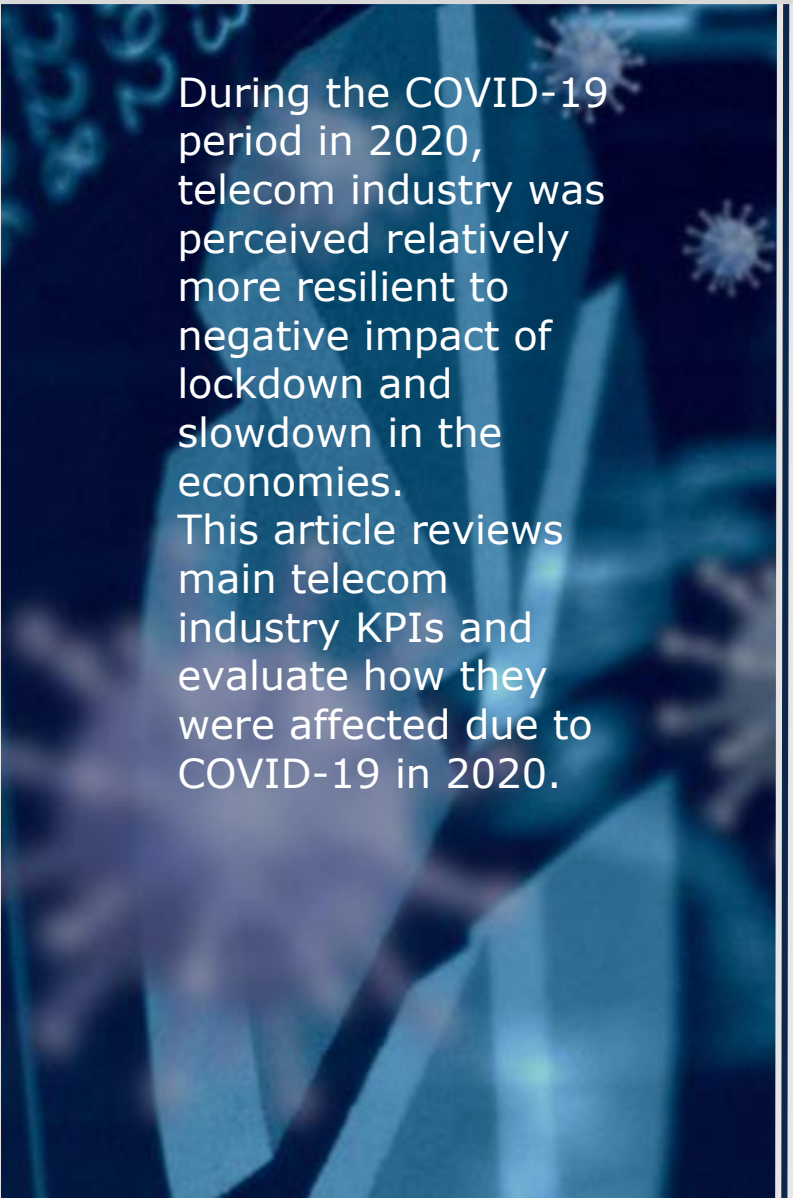
Axon Advisory Research

Impact of COVID-19 on Telecom Metrics



During the COVID-19 period in 2020, telecom industry was perceived relatively more resilient to negative impact of lockdown and slowdown in the economies.
This article reviews main telecom industry KPIs and evaluate how they were affected due to COVID-19 in 2020.

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1. Executive summary

While we face some of the biggest changes in our daily lives due to the COVID-19 pandemic, such as work becoming remote, education going online, demand increasing in online media and entertainment; the importance of telecommunication services is once more emphasised as they enable orienting our lives even under these unusual conditions.

After our previous article on the pandemic published in July 2020, "The Telecom Industry During Times of Crisis", Axon analysed the impact of COVID-19 on telecommunication industry metrics for a set of countries from the broad area of action of the Body of European Regulators for Electronic Communications (BEREC), that, beyond EU countries, typically includes in its studies other neighbouring countries. In particular, in this study, we have analysed countries for which there is plenty of information that represents most of the market, identifying the following countries: the United Kingdom, Germany, Italy, Spain, and Turkey.

Needless to say, as each selected market has a different competitive landscape, market evolution history, and background, the trends and evolution of mobile services and fixed broadband services during the COVID-19 period vary from their peers given their specific market dynamics.

Having said that, when selected countries are framed via data gathered from both national regulatory authorities and operators' financial statements, it was revealed that fixed broadband subscriptions witnessed an increase while mobile subscription levels tended to remain flat, presumably related to already high penetration levels and a decrease in new customer acquisition efforts during the lockdown period.

Zooming into fixed broadband revenues, the direct effect of increased subscription levels was not felt proportionally by the revenues in most cases. On the mobile revenues front, operators faced significant pressure on the growth which was potentially driven by losses in roaming revenues due to travel restrictions, a decrease in the number of upsell activities, a decrease in smartphone sales, among other factors.

On the capital expenditures and operating expenses front, the operators did not experience any major changes and the investments in fibre and rollout of 5G services continued as planned. Although there were minor cost-cutting activities, operators did not have a significant impact on the overall picture of operators' costs.

2. Introduction

Right after the World Health Organization (WHO) declared COVID-19 a pandemic, almost all countries experienced major lockdowns to stop the coronavirus spread. People had to avoid social contact for several consecutive weeks, even months, due to nationwide lockdowns that left millions of people stuck at home. Hence, economic activities were paralyzed with dramatic changes in the pre-pandemic way of living:

- Manufacturing processes slowed down significantly
- Supply chain operations faced multiple bottlenecks and decelerated
- Enterprises encountered poor cash flows
- Investment activities were postponed

In Axon's previous article "The Telecom Industry During Times of Crisis", we explored how most countries were in the "Staged Response and Recovery Plan" phase of the COVID-19 journey Axon defined. As of today, we see that some countries returned to that stage because of subsequent contagion waves and the spread of mutated variants of the virus. However, some other countries have already moved to "The New Normal" in which they carefully spin the wheels of their economies while keeping the pandemic under control.

Having said that, we currently live with major behavioural changes in our daily lives and usual business operations:

- We keep an eye on social distancing
- Remote working is widely accepted with videoconferencing and online calls being the main sources of communication
- Education is being carried out virtually
- The digital channels' share in shopping is growing at a fast pace
- Engagement with online media and entertainment is stronger than ever
- People are significantly cutting down on traveling whether it is touristic or business

With these key changes under these extraordinary times, we already emphasized in our previous article the role of the telecommunications industry becoming even more crucial as it enables us to continue living our lives and doing business. It is acknowledged that broadband services gained great importance to households so that they can work, learn, shop, and spend some leisure time during the lockdowns and also in the new normal. Moreover, governments all over the globe also became

more dependent on the telecommunications industry and especially on broadband services to be able to interact with citizens and monitor the progress of public health.

Now, with full visibility into 2020, this article explores how key telecommunication sector metrics of mobile and fixed broadband services and their expenditures were affected during one of the toughest challenges faced by them.

3. Methodology

This study assesses the impact of COVID-19 on mobile markets and fixed broadband markets, explores the evolution of main financial and operational market metrics, and pinpoint any similarities or differences in countries' market performance if any.

