

Data usage is still growing in every single country

Figure 1 shows the development of mobile data usage for 43 countries¹ where regulators² report mobile data traffic. The usage is shown per SIM per month – and in Figure 1 we are including all³ SIMs, also M2M/IoT SIMs.

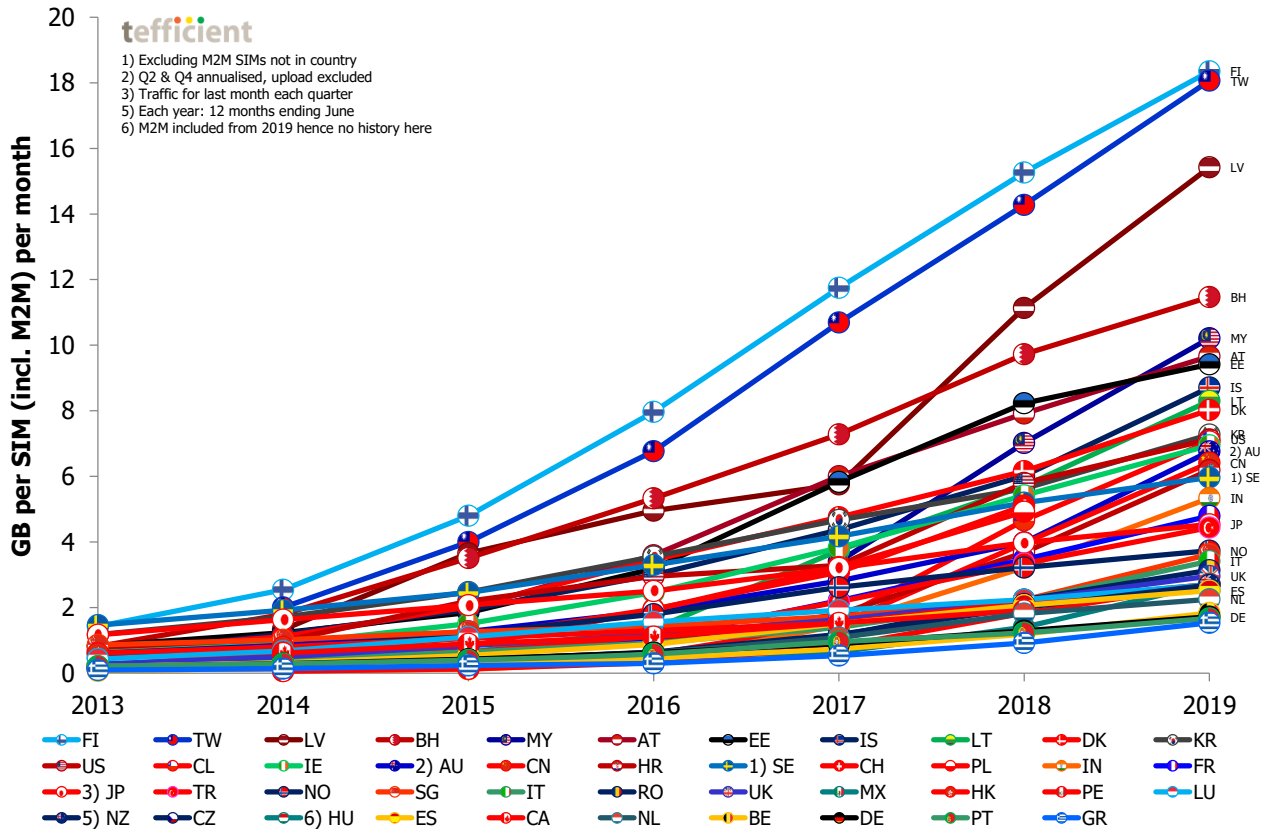


Figure 1. Development of mobile data usage per SIM (incl. M2M) per month – the legend shows the ranking

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 18.4 GB of data per month in 2019. **63%** of the Finnish SIMs (M2M included) had **unlimited data volume** in December 2019. If excluding M2M, 74%. If excluding also voice-only SIMs, 80%. No other country is as unlimited as Finland.

¹ Compared to our 1H 2019 analysis <https://tefficient.com/usage-up-but-monetisation-falters/>, Chile and New Zealand are added while Thailand is taken out as NBTC's reporting stopped

² Exception: USA, where the data is from the industry body CTIA. Its 2020 annual survey (with 2019 data) isn't published yet, but we applied a traffic growth figure stated in CTIA's [COVID-19 report](#) and extrapolated the subscriber and revenue development in 2019 based on the development of the publicly reported figures from Verizon, AT&T, T-Mobile and Sprint.

³ 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.

The average Taiwanese SIM carried 18.1 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 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 quicker than in Finland but ARPU is in faster decline.

Latvia is rapidly approaching the leader duo. The **data-only** base took a leap in 2018 and the growth continued with another 7% in 2019.

Bahrain remains in fourth place whereas **Malaysia** overtook both Austria and Estonia for the fifth place.

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 million M2M SIMs in Sweden – a figure that doubles the total SIM base if added to the regular SIMs base. We are therefore happy that PTS now reports the number M2M SIMs that are active in Sweden; 5.8 million, i.e. 39% 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 50% between December 2018 and December 2019. 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.

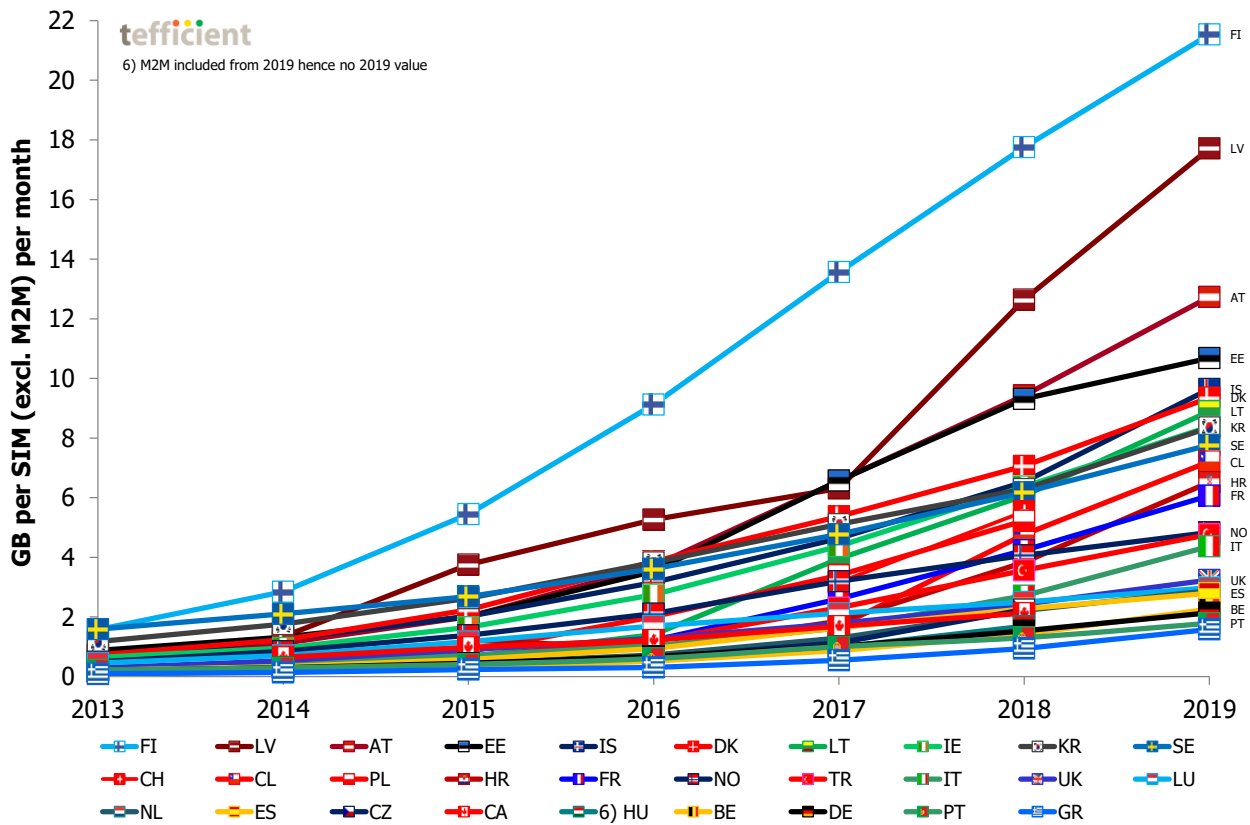


Figure 2. Development of mobile data usage per SIM (excl. M2M) per month – the legend shows the ranking⁴

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 **21.5 GB** per non-M2M SIM per month, **Finland** tops also Figure 2. Taiwan, Bahrain and Malaysia have disappeared from the top five 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 43 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

