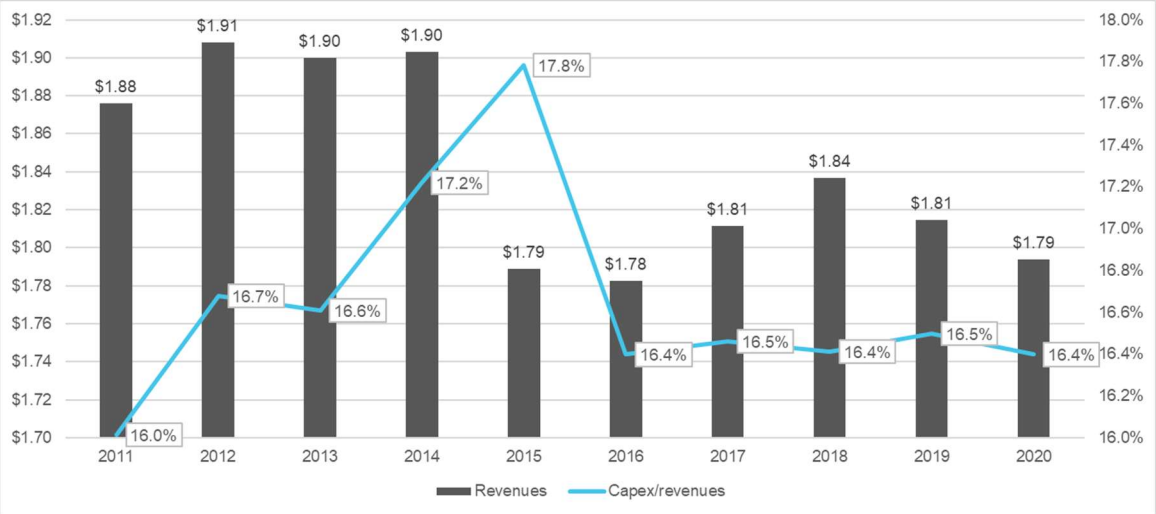
capex when possible. The accounting rules are in some cases open to interpretation, even if auditing firms frequently examine cloud cost allocation. An additional uncertainty is Huawei: as it struggles to win contracts amidst supply chain limitations, how will this affect the price bids offered by Nokia and Ericsson? MTN Consulting's current view is the impact will be minimal, given pressure from a rising Samsung and momentum behind Open RAN architectures. But both factors need to be watched closely.

## Telco revenues end 2020 just below $1.8 trillion mark

For the first three quarters of 2020, telecom industry revenues declined at an average rate of 2.7%. Despite many telcos' ability to benefit from COVID-19's shift towards work and study from home, economies hit hard by the pandemic experienced dramatic reductions in overall economic activity. For telcos, the tide started to turn in 4Q20. Revenues climbed by 3.4% YoY in 4Q20, pushing the average industry growth rate to -1.2% for CY2020. That rate of decline is the same as was achieved in 2019. Economic stimulus programs were one factor in the late-year surge, as was the increased confidence in a looming end to the pandemic. A raft of new services was a third factor, as a large number of telcos continued to roll out 5G services and sell related devices.

Figure 1 illustrates annual telecom industry revenues since 2011 and the industry's average capital intensity (capex/revenues ratio).

**Figure 1: Telecom industry revenues and capital intensity, 2011-20**




Source: MTN Consulting

As shown, while industry revenues grew slightly in 2017-18 and then declined by similar amounts in 2019 and 2020, the relationship between capex and revenues has held steady at around 16.5%. This stability is a new phenomenon. In the past, transitions from one technology generation to another in mobile networks would often drive capital intensity upwards. 4G LTE upgrades were a primary factor behind the growth in capital intensity seen between 2011 and 2015, for instance. With the transition to 5G, upgrades are more based on software and there is a transition period for many operators as they first deploy non-standalone technology.

Moreover, telcos continue to search for ways to minimize capex outlays, seeking out ways to collaborate with the webscale/cloud sector as a complement to their own network investments. That shows up in many areas, including edge computing. In addition, some of the traditional telco-focused vendors are developing combined offerings with webscale players to jointly go after telco vertical opportunities. NEC's joint development of a mobile core solution with AWS in 2019 was an early example, but many others have been announced since. Nokia upped the game considerably in February 2021, with three separate