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Assessing China's Digital Silk Road: Huawei's engagement in Nigeria

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Abstract:

The role of information technology in today's society has made digital infrastructure a critical aspect of geopolitics. Although the private sector has traditionally led such developments, there is increasing evidence that countries are now slowly getting involved. This paper argues that as part of its Digital Silk Road (DSR) initiative, the People's Republic of China ("China") is incentivizing private actors, such as Chinese telecommunications firm Huawei, to build digital infrastructure abroad, so as to generate security externalities for China. This is evidenced by our case study involving Huawei's involvement in Nigeria in the realm of digital infrastructure development, the formulation of digital strategies, and associated standards**.**

Keywords: *Digital infrastructure, telecommunications, China, Huawei, Nigeria*

1. INTRODUCTION

Many cross-border connectivity projects are Chinese-led initiatives that have now been subsumed under China's Belt and Road Initiative (Aikman, 2018; Devonshire-Ellis, 2021; Grassi, 2020; Sukhankin, 2020). The Belt and Road Initiative, or BRI, is increasingly perceived as a crucial element of Chinese global economic engagement. It has also been described as a tool of Chinese economic statecraft (Pacheco Pardo, 2018; Zhang & Keith, 2017). The declared objective of the BRI is improving political and cultural exchanges, infrastructure development, trade and connectivity, between China and the rest of the world (Hong Kong Trade Development Council, 2021; Costa Buranelli, 2018).

Assessments of BRI's drivers are often focused on emerging political ties between China and the rest of the world, the facilitation of (resource-driven) trade, the creation of various financial institutions (such as the Asian Infrastructure Investment Bank or AIIB), increased domestic demand within China, and a growing Chinese integration into international institutions, or the building of traditional 'hard' infrastructure (e.g. railways and ports) (Brattberg & Soula, 2018; Chin, 2012; Golley & Laurencesn, 2017; Ikenberry & Lim, 2017; Yu, 2017). However, developments regarding the digital, or 'soft' aspects of the BRI tends to be overlooked. This is despite the BRI also enhances cross-border digital connectivity under the initiative known as the "Digital Silk Road", or DSR (Shen, 2018; World Economic Forum, 2018). This work therefore emphasizes the DSR's role in its analysis of how China has wielded economic statecraft in its global initiatives to achieve its objectives.

By taking economic statecraft as "the intentional attempt of the state to incentivize commercial actors to act in a manner that generates security externalities that are conducive to the state's strategic interests" (Norris, 2016), this work argues that the DSR, illustrates an excellent framework where Chinese commercial actors are incentivized to generate security externalities for the Chinese state. Recent domestic policies intended to bolster China's overall economic competitiveness, such as "Made in China 2025" ("MIC 2025"), "Internet+", "Next Generation Artificial Intelligence Development Plan", or the "Military-Civil Fusion" ("MCF") are argued to be within the overarching DSR framework.

Following a brief overview of the DSR's aims and accompanying domestic digital policies, this work will then pay special attention to the DSR's role and impact on digital infrastructure outside of China. In particular, it will focus on the interplay between Chinese state and commercial actors regarding the construction of digital infrastructure using the case study of Huawei's engagement in Nigeria. The specified case study will help to shed some conceptual and empirical clarity regarding how the DSR is used by China to achieve its strategic aims. Subsequently, this paper will then discuss the evolving security externalities generated for the Chinese state.

2. THE AIMS AND IDEAS FOR A "DIGITAL SILK ROAD"

The Digital Silk Road (DSR) initiative has become increasingly salient since 2015, when the Chinese government announced its intention to bring about an *"Information Silk Road"* (National Development and Reform Commission, PRC MFA & MOFCOM, 2015). This was subsequently followed up by a more concrete plan, the 13th Five-Year-Plan, which mentions an *"online Silk Road"* that ought to be built by Chinese companies. An additional stated aim also entailed cooperating with other countries within the DSR to establish (technical) standards – with the goal to *"strengthen China's say in (their) formulation"* (Central Compilation & Translation Press, 2016).

The DSR was also mentioned by Chinese President Xi, who has called for the construction of a 21st-century Digital Silk Road (Xinhua, 2017a). Speaking at the 2017 World Internet Conference hosted in China, Chinese Politburo member Wang Huning further elaborated on the leading role China will play, stressing the need to create a:

> "…mutually beneficial, win-win direction of development; to deepen Internet and information technology, build a cyber superpower, and advance society through a digital China […] to strengthen cooperation on the data economy, so as to make the achievements of the Internet greater and to better bring countries together" (Webster et al., 2017a).