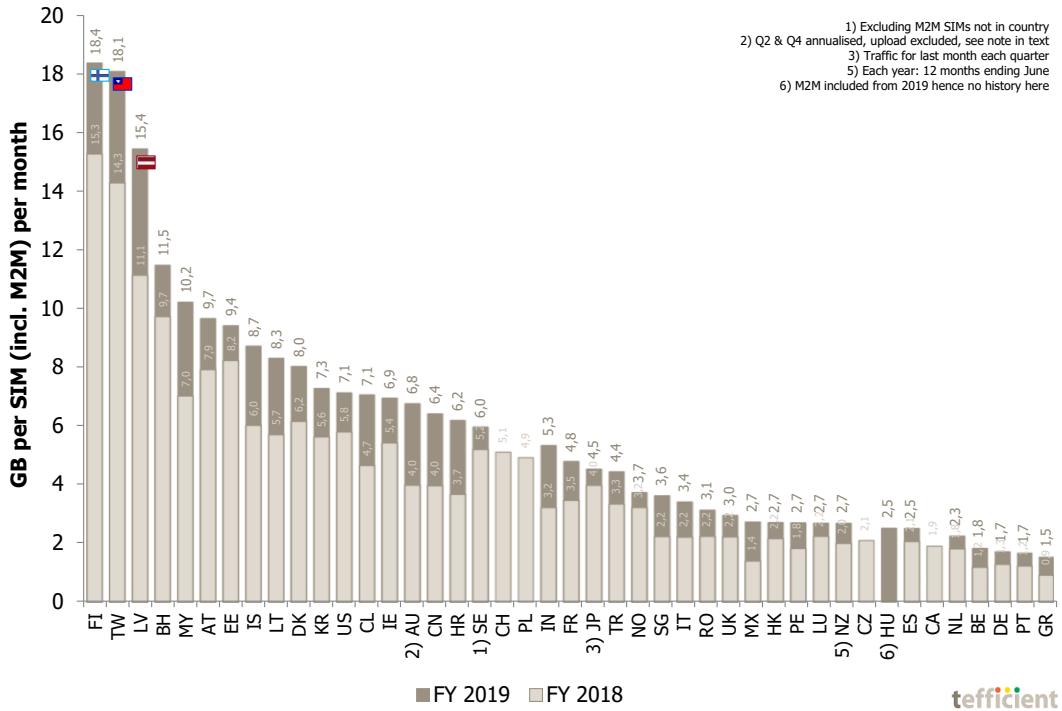


Figure 3. Mobile data usage per SIM (incl. M2M) per month, FY 2019 and FY 2018

And in Figure 4 excluding M2M:

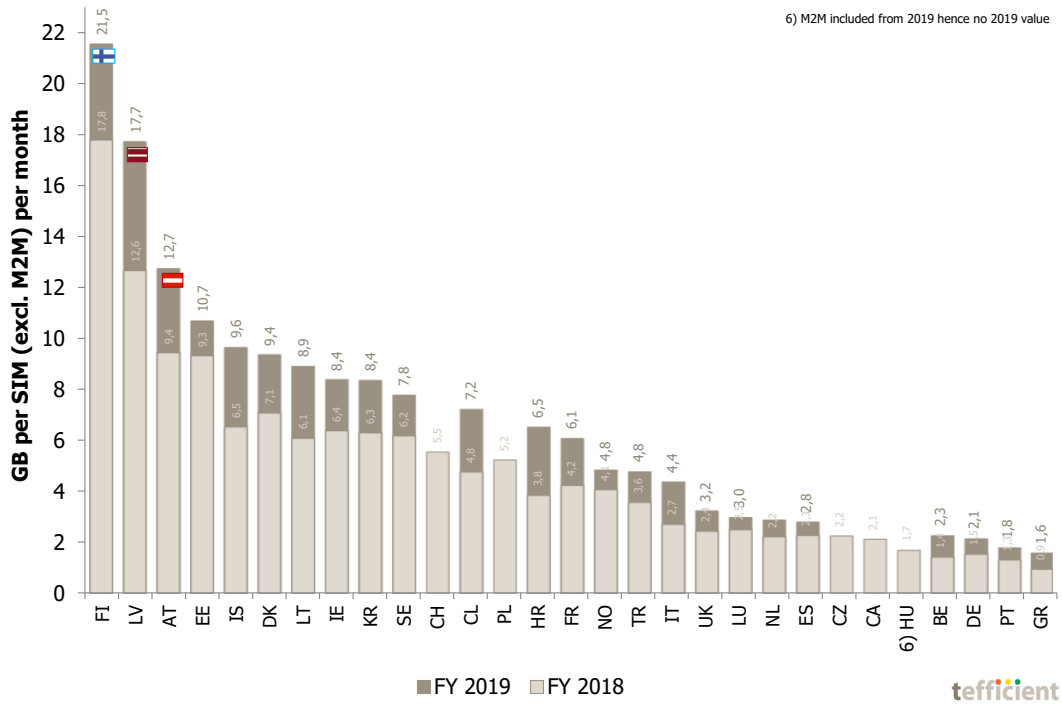


Figure 4. Mobile data usage per SIM (excl. M2M) per month, FY 2019 and FY 2018

The countries with the lowest data usage in both Figure 3 and Figure 4 are **Greece, Portugal, Germany** and **Belgium**.

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

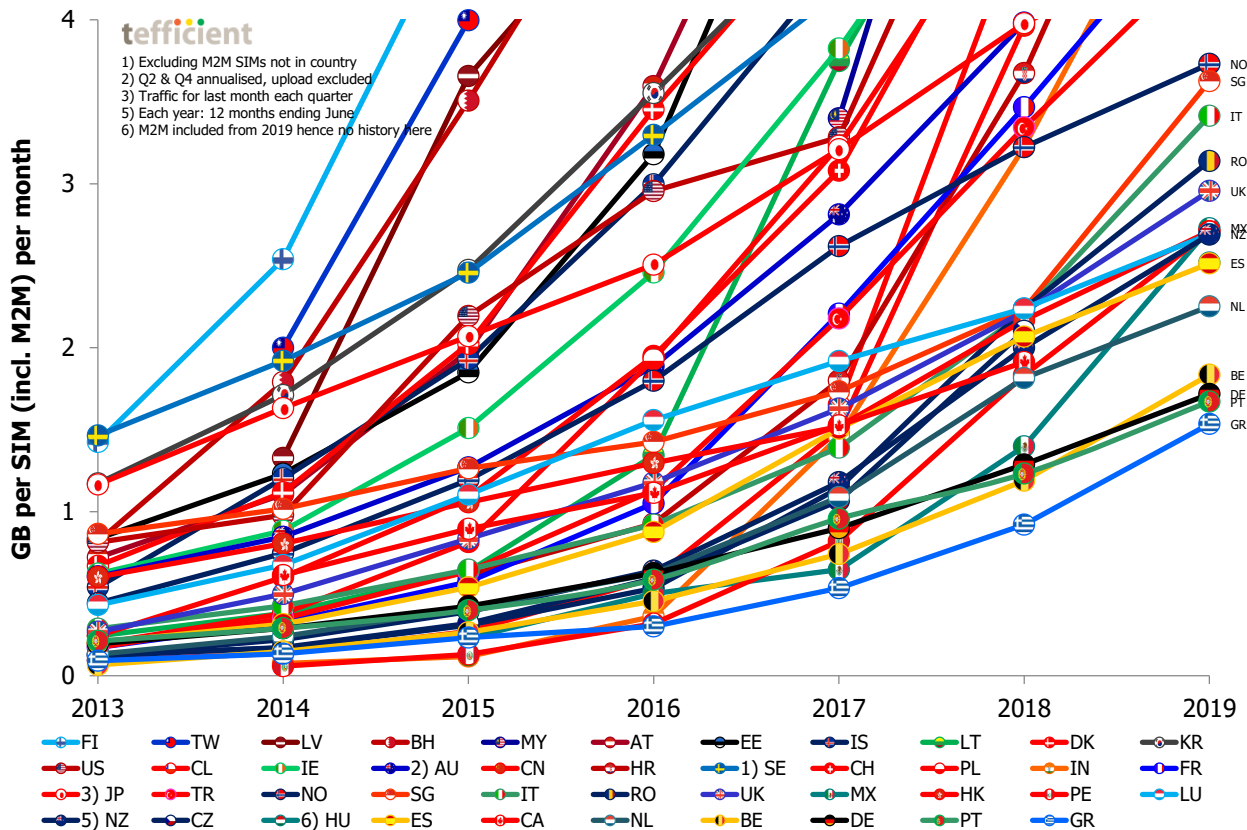


Figure 5. Development of mobile data usage per SIM (incl. M2M) per month [zoom-in on low end]

With 2.7 GB per SIM per month, **Mexico** overtook a few mature markets – Spain, the Netherlands, Luxembourg, New Zealand and most likely also Canada⁵ – in 2019. Of the Mexican operators, Movistar (right) offers unlimited data options whereas Telcel and AT&T don't – but all three offer zero-rated social media on many of their plans. There are also plans with specific allowances – on top of the general bucket – for specific services such as YouTube or Netflix.

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Disfruta de maratones de tus series favoritas, películas y videos.



Greece remains the country with the lowest average data usage – the last country (of our 43) that exceeded 1 GB per SIM per month. Greece has though come closer to Portugal and Germany in 2019.

⁵ The Canadian regulator, CRTC, is usually the last to report of our 43 markets. Data for 2018 was reported in January 2020.

Data usage growth fastest in Mexico – almost doubled in 2019

Figure 6 shows the growth in average usage per SIM (incl. M2M) between 2018 and 2019.

