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The 5G Moment of Truth in Europe: Geopolitical Implications, Economic Opportunities and Cybersecurity Concerns

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Abstract

5G is the latest generation of wireless technology. Even more than its predecessors, it is supposed to bring tremendous benefits for both enterprises and consumers. However, 5G has also started to be perceived as critical infrastructure, and has therefore become one of the biggest fields of competition among global powers today. With a focus primarily on the EU and its relations with China, this paper aims to better understand the core stakes in the 5G debate. First of all, 5G should be understood in the context of a more geopolitical world order caused by the rise of China as a global technology leader and as a consequence of this new mindset, economic benefits in and of themselves are no longer seen as being sufficient. There is an overt need to balance commercial gains with strategic sovereignty, global influence and dependency concerns. Secondly, the future of the 5G market is Chinese-led. This opens up to a series of substantial economic opportunities for European companies such as Ericsson and Nokia, while it also poses significant challenges. Thirdly, in the implementation of 5G, the EU is lagging behind. Learning from the 5G case, the EU and its Member States make an effort to catch up and look beyond the horizon in developing a common approach and vision on 6G.

This policy brief concludes with key takeaways including that the EU takes the lead together with China in the 5G standardisation agenda; that the EU should carve a middle way by strengthening its economic ties and cooperation with China, without harming its historical transatlantic ties; that the EU must develop a common and coordinated approach to avoid backlogs, partly fuelled by unscientific populist agendas.

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The next generation of wireless technology (5G) represents the key to develop the Internet of Things (IoT) and Artificial Intelligence (AI), paving the way for new functions such as driverless automobiles, virtual and augmented reality, remote surgery, smart cities and automated manufacturing.

Due to the complexity of the applications in critical sectors such as energy, transport, banking, health and industries, 5G also poses a range of threats and concerns regarding its network security. 5G might not only violate the privacy of its users but, considering the extension and critical use of its features, it could pose threats to the national (cyber)security of countries.

The **EU's "coordinated risk assessment of the cybersecurity of 5G networks"**, published on 9 October 2019, attempts to address these concerns by illustrating the following scenarios: (i) Local or global 5G network disruption; (ii) spying of traffic/data in the 5G network infrastructure; (iii) modification or rerouting of traffic/data; and (iv) destruction or alteration of other digital infrastructures or information systems (NIS Cooperation Group, 2019, p. 12). There are various actors that are likely able to pose these threats. Among them¹, the '*state or state-backed actor*', especially **when originating from non-EU countries** (NIS Cooperation Group, 2019, p.14), are likely equipped with potential tools and resources to cause cyberattacks and disrupt 5G networks.

It is in this sense that the EU assessment on 5G partly focuses its attention on ZTE and Huawei. Both companies have been subject to scrutiny in regard to their governance structure and ties with the Chinese government (Rühlig& Björk, 2020). Besides these concerns, some criticism levelled against Huawei alleges that they have connections to state funding, impelling the EU to push China towards reforming its regulations regarding subsidies.

Washington has exerted strong pressure on the EU to ban Huawei **due to cybersecurity concerns** (Decker, 2020), **threatening to interrupt intelligence sharing** with countries unwilling to impose restrictions on the Chinese telecommunications firm. Therefore, 2019 was characterised by a heated debate in Europe over the involvement of Huawei in the roll-out of 5G networks. EU Member States took different approaches on the matter, in line with their economic interests related to China and the US. Hungary for example, a participating member of both the Belt and Road Initiative (BRI) and 17+1, has expressed its intent to allow Chinese firms to roll-out 5G throughout the country (Budapest Business Journal, 2019). Others, like Germany, have not yet taken a clear stance, worried that any restrictive measures would prompt repercussions for their economic relations with China, especially in the automotive sector (Czuczka & Arons, 2019). Finally, a last group of countries, mostly Central and Eastern European (e.g. the Czech Republic, Poland, Romania and Denmark), have already planned to implement strong restrictions on high risk vendors (Cerulus, 2020). Prague, for instance, has signed a joint declaration with Washington in May 2020 which pledges to strengthen cooperation on 5G network security and on screening 5G equipment providers (Sbeglia, 2020).

¹ The other actors identified by the assessment as threat actors are: individual hackers, hacktivist groups, organised crime groups, insiders, cyber-terrorists and corporate entities.

In January 2020, the UK Government decided that High Risk Vendors (HRV), including Huawei², should be excluded from all safety-critical and core parts of the network, being allowed a presence of maximum 35 per cent in the RAN-like base stations and masts (Department for Digital, Culture, Media & Sport, National Cyber Security Centre & Nicky Morgan, 2020). However, later in May, the UK Government affirmed its plans to reduce this percentage to zero by 2023 (Pickard & Fildes, 2020).

In January 2020, the EU also adopted its toolbox on 5G cybersecurity, which gives the EU Member States the possibility to apply whichever relevant restrictions on suppliers they deem appropriate, and to ensure that each operator has an appropriate multi-vendor strategy to avoid any major single-supplier dependency. The toolbox required the EU Member States to prepare a joint report on the measures implemented by 30 June 2020.

Regulations, both at the Member States' and EU level, over (at least partially) restricting Chinese telecommunications companies in Europe should be interpreted according to what Roberts, Moraes and Ferguson (2019, p.657) refer to as the "Geo-economic order". Following this new international economic mindset, economic gains are not merely seen as positive but also susceptible to create "**strategic vulnerabilities**" such as "**dependencies on foreign states for the supply of critical technologies** necessary to the **economic advancement** and **military capacity** of great powers" (Roberts et al, 2019, p.660).