Our study has been focused on BEREC's broad area of action, which typically includes not only EU countries but also some other neighbouring counties in its studies. As such, the analysis has been built on a selection of countries whose national telecommunications regulators provide publicly available and statistically significant telecom market data separately for mobile services and fixed broadband services in the past three years (2018-2020).

Based on extensive desk research, the identified five countries that fulfil these requirements are the **United Kingdom**, **Germany**, **Italy**, **Spain**, and **Turkey**.

In order to facilitate the analysis, the quarterly and/or annual operational and financial market KPIs published by the telecom regulators of the countries have been collected. The studied KPIs for both markets can be listed as:

- Number of subscribers[1]
- Data consumption
- Service revenues (€)
- Capital and Operating Expenditures (€)

The telecom regulators in Turkey and Spain published their telecom market results for all years and quarters of the three years. However, in the cases of the UK, Germany, and Italy, the national regulators did not yet publish them for some quarters of 2020. To ensure full visibility of the impact of COVID-19 on the region, the missing KPIs regarding revenues, consumption, and subscribers for these quarters have been estimated based on the same KPIs reported by the main telecom operators (in their annual reports or financial statements) which jointly serve at least 90% of the total subscriber base of the corresponding market in the country. Considering the scale of the operators used for this purpose, they constitute the majority of the telco services in respective markets, and hence, are considered to be a fair proxy to understand the overall market trend. The calculations assumed no change in the market share of the operators and the market metrics were extrapolated proportionally.

[1] The number of subscribers in mobile market exclude M2M SIM subscriptions.

On the other hand, capital and operating expenditures are demonstrated at the country-operator level with no estimations but as aggregated levels (by country or by the operator) as their nature is dependent on internal company dynamics rather than mere market trends (e.g., corporate investment decisions, process developments reducing operational expenses, etc.). Moreover, these values are represented on a half-year basis to ensure comparability since some operators shift fiscal years by one quarter compared to calendar years for financial reporting purposes and the latest quarter of 2020 is not yet published.

Following data collection, all KPIs have been analysed on a quarterly, half-year, or annual basis and insights have been generated as a result of comparative work.

It should be noted that in order to avoid noise and fluctuations in trends due to varying scales and starting points of the selected countries, the collected data has been adjusted by assigning an index of '100' to 2018 for the subscriber, data consumption, and revenue analysis; and by assigning an index of '100' to 2018 Q2 - Q3 for expenditures analysis, both referred as the "base year". Accordingly, the subsequent quarters, half-years, or years have been represented as a ratio to the base year. More information on this method can be found in the Annex.

4. Response of key telecom metrics to COVID-19

4.1. Mobile market

In this section, we explore the influence of the COVID-19 pandemic on mobile market metrics in the five countries studied.

4.1.1. Evolution of subscribers

Through this subsection, we deep dive into the trends observed in the number of mobile market subscribers both annually and quarterly for 2020.

Exhibit 4.1 below shows the change of average annual mobile subscriptions between 2018 and 2020 in the selected countries.

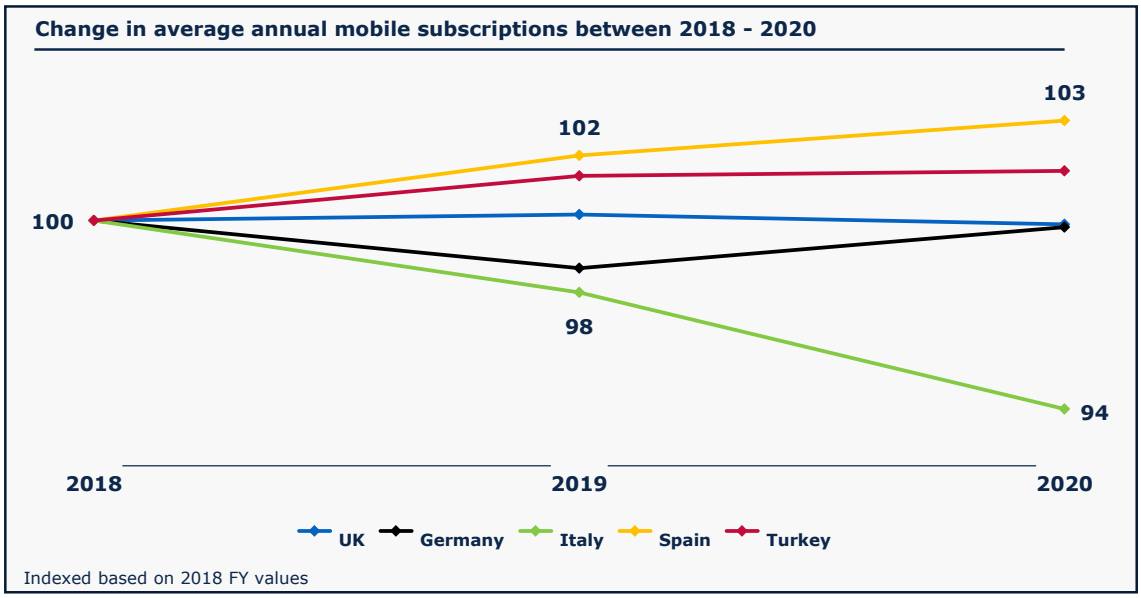

Exhibit 4.1: Average annual mobile subscription between 2018 - 2020
[Source: Axon Consulting, based on NRAs reports and operators' financials]

As seen in Exhibit 4.1, the selected countries followed different patterns in terms of mobile subscriptions, while in general, they experienced an increase in 2020, with the exception of Italy which showed a relevant decrease of 4%, and Germany with a slight decrease (<1%). It should be noted that the evolution of mobile subscribers in the region is certainly affected by the pandemic, however, there are other aspects to be taken into account to understand the big picture. Some of the key considerations to be studied include the pandemic's unique impact on countries individually, the

countermeasures taken by the governments, and variant mobile subscriber maturities. Additionally, the evolution of fixed broadband metrics studied in section 0 also sheds light on the changing telecom landscape during the past year.

A comparative look at the countries' subscriber count reveals that even though the average mobile subscriptions increased in 2020, the pace of the growth between 2019 and 2020 slowed down except in Germany where there is an upward trend in contrast to the previous year. This can be attributed to Germany's low digital adoption rate before the pandemic which was uplifted significantly as the day-to-day lives of citizens became more reliant on digital services and connectivity in general[2]. On the other hand, the downward trend in Italy's mobile subscription accelerated even further in 2020 which was already fuelled by rapid attractive off-net pricing resulting in a reduced financial benefit of having multiple SIM cards from different operators[3].