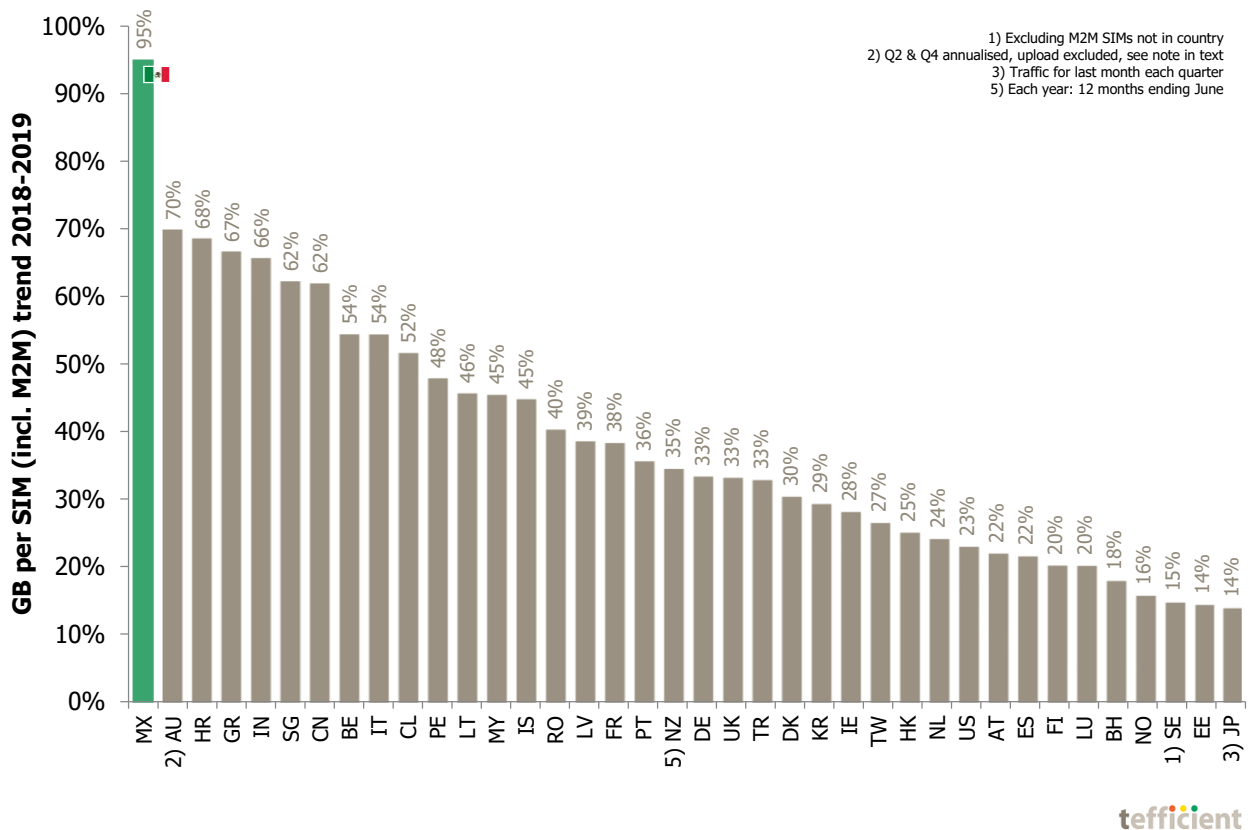


Figure 6. Development of mobile data usage per SIM FY 2018-FY 2019

Mexico defends the number 1 growth position from our 1H 2019 analysis. The average Mexican SIM used 95% more mobile data in 2019 than what it did in 2018. **Croatia** had 68%, **Greece** – the country with the lowest usage in our analysis – 67%, **India** 66% and **Singapore** and **China** both 62%.

The position of **Singapore** is interesting as the country always in our previous analyses had low growth rates. What happened? As usual when we observe such rapid trend changes⁶, it's 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

⁶ Previously observed in e.g. India and Italy

data consumption of the Indian market. It will be interesting to follow if Singapore’s growth in mobile data traffic continues⁷ now that the free trial is over.

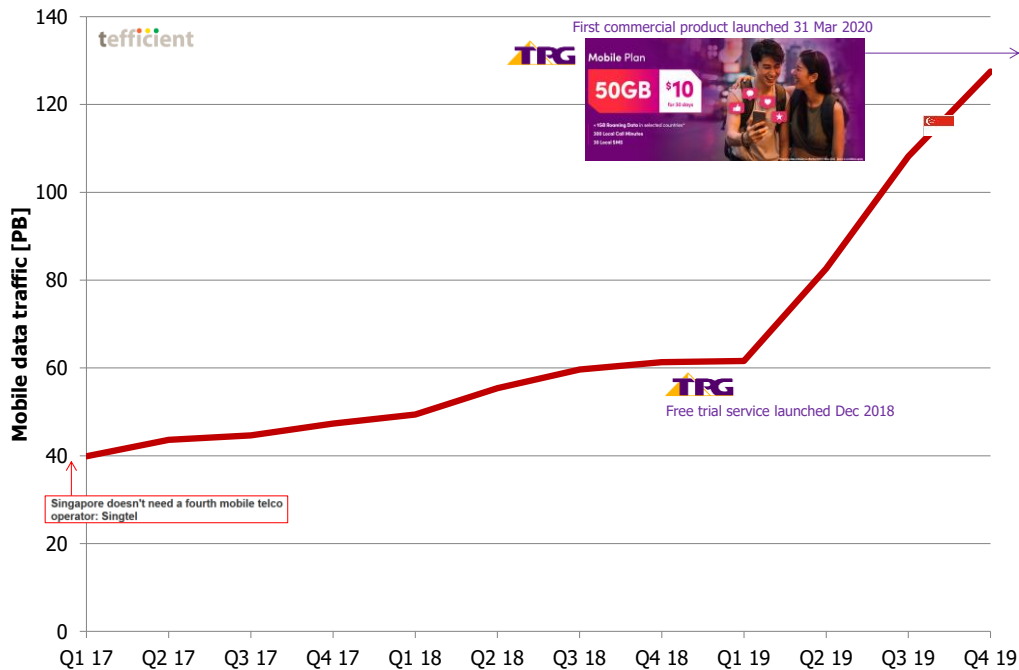


Figure 7. Development of mobile data traffic per quarter – Singapore

You might have noticed that we skipped over second-ranked **Australia** in Figure 6. The Australian Competition & Consumer Commission (ACCC) took over the responsibility to report the internet statistics from the Australian Bureau of Statistics in 2018. Originally it continued to report it in the same way, but has from its June 2019 report changed the way data is collected. For mobile services, only the three MNOs (and no longer the MVNOs) are providing the input data. The ACCC says that the data “is not directly comparable” to the previous report even though the MNO data now is said to include also the MVNOs. Even though it sounds as if the differences would be small, we cannot rule out that the high growth in Australian data usage shown in Figure 6 is an effect of the changes done in data collection. It is a pity that the ACCC chose not to update the historical data.

The growth laggards in Figure 6 are **Japan** (14%), **Estonia** (14%), **Sweden** (15%) and **Norway** (16%) – four mature markets where fixed broadband speeds are high, fuelled by high **fibre** penetration. One could expect **fibre-fed Wi-Fi** to play an important role here.

Although, as said, 63% of **Finland’s** SIMs (incl. M2M) are on unlimited volume plans, the usage growth rate there was just slightly higher, 20%. Does the demand for *more* mobile data weaken the more unexceptional unlimited data is?

Japan, Estonia, Sweden and Norway had the slowest usage growth in 2019

⁷ Q1 2020 data is not yet reported by Singapore’s regulator IMDA

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

We just said Wi-Fi and fibre rollout could affect mobile data usage. But mobile operators could also address the home market with **fixed-line substitution** offers. The take-up can be significant if these offers are reasonably charged and come without caps. It also helps if the fixed broadband offering is weak with much DSL is the mix.

This pretty much described the situation in **Austria**, a country that emerged as one of Europe’s mobile data leaders. Since Q4 2017, the Austrian 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 in Austria: In the first quarter of 2020, the mobile data traffic was **53%** of the fixed data traffic.

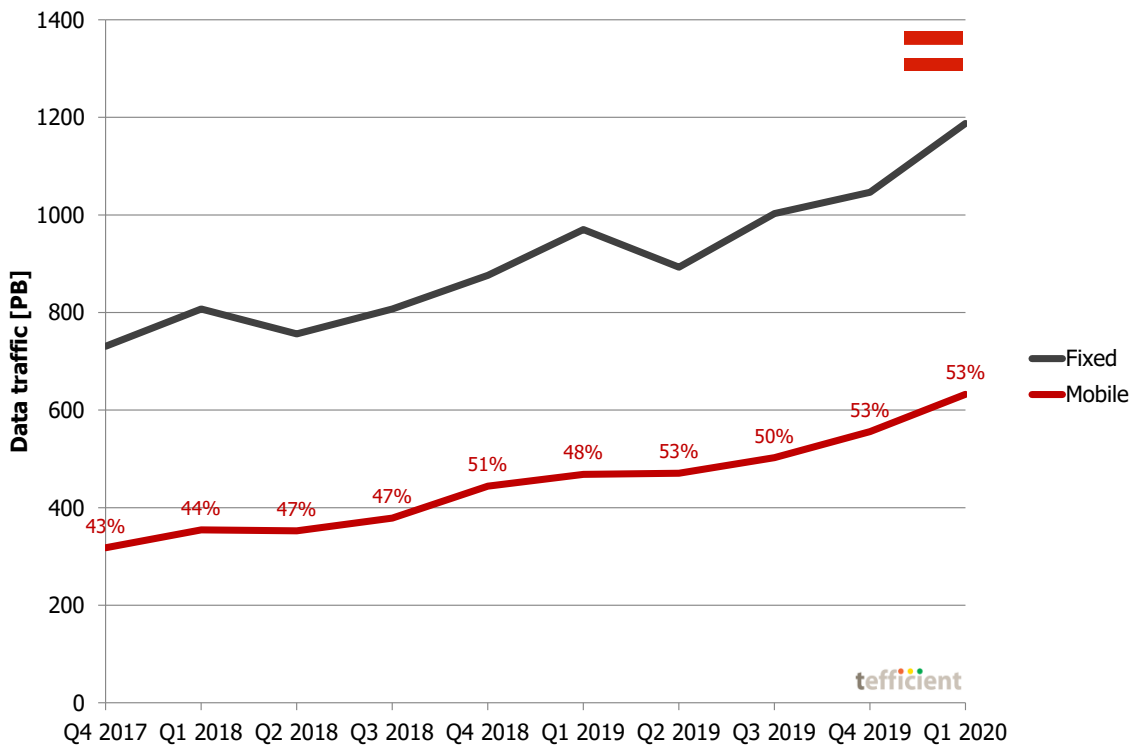


Figure 8. Development of fixed and mobile data traffic in Austria

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.