The DSR therefore aims to build a loosely-defined "win-win" digital development path, with China being at the core of the path. Thus, Chinese domestic companies are sought out by policymakers to assist China in becoming a "cyber superpower". The DSR strategy is thus accompanied by domestic initiatives such as the "*MIC 2025*", "*China Standards 2035*", "*Internet+*" and the "*MCF*" as well as the so-called "Going-Out Strategy" (Wang, 2016). All of these form the core of the internationalization efforts of Chinese firms (World Economic Forum, 2018; The Economist, 2018; Wang, 2016). An assessment of the general outline of these initiatives lends support to the argument that Chinese companies are, at their core, tasked with becoming drivers to elevate digital value creation and standard-setting, with the ultimate goal of promoting Chinese state-defined interests.

One of the essential components of realizing the DSR is the construction of physical infrastructure – such as laying a cross-border optical cable network. Such physical infrastructure is a key part of long-distance telecommunications and is therefore critical for the Internet to function (Chaisse & Gorski, 2018; Huang, 2017). As cables could be laid alongside other forms of physical infrastructure (CableNet Industries, 2020) such as railways, this is indicative that Eurasian and African digital connectivity could benefit from the transportation infrastructure that China plans to build via the BRI in those regions (Costa Buranelli, 2018; The Economist Intelligence Unit, 2018). Examples of such cable construction include Chinese telecommunications firm Huawei building the "Pakistan-East Africa Cable Express (PEACE)" (Huawei, 2017; Becker & Downs, 2018) or China Telecom's active involvement in the Super TSR (Transit Silk Road) internet land cable system spanning Europe and Asia (Marketwired, 2017).

3. THE INTERPLAY OF COMMERCIAL AND STATE ACTORS

Building (digital) infrastructure also confers advantages upon commercial actors, such as having access to new markets. Given that Chinese telecommunications infrastructure and cable industries face domestic overcapacity, these companies have shown enthusiastic support for the DSR (Shen, 2018). Numerous Chinese companies, such as ZTE or Alibaba, have indicated their interest in participating in the DSR initiative (Hou, 2015; TASS, 2016). Other firms, such as the telecommunication company China Unicom and China Mobile, have taken steps to prepare for the DSR. These steps include easing mobile roaming charges and building optical cable mines in BRI countries (Xinhua, 2017b; Zhang, 2018).

Building the DSR also potentially confers other forms of benefits. One such benefit is the increased overall competitiveness of Chinese firms - and by extension, the Chinese economy and China's global influence. Telecommunications has been identified as an area of strategic importance for countries (Alden & Chan, 2021). The DSR could therefore boost Chinese firms' bids to secure a long-term influential position within the global telecommunications industry. Successfully doing so could result in increased Chinese influence when it comes to setting standards. Setting technical standards generally influences firms on the entire value-chain and could serve as a boost for various commercial actors towards gaining increased market share (Shen, 2018). In 2019, Chinese telecommunications firms have accounted for the majority of the technical documents submitted to the International Telecommunication Union ("ITU"). All of this indicates possible growing Chinese ambition in the realm of global telecommunications.

The promotion of the Chinese *BeiDou* satellite system by Chinese policymakers is a prominent example of how China translates its advantages in technical standards-setting into increased international influence. Research has found that the BeiDou system has an advantage over the US-owned *Global Positioning System* ("GPS") system in times of natural disasters (Ding & Chen, 2016; Rose, 2013). Other prominent benefits include the generation and utilization of geospatial data on populations and infrastructure (Space in Africa, 2021). Consequently, this makes the BeiDou system an attractive alternative to the GPS system, especially in disaster-prone countries in Africa.

