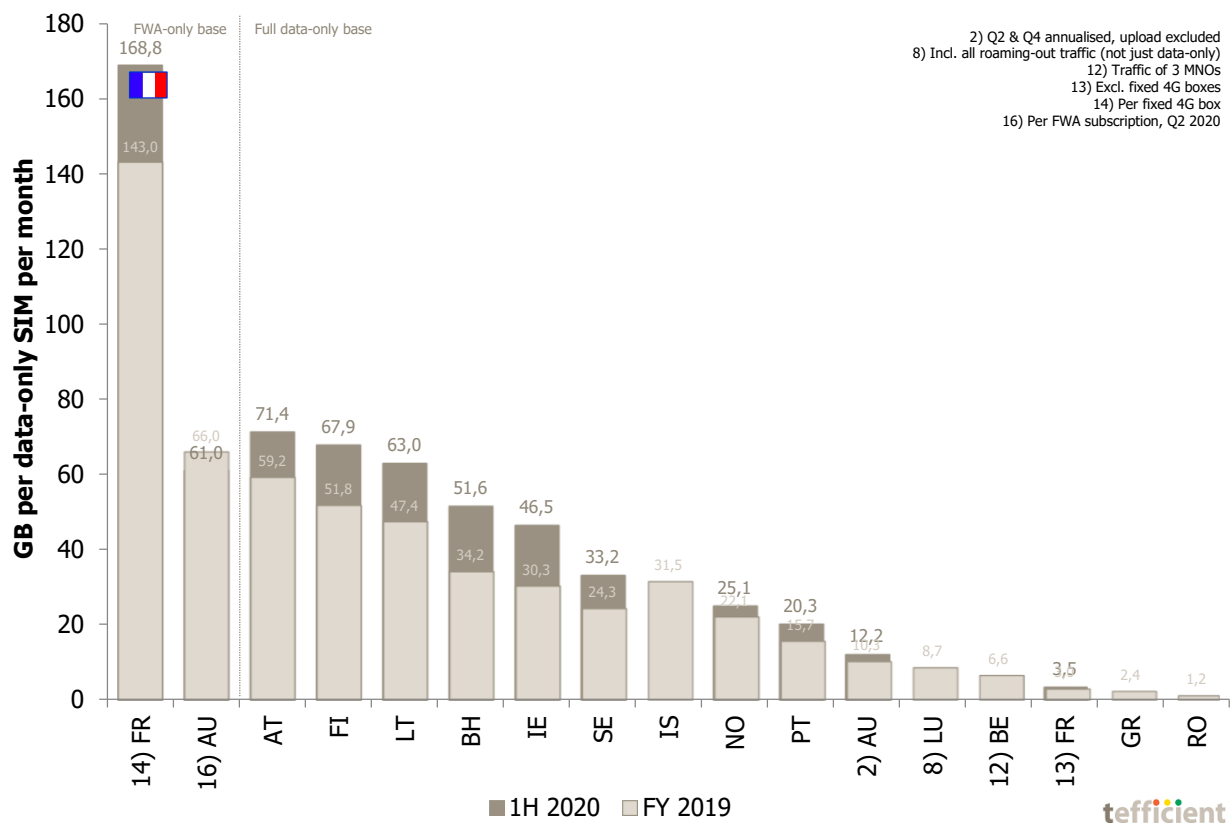


Figure 11. Mobile data usage per data-only SIM per month, 1H 2020 and FY 2019

Starting from the left, the average '4G box' in **France** carried **168.8 GB** of mobile data per month in 1H 2020. This is significantly higher than for the other FWA-only usage number in Figure 11: In Australia, the usage per FWA subscription was 61 GB in Q2 2020 – actually a decline from the 66 GB reported for Q4 2019.

If instead looking at the *whole* data-only base (not just the FWA segment), **Austria** leads with the average mobile data consumption per data-only SIM of **71.4 GB**. **Finland** had 67.9 GB but faster growth than Austria. **Lithuania** follows with 63.0 GB – here the mobile data-only specialist Mezon pushed the traditional MNOs to embrace

The average French '4G box' consumed 169 GB per month in 1H 2020

the data-only segment. There was good usage growth also in Bahrain and Ireland.

If **5G** should become the fibre-over-radio solution that e.g. Verizon, Sunrise and others suggest, the data-only FWA usage figure of France gives a taste of the usage that the solution must at least manage. Fixed broadband usage is yet higher – often around 300 GB per month.

The appetite that operators show for FWA seems to make them let go of their **anxiety for unlimited** within the data-only segment. Figure 12 shows something quite interesting.