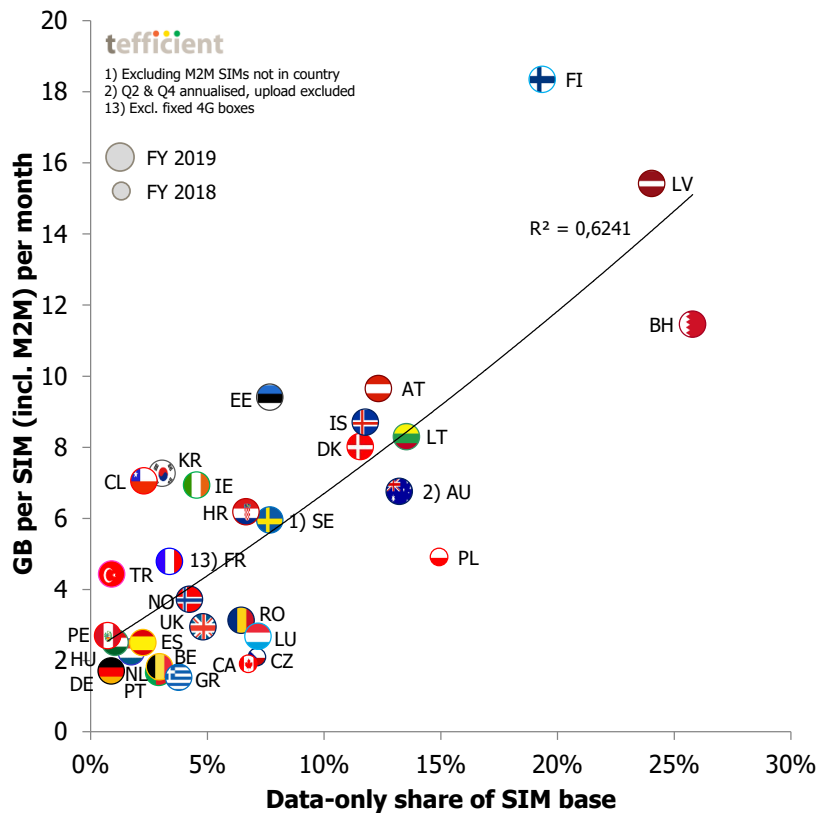
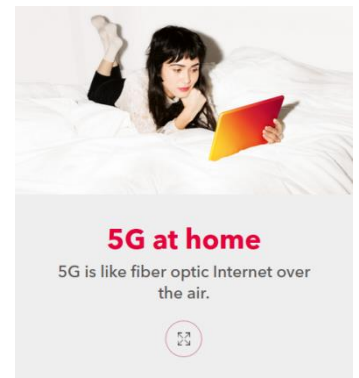


Figure 9. Mobile data usage vs. data-only share

In December 2019, close to **26%** of the SIM base in Bahrain was data-only. This makes **Bahrain** the leader in data-only share of base – and the average mobile data usage is also high. In **Latvia** data-only represented 24% of the base in December 2019 but usage is even higher than in Bahrain. It's yet higher in **Finland** in spite of a lower data-only share – 19%. There are six countries forming a central cluster between 12% and 15%: Denmark, Iceland, Austria, Lithuania, Australia and Poland.

The adherence to the regression line is 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) 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.

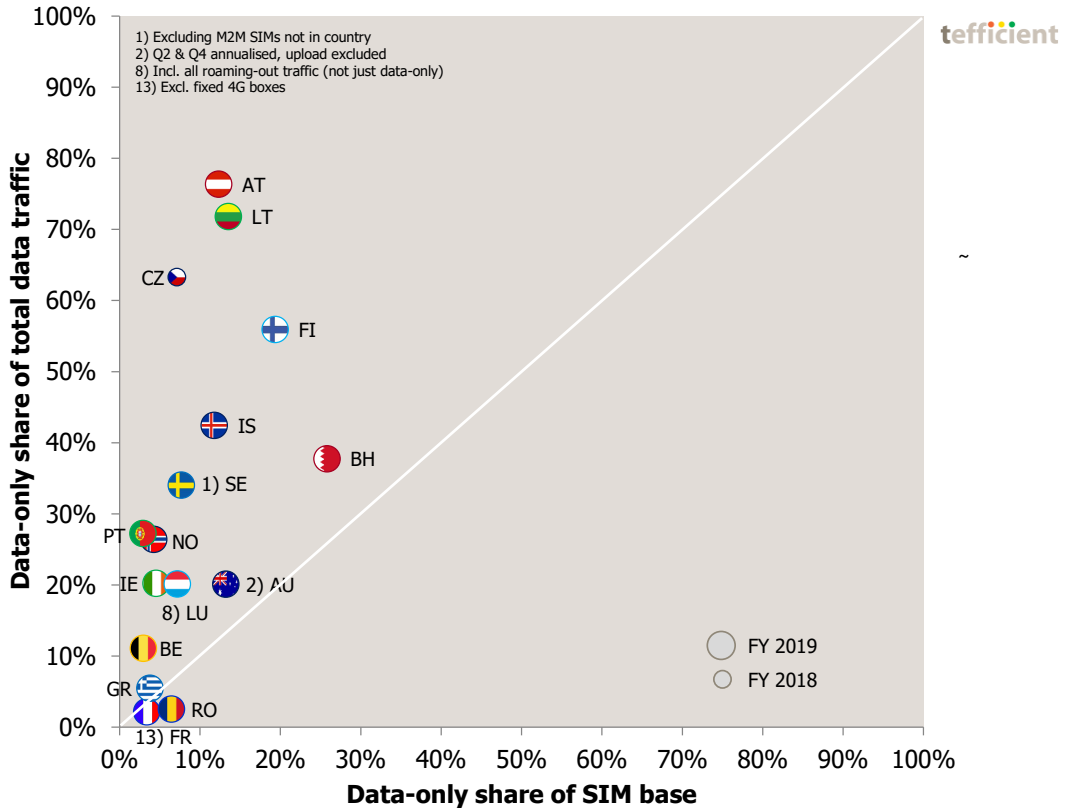


Figure 10. Data-only share of total traffic vs. data-only share of SIM base

With the exception of France and Romania, data-only SIMs carry a disproportionately high share of the data traffic – and it is increasing:

- Portugal **9.4x** higher traffic per data-only SIM vs. any SIM
- Czech Republic **8.9x** (2019 figure not yet reported)
- Norway **6.2x**
- Austria **6.2x**
- Lithuania **5.3x**
- Ireland **4.5x**
- Sweden **4.4x**
- Belgium **3.8x**
- Iceland **3.6x**
- Finland **2.9x**
- Luxembourg **2.8x**
- Australia **1.5x**

- Bahrain **1.5x**
- Greece **1.5x**
- France (excl. fixed 4G boxes) **0.6x**
- Romania **0.4x**

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.

