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Canada & 5G

Security, Diplomacy, and Policy

China Institute - University of Alberta

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June 2020

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Summary

Canada is expected, at some point in the near future, to make a formal decision on whether or not to allow Huawei to participate in the development of its 5G telecommunications network. This has been a long-standing area of deliberation and debate for Canadian politicians, policymakers, security experts, media, and members of the public.

Huawei, as the world's largest telecommunications-equipment manufacturer, is actively pursuing market opportunities for 5G development - the new "standard" in wireless communication technology. Telecommunications providers around the world are moving to implement 5G technology and upgrade existing infrastructure. There are a limited number of equipment providers (namely Nokia and Ericsson) with the capacity to compete with Huawei's offerings,[1] which are generally regarded as being reliable and cost-effective.[2] Many telecom firms - including the three major Canadian carriers - currently use Huawei equipment in existing 3G and 4G wireless networks around the globe. While the onset of 5G technology will lead to widespread benefits for consumers, businesses, and cities, it will also create new, previously unrealized security challenges.

Although Huawei has enjoyed rapid global expansion and financial success, it has been the focus of security concerns from a number of countries in the West. Two pieces of Chinese legislation - the 2017 National Intelligence Law and the 2014 Counter-Espionage Law - require companies to assist the state with "intelligence work."[3] This fuels the perception that 5G networks using Huawei equipment could be exploited by the Chinese state for the purposes of espionage, compromising user data, intellectual property theft, and/or critical infrastructure sabotage. Moreover, questions of a potential security threat fit within the broader context of a deep-seated, strategic rivalry between China and the West, in which technological dominance has become a flashpoint issue.

Some of Canada's international contemporaries have already made their own decisions regarding 5G policy. While the United States has championed a global anti-Huawei approach, some other countries have acted to permit the use of Huawei equipment in their 5G networks, much to the ire of American officials. Others have yet to make a final call. As of yet, there is not a fully uniform approach to Huawei from the West, even among close political and economic allies.

Canada is tasked with making a decision that prioritizes national security, while also ensuring the economic viability of the country's 5G rollout. It will likely take cues from its international allies. Minister of Innovation, Science and Industry, Navdeep Bains, stated in early March that Canada "won't be influenced by other jurisdictions" in deciding how to proceed.[4] While this may be true, any Canadian decision will certainly also factor in the potential for retaliatory measures from the U.S. or China in the wake of the decision. Additionally, the lack of an official decision thus far may already be pressing Canadian telecom providers to make their own determinations on whether or not to partner with Huawei.

This analysis provides an overview of recent measures regarding Huawei by **eight** of Canada's closest economic and political partners: the United States, Australia, New Zealand, United Kingdom, Germany, France, Italy, and Japan. This encapsulates the informally-named "**Five Eyes**" intelligence-sharing alliance, along with the remaining members of the G7. It further examines the factors impacting Canada's eventual decision, given its uniquely complicated relationship with both Huawei and China as a whole. This is the second China Institute publication on the subject of Huawei. The company was also examined in the 2019 CIUA Occasional Paper titled "Examining Huawei's Growth and Global Reach: Key Implications, Issues and the Canadian Connection." Authors Tom Alton and Evan Oddleifson would like to thank Gordon Houlden and Jia Wang for their editorial and project management support, and Genevieve Ongaro for her design and formatting contributions."

Overview: Five Eyes

The Five Eyes is an intelligence-sharing alliance of five English-speaking nations: the United States, United Kingdom, Canada, Australia, and New Zealand. After World War Two, the United States and United Kingdom formalized their intelligence sharing relationship with the BRUSA (later called UKUSA) Agreement. This would later grow to include the remaining three nations - all Commonwealth countries. The Five Eyes has grown into one of the "world's tightest multilateral arrangements" for intelligence sharing.[5] Dealing with Huawei and 5G have presented a new challenge for the group as there is not yet a uniformly accepted approach, leading to division and bilateral tension between members.

USA

U.S. government officials, under both President Obama and President Trump, expressed concern over Huawei's growing global influence, connections to the Chinese state, and potential threat to domestic national security. Dr. Christopher Ashley Ford, a senior U.S. Department of State official, has stated that with respect to Huawei and other Chinese companies, "[i]rrespective of their ostensibly private, commercial status, all such firms are subject to a deep and pervasive system of Chinese Communist Party control."[6] These companies must be treated, he states, as "the functional equivalent of state-owned enterprises. This is critical, inasmuch as their non-separateness from the Chinese Communist Party's authoritarian governance system makes these companies enablers for and instrumentalities of Party power." This type of sentiment has defined recent U.S. policy towards Huawei and other Chinese tech companies.