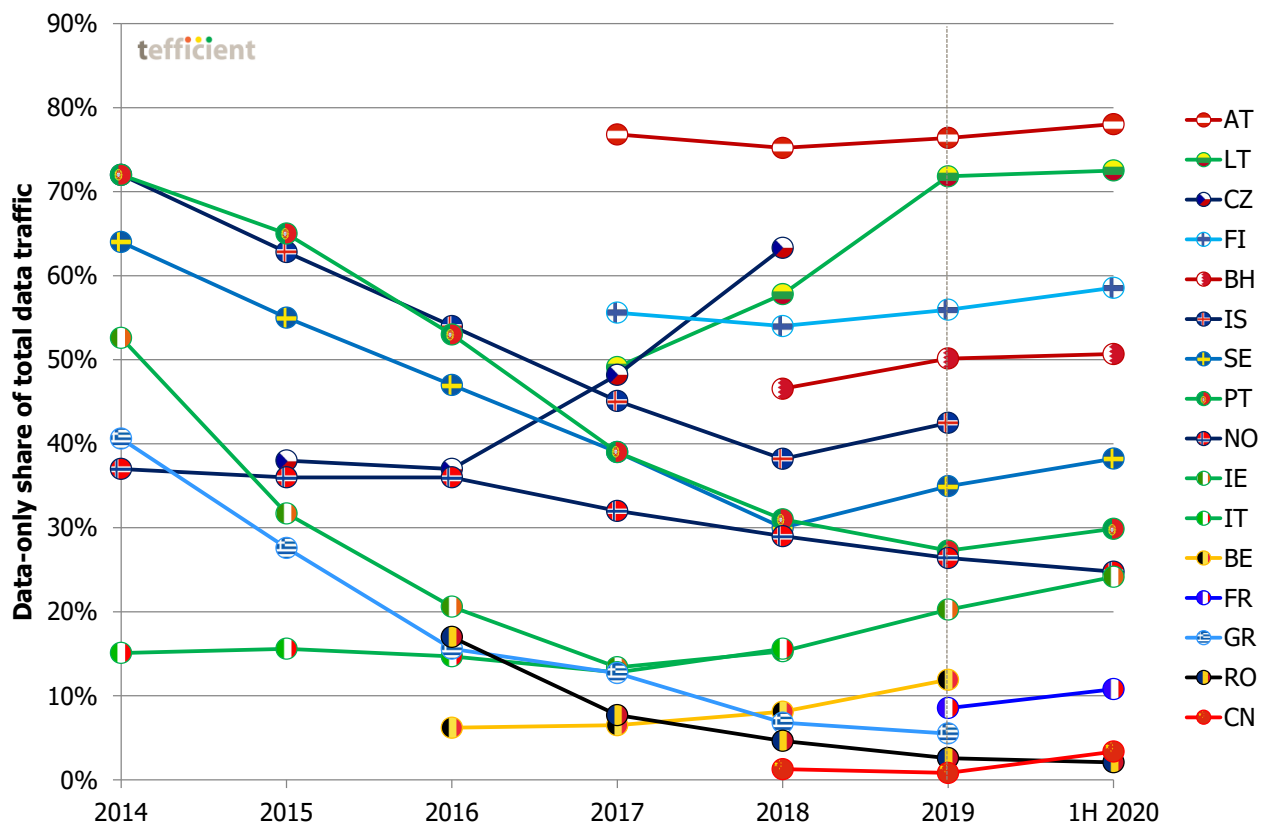


Figure 12. Development in the data-only share of total mobile data traffic – for all reporting countries

Data-only's *share* of traffic decreased until 2018. It's not necessarily that the absolute data-only traffic decreased, but the growth of the smartphone traffic has been much quicker. But something happened in 2019 which continues in 1H 2020.

For a number of markets – Austria, Lithuania, Finland, Bahrain, Sweden, Portugal, Ireland, France and China – **data-only traffic gained market share** in 1H 2020. Of our markets, only Norway and Romania had a decline. It's because of Corona, right? No, that trend shift happened already in 2019. We attribute it to FWA and the wider adoption of unlimited within operators' data-only propositions.

Data-only's share of total traffic started to grow again in almost all markets

4G adoption a weakening driver of data usage – 5G a different story

If data-only defines the overall data usage, the same can't really be said for 4G.

Figure 13 plots the average data usage per SIM vs. the 4G/5G share of the country SIM base. **Taiwan** leads with 100% followed by **Korea** with 90% (Korea's figure includes 5G). The adherence to the regression line is weaker than in the previous data-only section.

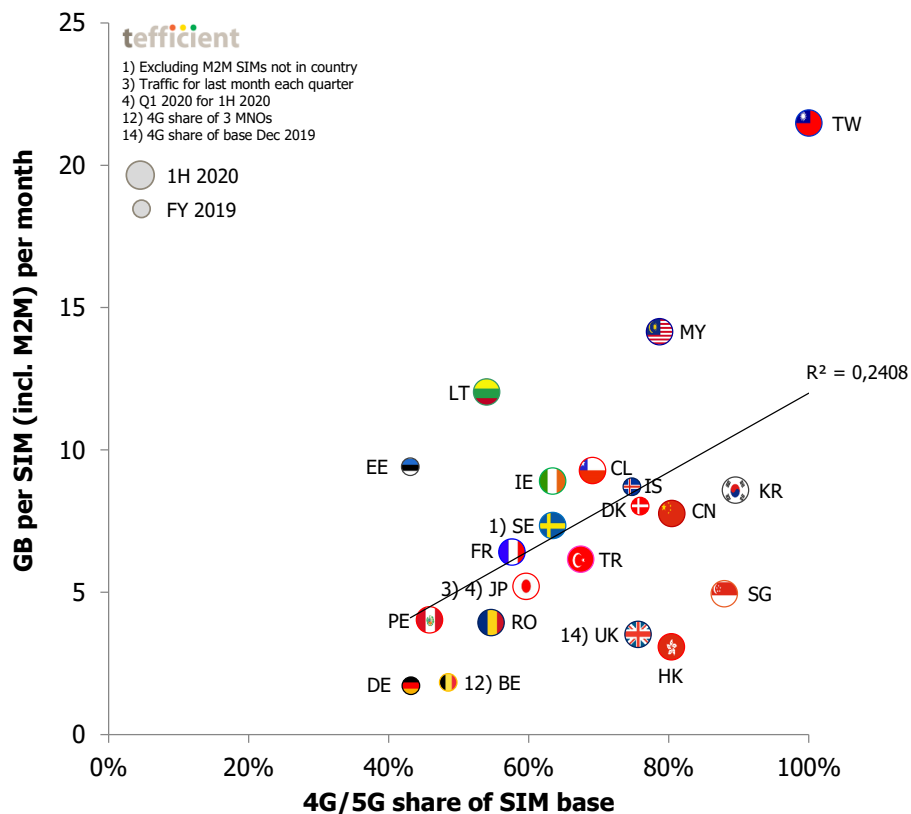


Figure 13. Mobile data usage vs. 4G/5G share

While operators in countries with very low 4G penetration (such as Germany) often still report that 4G drives data usage, Figure 13 shows that 4G in itself is a much weaker driver of traffic than data-only (compare with Figure 10).