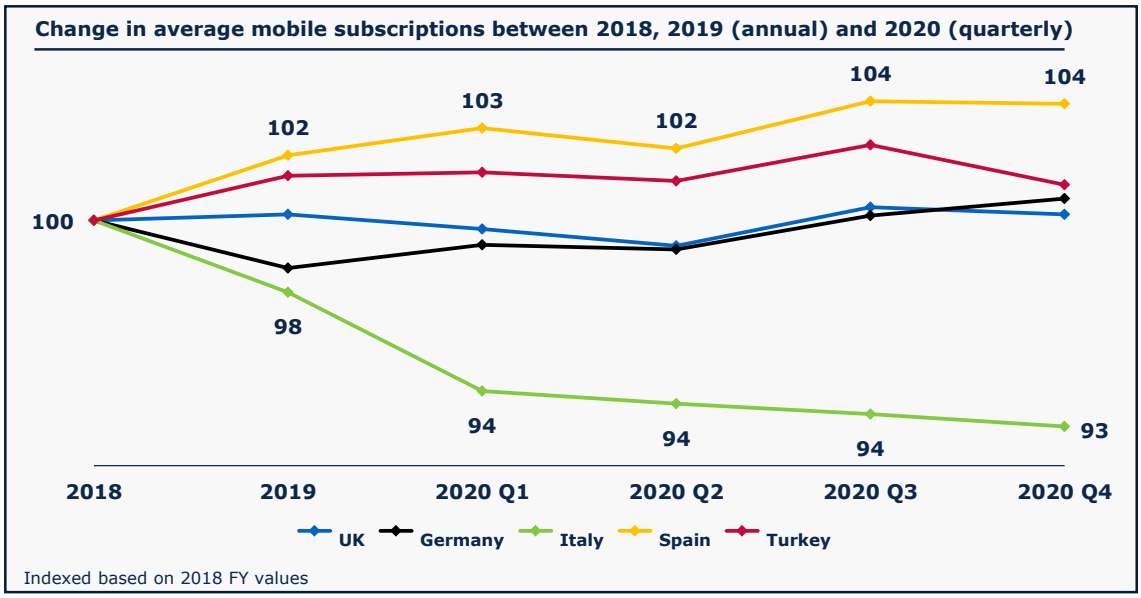

Exhibit 4.2: Mobile subscription trend between 2018, 2019 (annual), and 2020 (quarterly) [Source: Axon Consulting, based on NRAs reports and operators' financials]

When zoomed in to 2020, the collected data demonstrates that the introduction of quarantine lockdowns in the second quarter of 2020 resulted in a decrease in mobile subscriptions across all selected countries potentially due to several reasons, including the sufficiency of residential broadband services for leisure or remote working habits, and limited mobility in a stay-at-home era. Even in the countries that showed an increasing trend between 2018 and 2019 (e.g., Spain, Turkey, and the UK), the number of subscribers declined in the quarter. This may suggest that the

[2] ITU, "Digital Trends in Europe 2021", 2021; Available at: https://www.itu.int/en/ITU-D/Conferences/WTDC/WTDC21/Documents/RPM/EUR/Digital-Trends_Europe-E.pdf

[3] Buddle, "Italy - Telecoms, Mobile and Broadband - Statistics and Analyses", 2020; Available at: https://www.budde.com.au/Research/Italy-Telecoms-Mobile-and-Broadband-Statistics-and-Analyses

anticipated organic growth was somehow delayed due to the slowdown of social life and business activities in multiple critical sectors during the pandemic. However, these countries maintained their historic upward trends in the upcoming quarters of 2020. Along with softening restrictions in the following quarter, the mobile subscription struck and came back to pre-COVID levels across all countries except for Italy where the mobile subscription trend maintained its downward trend across all quarters in 2020. Italy is a special case, firstly because the mobile market in the country was well-saturated even before the pandemic, more than all countries studied with 131 subscriptions per 100 people in 2019[4]. Secondly, there was a vast increase in fixed-mobile convergent offers which resulted in a decrease in individual mobile SIM cards. Finally, a large number of prepaid SIM cards became inactive in the three-year period[5].

4.1.2. Data consumption trends

The changing consumer behaviour in the digital space during the pandemic becomes most visible when data consumption or traffic trends in the period is studied.

Exhibit 4.3 below shows the change in mobile data consumption between 2018 and 2020 in the selected countries.

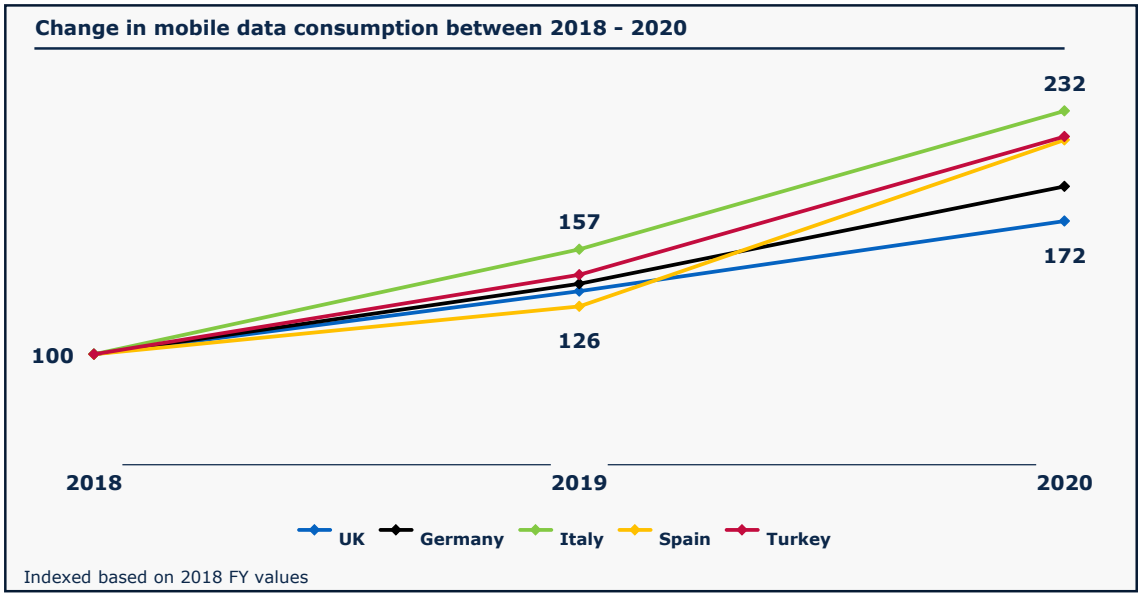

Exhibit 4.3: Annual mobile data consumption between 2018 – 2020
[Source: Axon Consulting, based on NRAs reports and operators' financials]

[4] The World Bank, "Mobile cellular subscriptions (per 100 people) - European Union", 2019; Available at: https://data.worldbank.org/indicator/IT.CEL.SETS.P2?locations=EU&most_recent_value_desc=false

[5] Dataxis, "Mobile Market Report – Italy", 2020; Available at: https://dataxis.com/my-shop/market-report/mobile-italy/

Mobile data traffic increased between 2018 and 2020 across all studied counties. However, the traffic growth in 2020 has been lower than in the previous year for UK and Italy. On the other hand, both Spain and Turkey showed higher data consumption data growth rates than in 2019. A factor that could have led to such an increase may be the changed consumption habits as a result of the COVID-19 pandemic. There are several scenarios to be considered to spot the underlying reasons for such a trend. For instance, the pandemic forced all family members residing together to work or study in the same house, potentially causing a dramatically high traffic load on their fixed broadband network and reducing its quality significantly. As such, some members might have preferred to connect their devices to the internet using their existing mobile data plans. Another implication could be related to the increased availability of 5G services across the region, coupled with increased engagement in mobile devices during the lockdown periods. Consumers who value connectivity speed might have opted for their mobile data plans over their fixed broadband plans. With the contribution of a combination of factors, it was observed that average data consumption per user in these countries was doubled in the span of the last two years.

Interestingly, Italy experienced the largest mobile data consumption both in 2019 and 2020 while the mobile subscription showed a descending trend. The most responsive studied country to the COVID-19 pandemic was Spain where mobile data consumption skyrocketed in 2020. According to ITU[6], Spanish operators have issued a plea to their consumers to use their services "responsibly" during the quarantine. As seen in Spain, operators now have been challenged to overcome this enormous traffic on their networks.