Huawei has been barred from bidding on US government contracts since 2014.[7] In early 2018, the Federal Bureau of Investigation (FBI), the Central Intelligence Agency (CIA), and the National Security Agency (NSA) all cautioned Americans against using Huawei products. FBI Director Christopher Wray stated that American authorities were "deeply concerned about the risks of allowing any company or entity that is beholden to foreign governments that do not share our values to gain positions of power inside our telecommunications networks."[8]

In May 2019, President Trump signed an executive order that prevents companies linked to "foreign adversaries" such as Huawei, from selling telecommunications technology in the United States.[9] Huawei was also added to the U.S. Commerce Department's "entity list" which effectively blacklisted the company from doing business with American corporations.[10] On May 15, 2020, the Department announced plans to further restrict Huawei access to U.S. technology and software. A press release states that the Bureau of Industry and Security is "amending its longstanding foreign-produced direct product rule and the Entity List to narrowly and strategically target Huawei's acquisition of semiconductors that are the direct product of certain U.S. software and technology."[11] This rule change will enter into effect in September 2020.[12]

The U.S. government has granted multiple extensions to the "temporary license" that permits Huawei to continue select business operations in the country. This delay, according to Secretary of Commerce Wilbur Ross, "grants operators time to make other arrangements and the Department [of Commerce] space to determine the appropriate long term measures for Americans and foreign telecommunications providers that currently rely on Huawei equipment for critical services."[13] This temporary license was extended on May 15, 2020 for an additional 90 days,[14] and it is unclear if it will continue beyond this time period.

While no major American carriers use Huawei equipment, some smaller wireless carriers rely on it due to the low cost and relatively high quality. These largely rural carriers expressed concern that a Huawei ban would force them to incur the cost of a "rip and replace" approach to existing Chinese-made equipment.[15] To combat this, the President recently signed the Secure and Trusted Communications Networks Act into law, which, in addition to banning carriers from using government subsidies to buy Chinese equipment, sets up a compensation program for rural providers.[16]

U.S. companies may, however, soon be permitted to work with Huawei on setting 5G standards, according to a new rule proposed by the Department of Commerce. Dialogue and information sharing between U.S. firms and Huawei had halted after Huawei's addition to the entity list in 2019, leading some to suggest that this was hurting U.S. involvement in the standards setting process. Reuters reports that the rule "essentially allows U.S. companies to participate in standards bodies where Huawei is also a member."[17]

Australia

In August 2018, after a review of the national security risks to its 5G networks, the Australian government released a set of "5G security guidance" principles to domestic carriers. The order states that "the involvement of vendors who are likely to be subject to extrajudicial

directions from a foreign government that conflict with Australian law, may risk failure by the carrier to adequately protect a 5G network from unauthorized access or interference."[18] While there is no explicit mention of Huawei or China, the statement "heavily implies that the involvement of Chinese companies would pose too high a security risk" in 5G expansion.[19]

It further cites the increasingly blurred distinction between "edge" and "core" components of 5G telecommunications network equipment as a main reason for this shift. The "edge" components in 4G networks, such as towers and antennas, were largely independent of the network "core" that dealt with sensitive data. 5G technology removes this distinction, which, according to the U.S. State Department "means there will no longer be an "edge of the network," and the entire network will require as much protection as the core does with today's 4G technology."[20]

Previously, the Australian Signals Directorate, a government security agency, had "tolerated 'high risk vendors' in edge infrastructure, but blocked them from the network core."[21] This approach was deemed no longer viable, as "new architecture provides a way to circumvent traditional security controls by exploiting equipment in the edge of the network – exploitation which may affect overall network integrity and availability, as well as the confidentiality of customer data." Chinese actors had previously been accused of committing acts of state-sponsored intellectual property theft and cyber espionage in Australia, which also raised suspicion and concern. [22]

The Global Times, a Chinese nationalist state-owned news outlet, stated in an op-ed soon after the decision that while the "statement did not name names... everyone knows it meant Huawei and another Chinese telecom firm ZTE Corp."[23] It described Australia as having "stabbed Huawei, a company that embodies China's reform and opening-up, in the back" by following the lead of the U.S. Huawei Australia has reportedly launched a "last-ditch charm offensive" in March 2020 to attempt a reversal of the government's stance.[24] This lobbying effort is being led by Huawei Australia's external lawyer Nick Xenophon, a former Australian senator, and Huawei's US-based Chief Security Officer Andy Purdy.

Australian technology journalist Chris Rowland "suspect[s] that the ship has now sailed, and even if the government were to reverse the ban on Huawei 5G products being used in Australia, carriers may have little appetite to use products from the vendor given its other woes."[25] He further notes that the Australian Huawei Board of Directors was dissolved in March of 2020 and its workforce in the country has dwindled to under 500, down from its peak of around 1000.

New Zealand

New Zealand's Government Communications Security Bureau (GCSB) denied a November 2018 request from Spark, one of New Zealand's large domestic carriers, to use Huawei 5G equipment.[26] The CSB cited a "significant network security risk" but did not elaborate beyond this. While this move was reported in some media outlets as being a full ban, New Zealand Prime Minister Jacinda Ardern stated just months later, in February 2019, that there was no "final decision here yet" and that it was on Spark to prove that the GCSB concerns could be mitigated.[27] Huawei was once again named as one of Spark's "preferred vendors" alongside Samsung and Nokia in a 5G network proposal in November 2019. This was a shift from the initial proposal a year earlier, when Huawei was included as the sole supplier of equipment.