Taiwan had 100% of mobile data traffic (and 100% of subscriptions) on 4G. **Korea** had 99.99% of the traffic on 4G or 5G but only 90% of the subscriptions.

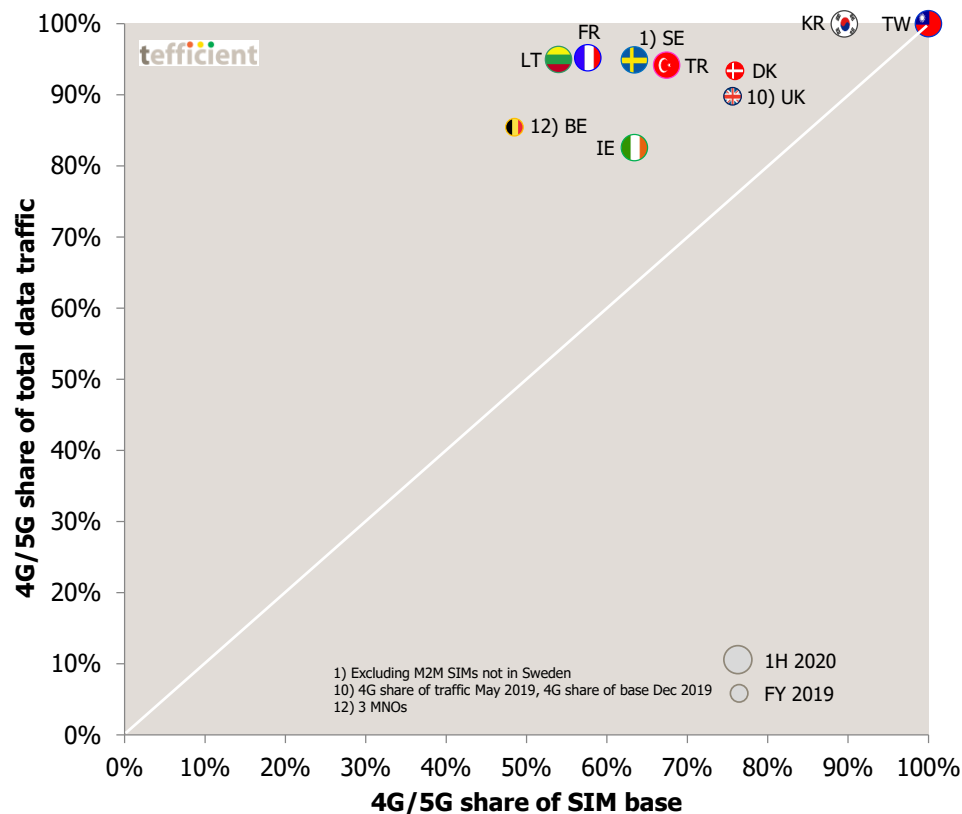


Figure 14. 4G/5G share of total traffic vs. 4G/5G share of SIM base

4G/5G users are carrying a disproportionately high share of the data traffic – but in comparison to data-only, the multipliers are much lower. They are also decreasing.

- Lithuania **1.8x** higher traffic per 4G/5G user vs. any SIM
- Belgium **1.8x**
- France **1.7x**
- Ireland **1.3x**
- Turkey **1.4x**
- Sweden **1.5x**
- UK **1.2x**
- Denmark **1.2x**
- Korea **1.1x** (includes 5G)
- Taiwan **1.0x**

In addition to the countries in Figure 14, there are four which do not report 4G's SIM base, but 4G's share of traffic: In the Netherlands and India, 96% of mobile data traffic was over 4G. In Hungary it was 94% in Q1 2020 whereas **Mexico had 80% of traffic over 4G** – the lowest among reporting countries.

If comparing with Figure 14 it is clear that the 4G/5G multiplier drops with an increasing 4G/5G adoption. It is, in other words, when 4G/5G still has a relatively low adoption that it makes a difference for the overall

data usage. Once 4G/5G has become more common, the effect of the early adopters is watered out and the delta between a 4G/5G user and any SIM becomes smaller.

Over time, the 4G/5G penetration will grow – simply because new terminals will, by default, have 4G/5G – but it will no longer have any strong impact on the average data usage.

If separating out just 5G, the story becomes a bit more exciting, though. Our example will have to be taken from **Korea** as that is the only launched 5G market for where there is reporting of traffic⁶. Figure 15 shows how the Korean 5G share of traffic has developed month by month when compared to the 5G share of base.