As for the EU, this geo-economic approach towards international trade is becoming increasingly apparent in its latest policies. Besides President Ursula Von der Leyen's new European Commission being identified as a "**geopolitical Commission**" (Von der Leyen, 2019), the **new EU Industrial Strategy**, published in March 2020, openly calls for preserving "**Europe's sovereignty**" and to "**reduce the dependence** on other countries for **critical materials, technologies, food, infrastructure and security**". Moreover, the strategy pledges to implement **a framework to screen foreign investments** by October 2020 in order to "safeguard Europe's interests on the grounds of security and public order" (European Commission, 2020, p.13).

Sovereignty and dependency concerns originate from **China's considerably reduced technological gap with the West**. Regarding wireless technology and 5G, Chinese companies have become leaders in international standard setting (Pohlmann, Blind & Heß, 2020), while holding, together with European companies such as **Ericsson** and **Nokia**, the highest market shares in the telecomms equipment market (Weissberger, 2019).

Its new leadership **in innovation and critical technologies** gives China the potential to exert a **growing influence and importance abroad**. In the case of 5G, this entails possessing the keys to empower the applications expected to increase economic and industrial benefits. Furthermore, Chinese technological primacy could be amplified, in particular, in the context of broad cooperation initiatives in Europe promoted by China such as the **BRI** and the **17+1 platform**

² Huawei is defined as an HRV in a document of the National Cyber Security Centre, (the NCSC) who advise on the use of equipment from high risk vendors in UK telecoms networks. Link: <https://www.ncsc.gov.uk/guidance/ncsc-advice-on-the-use-of-equipment-from-high-risk-vendors-in-uk-telecoms-networks>.

in Europe. Perceiving its hegemony and technological supremacy being threatened by a powerful rival, the US has consequently initiated a new course in its international economic relations, characterized by a geopolitical logic that raises concerns over dependency, influence and strategic sovereignty.

By the end of March 2020, 5G had been commercially launched in ten European countries: Austria, Finland, Germany, Hungary, Ireland, Italy, Latvia, Romania, Switzerland and the UK (Pujol et alia, 2020), while others are following suit. In Germany, Deutsche Telekom launched its 5G network in September 2019 in five cities, namely Berlin, Bonn, Cologne, Darmstadt and Munich. In Italy, 5G has been launched by Vodafone in June 2019 in five cities and in some of them, like Turin, 5G already covers 80 per cent of the city. Among the other countries where 5G has been commercially deployed, it is worthwhile mentioning Spain, where 5G has been implemented in 15 cities, and the UK, where in May 2019 EE had launched 5G services in six cities including London and Edinburgh.

However, compared to the progress of 5G roll-out in frontrunning China, the EU is lagging behind. Although the Chinese Government is strongly backing the development and implementation of 5G, **it is equally true that the EU has mainly itself to blame** for its own wait and see attitude towards 5G (Ekholm, 2019). For example, over the last few years Beijing has invested USD \$400 billion in 5G, built 350,000 base stations and has assigned radio frequencies to the mobile operators (Gu et al, 2019). Hence, China Mobile, China Telecom and China Unicom, the three most important Chinese mobile operators, have all launched 5G services in already more than 50 cities in November 2019 (Tomás, 2020). In December 2019, 5 million 5G connections had been established (GSM Association, 2019) and China Mobile aims to increase this number to 70 million by the end of 2020 (Tomás, 2020).

Concerning the contracts with 5G equipment vendors in China, China Mobile, China Unicom and China Telecom have confirmed purchases of 5G RAN and core networks **from Ericsson and Nokia**. The Swedish company signed a deal with China Mobile in April 2020 for the second phase of 5G roll-out in China that will entitle it to sell both core networks and RAN equipment. Earlier this year, Ericsson, together with Huawei and ZTE, took part in an auction of China Mobile for the implementation of 5G networks worth USD \$5.2 billion, obtaining 11 per cent of the available contracts (Barbaschow, 2020). Nokia has also signed deals worth EUR 2.2 billion (Sbeglia, 2019).

In Europe, the 5G Action Plan sets the objective to implement 5G in at least one city in every Member State by the end of 2020. A significant number of contracts between mobile operators and equipment vendors remain secret, however, especially since the EU Member States have not yet fully announced their endorsed measures to restrict "high risk vendors" from their 5G networks.

Takeaways

- **China is going to lead the 5G global market** due to its size, development, innovation, investments, and number of subscribers (GSM Association, 2020). For Ericsson and Nokia -together with Huawei EU leaders in 5G equipment - to participate in the roll-out of Chinese 5G networks, represents a great opportunity to access revenues that can be used for R&D and to maintain a primacy in this sector. **Therefore, it is of utmost importance that the EU takes the lead together with China in the 5G standardisation agenda.**

- Global powers are developing new approaches towards globalisation and commercial trade in dealing with critical technologies like 5G. This economic securitisation, and effects of this new "Geo-economic order" as defined by Roberts, Moraes and Ferguson (2019) have caused economic decoupling between the two biggest economies in the world (the US and China), who are currently engaged in a tech-trade competition. **This creates an opening for the EU to develop a middle way by strengthening its economic ties and cooperation with China, without harming its historical transatlantic ties.**

- **Europe has built up a significant delay in the roll-out of 5G networks.** According to current evaluations, while the number of 5G connections in North America, China, Japan and South Korea will amount to approximately 50 per cent of the total connections in 2025, this number will only be around 34 per cent in Europe (GSM Association, 2020). Notably, the reasons behind this anticipated delay do not only relate to the lack of policy planning or investments in the field of 5G, but in a certain way also to opposition and hesitation on the part of the population at large towards the new technology, **driven by populist agendas.**

For **the future of mobile wireless technology, namely 6G**, Europe must develop a common and coordinated approach to avoid backlogs as was the case for 5G deployment.

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