4.1.3. Impact on revenues

In this subsection, we deep dive into the trends observed in the annual revenues generated from mobile services on an annual basis. Exhibit 4.4 below shows the change of annual mobile revenues between 2018 and 2020 in the selected countries.

[6] ITU, "Telecoms, Coronavirus and keeping the networks running", 2020; Available at: https://news.itu.int/telecoms-coronavirus-and-keeping-the-networks-running-time-for-leadership/

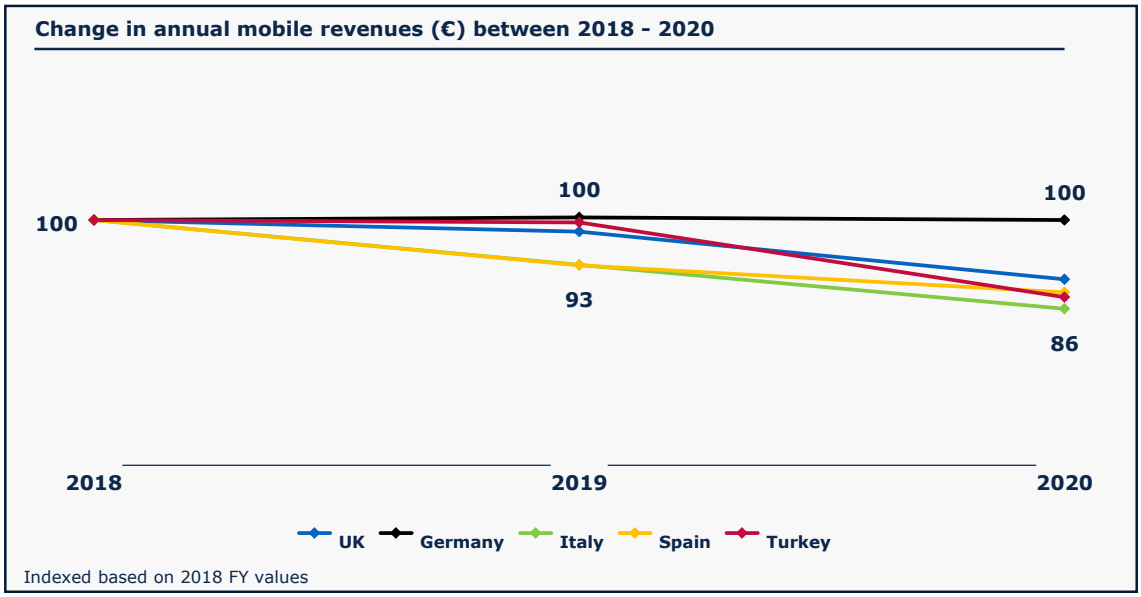

Exhibit 4.4: Annual mobile revenues between 2018 - 2020
[Source: Axon Consulting, based on NRAs reports and operators' financials]

Although there was an increase or at least a stagnant trend in mobile subscriptions across all countries besides Italy, the mobile revenues fell gradually for all countries and this downward trend in revenues accelerated also during the lockdown period. The stronger decline in revenue figures implies a decline in ARPUs (average revenue per user) which is potentially driven by lower roaming revenues due to travel restrictions. According to Kaleido Intelligence[7], a well-known roaming research firm, total mobile roaming retail spend by consumers estimated to fall by 54% in 2020 due to the impact of COVID-19 on global travel. Additionally, consumers turned their faces to fixed broadband services for connectivity more than ever. As such, the users might have leveraged their fixed plans which come with higher data quotas, and therefore they did not exceed their mobile data plans as they would before the pandemic. As a result, the mobile revenues of operators were declined with the loss of mobile data package sales which contribute a significant amount of revenue to mobile service providers' financials. Another potential reason might be a drop in smartphone sales worldwide, according to Gartner[8], smartphone sales have decreased 12.5% in 2020 which may be one of the main factors influencing the mobile KPIs. In addition to potential drivers explained above, according to GSMA[9],

[7] Kaleido Intelligence, "Retail Roaming Market Trends & Future Outlook 2020", 2020; Available at: https://roaming.kaleidointelligence.com/covid-19-impact-on-mobile-roaming-retail-revenues-to-reach-beyond-2022-12-billion-consumer-spend-will-fall-short-of-2019-levels-kaleido-intelligence/

[8] Gartner, "Smartphone Sales Analysis", 2021; Available at: https://www.gartner.com/en/newsroom/press-releases/2021-02-22-4q20-smartphone-market-share-release

[9] GSMA, "Global Mobile Trends", 2021; Available at: https://data.gsmaintelligence.com/api-web/v2/research-file-download?id=58621970&file=141220-Global-Mobile-Trends.pdf

one of the drivers of this decrease in mobile revenues has been general pressure on consumer spending, particularly in the prepaid sector.

4.2. Fixed broadband market

In this section, we explore the influence of the COVID-19 pandemic on fixed broadband market metrics in the analysed countries.

4.2.1. Evolution of subscribers

In this subsection, we discuss how the number of fixed broadband market subscribers evolved, both annually and quarterly for 2020. Exhibit 4.5 below shows the change of average annual fixed broadband subscriptions between 2018 and 2020 in the selected countries.

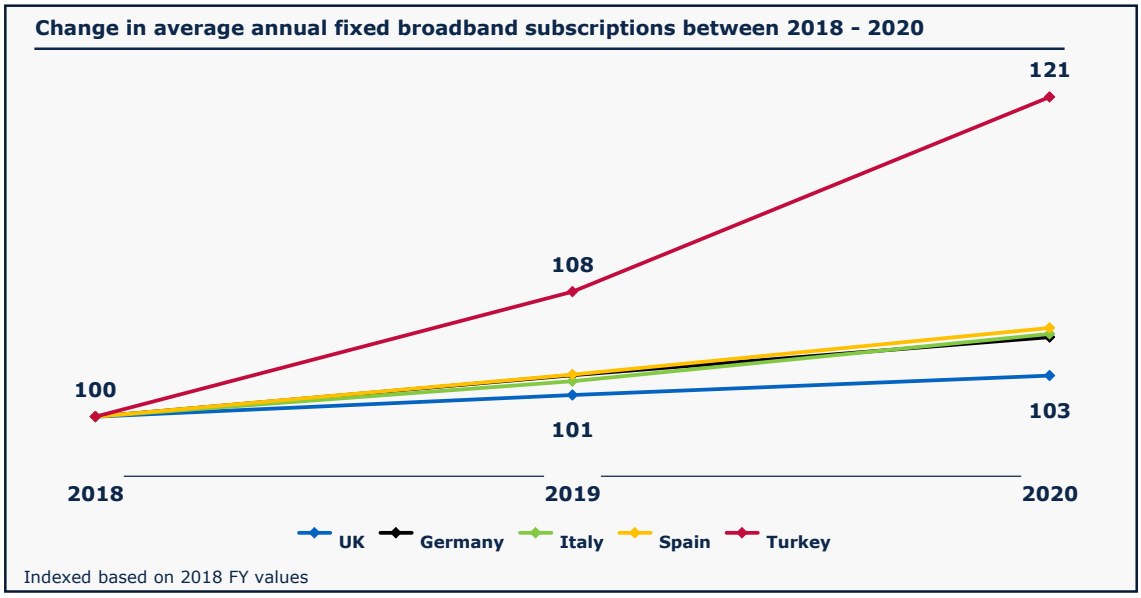

Exhibit 4.5: Annual fixed broadband subscription between 2018 - 2020
[Source: Axon Consulting, based on NRAs reports and operators' financials]

The fixed broadband market has been growing steadily over the past decade thanks to higher investments in fixed broadband infrastructure becoming a key strategic objective of nations (such as investments for fibre technologies that replace copper pairs), which was also incentivized by the European Commission's guidelines for the state aid rules for the rapid deployment of broadband networks in line with the EU Digital Agenda[10].