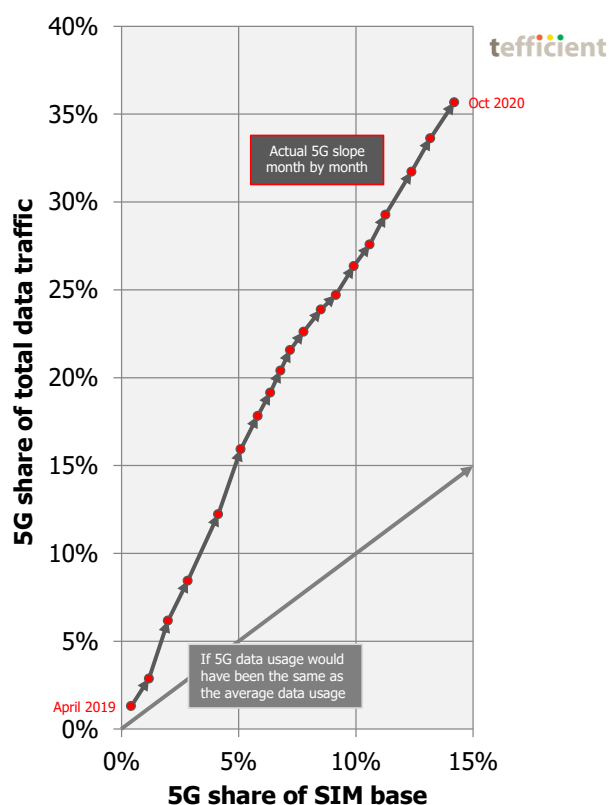


Figure 15. 5G share of total traffic vs. 5G share of SIM base – Korea per month since 5G launch

There are small variations between the months, but the 5G multiplier which initially was at 3x has now fallen somewhat to **2.5x**: With 10 million 5G subscriptions at the start of November 2020, 5G's high data usage – it was 26.6 GB in October 2020 – can't be dismissed as an 'early adopter' thing.

The development in Korea is impressive and bodes well for the industry. It will be interesting to see if **China** and **Japan** – two other countries where operators with launched 5G networks have started to report 5G customer numbers – will be able to follow the Korean 'gearing' curve between base and traffic.

⁶ The Swedish regulator PTS did report it for Sweden, but as the commercial 5G networks weren't really launched in 1H 2020, it is still too early

A gigabyte has never been cheaper – but it doesn't mean it's cheap everywhere

Most mobile operators in mature markets aren't attempting to monetise voice and SMS based on usage any longer; they have instead made these allowances unlimited and included them in a flat fee. This means that the last price-defining parameter for most mobile users is **data volume**. Even though more and more operators introduce unlimited propositions, these are often the last step in a tiered data plan⁷ – which means that price still, essentially, is about data volume.

Figure 16 plots the *total* mobile service revenue per consumed gigabyte⁸ against the average mobile data usage per SIM and month.

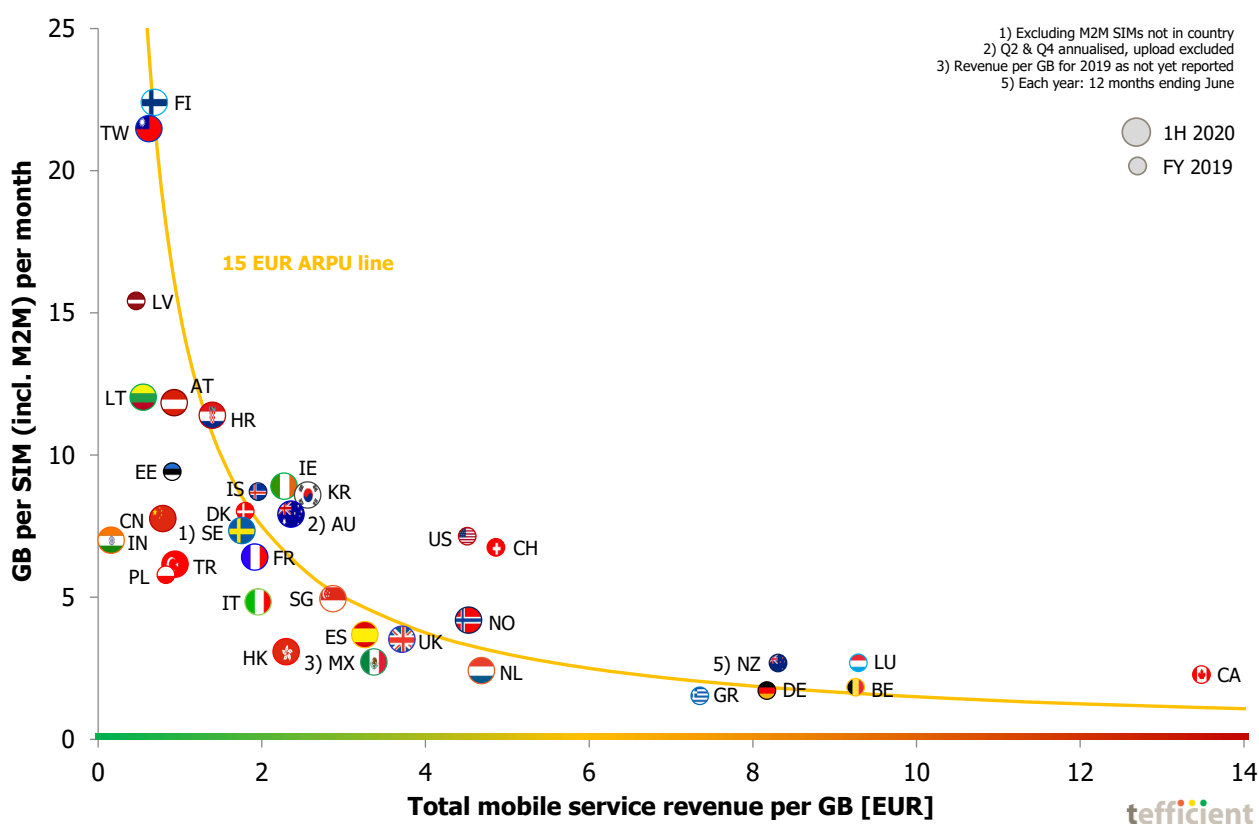


Figure 16. Mobile data usage vs. total mobile service revenue per consumed GB

The amber line shows where **15 EUR of ARPU** is earned. Countries below it had an ARPU lower than 15 EUR; countries above an ARPU higher than 15 EUR.