However, the Chinese firm was dealt a further blow in March, when Samsung won the deal to provide equipment for Spark's radio access network, or RAN.[28] With major competitor Vodafone already proceeding with Nokia equipment, there may be little to no path forward for Huawei in New Zealand.[29]

United Kingdom

Huawei has a long history in the United Kingdom, originally opening a British office in 2001 and growing to employ over 1000 people across 15 locations in the country.[30] Huawei equipment was first used by British Telecom (BT) during the Blair government and since then, the company's equipment has been subject to strict oversight and scrutiny from regulators, namely the National Cyber Security Centre (NCSC).[31] By 2008, Huawei equipment had become more commonly used across the British telecom industry. This led to the creation of the Huawei Cyber Security Evaluation Centre (HCSEC),[32] a security group established to coordinate risk management for operators running Huawei gear.

In March of 2019, the HCSEC published a report stating that "[f]urther significant technical issues have been identified in Huawei's engineering processes, leading to new risks in the UK telecommunications networks."[33] It stated that it could only provide "limited assurance" that national security risks arising from Huawei involvement in key British telecom networks could be mitigated. This diverged from reports that, just one month earlier, British intelligence officials from the NCSC had determined "that there are ways to limit the risks from using Huawei in future 5G ultra-fast networks." [34]

After much deliberation, British lawmakers announced in January 2020 that the country would not ban Huawei and other "high risk vendors" from providing equipment for its 5G wireless network. The Department for Digital, Culture, Media, & Sport, the British government ministry responsible for the final decision, announced that, in addition to "[exclusion] from all safety related and safety critical networks in Critical National Infrastructure," high risk vendors, including Huawei, would be "[l]imited to a minority presence of no more than 35 per cent in the periphery of the network, known as the access network."[35]

Britain initially chose to restrict, monitor, and mitigate instead of implementing a blanket ban. This represented a shift from the previous "Five Eyes" stances of New Zealand and Australia, and amounts to a rejection of US-led pressure against Huawei.[36] While both the U.S. and Britain appeared to "gloss over their differences with muted public statements" following the decision, some American officials expressed anger. President Donald Trump was reportedly "apoplectic" towards British Prime Minister Boris Johnson in a call following the decision,[37] and his

then-Chief of Staff Mick Mulvaney speculated that intelligence sharing could suffer as a result.[38] U.S. Defence Secretary Mark Esper, reiterating prior statements made by Secretary of State Mike Pomepo, also warned allies in the wake of the British decision that Huawei's inclusion in 5G networks could compromise geopolitical alliances (including NATO) and future intelligence sharing.[39]

In early March 2020, a group of "rebel" Conservative MPs - reflecting the same concerns proliferated by U.S. officials - unsuccessfully attempted to modify the British decision to instead fully exclude Huawei equipment. British ministers were said to view the possibility of fully stripping Huawei from UK telecom networks as an "impossible" task, although they looked to make concessions - including tougher sanctions on misbehaviour and increased regulatory oversight - to appease internal opposition.[40]

There are strong signs, however, that the British decision towards Huawei will shift. Prime Minister Johnson is now faced with a seemingly unwinnable political battle. The number of "rebel" Conservative MPs opposing Huawei has supposedly grown to 59, passing the threshold of "the 44 or so rebels required to defeat Johnson's government despite the Tories' healthy Commons majority."[41] On May 22, 2020, it was reported by The Guardian that the Prime Minister was facing renewed internal party pressure and "had drawn up plans to reduce the Chinese company's involvement to zero by 2023."[42]

This was followed by an announcement that the National Cyber Security Centre was conducting a new security assessment of Huawei's involvement in British 5G networks due to the new set of U.S. sanctions on the company.[43] The British government has also reportedly reached out to Washington about the concept of creating an "alliance" of democratic nations, namely the existing G7 plus Australia, South Korea, and India, to reduce reliance on Chinese technology.[44] The reality of increased U.S. pressure on Huawei, which prevents the firm from accessing essential American-made technology, has compounded speculation that it will be faced with a full, official ban and a momentous reversal of fortune in the United Kingdom.

Overview: G7

Aside from the Five Eyes countries, Germany, France, Italy, and Japan - the remaining members of the G7 - also maintain close security relations with the U.S., Canada, and yet also have substantive relations with China. All have faced some degree of pressure from the U.S. to ban Huawei from their markets, though none have fully adhered to this prescription.