Under the umbrella of the DSR, Chinese state-owned satellite firm China Great Wall Industry ("CGWIC") has made deals with African countries such as Nigeria. The recent procurement of two Nigerian satellites were financed by the China EXIM Bank. In exchange for a US$550 million investment, the Chinese bank attained an equity stake in NIGCOMSAT, a satellite communications company belonging to the Nigerian government (Reuters, 2018; Liew, 2018). This leverages China's existing presence in Africa, which will further aid Chinese tech firms' entry into the regional communications market. Additionally, the implementation of a myriad of Chinese-owned or Chinese-linked satellites permits inter-satellite linking ("ISL"), a function which allows the different satellites to connect and communicate with each other (Inside GNSS, 2020). From a military applications perspective, such an integrated system (between the ground control stations and the satellite constellation) would provide a boost to the military capabilities of the People's Liberation Army ("PLA"), such as in the areas of missile guidance and military forces tracking (Wilson, 2017). At the same time, Nigerian uses for such satellites could revolve around providing increased broadband internet penetration within the country, and even serve as a crucial driver of Nigeria's ICT initiatives (Integra, 2012). For example, the Chinese-launched Nigerian satellite, NigComSat-1, helped to improve agricultural benefits by locating suitable farmland (Bakare, 2016).

The DSR can therefore foster both Chinese commercial activity and boost Chinese technological and military capabilities. Whistleblowers have disclosed how US government agencies have intercepted data from US-constructed communication cable networks for their surveillance programs (MacAskill & Rushe, 2013; Ehrenfreund, 2013). Setting up new telecommunication networks or satellite navigation systems could present China with the same opportunities that the US had readily capitalized upon (Lo & Chung, 2016).

4. DOMESTIC POLICIES IN CHINA COMPLEMENTING THE DSR

The DSR is further complemented within China by a range of domestic policies, which are intended to elevate the role of technology and the internet in China's national security agenda. China's State Council has stated that it seeks the construction of a strategic alliance where large enterprises are encouraged to utilize the internet and take the lead in entering the international market, with smaller supporting enterprises following suit. By christening select "national champions" and placing them at the forefront, such large companies would then serve as critical enablers and inspire others within China's domestic market to follow. (State Council of the People's Republic of China, 2015a). Let us now briefly review the domestic policies that complement the DSR.

4.1. MIC 2025

The Made in China 2025, or MIC 2025, aims to holistically upgrade the Chinese industry through technological innovation and spearhead China's economic transition away from being labor-intensive and into high-tech production (Kennedy, 2015; State Council of the People's Republic of China, 2015b). The MIC 2025 policy thus intends to challenge the dominance of industrial countries, helping China avoid the middle-income trap and leapfrog it towards being an "Internet Superpower". Significantly, the top-down nature of the policy is indicative of the reliance that Chinese businesses have on politics when it comes to upgrading their production capacities. The relative absence of foreign competition in domestic markets has meant that Chinese firms

suffer from a lack of natural incentives to pursue such upgrading efforts – hence the need for state-imposed 'nudges'. Just like the DSR, the MIC 2025 places enormous emphasis on high-tech production as a necessary condition for China to achieve its goal of becoming an "Internet superpower".

4.2. CHINA STANDARDS 2035

Building on MIC 2025, the China Standards 2035 strategy aims to achieve long-term prosperity gains through standardization. Standardization plays a role in all areas of life and determines the width of rails, the shape of electrical outlets and even the design of Internet protocols. The standardization work of various engineering and government agencies in China have been reflected in the "14th Five-Year Plan (2021-2025) for National Economic and Social Development and Vision 2035 of the PRC" (SAC, 2021). With regards to digital technology, the plan states the aim of: "*promot(ing) the construction of a community of common destiny in cyberspace (*网络空间命运共同体*)*" as well as active participation "*in the formulation of international rules and digital technology standards in areas such as data security, digital currency, and digital taxes*", so as to "*provide technology, equipment, services, and other digital assistance to underdeveloped countries and allow all countries to share the dividends of the digital age*" (Center for Security and Emerging Technology, 2021). Influencing standard-setting is thus likely to constitute a key component of China's international initiatives such as the DSR.

4.3. INTERNET+

The "Internet+" action plan seeks to fully leverage upon advantages conferred by the internet to scale and expand numerous Chinese domestic industries. This is done by using the internet to "*accelerate the formulation and dissemination of fundamental generic standards and key technical standards for […] areas integrated with the internet*" (Central Compilation & Translation Press, 2016). While the phrase was used by others to incorporate the internet into industries such as healthcare or education, the popularity of the idea amongst Chinese businesses has provided the Chinese government with the necessary impetus to co-opt the idea and accelerate it into a state-sanctioned policy (Wang, 2015; Sohu, 2015). However, in contrast to MIC 2025, Internet+ is rather a bottom-up approach where tech companies innovate and disseminate mobile and internet services upstream.