There are a few countries where operators enjoy very high total revenue per consumed gigabyte: **Canada** foremost, but also the cluster of **Luxembourg, Belgium, New Zealand, Germany** and **Greece**. The

⁷ There are exceptions to this, e.g. Finnish operators, Swisscom and Vodafone in Spain, the UK and most other European Vodafone markets except Germany, where the price-defining parameter instead is data throughput. There are also operators mixing several parameters such as volume, throughput, policy, zero-rating, video resolution, service bundling etc.

⁸ Attributing zero value to voice and messaging

observation is based on the latest available data – FY 2019 (in New Zealand's case the 12 months ending June 2019). Greece will report 1H 2020 data, but it is not yet published.

It's important to point out that our analysis looks at what the mobile operator industry *de facto* makes on end-users, not what the best offer on the market currently is. In reality, most users are on old price plans because they are still locked in by a contract – or because they have not bothered to find the best deal.

In the other end of the scale we find the countries where operators get the lowest revenue per consumed gigabyte: **India, Latvia, Lithuania, Taiwan, Finland, China** and **Poland**.

Looking at Figure 16 we can conclude – as in all our previous analyses on this topic – that the key explanation to high mobile data usage is low effective revenue per gigabyte: **Bigger data buckets lead to lower revenue per GB – which, on the other hand, increases usage**. At least when customers can use those big buckets also on data-only devices; see Figure 9.

Indian operators have the lowest total revenue per GB – Canada the highest

But we also said that a gigabyte has never been cheaper. More correctly put is that operators never had lower total service revenue per gigabyte than what they currently have. Figure 17 shows the revenue erosion from 1H 2019 to 1H 2020.

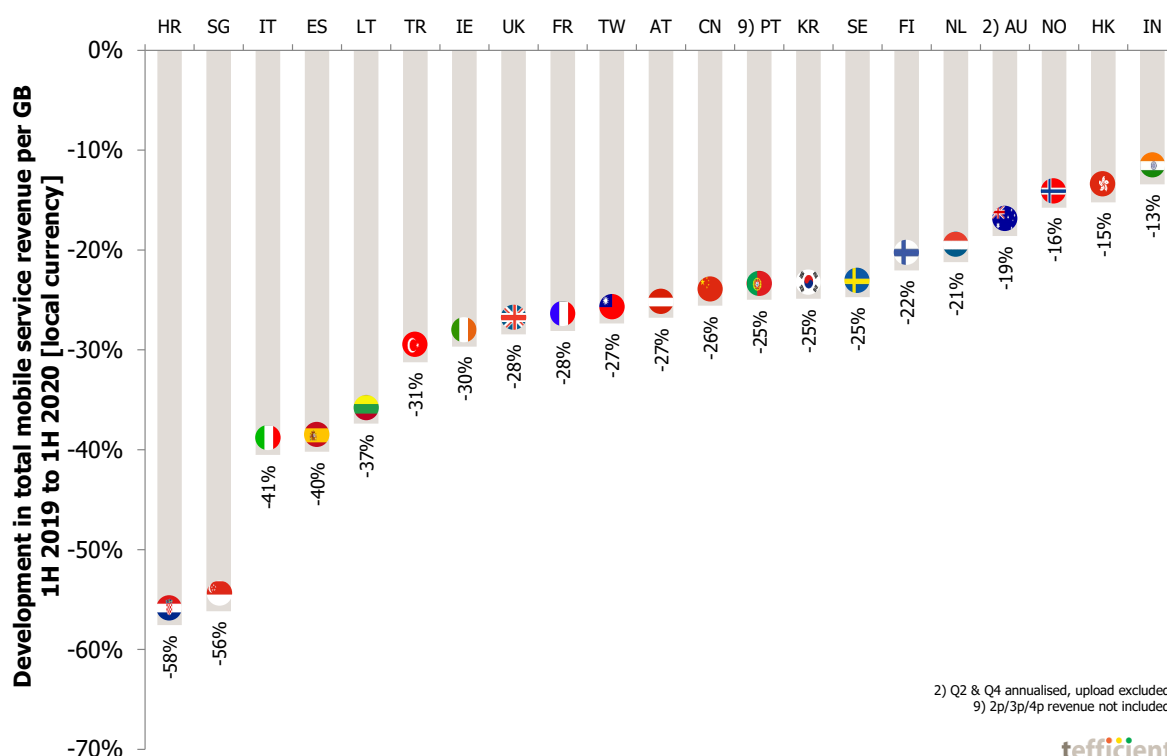


Figure 17. Erosion in total mobile service revenue per consumed GB – 1H 2019 to 1H 2020

The prerequisite to be in Figure 17 is of course that the statistics have been reported both for 1H 2019 and for 1H 2020. Of these markets, **Croatia** has the fastest revenue erosion, 58%. **Singapore** is just behind

with 56% as TPG's entry led to a shift in data consumption. **Italy** – where the disruptive entry of Iliad still affects usage – follows with 41%. **Spain** had 40% and **Lithuania** 37%.