Germany

Caught between the U.S. and China, Germany's Chancellor Angela Merkel has made it clear that her government does not see network security as the sole deciding factor in their decision of whether or not to include Huawei in Germany's 5G rollout. Though there seems to be significant support in Merkel's Christian Democratic Union (CDU) party to exclude firms subject to "political influence in their home country,"[45] Merkel has articulated that she is unconvinced that Huawei's inclusion heightens security risks. Additionally, Merkel's government is weighing heavily the implications a ban would have on the cost and duration of Germany's 5G rollout, as well as any trade retaliation from China.[46]

Ultimately, a potential consensus between Merkel and her party's hardliners was outlined in a government backed policy proposal that balances these concerns.[47] The proposal emphasizes the need for a rules-based approach that address security concerns while avoiding naming Huawei or China directly. Furthermore, it promotes a cooperative approach whereby Germany would require guarantees regarding Huawei's data sharing in exchange for participation in the construction of its 5G networks. Underlining this approach is the belief that risks in Germany's network security are ever present, and that banning specific companies outright does not make sense in light of the broad security risks inherent to the technology.

U.S. President Donald Trump warned Germany that including Huawei in their 5G rollout would jeopardize U.S. intelligence sharing. However, recent signals from the U.S. Administration have been mixed. After initiating a similar plan to limit Huawei's involvement in the UK, U.S. Secretary of State Mike Pompeo stated that they would not suspend intelligence sharing with London, although this statement has been contradicted by other officials.[48] Germany seems poised to follow through on their plan to afford Huawei a limited role in their 5G rollout to satisfy both security skeptics and logistical concerns.

France

In practice, France has taken a similar approach to Germany regarding Huawei's involvement in their 5G rollout by moving to disallow the use of Huawei equipment in their "core networks."[49] France has also made efforts to hold out against hardlines and avoid an outright ban, with fear of trade retaliation from Beijing and the loss of a competitive telecoms provider being prominent concerns.

The National Cybersecurity Agency of France (ANSSI), is set to specify what Huawei equipment will be deployable and where, but has not yet made their intended regulations clear. These specifications will be critical to at least two of France's four telecom providers, Bouygues Telecom and Altice Europe's SFR, who already use Huawei equipment extensively.

Due to Huawei already expansive equipment deployment across French telecoms networks, a ban would pose significant technical problems to their telecommunications industry. However, Orange S.A. - the leading French telecommunications provider - has chosen Nokia and Ericsson over Huawei to build their 5G networks.[50] The same decision has not yet been made by other major telecom providers in France, which are privately owned. On balance, France appears poised to largely follow the initial UK approach, which would grant Huawei partial, albeit heavily restricted, access to their 5G deployment.

Italy

Unlike their European counterparts France and Germany, Italy has not taken steps to directly limit Huawei's involvement in the rollout of their 5G networks. However, the Italian Parliament has passed legislation designating telecommunications as a strategically important industry and gave themselves special vetting powers over the supply of 5G equipment.[51] Furthermore, Italy's parliamentary security committee, known as COPASIR, has expressed the will to exclude Huawei and ZTE from their 5G rollout. However, the Italian Industry Minister, Stefano Patuanelli, refuted this by saying that it was "not up for debate."[52] Italy's largest telecom provider, Telecom Italia, has also stated that they will keep working with Huawei unless otherwise directed by the government, and is considering Huawei as a 5G equipment supplier.

Overall, Italy's ruling Five Star Movement has indicated that they perceive no security threat from Huawei or ZTE, and do not plan on using their special protective powers to block Huawei's involvement in Italy's 5G rollout. Huawei currently appears to face little to no disruption to their business in Italy.

Japan

Compared to some of its European counterparts, Japan has adopted more stringent 5G protections that will effectively bar Huawei and ZTE,[53] another major Chinese telecoms supplier, from accessing public contracts. This ban has not been extended to private companies wishing to use Huawei or ZTE equipment in the construction of their networks. Senior Japanese government officials cited concern regarding information theft and destruction as primary determinants in the design of their plan.[54]

Although Huawei has made efforts to ease security concerns in Japan, such as offering to share source code with the Japanese government, Japan's main telecom provider, Softbank Corp., has still declined to include Huawei in their 5G rollout despite previous cooperation. Japan's other major telecom providers, NTT Docomo Inc. and KDDI Corp., are also not expected to contract Huawei or ZTE to deploy their 5G networks.[55]

Japan-China relations have been precarious in recent years and Japan's government is sensitive to its image in China. They have made efforts to avoid naming Huawei or ZTE specifically, but Chinese officials have nonetheless criticized Tokyo for its stance on Huawei and 5G. Ultimately, this issue could create a rift in Japan-China relations that might undermine recent progress in their state to state relationship. However, it is likely that in Japan's security calculations the views of their US security guarantor outweigh concerns from Beijing.

Where does Canada Stand?

Canada is currently conducting its own review of Huawei's potential role in the coming 5G rollout, though there is no set deadline or public timeline for this process. While media reports indicated that the decision would likely follow the October 2019 Federal Election,[56] recent comments on the issue from the Minister of Innovation, Science and Industry, Navdeep Bains made no mention of a solid timeline.[57] And with the onset of the global COVID-19 pandemic, government attention has shifted away from this issue for the time being.