4.4. MILITARY-CIVIL FUSION

The MCF strategy, or Civil-Military Integration, is an attempt by China to encourage the diffusion of innovation between private businesses and the military sector (Hille & Waters, 2018). The MCF strategy aims to "*ensure that economic development meets the needs of defense and that civilian needs are given due consideration in national defense development*" (Central Compilation & Translation Press, 2016). The policy promotes the acquisition and use of dual-use technologies, such as big data, facial recognition software, and satellites, among others (Levesque & Stokes, 2016). It aims to "*implement military-civilian development projects, including […] space, and cyberspace projects […] and the strengthening of coordination between military and civilian sectors*" (Central Compilation & Translation Press, 2016).

5. IMPLICATIONS OF DOMESTIC POLICIES COMPLEMENTING THE DSR

In order to optimize Chinese innovation, the Chinese state provides substantial financial support for participant companies in the form of favorable loan conditions or tax discounts (Wübbeke et al., 2016; McBride & Chatzky, 2019; European Union Chamber of Commerce in China, 2017). This highlights the tendency to 'usher' domestic

industries to align with China's strategic state interests to generate growing reciprocity between the two (Hille & Waters, 2018). For example, in its approval process for the MIC 2025 demonstration zones, the Chinese Ministry of Industry and Information Technology ("MIIT") has indicated its support for companies that are involved in the MCF (Laskai, 2018). Other initiatives, such as the 2017 Next-Generation AI Development Plan, named the MCF as one of the "six main duties" for the development of AI. Additionally, the plans call for the establishment of an "*all-element, multi-domain, highly efficient new pattern of civil-military integrated development*." Taken together, it is possible to claim that the Chinese state aims to foster the in-tandem evolution of civilian and military applications to enable "leapfrog development". The term refers to the use of certain technologies to bypass the earlier stages of development to reach the latter stages more quickly. By funding and promoting "national champions", China could thus ensure that emerging industries grow within the ambit of the MCF (Laskai, 2018). This becomes more evident with the Communist Party of China (CPC) 's installation of oversight committees within major companies, which allows them to review the companies' compliance with "national goals" and exert influence (Martin et al., 2018).

Technology transfers between the military and civilian spheres can also foster China's indigenous military innovation capacity (Kania, 2017). Given the PLA's focus on "intelligent warfare" (智能化战争与无), intertwining expertise from academic, commercial, and military industrial sectors is therefore critical (Webster et al., 2017b).

These policies also lend support to China's new innovation-heavy development philosophy (Xinhua, 2020) and the formation of a "*Chinese internet superpower*". The *MIC 2025* promotes the upgrading of the Chinese industry firms into the highest global value chains, while *Internet+* scales and diffuses CPC-approved ideas, norms and applications into all levels and spheres of life in China and abroad, and the *MCF* merges commercial with political and security interests to boost the relative power of the Chinese state.

In summary, this section has laid out how Chinese domestic initiatives have been integrated into the DSR's framework. Furthermore, this development (a "*trinity*" involving commercial IT promotion, encouraging state (financial) support, and military involvement) appears to be a constant feature of Chinese development politics (Medeiros et al., 2005). Assessing Huawei's engagement in Nigeria offers insights how this "trinity" plays out outside of China.

6. CHINESE ENGAGEMENT IN NIGERIA

In Nigeria, Chinese telecom giants such as Huawei or ZTE are significant investors (Ojeme, 2018). The generally positive nature of the Sino-Nigerian relations, which were formally established in 1971, is a major enabling factor for this relationship. A strategic partnership was then established in 2005 (PRC MFA, 2005). This strategic partnership comprises, inter alia, the China-Africa Defense and Security Forum, the Forum on China-Africa Cooperation (or FOCAC), as well as Nigeria's acceptance of the PRC's interpretation of "One China" (Sale, 2018; Dino, 2006; Yang, 2018).

On the economic front, Nigerian domestic economy is largely agricultural, and the country remains highly dependent on international exports of natural resources. Nigeria's economic development is also disrupted by internal disruptions such as the Boko Haram insurgency and occurrences of violence between foreign corporations and locals along the oil-rich Niger Delta (Page, 2018).