Surprise: **India**, which historically often had the fastest revenue erosion in our reports, is now having the slowest, just 13%. **Hong Kong** had 15% and **Norway** 16%.

No correlation between data usage and ARPU

Figure 18 is a variant of the revenue per GB chart – it plots the usage against the average revenue per SIM, i.e. the ARPU.

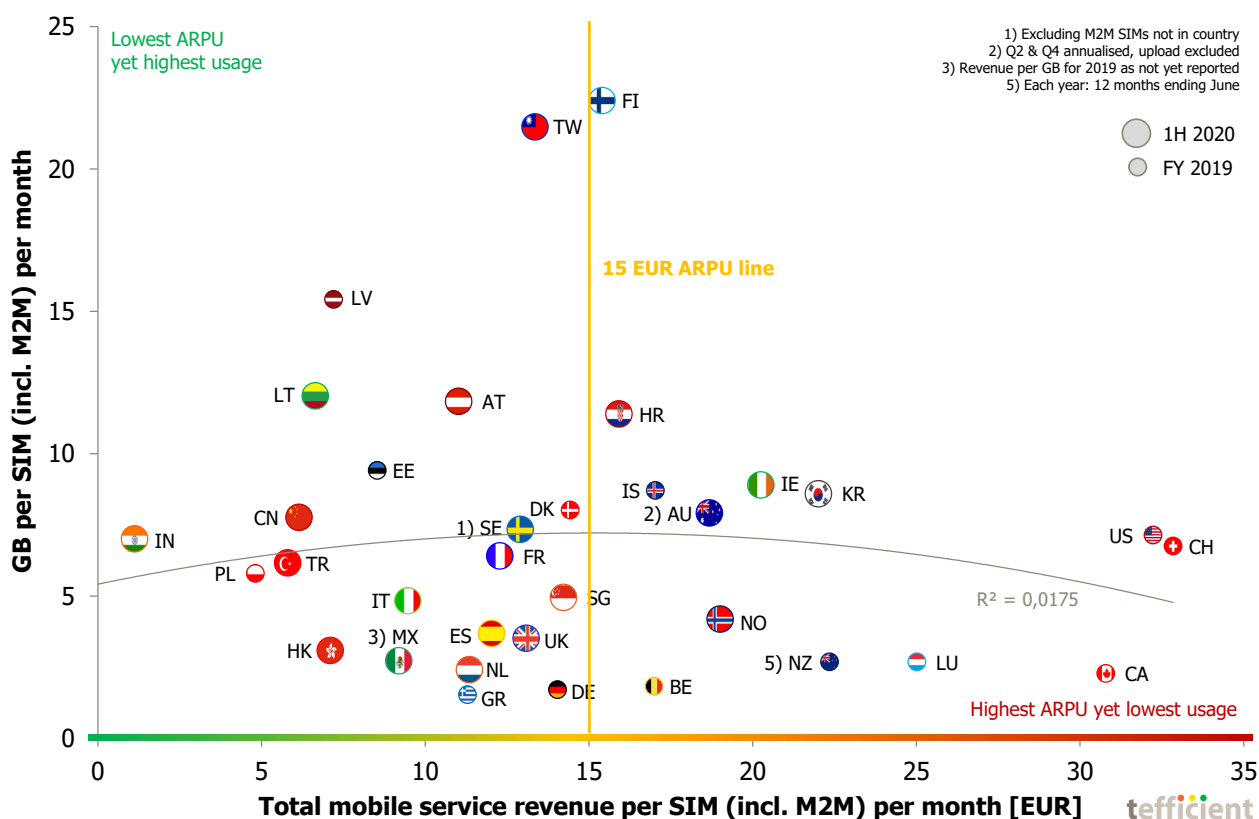


Figure 18. Mobile data usage vs. total mobile service revenue per SIM

Of our markets with 2019 or 1H 2020 data, there are three where operators derive ARPUs much higher than elsewhere: **Switzerland, USA** and **Canada**. Although the Canadian ARPU is lower than that of USA and Switzerland, Canadian mobile users can be said to have made the worse deal as the data usage is so much lower than Switzerland and USA.

Operators in the upper left corner – **Finland, Taiwan, Latvia, Lithuania** and **India** – are being the most generous with mobile data considering their ARPU. These countries form a nice line suggesting that operators could expect to get rewarded with higher ARPU as usage grows.

But that's regrettably not the overall trend: The adherence to the grey regression line is super-weak and it's anyhow not pointing in the north-easterly direction one would like to see – with more usage leading to higher ARPU.

Is the Christmas tree a victim of 2020?

Now to our Christmas tree graph. It's the graph were we ideally like to see the branches stretch to the right as that means that the ARPU grew in the past year. That would mean that the operators of a country have been able to monetise the growth in data usage.