The Huawei "review" is a collaborative effort, including input from Public Safety Canada, the Canadian Security Intelligence Service (CSIS), the Communications Security Establishment (CSE), Global Affairs, and Innovation, Science and Economic Development (ISED). There are, as it stands, differing perspectives among these agencies regarding the correct path forward. A Globe and Mail report from November 2019 indicates that CSIS favours a full Huawei ban,[58] whereas the CSE favours "robust testing and monitoring of Huawei's 5G equipment" to protect against security risks. Sources note that the Canadian military leadership also favours a ban.[59]

Prime Minister Justin Trudeau has generally avoided commenting directly on specific issues, as have most members of his cabinet. Trudeau has confirmed to reporters that the government has not made a final conclusion as of late May, 2020, but did not provide further detail.[60] Conservative Party leadership has uniformly spoken in favour of a Huawei ban. Andrew Scheer, speaking before his October 2019 election defeat, stated that his government would implement a full ban[61] and his two most likely successors, Peter MacKay[62] and Erin O'Toole,[63] have committed to do the same should they become Prime Minister.

While there is clearly no domestic "consensus" on the topic, Canada's decision falls under the responsibility of Public Safety Canada, which leads the National Cyber Security Strategy and "the country's "5G wireless network policy coordination efforts." Ultimately any decision is certain to be reviewed by the Prime Minister and the Cabinet. Public Safety Minister Bill Blair has stated that the Liberal government would "continue to listen carefully to the advice of our public security officials"[64] in addition to considering "all security, economic and global considerations"[65] in making the final call, although Canada's largest telecom providers have largely already signaled their intention to move forward with alternative 5G equipment providers for core equipment.[66]

The Canadian government will also face, and take into consideration, the opinions of Canadians who support or disagree with their decisions. With regards to public sentiment towards Huawei, and more broadly, China, Canada occupies a unique position. Polling conducted by the Pew Research Centre[67] in the spring of 2019 highlights China's favourability ratings in major countries around the world. Notably, out of all the countries discussed thus far, Canadians reported having the second most unfavourable views of China, only behind the Japanese. 67% of Canadians reported viewing China unfavourably, while only 27% viewed China favourably. This is a significant decline from 2018, when 44% of Canadians reported having favourable views on China. This may be explained in part by the fact that the most recent Pew survey was conducted immediately following the arrest of Meng Wanzhou in Canada and Michael Korvig and Michael Spavor in China, which, as reported on by the China Institute in a recent media content analysis,[68] strongly preoccupied Canadian media discussion.

While similar to Canada, more respondents from the United States reported having unfavourable views on China, at 60% of those polled. Respondents in the UK, Germany, and Italy again had less unfavourable views on China at 55%, 56%, and 57%, respectively. That said, a more recent British poll showed that 47% did not consider Huawei a national security threat.[69]

An Angus Reid poll from February 2020 showed that more Canadians, 56%, favour a comprehensive ban of Huawei,[70] akin to the responses of the US, Australia, and New Zealand, than favour (34%) the official U.K-like approach of exclusion only from core network areas. This is not to say that Canada will therefore follow suit with the U.S. but that the Canadian public may strongly resist Huawei's involvement in Canada's future 5G plans. These responses were likely driven in part by Canada's recent diplomatic difficulties with China arising from the U.S. extradition request regarding Meng Wanzhou, the CFO of Huawei.

The most recent polls from Angus Reid regarding public opinion in Canada of China's handling of the COVID-19 pandemic have pushed favorability towards China to new lows. Only 14% of respondents indicated having a positive opinion of China, down from 29% six months ago, and 48% in 2017. Furthermore, 85% said they believe that "China has not been honest or transparent about [the] pandemic."[71] Notably, public favorability towards the US has also dropped to a 40 year low of 38% according to the same poll. Another recent national poll conducted by Research Co. showed 75% of respondents agreeing with the statement that "Ottawa should not allow Huawei to participate in Canada's 5G spectrum."[72] This

is the least favorable survey response towards Huawei recorded to date and suggests that Canadian public opinion on cooperation with Huawei is trending negatively. The President of Research Co., Mario Canseco, also mentions the COVID-19 pandemic and the a recently rendered court decision on Meng's extradition as being potential factors in the decline in public goodwill towards Huawei.[73] The Canadian government will have to reconcile this growing animosity towards Huawei and China among many Canadians with whatever decision they make.

In responding to Huawei's potential inclusion in Canada's 5G rollout, it is worth noting that the options available to Canada are not limited to the models set out by the U.S, UK or other countries mentioned in this report. While it is not the case that a more negative public opinion on Huawei or China will directly translate to less hospitable policy, public opinion is a relevant factor of consideration.