In recent years, Nigeria has received relatively sizable funding from China for infrastructure development, especially the construction of railways (Sow, 2018). The warm welcomes that the Nigerian government have given to Chinese infrastructure investments is also being extended to Chinese telecommunication companies such as TECNO Mobile and Huawei, who are now being given levels of attention and appreciation that were formerly reserved for Chinese diplomats (Chao, 2018). Notably, Chinese state visits to African countries often involve commercial leaders from Chinese telecommunications companies (i.e., Huawei and ZTE). This gives the aforementioned telecommunications companies the opportunity to establish (informal) relations with local

leaders. The embedding of private-sector representatives within official state visits grants Chinese officials the chance to increase China's overall presence within African countries (Executive Research Associates, 2009). Let us now examine the nature of Huawei's engagement with Nigeria.

The general commercial interests for foreign firms in Nigeria are derived from its massive market potential. This is due to Nigeria being the largest African economy and one of the fastest-growing markets on the continent. Nigeria has one of the youngest populations regionally as well as a burgeoning (albeit economically-vulnerable) middle-class. Such favorable demographics have led to Huawei perceiving Nigeria as a key (testing) market for its smartphones and for telecoms growth within Africa in general (Connors & Maylie, 2011). Existing projections expect that Nigeria, together with China, India, Indonesia, and Pakistan, will contribute half of the 1.6 billion mobile internet users by 2025 (GSMA, 2016; Kazeem, 2018). Nigeria is therefore a crucial market for Huawei.

7. HUAWEI'S ENGAGEMENT IN NIGERIA

Since launching business operations in Nigeria in 1999, Huawei has invested US$76 million within the country. More importantly, Huawei has been selected by the Nigerian government as a core partner in building smart cities and e-government applications to "*reshape the way public services are provided and managed*" within the country (Tsui, 2016; Nigerian Communications Week, 2017). Other major digital connectivity projects that Huawei is also involved in include: working with local partners to launch a low-cost rural digital connectivity network (*RuralStar*), constructing major parts of the necessary infrastructure needed for Nigeria's broadband network (4G, LTE and 5G), creating two "ICT training centers" and holding ICT competitions at universities to foster local ICT expertise, and planning the construction of cloud service centers in several Nigerian cities (Aptantech, 2016; Elebeke, 2018; Kehinde, 2018; Muhammed, 2018; Ojoye, 2018; Usman, 2015). Furthermore, Huawei, in cooperation with Nigerian telecom company Globacom, plans to build the 850km submarine cable network Glo2 along the Nigerian coast, which would connect the Nigerian mainland with several offshore oil platforms (Okafor, 2018). According to Globacom officials, this project aims to allow enhanced data connectivity between the two and serve as a growth opportunity for local businesses within the tech industry (Ogundeji, 2018). Huawei is also the main technical partner of Phase3, a Nigerian optical fiber network infrastructure provider responsible for the expansion of communications network coverage in major parts of West Africa (Mayton, 2012; Phase3, n.d.). Additionally, within the framework of the BRI, a US$328 million concessional loan for the construction of optical-fiber networks for governmental communications was agreed on at the FOCAC 2018. The agreement was signed between China's EXIM Bank and the Galaxy Backbone (a telecommunications company of the Nigeria government), with Huawei working on the project (Ibukun, 2018). It is worth noting that Huawei's broad engagement with Nigeria is neither one-sided nor unappreciated – Nigerian officials regularly pay special tribute to Huawei's involvement and characterize Chinese investments in digital infrastructure as promising solutions needed to overcome Nigeria's development challenges (Oyeyemi, 2017; Opusunju, 2017;).

However, although Huawei's extensive involvement in Nigeria appear to have benefited the company, the Chinese state also appears to have benefited from Huawei's involvement. Such a development appears to be unintended, given that Huawei's corporate structure arguably subjects it to international market pressure which may serve as a buffer to limit the extent of Chinese state influence. Whether intentional or otherwise, there are nonetheless numerous examples on how the Chinese state has benefited from Huawei's extensive involvement in Nigeria.

The first example, drawing on evidence from South Africa and Egypt, is that rather than improve human capital, Huawei's creation of local training courses actually serves to polish the image of Chinese companies writ-large and raise their level of acceptance amongst locals. All of this fits within China's broader national aim of

fostering "cooperation and friendship" (Fang, 2011; Tsui, 2016; PRC MFA, 2009). The rationale for such appears to be preventing the flare up of tensions between Chinese firms and local citizens, as previous incidents in Sri Lanka or Vietnam indicate (Elmer, 2018; Shepard, 2017). As those examples demonstrate, the perceived loss of local control over key facilities and infrastructure had caused resentment in the local population.