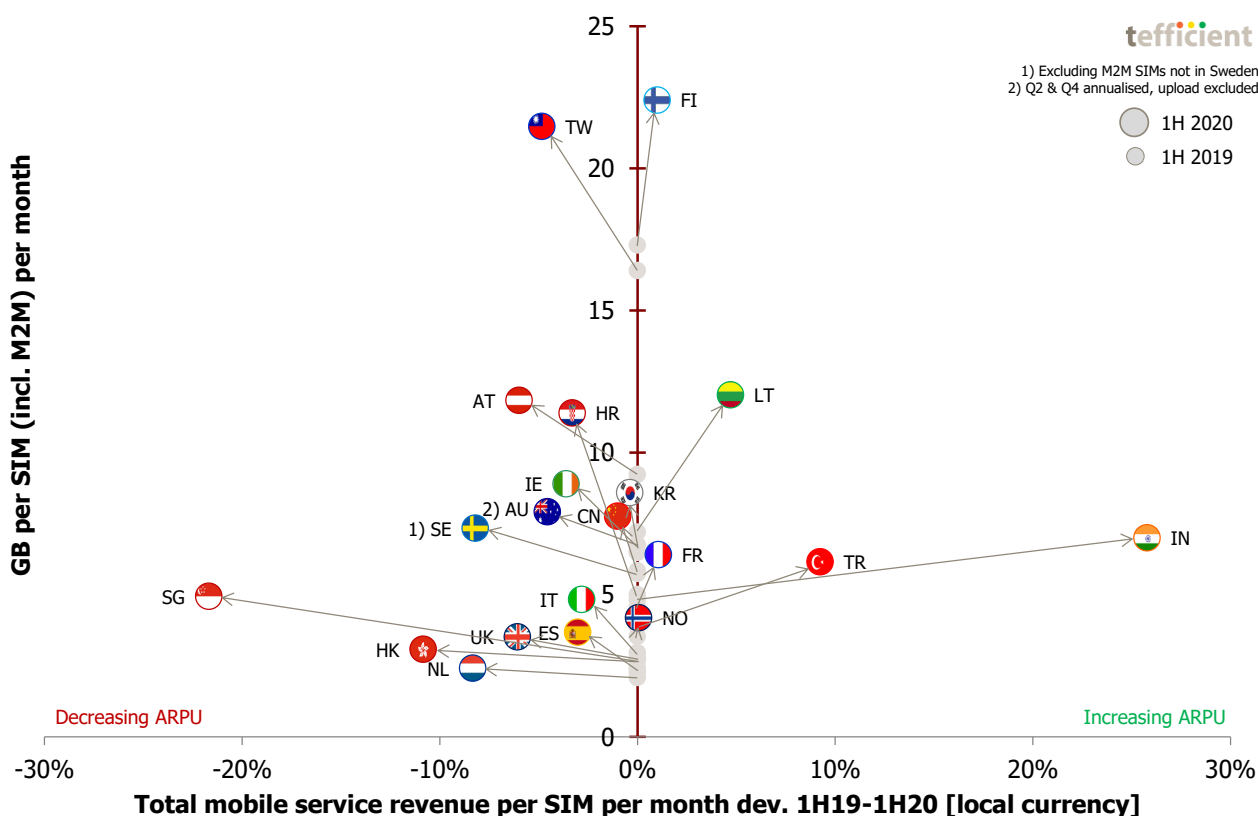
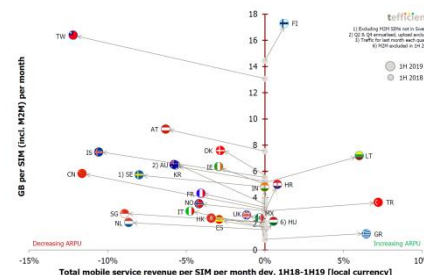


Figure 19. Development in mobile data usage vs. the development in ARPU – 1H 2019 to 1H 2020

In reality the branches stretch right in only **6 of 20 markets**⁹. These eight are – from the top – **Finland, Lithuania, India, France, Turkey** and **Norway** (just). In 14 markets (70%), the branches stretch left meaning that even though data usage grew, ARPU fell. The ARPU erosion in Singapore is unparalleled; above 20%. Hong Kong was above 10%. The Netherlands and Sweden only look marginally better.

It must be because of Corona? Not really. [Last year's Christmas tree](#) didn't look any better – see the miniature to the right. Why aren't we more successful as an industry?



⁹ The 20 markets for which regulators to date have reported the necessary underlying stats

It's important to remember that Figure 19 depicts the development of a market as a whole. Individual operators might not follow the country trend. In our operator report for the same time period – [“40% more gigabytes in spite of the pandemic”](#) – the situation looks better as 42% of the operators could grow ARPU based on an increase in data usage. It suggests that smaller operators – with less weight in the country totals – do better in Christmas tree graphs than larger operators.

5G could be the key to change the balance – by convincing the branches to grow to the right.

As shown, **5G** has had a major impact on the data usage in Korea. But Korea doesn't have a positive ARPU development in Figure 19 – its -0.4%. One explanation is that Korea's ARPU was heavily affected by a government decision taken in 2017 to increase the SIM-only discount from 20% to 25%. This started to have an effect on the ARPU by the end of 2017 and as the typical contract binding period on handset plans is two years in Korea, the effect should have lasted until the end of 2019. The upside of the change has been an equally significant improvement in churn, so it's not all bad.

The Korean operators do not break out their 5G ARPU in their reporting, but by looking at the year-over-year development of the overall mobile service revenue, we could try to see if 5G had a positive impact since the launch in Q2 2019.