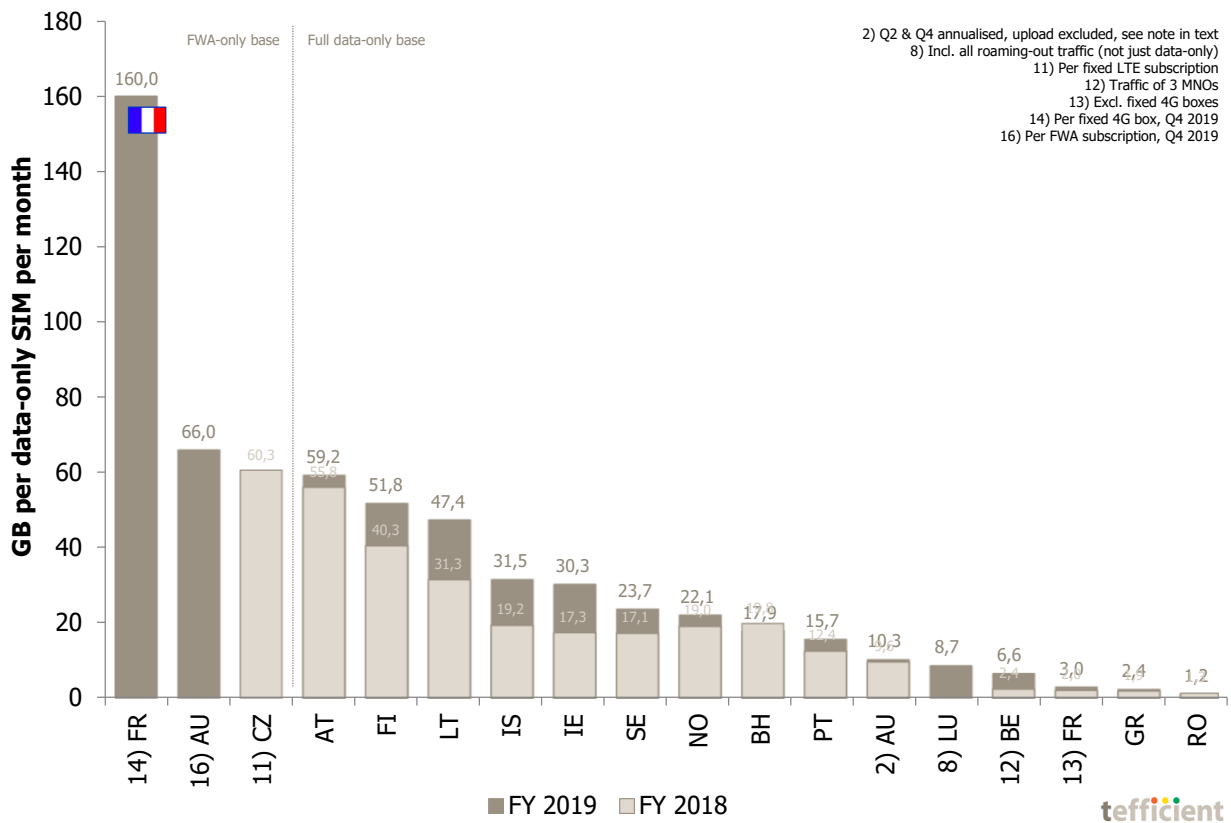


Figure 11. Mobile data usage per data-only SIM per month, FY 2019 and FY 2018

Starting from the left, the average '4G box' in **France** carried **160 GB** of mobile data per month in Q4 2019. This was significantly higher than for the other two FWA-only usage numbers in Figure 11: In Australia, the usage per FWA subscription was 66 GB in Q4 whereas the value per 'fixed LTE' subscription in Czech Republic was 60.3 GB in 2018⁸.

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 **59.2 GB**. **Finland** has 51.8 GB but faster growth than Austria. **Lithuania** has faster growth still; here the mobile data-only specialist Mezon pushed the traditional MNOs to also embrace the data-only segment.

⁸ 2019 not yet reported

If **5G** should become the fibre-over-radio solution that e.g. Verizon, Sunrise and others suggest, the data-only FWA usage figures of France, Australia and Czech Republic give a taste of the usage that the solution must at least manage. Fixed broadband usage is yet higher – often around 250 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.

The average French '4G box' consumed 160 GB per month in Q4 2019

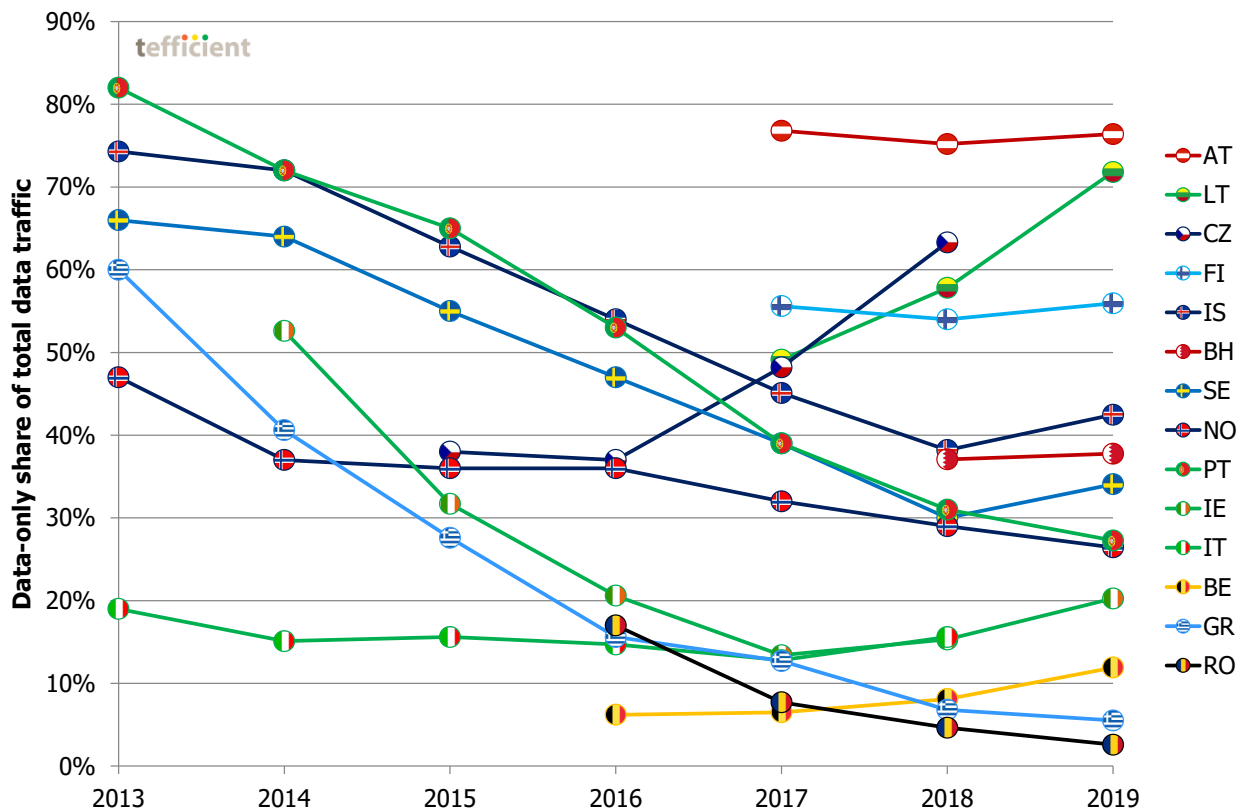


Figure 12. Development in the data-only share of total mobile data traffic – for all reporting countries

For as long as we have followed mobile data traffic, data-only's *share* of traffic has decreased. It's not necessarily that the absolute data-only traffic decreased, but the growth of the smartphone traffic has been much quicker. Until now.

For a number of markets – Austria, Lithuania, Finland, Iceland, Bahrain, Sweden, Ireland and Belgium⁹ – **data-only traffic gained market share** in 2019. Although not witnessed everywhere, we regard this as a trend shift and 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 several markets

⁹ But not necessarily for the other countries in Figure 12; 2019 data not yet available for Czech Republic

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 88% (Korea's figure includes 5G). The adherence to the regression line is weaker than in the previous data-only section.

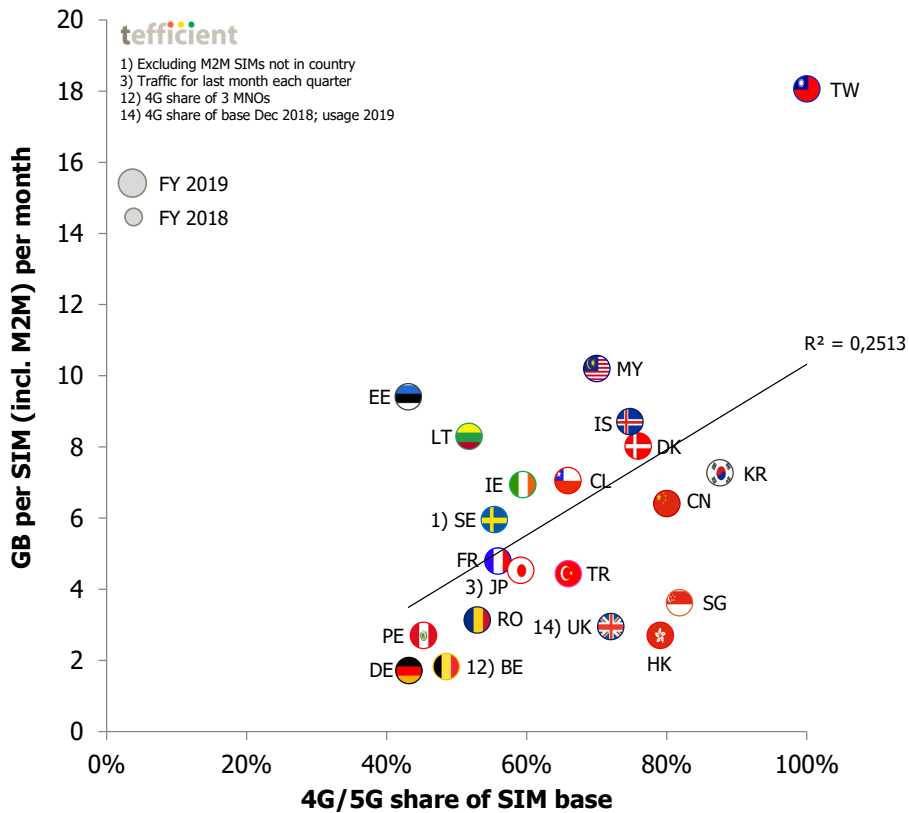


Figure 13. Mobile data usage vs. 4G/5G share

While operators in countries with very low 4G penetration (such as Germany) often still report that 4G drives data usage, Figure 14 shows that 4G in itself is a much weaker driver of traffic than data-only (compare with Figure 10).

Taiwan has 100% of mobile data traffic (and 100% of subscriptions) on 4G. **Korea** has 99.9% of the traffic on 4G or 5G but only 88% of the subscriptions.