Canadian Decision - Key Factors of Consideration

Security

There are a number of considerations that will factor into the final decision, which are further complicated by the precedent set by Canadian allies. The issue of **security** is perhaps the most pressing, receiving the bulk of public attention. It is important to note that Huawei has long faced scrutiny from Canadian officials and regulators, even before the current 5G review process. There have long been allegations of issues with Huawei,[74] (including allegations that it was responsible for the downfall of former tech-giant Nortel) and its alleged status as a threat to Canadian national security.[75] Huawei was prevented in 2012 from participating in the Canadian government's new telecommunications and email network after "Ottawa invoked an infrequently used national-security exception that allows it to override trade agreement obligations and restrict bidders on contracts to supply parts."[76] The company also cannot provide equipment in the "core" parts of the telecommunications that Canadian carriers use to receive and transmit sensitive data.[77]

The Canadian government, using an independent verification program overseen by the Communications Security Establishment (CSE), has been conducting security tests on Huawei equipment since 2013.[78] Huawei Canada, which works closely with the CSE, argues there has been no documented evidence of Huawei-related security breaches,[79] despite many years of operation in the country. It also states that as a company registered in Canada, it follows and complies with all relevant Canadian laws and regulations.[80]

There are, however, new variables and security concerns pertaining to 5G network development and associated infrastructure. This next generation of mobile communications technology, which may be up to 10 times faster than 4G, will lead to faster data transfers, latency reduction, and the ability to support more devices on a singular network.[81] Broadband will be more widely available in both crowded and remote areas, and expanded cellular connectivity will allow for the development of "smart" vehicles, roads, railways, and airfields. But, as previously mentioned in the case of Australia, the blurred distinction between "edge" and "core" components of 5G telecommunications network equipment make it more difficult to prevent state-sponsored espionage, hacking, and/or data theft.

There are also numerous use cases for 5G in relation to critical services and infrastructure control. Ericsson, a Huawei competitor, gives the example of connecting energy and water utilities with "millions of networked devices, taking real-time, intelligent and autonomous decisions."[82] With the potential for entire power grids and water supply networks to rely on this technology, security concerns may be justifiably amplified. Mike Burgess, the Director-General of the Australian Signals Directorate, communicated the idea that "the need to ensure the safety of critical infrastructure — rather than protecting privacy — was the key concern for [Australian] security agencies"[83] in recommending a ban on Huawei technology. Should Canadian utilities look to reap the potential benefits of 5G integration, they must carefully weigh the vulnerabilities of using equipment that *could* be compromised by foreign actors, including China.

With countless new, smart devices comprising the global Internet of Things (IoT), vulnerabilities may be "particularly problematic with unmanaged IoT devices that don't receive regular security patches to protect them from vulnerabilities."[84] For those critical of Huawei's potential inclusion in Canadian 5G expansion, the many "unknowns with telecom technology that make it difficult, if not impossible, to guarantee impenetrability"[85] are increasingly amplified as we move to implement new, more powerful cellular technology.

The term "backdoor" is used colloquially to describe a covert information pathway used to siphon information, and has been used widely in speculation about potential Huawei related security threats. However, this term is often misunderstood. All 5G equipment suppliers create "backdoors" primarily for use by the host country's law enforcement and network providers, so the security concern with regards to Huawei is not the existence of a back door but its misuse. In this case, concern pertains mainly to the notion that the Chinese government will have easier access to Huawei's "backdoors" than those of Nokia or Ericsson. However, it is important to note that, as has been seen in the past, it is possible for a state to exploit weakness in foreign company's telecommunications security to access sensitive data.[86, 87] Thus, the security concerns associated with a "backdoor" are not necessarily unique to Huawei equipment but reflect the potential for Chinese state intervention in Huawei's operations.

While Nokia and Ericsson have pitched themselves as safe alternatives to Huawei,[88] it is worth noting that using European equipment does not preclude Canadian providers from risk. There are broad security challenges associated with all 5G technology, regardless of the supplier. This reasoning has been cited by some countries, most notably Germany,[89] as a reason to not ban Huawei from their telecommunications infrastructure.

These factors underscore the dilemma facing Canada's security establishment, which reportedly does not hold a uniform view towards Huawei. For the CSE, robust security measures and monitoring will apparently mitigate enough risk to allow for Huawei's limited inclusion. In the case of CSIS, even the limited *potential* for security risks justifies a full ban, given the close relationship between Huawei and the Chinese state. This duality is further reflected on the global stage, as evidenced by the lack of a uniform Western response.

Financial

Canada will also inevitably weigh the **financial** implications of such a ban. Although Telus had appeared to be the only Canadian player moving forward with Huawei as its primary 5G equipment supplier previously, it updated this stance by announcing 5G partnerships with Ericsson and Nokia.[90] Rogers has announced a partnership with Ericsson and Bell will use both Nokia and Ericsson 5G equipment for different areas of its network.[91]

Because Huawei's equipment is not interoperable[92] (meaning it is not compatible with equipment from other vendors) executives from Telus and BCE Inc. (Bell) speculated in late 2018 that they could face roughly $1 billion in costs to "rip and replace" existing 3G and 4G equipment if faced with a full Huawei ban.[93] Telus would further warn of a "material" risk to the "cost of [its] 5G network deployment and, potentially, the timing of such deployment" should a Huawei 5G ban be implemented.[94] While executives from both Telus and Bell have taken a more optimistic stance and stated that a ban on Huawei may not delay 5G rollout plans,[95] the true long term implications are not yet known. Rogers uses only a "little bit"[96] of Huawei equipment on the periphery of its network, implying that it would not be faced with the same cost-obligations as Telus and/or Bell should a formal government ban be implemented.