As expected, the number of average fixed broadband subscribers in all selected countries increased on an annual basis due to the new way of living under quarantines, however at different rates, which can be attributed to the different

[10] European Commission, "Broadband Guidelines", 2021; Available at: https://ec.europa.eu/competition/sectors/telecommunications/broadband_decisions.pdf

maturity levels of fixed broadband penetration rates across countries. For instance, in the specific case of Turkey which has lower fixed broadband penetration rates than the rest of the countries, there was a significant spike in the number of subscribers with 21% more subscriptions by the end of 2020 compared to 2018. Since Turkey is an emerging country, the improvement area differs from the other selected countries leading to higher growth rates in the fixed broadband subscription. A similar trend on a smaller scale was observed in all other countries studied with a higher fixed broadband penetration rate, suggesting a similar change in the market's consumer behaviour during the pandemic.

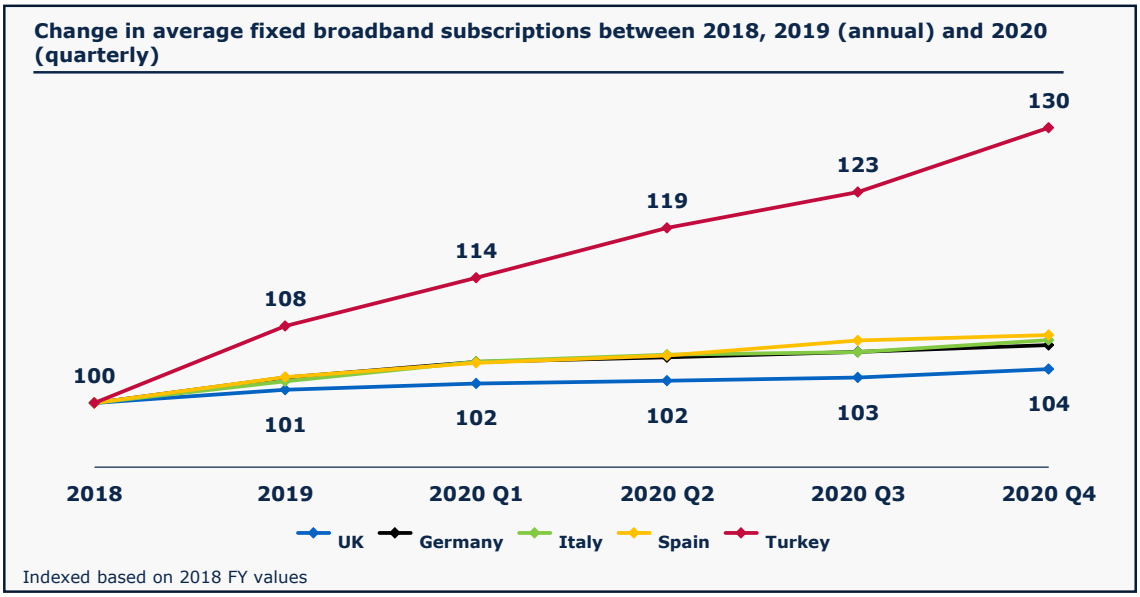

Exhibit 4.6: Fixed broadband subscription trend between 2018, 2019 (annual), and 2020 (quarterly)
[Source: Axon Consulting, based on NRAs reports and operators' financials]

As people started to become reliant on connectivity and digital services particularly in 2020 for their day-to-day lives, the average number of fixed-broadband subscriptions was expected to increase proportionally. As such, it does not come as a surprise that the number of average fixed broadband subscribers in 2020 increased across all studied countries. Besides, the quarterly 2020 data suggest that this increase was even further accelerated by the impact of the pandemic on consumers' lives, since national lockdowns, remote working principles, and travel restrictions prevented millions of citizens from leaving their homes and potentially led them to use more residential fixed broadband services. Further, the data suggest that the subscriber count of different countries increased at a differing rate in the last three quarters of 2020, which may be a consequence of distinct fixed broadband penetration rates (accelerated growth in countries with low penetration, and vice

versa), unique COVID-19 journeys of countries, the acknowledgment of the pandemic's certain presence in the near future.

4.2.2. Data consumption trends

The data traffic during the pandemic reflects the new way of living people had to adapt to in 2020. Exhibit 4.7 below shows the change of fixed broadband data consumption between 2018 and 2020 in the selected countries.

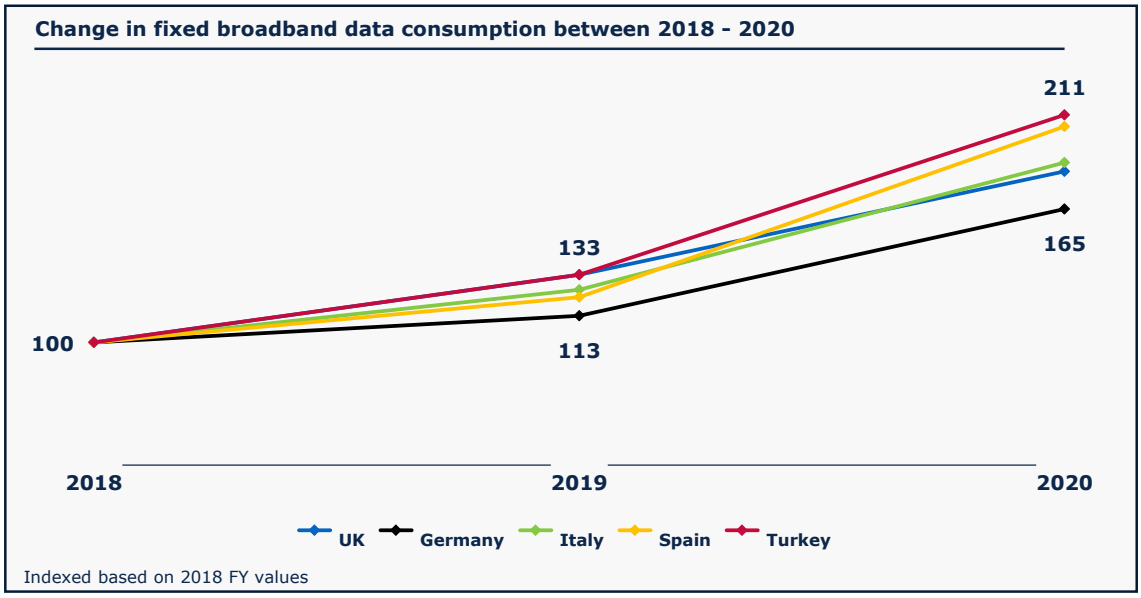

Exhibit 4.7: Annual fixed broadband data consumption between 2018 - 2020
[Source: Axon Consulting, based on NRAs reports and operators' financials]

The data consumption levels followed a similar increasing trend over the studied years although the spike in all countries is much higher than the increase in the number of subscribers. This suggests that the data consumption per subscriber increased significantly. This trend can be attributed to time spent at homes during lockdowns and curfews, users opting for virtual replacements of socializing activities, and increased digitization of education. As such, Spain experienced the greatest increase in data consumption per subscriber in the last two years, whereas Turkey topped the list with an increase of 59% from the previous year. This is, of course, no surprise considering these two countries show the steepest increase in fixed broadband subscriber base among all countries studied, which naturally lead to increased consumption levels. In the case of Turkey, this is also due to an increasing penetration rate of fixed broadband services which had already started before the pandemic.

