

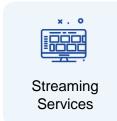


The Covid-19 pandemic has accelerated the need to modernise digital infrastructure networks. We expect that this will create new investment opportunities.

Online activity has surged during the coronavirus pandemic

Whether we like it or not, the Covid-19 pandemic has cemented our addiction to fast and reliable internet access. While speaking to colleagues remotely, food shopping online or monitoring our 'smart home' devices, a dropped Wi-Fi connection triggers a red alert in most households. Incumbent broadband providers have unfortunately experienced a rise in connection issues as online activity has surged during lockdown.

On a more positive note, cloud-based platforms such as Amazon, Zoom, Netflix and Ocado have risen to this challenge, having invested heavily in scalable digital infrastructure before the pandemic, in the form of software platforms and computer servers. This infrastructure enables them to securely process our orders, optimise logistics routes and deliver content on demand.









Having now experienced this potential, we believe their customers are unlikely to want less convenient ways of working, living and playing in the future. This means an accelerating need to modernise the digital communications networks that connect us to them.



Mission critical infrastructure

Data centres play a mission critical role for their occupiers and have demonstrated extreme income resilience during the pandemic, with high rent collection and low levels of bad debts. They enable cloud-based services such as Netflix by housing computer servers and offering access to internet exchanges that transmit data to subscribers who stream their content. What is less visible is that these data centres and exchanges rely on a largely hidden external network of millions of fibre optic cable miles, cellular base stations, towers and countless signal transmitters.

These networks are also critical for emergency responders, military communications and any other service that offers data access outside of a private local network. This includes Fifth Generation (5G) cellular technology that promises to accelerate mobile download speeds by up to 100x compared to those offered by Fourth Generation (4G) technology.

5G should enable emerging bandwidth-hungry technologies - such as driverless cars, online gaming and smart factories - to operate smoothly. The evolving network architecture and our ever-increasing reliance on network access has made it clear to governments that they must invest heavily to remain globally competitive.

Stimulating an economic recovery through digital infrastructure

China's announcement of a \$1.4 trillion stimulus package shifted focus from traditional infrastructure, such as roads and bridges, towards new infrastructure for the digital age. It is likely to target investments in artificial intelligence, data centres, 5G base stations, ultra-high voltage power, electric vehicle charging, industrial internet of things and intercity transit.



China is already comfortably leading the world in mobile wireless coverage, hosting around 2 million active cellular towers. This is 1.5x the rest of the global industry combined, according to data from TowerExchange.

Similarly, the **EU** is prioritising digitisation as part of its €750bn Covid-19 stimulus package. We believe that digital infrastructure will remain firmly at the centre of the debate, as economies recover from the pandemic.



Global cities host the most valuable digital infrastructure

It is clear to us that high quality digital infrastructure in the world's leading cities is becoming increasingly valuable as it sits at 'the edge' of the network, close to high volumes of customers and data. This proximity offers users the lowest levels of latency, thereby improving customer experience and reinforcing demand.



A key feature of 5G is that the radio wavelengths used can transmit significantly more data, but over much shorter distances. This means signal transmitters need to be more densely packed to ensure full coverage. A lot more fibre optic cable, cellular towers and small cells are therefore required than for 4G signal, which travels further.

To justify this investment, mobile network operators (MNOs) will first target cities with large populations of affluent consumers and businesses, where the potential 5G service revenue opportunity is larger. In turn, these cities will experience the highest quality of signal coverage, thereby reinforcing their productivity advantage.



Who will control 5G infrastructure?

Like data centre occupiers, the MNOs that use towers to transmit data are realising that it makes financial sense to share space on them with their competitors. The costs of deploying 5G transmission equipment and the time that it takes to densify tower portfolios make going it alone an unlikely route to scale their network rapidly.

MNOs in the US realised this some time ago, leading to a large and consolidated 'carrier neutral' tower, small cell and fibre industry, dominated by companies such as American Tower. Outsourcing in Europe and Asia is also gathering pace with Cellnex and China Tower raising billions of dollars in the public markets to extend their local leadership. These infrastructure owners then benefit from long-term, predictable lease payments from the MNOs which will operate the 5G network.

Essential role in promoting future economic growth

Digital infrastructure is a rapidly evolving yet often overlooked asset class, backed by resilient income streams. We think it has an essential role to play in promoting future economic growth, with cities that under-invest likely to lose global competitiveness.

Misguided <u>attacks on cell towers</u> have highlighted the challenges involved in the roll-out of new technologies. In addition to such ESG risks, investors in this sector need to pay close attention to technological advances, such as quantum computing, which could disrupt traditional models. Investors able to navigate these changes uncover some very interesting opportunities.



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