A second example of how the benefits of Huawei's engagement in Nigeria have benefited the Chinese state revolves around the fact that non-digital infrastructure projects are likely to have digital components in the future (Zhao, 2015). In the rail industry, control and signaling systems, and smart monitoring systems are set to drastically change rail operations (Muzira & Lawrence, 2019). Given that China has sought to construct rail transport infrastructure within the continent, it is unsurprising that other Chinese companies (i.e., railway construction firms) will benefit from Huawei's increased engagement in Nigeria. A good example of this is the recently-completed Chinese-constructed rail line between the Nigerian capital of Lagos and its industrial base of Ibadan *(Lagos-Ibadan railway)*, which has benefitted from the use of digital technologies such as drones (CGTN, 2020). Additionally, digital infrastructure can serve as a platform to support the creation of transnational trade networks, such as trading platforms for the export of Chinese goods (Xinhua, 2016). Examples include emerging Chinese-African e-commerce trading platforms (such as CA-B2B.com) that improve trading processes, and facilitate the turnover of inventory in China (Du, 2018).

A third example of the Chinese state benefitting from Huawei's engagement with Nigeria is the potential of *RuralStar* serving as a cornerstone for a digital infrastructure base, which China could leverage upon. The same can be said of Huawei's construction of the Glo2 submarine cable network, which connects oil platforms and gives Huawei the option of southward expansion (Onwuaso, 2018). Taken together, such digital infrastructure projects create an infrastructure base for Huawei to offer additional services *a la* Alibaba's data center expansion along the BRI (Shen, 2018). However, this is likely to have implications, especially in the realm of digital surveillance. The proliferation of data centers run by Chinese companies could leverage upon surveillance mechanisms through the use of big data and thus create additional security externalities for the Chinese state. As revelations about the PRISM or Stellar Wind surveillance programs demonstrate, data centers serve as platforms from which governments collect data to monitor individuals in real-time (Sottek & Kopfstein, 2013). The companies involved were some of the largest US-American internet companies, such as Microsoft, Google, Facebook, and AOL (Gellman & Poitras, 2013). Meanwhile, researchers have found that Chinese commercial actors involved in Huawei's construction of digital infrastructure in Nigeria *already* share data with the Chinese government (Kühnreich, 2018). This increases the likelihood of Chinese tech firms extending the type of data that they share with the Chinese government to include data obtained and stored within the data centers run by Chinese tech companies. This may already be the case. The African Union has alleged that over a period of 5 years, data was being transferred on a daily basis from its Huawei and ZTE-supplied computer systems to servers located in Shanghai. (Aglionby, Feng & Yang, 2018) Moreover, the 2016 introduction of the *Chinese Internet Security Law* indicates that within China, Chinese firms are mandated to assist the Chinese government in identifying Internet users with their real identities as part of a wider objective of "*national defense, social peace and the protection of infrastructure*" (Paul, 2016). Chinese censorship practices, such as keyword filters, can be easily propagated and implemented through cooperation between foreign governments and Chinese technology companies abroad. Nigerian government interest in the import of the "Great Firewall" is an example in this regard (Mbamalu, 2021). Another example includes *CloudWalk Technology*, a Chinese company which provides facial recognition software to the Chinese state police. It has signed an agreement with the Zimbabwean government to set up a nationwide facial recognition system. Observers stated that such agreements, while permitting authoritarian governments to purchase cheap surveillance technology, nonetheless create future dependencies on Chinese products, algorithms and further promote authoritarian values of "*national defense, social peace and the protection of infrastructure*" (Hawkins, 2018) In 2016, then-President of Zimbabwe, Robert Mugabe, cited China as an example of social media regulator that he hoped Zimbabwe could emulate. (Towindo, 2016) It is well-known that since the early 2000s,

internet communications are monitored and censored in China as Chinese policymakers became aware of the need to secure China's *"information borders"* (Hughes, 2003). Such views on "internet sovereignty" are part of a culture of surveillance within China that continues to this day (Callahan, 2020). For example, comments and messages posted on online platforms can lead to individuals being detained for *"picking quarrels and provoking trouble"* (Dou, 2017) – a broadly-defined crime that has often been used by the Chinese state to silence dissidents (Guo, 2021). This model of cyber governance risks becoming increasingly entrenched in African countries such as Zimbabwe. Zimbabwe's recent "Cybercrime and Cybersecurity Act" (Paul, 2020) for example risks being a legal instrument used by authorities to silence dissent. Criticism unfavorable of the Zimbabwean government can be now increasingly restricted under the guise of maintaining "national security" or "social peace".