4.2.3. Impact on revenues

The annual revenues generated from fixed broadband services were also hit by the pandemic. Exhibit 4.8 below shows the change of annual fixed broadband revenues between 2018 and 2020 in the selected countries.

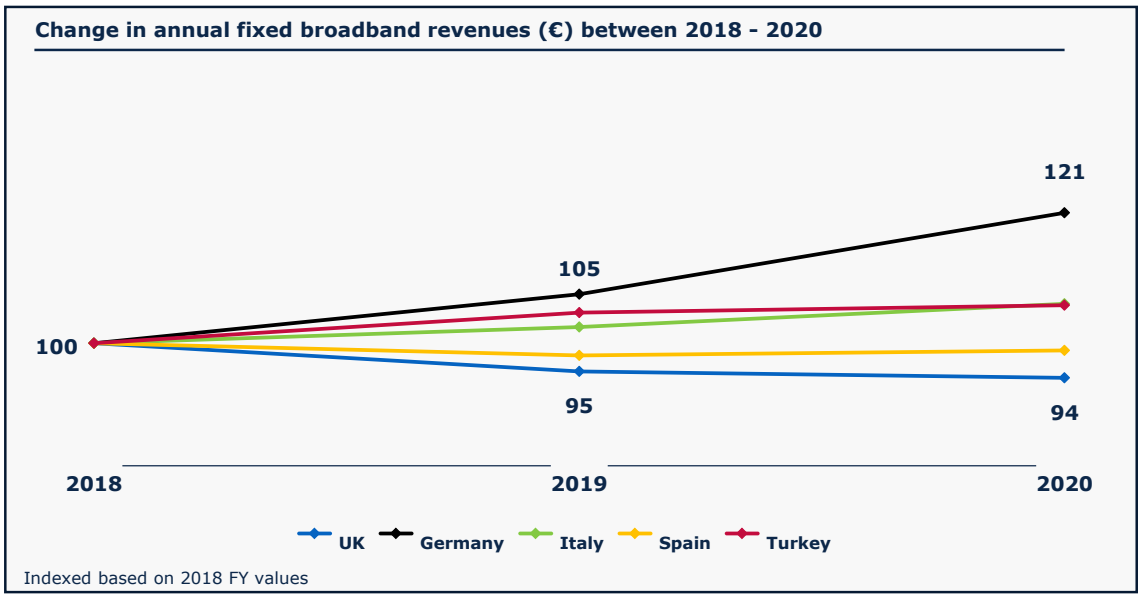

Exhibit 4.8: Annual fixed broadband revenues between 2018 - 2020
[Source: Axon Consulting, based on NRAs reports and operators' financials]

The pandemic, in general, did not hit much of the overall revenues generated from the fixed broadband services. However, despite the steep increase in subscription levels in all cases, the revenues did not always keep pace. For instance, although Turkey experienced the greatest growth in subscribers between 2019 and 2020, this rate was not translated into remarkable revenues which is also an inevitable consequence of the strict devaluation of the Turkish Lira against the Euro. Additionally, the UK experienced a decline (although softer than in 2019), whereas Italy, Spain, and Germany showed growth of revenues, higher than the variation observed in 2019.

It is important to highlight the significant increase in Germany in 2020. According to Vodafone11, the main contributor to this growth was the DSL migration of UnityMedia subscribers along with the acquisition of UnityMedia Global by Vodafone in the third quarter of 2019.

[11] Vodafone, "Quarterly Reports", 2020; Available at: https://investors.vodafone.com/sites/vodafone-ir/files/vodafone/results/q320-pr.pdf

4.3. Comparison of mobile and fixed broadband markets

In this section, we compare the influence of the COVID-19 pandemic on mobile and fixed broadband market metrics in the countries selected for this study.

4.3.1. Evolution of subscribers

In this subsection, we provide a comparison of the mobile market and fixed broadband market subscribers in the three-year period in the countries analysed. Exhibit 4.9 below shows the change of average annual mobile and fixed broadband subscriptions between 2018 and 2020, calculated as the average of all countries studied.

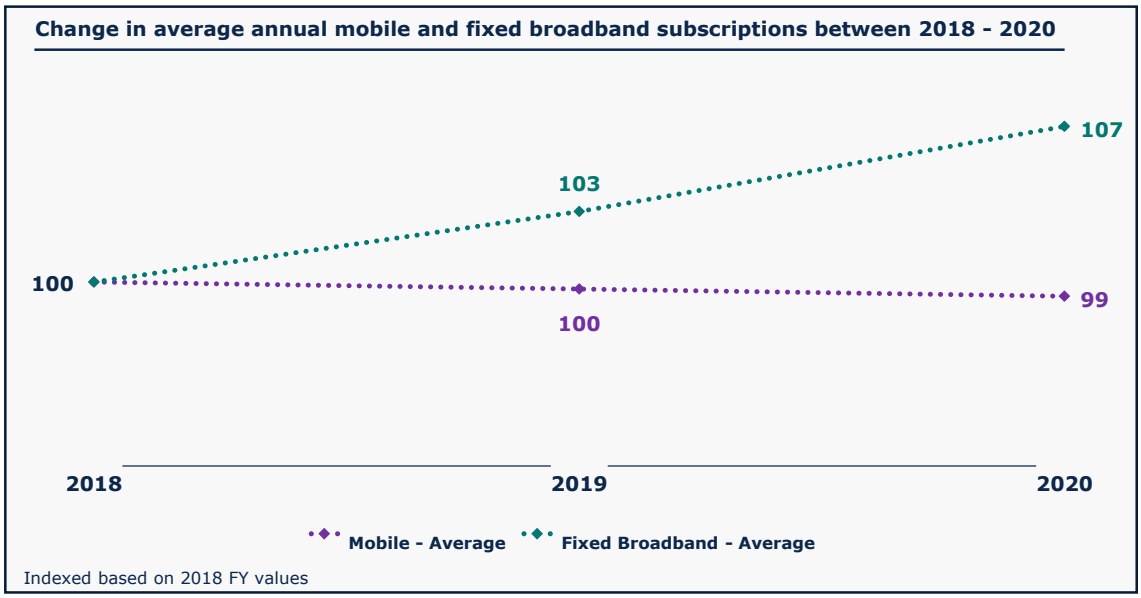

Exhibit 4.9: Annual mobile and fixed broadband subscription between 2018 - 2020
[Source: Axon Consulting, based on NRAs reports and operators' financials]

As citizens stayed in almost 24/7 especially during the lockdown period, a greater increase was observed regarding the number of fixed-broadband subscriptions while mobile subscriptions remained broadly stable as demonstrated in Exhibit 4.9. Considering the trend in mobile, it can be presumed that the fixed-mobile substitution is partially reversed during the lockdown period as fixed broadband services were used more than mobile services due to their intrinsic cost efficiency, quota advantage and accordingly result in increasing Wi-Fi offloading from mobile handsets might have capped mobile broadband service usage.