Despite announcing that they would be working primarily with European suppliers for core equipment, Telus is still working with Huawei for its peripheral radio access network.[97] Bell also did not close the door on using Huawei entirely, with a press spokesperson stating to the Globe and Mail that they would "consider working with [Huawei] in 5G if the federal government allows their participation."[98] It does appear, however, that the lack of a formal Canadian government decision is slowly driving Canadian telecom providers away from Huawei, despite the potentially onerous cost and rollout time implications.

Huawei is also actively pushing ahead with a rural Canadian internet strategy, providing opportunities for rural communities that would otherwise be underserved by large carriers and technology partners.[99] Bob Allen, the CEO of ABC Communications, a small rural internet service provider in British Columbia, has stated that since "Ericsson and Nokia do not target the rural market globally" there are "really no technology partners other than Huawei for ABC to use."[100] In July 2019, Huawei announced a partnership with ICE Wireless and Iristel to bring high-speed wireless internet to 70 remote communities across the Arctic region and Northern Quebec by 2025.[101] It is unclear what a formal Huawei ban would mean for this partnership, given the apparent lack of viable alternatives.

As a Huawei ban could both cause a "rip and replace" approach and compromise future communications technology expansion in remote areas, government subsidization or assistance could be required. The aforementioned U.S. Secure and Trusted Communications Networks Act, which compensates carriers tasked with removing Huawei kit, may provide a roadmap for such a plan.

For Canadian consumers, who pay some of the highest data costs in the world, Huawei's capable but less pricey equipment would, at least in theory, offer Canadian telecom companies a means by which to lower cost to consumers. However, this dimension does not appear to be prominent in public thinking.

Political

As Canada-China bilateral relations are still complicated by both Meng Wanzhou's extradition proceeding and the detention of Canadian citizens Michael Kovrig & Michael Spavor in China, there may also be **political** ramifications that arise from barring Huawei. China's former Ambassador to Canada, Lu Shaye, warned Ottawa of "repercussions" should they choose to ban Huawei last year.[102] Although Lu did not elaborate and was well-known for his outspoken nature (his successor, Cong Peiwu, has not used the same language) this veiled threat underlies a complicating factor in Canada's upcoming 5G decision.

China, as with many states, is known to ferociously advocate for the interests of Chinese firms operating abroad. Chinese Foreign Ministry then spokesman Lu Kang, referencing the Meng arrest, stated that Canada needs a "clear understanding of the consequences of endangering itself for the gains of the U.S."[103] China demonstrated a willingness (and ability) to punish against Canada after this event, detaining two Canadians living in China and imposing trade restrictions on important Canadian exports, which are widely seen as such retaliatory measures. Would it engage in similar action if Canada was to restrict Huawei's ability to operate within Canada?

Trade is an important consideration given the close Canada-China trading relationship. Bilateral trade with China amounts to just under $100 billion, or 8.2% of all Canadian trade.[104] China has become Canada's second largest trading partner, sitting only behind the United States. As demonstrated by the Chinese bans on Canadian canola, pork, and beef in mid-2019, certain industries may find themselves enveloped in fallout arising from seemingly unrelated political events. The clear economic power imbalance and export reliance permits China to unfairly target Canada. While beef and pork exports resumed relatively quickly (canola remains uncertain), further or continued trade disruption may arise if Canada further aggravates China by barring Huawei.

To this end, a Canadian decision to permit Huawei gear - even in a restricted capacity - would certainly upset American officials. Robert Blair, a top White House official and President Trump's "point man" on

Huawei, visited Ottawa in March to warn Canada that it could lose access to "sensitive intelligence" if Huawei was permitted to operate in its 5G network.[105] While this remains a rather ambiguous threat, the potential to upset such a close ally may not be palatable for Canadian policymakers.

And with the recent announcement that the United Kingdom is re-reviewing the role of Huawei in its 5G networks, a decision to officially allow Huawei "in" may be even *less* palatable. The potential change in British policy would represent a relatively uniform Five Eyes stance towards Huawei. It may be impractical for Canada to diverge from a consensus policy stance among its closest security allies. Meng Wanzhou's on-going extradition process will place additional pressure on the Trudeau government to take a strong stance on Huawei, with both media and public attention firmly focused on the company and China as a whole.

Looking Forward - Greater Context & Implications

Canada's decision whether or not to officially include Huawei in its 5G rollout rests within the context of heightened state to state suspicion and rivalry between China and the West that is likely to characterize international politics, trade, and business for the foreseeable future. This report, in addition to providing an analysis of Canada's 5G plans and its current relationship with China, also aims to further promote a productive and balanced conversation in an environment of broad, and largely U.S. led, suspicion and scrutiny towards China and Chinese technology.