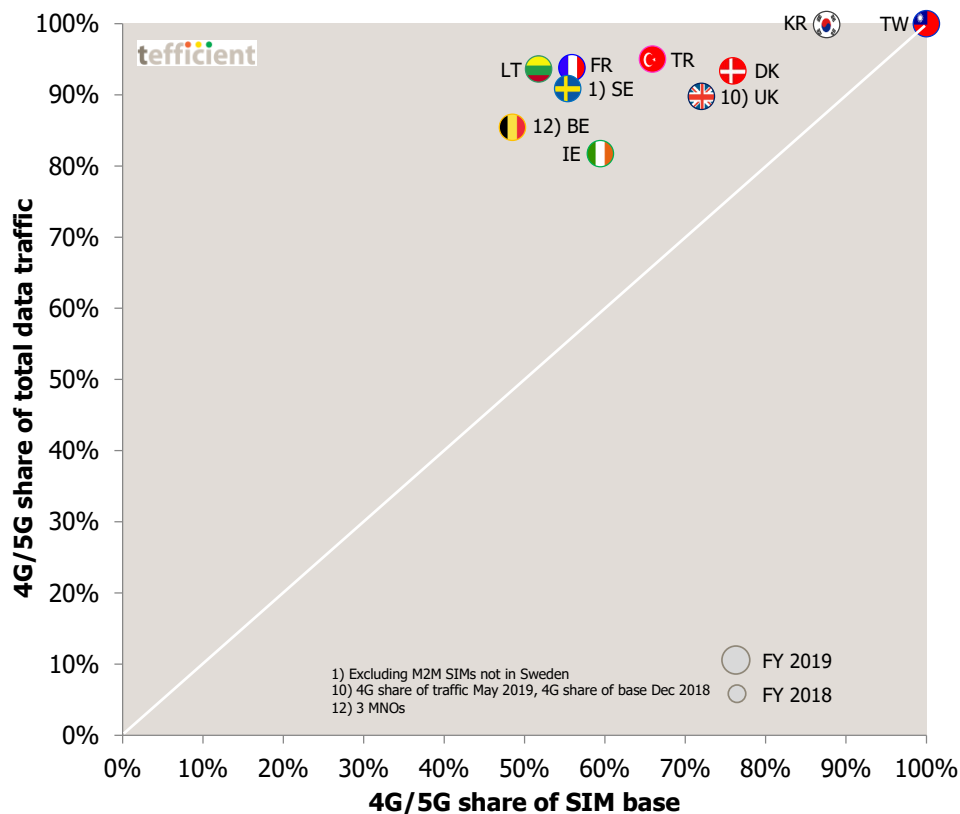


Figure 14. 4G/5G share of total traffic vs. 4G/5G share of SIM base

4G 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 user vs. any SIM
- Belgium **1.8x**
- France **1.7x**
- Ireland **1.4x**
- Turkey **1.4x**
- Sweden **1.6x**
- 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 in 2019, 94% of mobile data traffic was 4G. India and Hungary both had 93% where **Mexico had 76% of traffic over 4G** – the lowest among reporting countries.

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

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

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

It's a different story with **5G**, though. Our example will have to be taken from **Korea** as that is the only launched 5G market for where there's traffic reported¹⁰. Figure 15 shows how the Korean 5G share of traffic has developed month by month when compared to the 5G share of base.

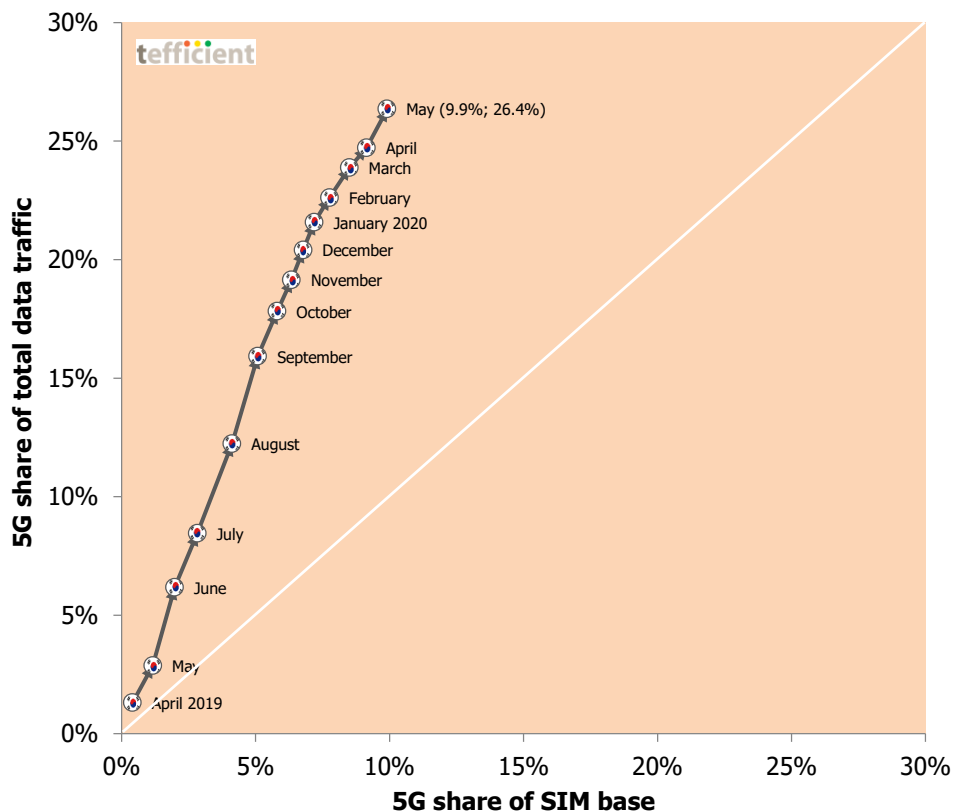


Figure 15. 5G share of total traffic vs. 5G share of SIM base – Korea per month since 5G launch

There are small variations between the months, but the 5G multiplier has generally been close to **3x**: A 5G subscription consumed three times the traffic of a general subscription. Is this an 'early adopter' thing? Not really. After 14 months, Korea has **6.9 million** 5G subscriptions and it's only in the past four months the 5G multiplier lowered a bit¹¹:

- April 2019 **3.2x**

¹⁰ The imbalance between the level of 5G marketing and the level of 5G reporting is striking outside of Korea

¹¹ Hard to say if COVID – where Korea had an early outbreak – affected these multipliers or not

- May **2.5x**
- June **3.1x**
- July **3.0x**
- August **3.0x**
- September **3.1x**
- October **3.1x**
- November **3.0x**
- December **3.0x**
- January 2020 **3.0x**
- February **2.9x**
- March **2.8x**
- April **2.7x**
- May 2020 **2.7x**

The development in Korea is impressive and bodes well for the industry¹². It will be interesting to see if **China** and **Japan** – the only other two 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.

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

¹² We have analysed the Korean 5G market closely and on-site, and occasionally made parts public, see: <https://tefficient.com/nine-months-with-5g-4-7-million-subs-each-using-27-gb-per-month/>

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 plan¹³ – which means that price still, essentially, is about data volume.

Figure 16 plots the *total* mobile service revenue per consumed gigabyte¹⁴ against the average mobile data usage per SIM and month.

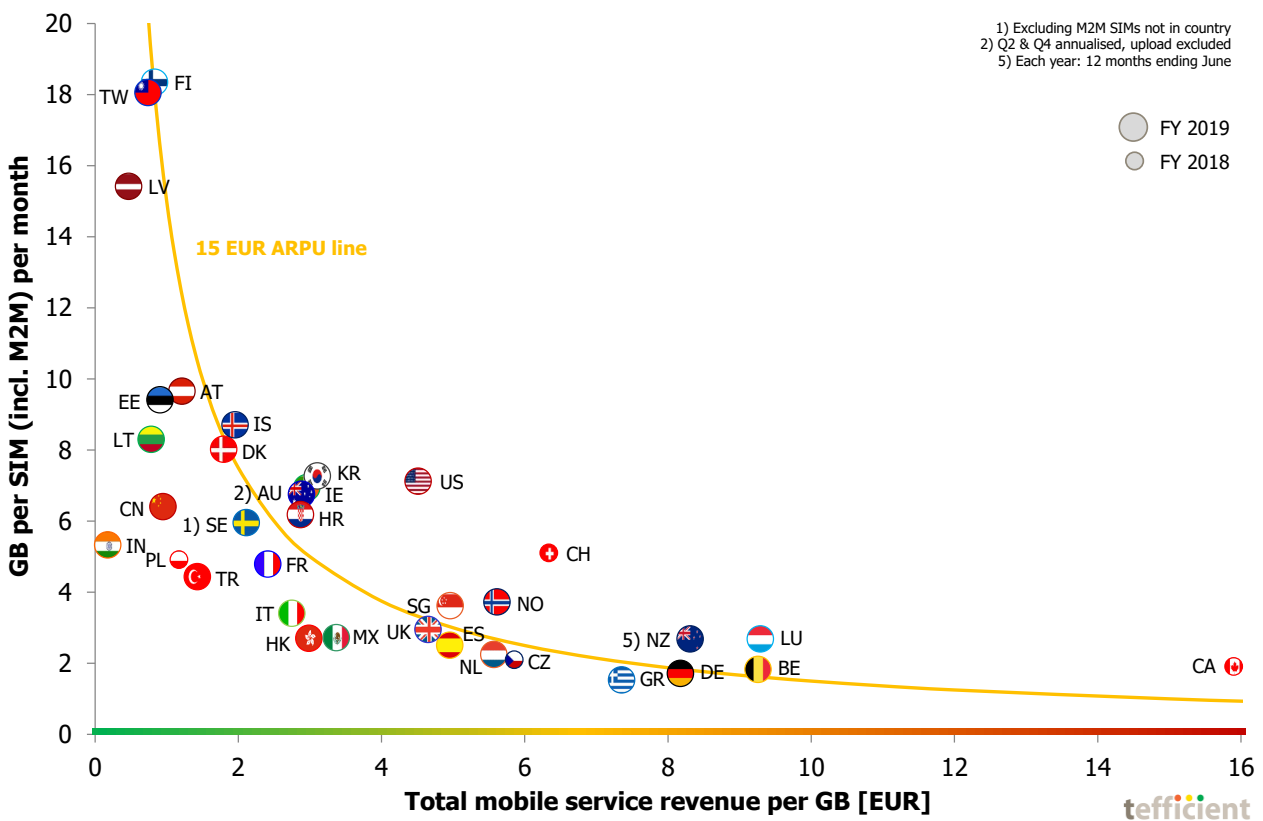


Figure 16. Mobile data usage vs. total mobile service revenue per consumed GB

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.