4.3.2. Data consumption trends

In this subsection, we provide a comparison of the mobile market and fixed broadband market data traffic trends in the three-year period in the countries selected for this study.

Exhibit 4.10 below shows the change of annual mobile and fixed broadband data consumption between 2018 and 2020, calculated as the average of all countries studied.

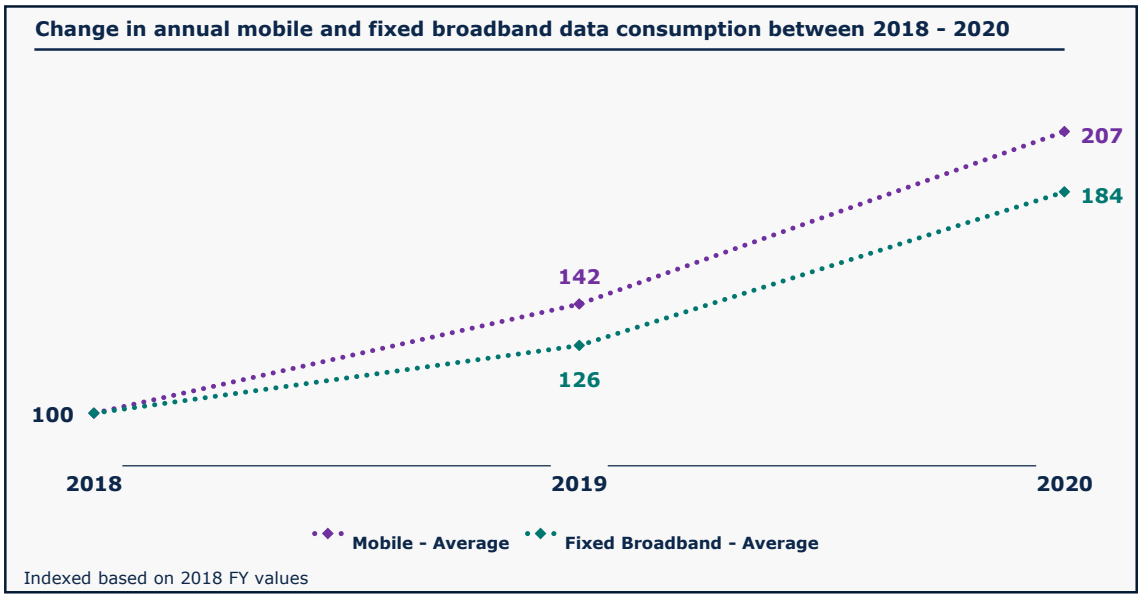

Exhibit 4.10: Annual mobile and fixed broadband data consumption between 2018 - 2020 [Source: Axon Consulting, based on NRAs reports and operators' financials]

As expected, the increasing consumption trends in both mobile and fixed broadband markets remained and the growth even accelerated in 2020 due to several reasons, some mentioned in the previous sections (4.1.2 and 4.2.2) dedicated to mobile and fixed broadband services' evolution. There is no doubt that the COVID-19 pandemic influenced the way customers behave, leading to higher data consumption both in mobile and fixed broadband networks where similar growth rates were observed in the last year. As stated earlier, operators in many countries now face great challenges to meet massive consumer demand, which makes further improvements or new deployments for their networks an absolute must.

4.3.3. Impact on revenues

The comparison of the mobile and fixed broadband market revenues evolution in the three-year period in the selected countries is presented in this subsection.

Exhibit 4.11 below shows the change of annual market revenues between 2018 and 2020, calculated as the average of all countries studied.

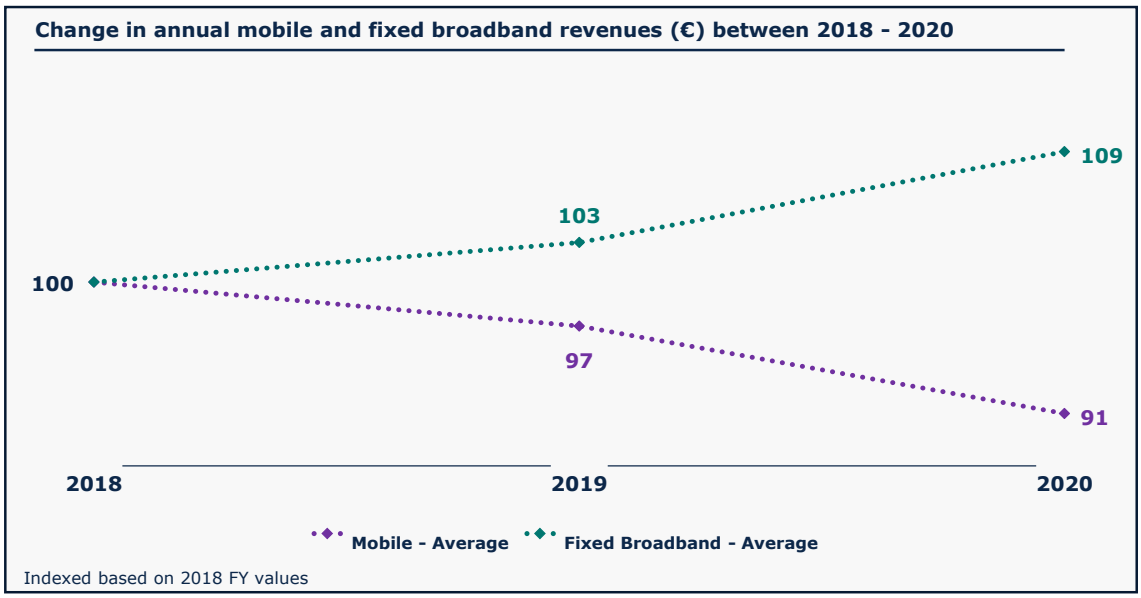

Exhibit 4.11: Annual mobile and fixed broadband revenues between 2018 - 2020 [Source: Axon Consulting, based on NRAs reports and operators' financials]

Mobile revenue and fixed broadband revenues followed different patterns in the last two years. It is important to mention that selected countries experienced a sharp decrease in mobile revenues in the past two years, whereas fixed broadband revenues were in a quite increasing trend in which the majority of this increase was driven by Germany itself. In summary, the collected data demonstrates that the COVID-19 speeded up the decrease in revenues for mobile broadband and the increase in fixed broadband technologies.

When compared with the increasing subscription levels, by knowing that the increase was heavily driven by Germany, fixed broadband revenues did not go up that much during 2020 as a result of the slight decrease in ARPU levels which could be driven by promotional activities of operators in respective countries, etc. Additionally, in the mobile market, even though a stagnant trend in subscription and a relevant increasing trend in data consumption is observed, the selected countries experienced a sharp decrease in their mobile revenues especially in 2020. In addition to the decrease in roaming revenues as stated earlier, this decline in revenues can be also explained by the fact that consumers are more inclined to use their fixed broadband solutions nowadays since they spend most of their time at home. Similarly, the drop in smartphone sales might be another factor that explains this trend.

Lastly, there is one other interesting point that must be touched upon: Since the COVID-19 was defined as a global phenomenon, operators provided additional

benefits to subscribers in order to avoid the damage as much as possible. For instance, Turk Telekom[12], a mobile operator in Turkey, provided a free-of-charge 8 GB data allowance to its subscribers to be used in its online education portal owned by the Turkish government.