Other technology companies with links to China have, for example, faced recent scrutiny from American government officials. Bytedance, the Beijing-based owners of the popular TikTok app, became the target of a bipartisan effort to investigate whether it posed a risk to national security.[106] U.S. Senators Chuck Schumer and Tom Cotton, in an October 23, 2019 letter addressed to the Acting Director of National Security, raised questions surrounding the collection and storage of U.S. user data, content censorship, and the potential for the app to be targeted by foreign influence campaigns.[107] The Committee on Foreign Investment in the United States(CFIUS) subsequently launched a national security investigation into Bytedance's initial purchase of the app Musical.ly, which was later converted into Tik Tok.[108] Branches of the U.S. military have moved to ban the app[109] and two Republican senators recently introduced a bill seeking to ban it from the government issued phones of all federal employees.[110]

Zoom, the videoconferencing app that has experienced an uptick in popularity due to the coronavirus crisis, has also faced criticism for "mistakenly" routing customer data through China,[111] in addition to a number of other data and privacy-related complaints. Citizen Lab reported "discrepancies between security claims in Zoom documentation and how the platform actually works."[112] This included "non-industry standard" encryption and the use of Chinese servers to transmit North American user data. Citizen Lab stated that "a well resourced actor like a nation state (including China) could leverage the security issues we found to target communications on Zoom."[113] Zoom was called "a Chinese entity" by House Speaker Nancy Pelosi,[114] despite being founded by an American citizen (who emigrated from China in 1997), maintaining its headquarters in the United States, and mainly serving an American userbase. This sentiment has emerged from the fact that most of Zoom's product development team is China-based (including 700 employees),[115] along with the aforementioned China-related security concerns. Canadian government officials in certain departments are instructed not to use Zoom video features for work-related purposes.

In both cases, the primary concern and basis for scrutiny may be traced back to China and/or the threat of Chinese state involvement, be it real or perceived. Any potential exposure to Chinese law and/or Chinese intelligence gathering is considered dangerous, especially for applications that contain sensitive user data. This perspective is seemingly common on both sides of the American political aisle.

The Huawei decision is not the first in which Canada has had to grapple with security concerns regarding international business, with the recent and notable example of Ottawa blocking China Communications Construction Company's takeover of Aecon in 2018. But it is an escalation with regard to case profile and supposed risk. Future cases that fall under a similar purview are also likely to be of significant profile amid the now intensified U.S.-China rivalry and attract more critical public sentiment. Canada may be faced with similar concerns over Tik Tok, Zoom, or any number of other China-connected firms. Canadian politicians and policymakers should pay close attention to these cases and decisions in order to prepare for the potential consequences, be they foreign government retaliation or domestic backlash, and find ways to pursue Canadian interest including taking advantage of possible opportunities.

The implications and intentions behind foreign investment regulations extend beyond the immediate considerations regarding Huawei. While Huawei, and China more generally, have become the focus of many 5G security concerns, other actors could soon spur similar conversations regarding these issues. U.S. Attorney General William Barr stated recently that the U.S. may seek controlling interest in the European telecoms providers Nokia and Ericsson, Huawei's largest competitors, to combat China's 5G dominance. This may enhance the politicized environment surrounding the telecommunications industry and lead to a landscape fraught with pressure and competition that will be more difficult for countries to navigate without policy that is able to systematically address security, privacy, national interest considerations fairly and consistently. However, US control of Nokia or Ericsson, should that be allowed by the Finnish and Swedish governments, would not pose the same challenges for Canada as Huawei given our status as a close security ally of the United States.

As for Canada's present policy on the topic, on April 18, 2020, the Canadian government signaled its intention to more critically and broadly scrutinize foreign investment in Canada during the COVID-19 crisis. Citing "expos[ure] to predatory foreign investors," and making special

reference to "state-owned" companies.[116] This action could be a stepping stone towards more protectionist foreign investment policy even after the COVID-19 crisis has subsided. Moreover, it partially serves to address public concerns regarding foreign influence, akin to the concerns about Huawei as reported in Canadian survey data.

Lastly, as mentioned above, the broader context in which policy changes operate is key. Indecision on the government's part creates uncertainty for telecom providers, which could be a factor in the recent announcements from Telus and Bell to pursue contracts with Nokia and Ericsson rather than Huawei.[117] Telecom providers appear to be moving towards a more risk-averse approach to future supply chain management. This could be construed as a form of indirect pressure from the Canadian government, whereby the government is able to avoid taking an official stance and thus avoid much of the potential diplomatic conflict with China, yet is still able to keep Huawei from participating in Canada's 5G rollout. If deliberate, this signals a more moderate stance from our government and serves in part to suppress conversation on the government's role in controlling the involvement of major Chinese companies in Canada, which could be a saving grace for Canada amid its ongoing bilateral tensions with China.

Issues related to perceived exterior threats to Canada's national security and the privacy of Canadians may grow in the near future. Canadian politicians and policymakers will undoubtedly face consequential decisions regarding how Canada chooses to deal with foreign investors, collaborators, and even close political allies. Canada's official decision on Huawei's inclusion in the 5G rollout may or may not set precedent for future decisions, but it can provide a basis to further expand dialogue and discussion on the broader topics of national security, international trade, and the current relationship with China.

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