¹³ There are exceptions to this, e.g. Finnish operators, Swisscom and now 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.

¹⁴ Attributing zero value to voice and messaging

There are a few countries where operators enjoy very high total revenue per consumed gigabyte: **Canada, Luxembourg, Belgium, New Zealand, Germany and Greece**. The observation is based on the latest available data – FY 2018 or FY 2019 (or in New Zealand’s case the 12 months ending June each year).

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 earn the lowest revenue per consumed gigabyte: **India, Latvia, Taiwan, Lithuania, Finland, Estonia and China**.

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 – operators in 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 FY 2018 to FY 2019.

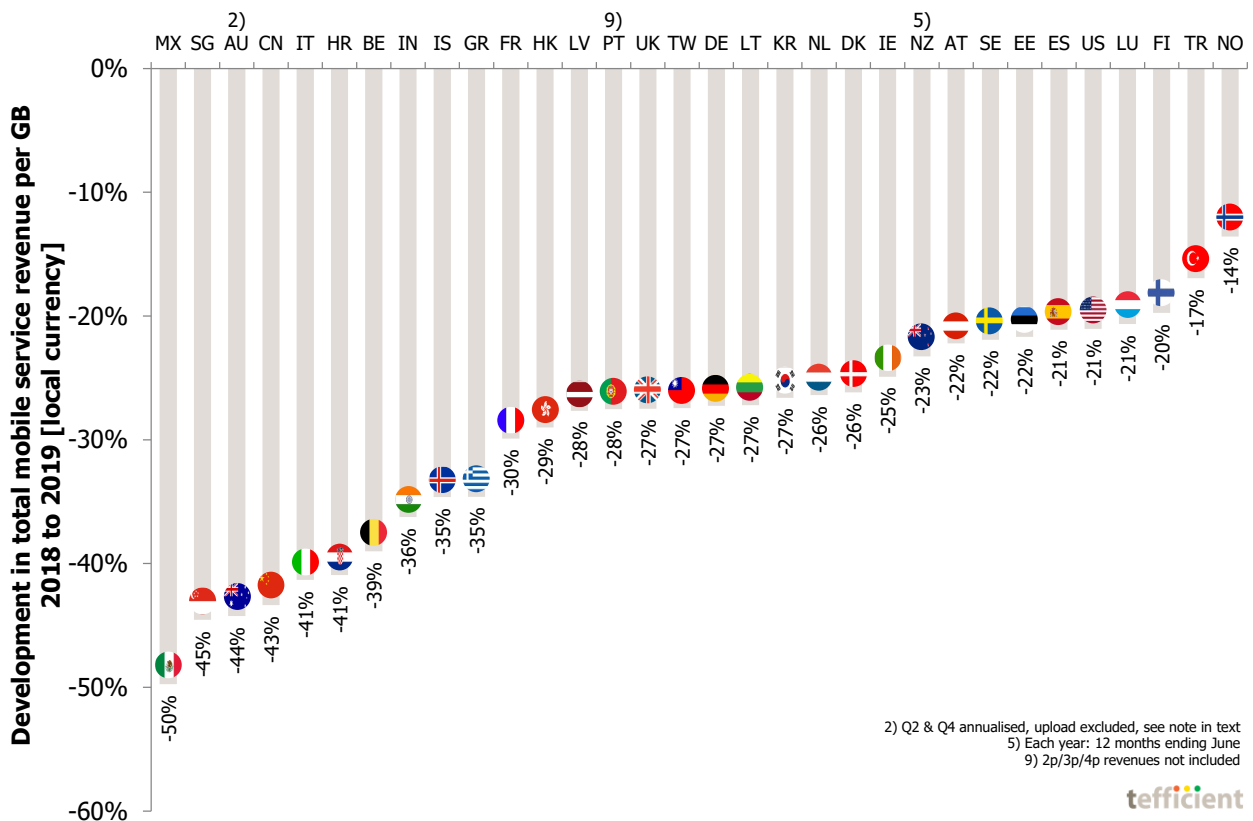


Figure 17. Erosion in total mobile service revenue per consumed GB – FY 2018 to FY 2019

The prerequisite to be in Figure 17 is of course that the statistics have been reported both for FY 2018 and for FY 2019. Of these markets, **Mexico** has the fastest revenue erosion, 50%. **Singapore** is just behind with 45% as TPG's entry led to a shift in data consumption. **Australia** follows with 44%, but remember the possible data comparability issue between 2018 and 2019 that we described earlier. Also in **China, Italy** and **Croatia** erosion is fast.

Norway has the slowest revenue erosion, just 14%. **Turkey** has 17%. **Finland's** slow revenue erosion (20%) is interesting as the textbook always taught that unlimited would destroy the revenue development. As you know by now, there's no market in the world with more unlimited than Finland.

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.

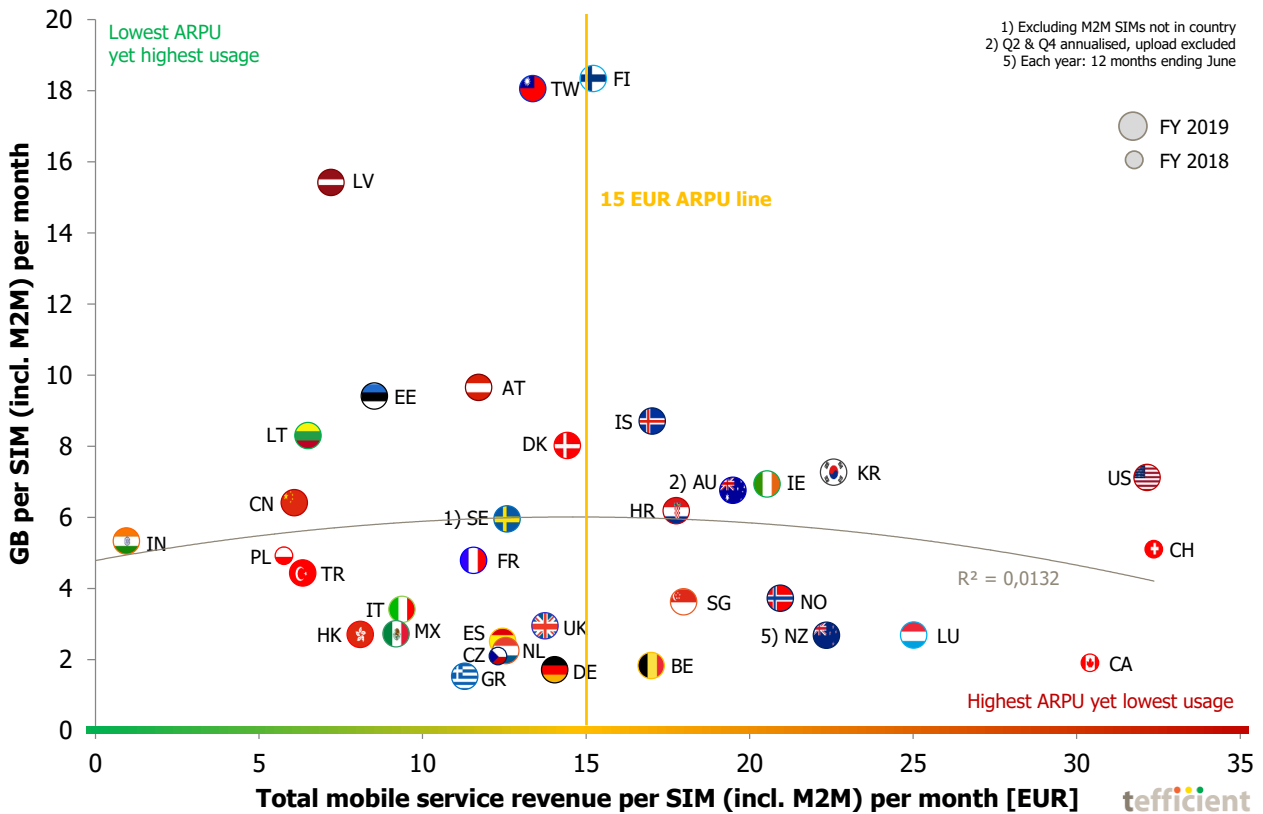


Figure 18. Mobile data usage vs. total mobile service revenue per SIM

Of our markets with 2018 or 2019 data, there are four where operators derive ARPUs much higher than elsewhere: **Switzerland, USA, Canada and Luxembourg**.

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

But that’s regrettably not to 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.

The Christmas tree isn't making many happy

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 last year. That would mean that the operators of a country have been able to monetise the growth in data usage.