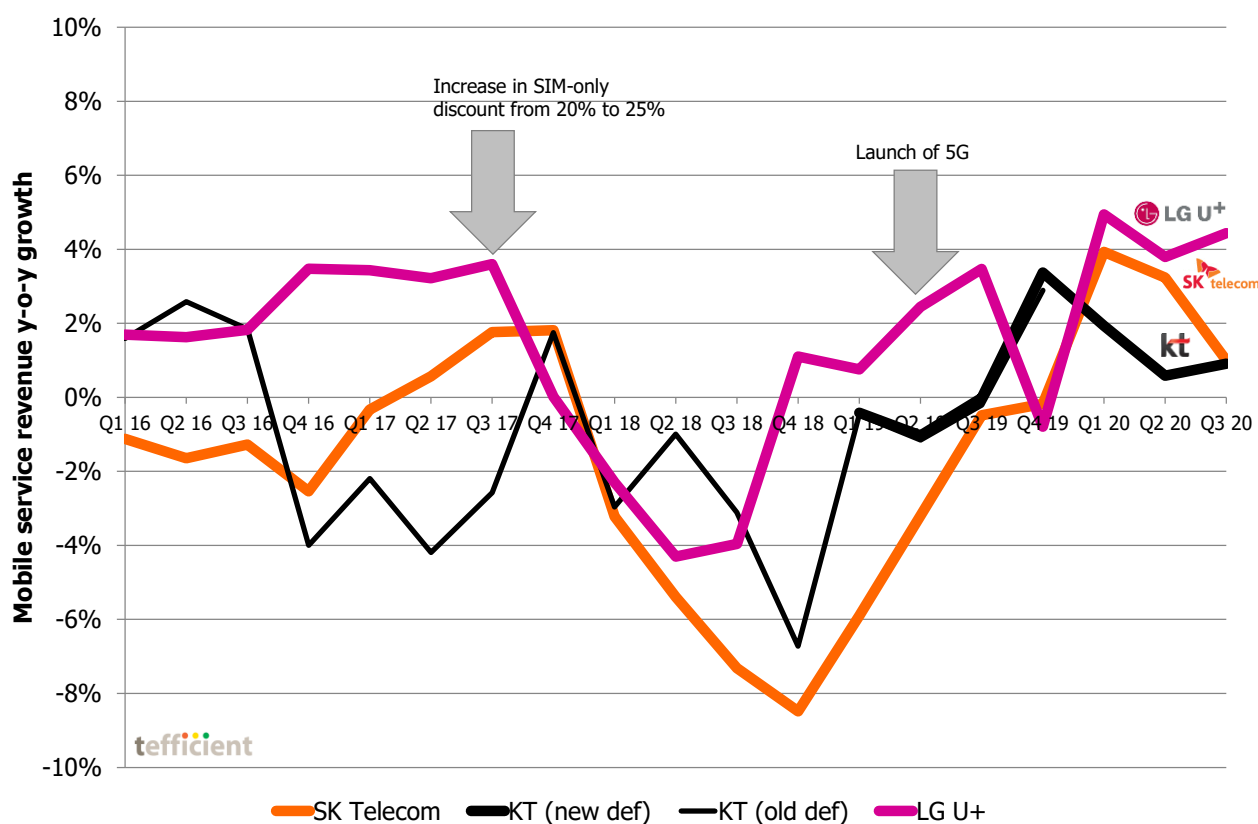


Figure 20. Y-o-Y development in overall mobile service revenue – Korea

From Figure 20 it's clear that the increase in SIM-only discount (see the first arrow) had a quite negative impact on the mobile service revenue when customers rather took the 25% SIM-only discount than committing to binding contracts with subsidised handsets. At around the time of the second arrow (=5G launch), the overall mobile service revenue started to grow again – LG U+ first, then KT and finally SK Telecom.

There's reason to be positive, but we should also realise that the negative effect of the SIM-only discount increase effectively should have ended by the end of 2019. A cautious conclusion is that 5G *helped* the Korean operators to get back on track. They have now **re-established the revenue growth** they had prior to the increase in SIM-only discount.

5G helped the
Korean
operators to re-
establish
growth

Conclusion

Mobile data usage is growing in all of the 44 countries covered by this analysis. The growth rates are very different and so are the usage levels. We think COVID-19 measures have increased the spread. **Finland** tops the charts – with 22.4 GB per average SIM per month in 1H 2020. If excluding M2M, the usage grows to 26.4 GB per month. But in spite of **78%** of non-M2M SIMs being **unlimited** and three 5G networks covering at least 25% of the population, the data usage growth isn't particularly fast in Finland – 30%. Usage in **Croatia** grew 128%. To determine usage is no longer as simple as classifying a market as mature or maturing. The lowest usage is found in Greece, Portugal, Germany and Belgium, hardly any maturing markets.

Our analysis shows strong correlation between the **data-only share** of a country's SIM base and the average data usage. **Latvia, Bahrain** and **Finland** are the data-only powerhouses of the world. In all but one reported market (Norway), **data-only's share of total traffic grew** – a trend that started in 2019, before Corona. We attribute this to FWA.

While 4G doesn't really drive data usage as such any longer, **5G** is different. At least in South Korea – still the only country with proper reporting on 5G. And despite media reports on how poor Korea's 5G is (although it's the densest 5G network on the planet), the progress is steady. Eighteen months after launch, 10 million Koreans (14% of SIM base) have moved to a 5G subscription. The data consumption per 5G subscription is about **2.5 times** that of the average subscription – 26.6 GB per month. 5G seems to have helped Korean operators to re-establish mobile service revenue growth overall.

Regardless of technology, data usage could be elevated by an increased data-only penetration through fixed-line substitution. But a prerequisite for this – and for high data usage in general – is that the **total revenue per gigabyte** is low.

This is the case in **India, Latvia, Lithuania, Taiwan, Finland, China** and **Poland**. **Canada, Luxembourg, Belgium, New Zealand, Germany** and **Greece** represent the other end.

Low usage doesn't necessarily mean low ARPU, though. Market ARPU is uncorrelated with usage. **Switzerland, USA** and **Canada** have much higher ARPU than other countries in our analysis.

What is worrying is that **only 6 of 20 markets could grow ARPU** on the back of data usage growth. It's easy to blame Corona for it, but the percentage is actually quite similar to what we have had in our previous country analyses. As an industry, we can do better.