Additionally, Chinese-led seminars for foreign governments aim to disseminate information regarding China's practices with regards to internet and technology governance (Shahbaz, 2018). This indicates that not only is technical knowledge and infrastructure transferred, so too are ideas and mechanisms regarding maintaining government control of society and cyberspace. China's pioneering initiative of providing support for internet control mechanisms in Tanzania, Egypt, or Sudan, could very well attract and find an audience in other foreign leaders elsewhere (Sacks, 2018).

Implications of the MCF are already observable in other associated areas, such as the production of drones and their utilization in war operations. China now dominates the export of Unmanned Aerial Vehicles ("UAVs"), with more than 70 countries having acquired Chinese drones (Rick, 2019; Nouwens & Legarda, 2018). The creation of intelligent logistics systems and utilization of UAVs by e-commerce and leading Chinese AI giants JD and SF Express for the PLA Air Force is an example in this regard. It has been described by Chinese state media as *"innovative specimen of civil-military fusion"* (Laskai, 2018; Marr, 2018). Therefore, given such a precedent, it is reasonable to state that Huawei is more than likely to follow suit in providing its capabilities to the Chinese state, given that digital communication technology is essential to advanced drone operations (Laskai, 2018; Miracola, 2018). Nigeria has already bought several Chinese UAVs for its fight against Boko Haram – a development which is likely to offer Chinese PLA the opportunity to gain real experience in integrating UAVs in conventional military operations (Nouwens & Legarda, 2018).

Many of Huawei's projects are also financed through loans provided to the host state by banks set up by the Chinese government, such as the Export–Import Bank of China (EXIM Bank). This not only gives immediate stakes to the Chinese state but also creates interdependencies – often referred to as "debt trap diplomacy" (Parker & Chefitz, 2018; Sanderson & Forsythe, 2013). A recent report finds that Chinese state-owned lenders demand strict confidentiality, securitization of public debt, as well as international lending of cash collaterals (Gelpern et al., 2021). On the political front, it appears that Huawei's "Smart City" initiatives also neatly aligns with China's Africa policy, as recently outlined at the FOCAC where *"China will support African countries in building "smart cities" and enhancing the role of ICT in safeguarding public security, counter terrorism and fighting crime and work with the African side to uphold information security"* (FOCAC, 2018).

8. CONCLUSION

Drawing to a close, this paper notes that official Chinese documents clearly emphasize strategies to incentivize Chinese commercial actors to (1) build the DSR, (2) employ their technological *know-how*, and (3) strive to be standard-setters within the industry. The resulting infrastructure and influence could then be utilized for the Chinese state's benefit. Additionally, while the construction of such digital infrastructure is done by privately-owned Chinese tech companies, they often act in accordance with the overall guidelines and policies as laid out by the Chinese state. As the case of Nigeria illustrates, Huawei's deep engagement with the country serves not only commercial interests but also follows the Chinese state's strategic interests to *"build a cyber superpower",*

"*strengthen cooperation on the data economy*" and build friendly "*win-win*" relations with foreign countries. The DSR thus generates security externalities for China. These security externalities can be derived from the implementation of a Chinese navigation system, or the obligation for commercial actors to heed "military-civil fusion", or the ideational influences stemming from knowledge transfers. Assessing the DSR therefore proves to be an excellent example to demonstrate how China utilizes economic statecraft to achieve its aims.

However, this work also opens up new questions. While Huawei's offering of ICT learning opportunities to local populations can strongly promote a positive perception of China and bolster Nigeria's development capabilities, significant local pushback may also occur – as protests in other regions in Nigeria have demonstrated. Furthermore, whether the current nature of Chinese engagement can indeed help recipient countries overcome other long-lasting developmental obstacles, such resolving the Boko Haram insurgency in Nigeria, remain to be seen. Lastly, there remains room for debate whether Chinese economic and development initiatives, such as the US$328 million China-Nigeria ICT infrastructure deal, are indeed driven by South-South solidarity, as Chinese leaders often claim. All of this remains to be answered. ∎

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