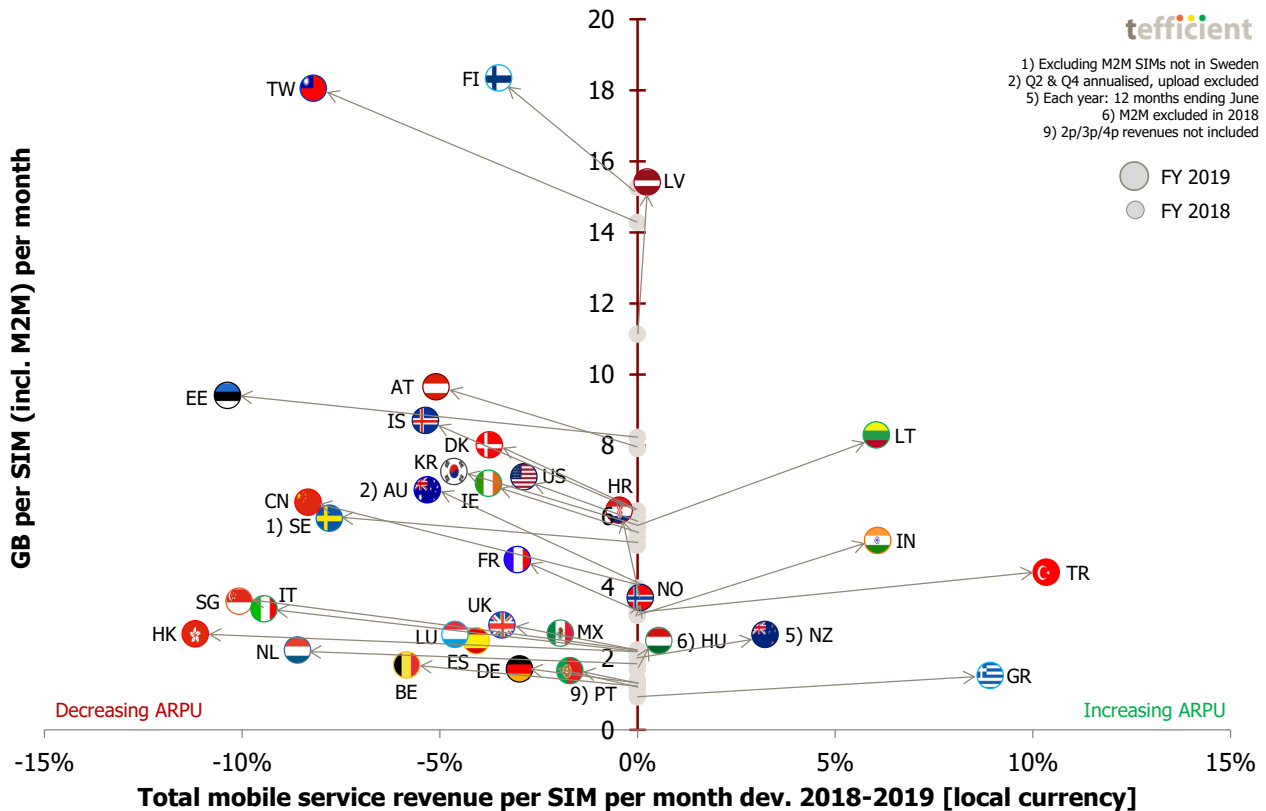
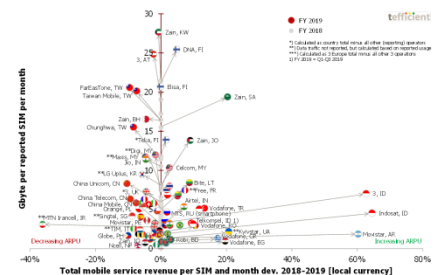


Figure 19. Development in mobile data usage vs. the development in ARPU – FY 2018 to FY 2019

In reality the branches stretch right in only **8 of 33 markets**¹⁵. These eight are – from the top – **Latvia, Lithuania, India, Turkey, Norway, New Zealand, Hungary** and **Greece**. In 25 markets (76%), the branches stretch left meaning that even though data usage grew, ARPU fell. Hong Kong, Estonia and Singapore all had ARPU erosion that was faster than 10% between 2018 and 2019. Taiwan, China, Sweden, Italy and the Netherlands only look marginally better.

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 – "[The gig economy: 58% more gigabytes generated 0.4% more revenue](#)" – the situation looks better



¹⁵ The 33 markets for which regulators have reported the necessary underlying stats

as 44% of the operators could grow ARPU based on an increase in data usage. If you haven't yet read it, we propose you do.

As shown, **5G** had a major impact on the data usage in Korea. But Korea doesn't have a positive ARPU development in Figure 19. One explanation is that Korea's ARPU was heavily affected by a government decision taken in 2017 which increased 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 actually has had a positive impact since the launch in Q2 2019.

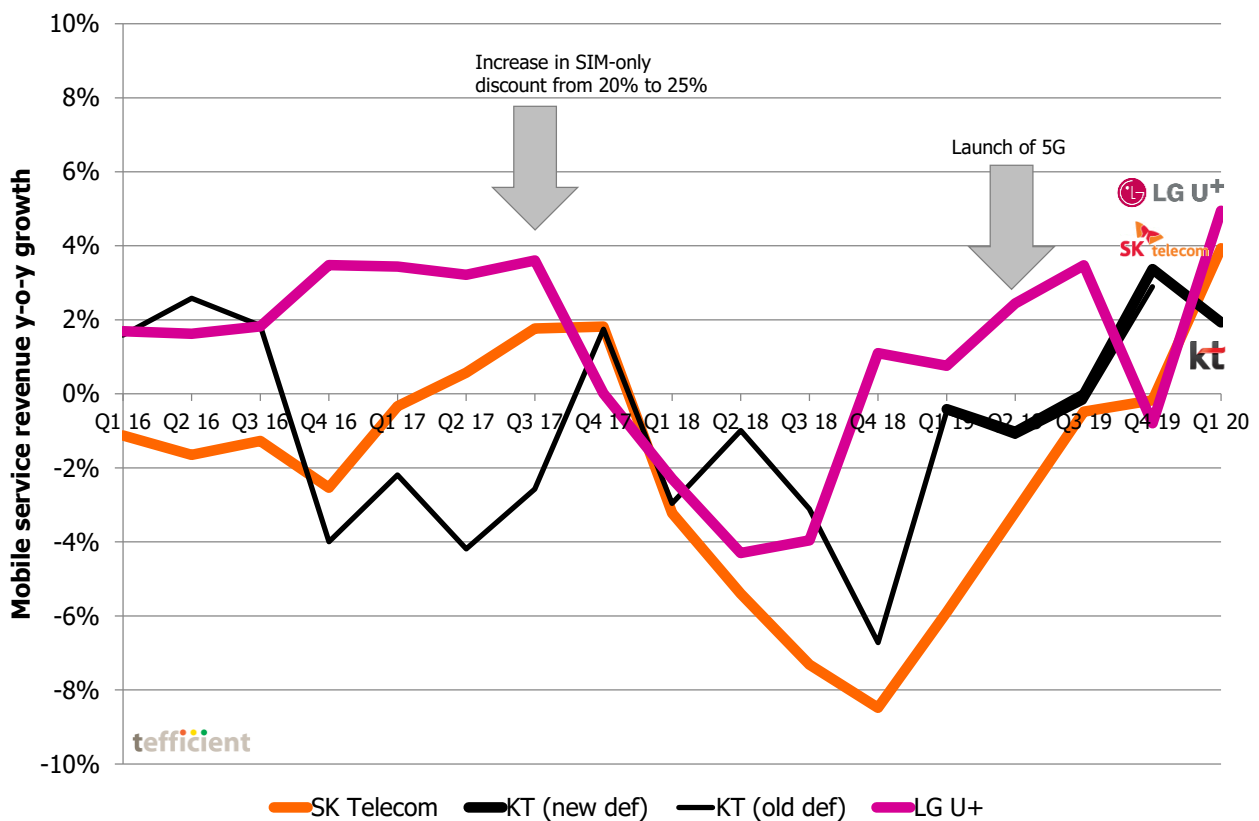


Figure 20. Y-o-Y development in overall mobile service revenue – Korea

From Figure 20 it's clear that the increase in SIM-only discount (see the first arrow) had a large 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 43 countries covered by this analysis. The growth rates are very different and so are the usage levels. **Finland** tops the charts – with 18.4 GB per average SIM per month in 2019. If excluding M2M, the usage grows to 21.5 GB per month. But in spite of **74%** of non-M2M SIMs being **unlimited**, the data usage growth isn't particularly fast in Finland – 20% in 2019. Usage in **Mexico** grew 95%. 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. **Bahrain, Latvia** and **Finland** are the data-only powerhouses of the world. But ever since the smartphone era started, data-only's *share* of total mobile traffic declined. Until now. Thanks to FWA and to operators letting go of their anxiety for unlimited in this segment, the **data-only traffic started to grow quicker** than the overall data traffic in many markets.

While 4G doesn't really drive data usage as such any longer, **5G** is different. The Korean progress is stunning. Fourteen months after launch, 6.9 million Koreans (10% of SIM base) have moved to a 5G subscription. The data consumption per 5G subscription is about **three times** that of the average subscription. 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, Taiwan, Lithuania, Finland, Estonia** and **China**. **Canada, Luxembourg, Belgium, New Zealand, Germany and Greece** represent the other end.

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

What is worrying is that **only 8 of 33 markets could grow ARPU** on the back of data usage growth. If we can't monetise gigabytes, then what?