[12] Turk Telekom, "Company offerings", 2021; Available in Turkish at: https://bireysel.turktelekom.com.tr/mobil/web/kampanyalar/sayfalar/faturasiz/eba-kampanyasi.aspx

4.4. Impact on operators' expenditures

In this section, we provide key insights on the effect of the COVID-19 pandemic on telecommunications operators' major cost items in the selected countries: Capital and operating expenditures.

4.4.1. Capital expenditures

In this subsection, we demonstrate how operators' capital expenditures evolved on a half-year basis between 2018 and 2020, summarised in Exhibit 4.12 below.

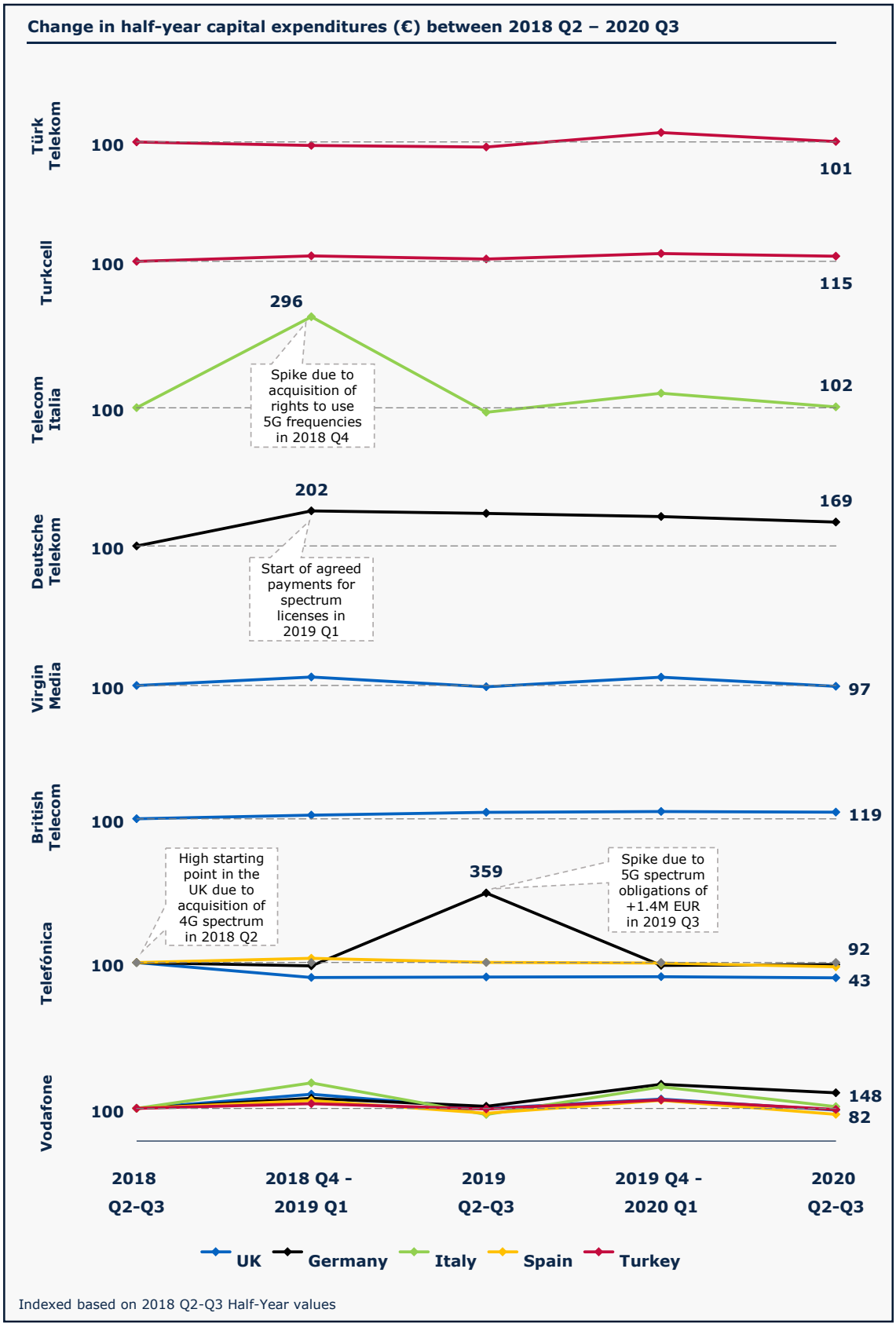

Exhibit 4.12: Half-year evolution of operators' CAPEX between 2018 - 2020
[Source: Axon Consulting, based on operators' financials]

Along with the decline in revenues, especially in the mobile market, we envisage that operators have been under pressure to maintain their capital expenditure budgets due to the COVID-19 pandemic. Having said that, we do not see significant drops in operators' capital expenditures, potentially due to the required investment on 5G technologies and fibre rollouts in the last half-year covering 2020 Q2-Q3 across all selected operators.

As discussed in Section 4.2.2 and Section 4.3.2, there are compelling growths in data traffic of mobile and fixed broadband technologies in 2020 as a result of the COVID-19 pandemic which could have lead operators to invest in their communication networks. Thus, as seen in Exhibit 4.12, operators have been reluctant to change their capital expenditure plans.

4.4.2. Operating expenditures

The evolution of operating expenditures of the main telecom operators in the analysed countries is provided in Exhibit 4.13.

Exhibit 4.13: Half-year evolution of operators' OPEX between 2018 - 2020
[Source: Axon Consulting, based on operators' financials]

On the operational expenses side, one would not expect huge changes as the commercial plans of the operators set the rules for how they will allocate such expenses from a service provider's point of view. As such, the data shows that telecom operators did not experience significant spikes or downfalls. In fact, most operators have a minor declining trend in the last half-year studied, presumably due to some strategic cost-cutting activities triggered by the certain presence of the virus in our lives for much longer than anticipated.

5. About Axon Advisory

Axon, through its Advisory arm, is an international investment and advisory firm offering world-class consulting and corporate finance services to a broad client base in the ICT industries.

In the last 10 years, Axon has executed +500 projects in +60 countries in the ICT domain for major private companies, institutional bodies, and technology companies worldwide.

Analysts Team at Axon Partners Group[13]

[13] The views and opinions expressed in this article are those of the authors and do not necessarily reflect the view of Axon Partners Group.

Annex: Illustrative example of the methodology applied

As stated in the methodology section, in order to avoid noise and fluctuations in trends due to varying scales and starting points of the selected countries, the collected data has been indexed to reflect the percent change of the metric in question.

Below is an illustrative example of the fixed broadband market in the UK based on the number of subscribers collected from Ofcom, the national telecommunications regulator in the country.

Total and Adjusted total of Fixed BB subscribers in UK (millions)			
	2018	2019	2020
Total	26.4	26.8	27.1
Adjusted Total	100	101	103
	Base year	*Target years*	

Exhibit A.1: Total and Adjusted total of Fixed Broadband subscribers in the UK [Source: Axon Analysis, based on Ofcom]

The first period of target terms was indexed to "100" which is called the "base year" and other years' indexes were calculated with respect to the ratio of their number of subscriptions to the number of subscriptions in the first period. In this case, the base year is 2018 and this year was indexed as "100". Following years were calculated to be proportional to the base year in terms of the number of subscribers.