THE GROWING DIGITAL PRESENCE OF CHINA IN THE CEE COUNTRIES

Editors:
Csaba Moldicz
Amadea Bata-Balog

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Foreword

The recent technological competition between the United States and China seems to be the most critical battleground in the struggle for hegemonic power. This struggle has often been described as a long-term race between two different political regimes. Another obvious aspect is that in this contest, although it occurs on many levels and in several places simultaneously, the European Union appears to be an ideal battleground as it is wealthy and inherently weak as a political power.

Papers in this book contribute to the Central European level of this geopolitical dispute, however, they often seek to address questions of soft power. In this search, the focus is on China's policies and achievements in this area, not on the policies and actions of the United States. In our understanding, the recent political, economic and technological rise of China and the withdrawal of the United States from multilateral commitments have created a new and more unstable geopolitical environment in Central and Eastern Europe (CEE). Against this backdrop, the recent assertion that CEE countries are becoming hubs for geopolitical competition among the great powers should not come as a surprise.

The edited volume is part of the OBIC Book Series, in which nine books have been published to date. The aim of the edited book is to shed light on China's geopolitical motivations in the CEE region, and it raises the question of whether the United States is able to contain China's advance in this particular area. Studies published in the book examined the potential impact of China's digital presence in Hungary and the CEE region.

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The Growing Digital Presence of China in Hungary
China in the Hungarian Digital Space – Contribution by the Chinese Diaspora and the China-Related Actors

Richárd Mohr

1. Preface: China's Digital Presence in the Information Age

China had been a long-standing dominant power in the world until the early 19th century, then lost its influence and rapidly became the poor, backward country, we used to know during most part of the 20th century. In the recent decades, however, an amazing change took place, which has led to China's re-emerging into the status it used to have for centuries: one of the most important superpowers in the world. China traditionally defines itself as a non-conquering power, and often gives voice to this opinion (Hao, 2019). However, the fears today in the Western world about China are not about conquering lands, but rather conquering minds (Economist, 2017).

The successful Chinese reforms inevitably brought on the increase in all three sources of power—economic, military, and soft power (Nye, 2004, p. 31). This rapid growth phase of China coincided with the cataclysmic change in the world brought about by the emergence and proliferation of the Internet. Never in the known history of mankind could we see such vast amount of information so easily accessible. China has successfully utilized this development with the production and export of extremely affordable digital devices, which have popularized China to some extent. On the other hand, according to our hypothesis, judged by its digital presence, the country's international acceptance could not keep pace with the growth of economic power, furthermore, due to its completely independent and almost isolated Internet ecosystem, unique cultural and political characteristics, and different values thereof, which are regularly misunderstood and misinterpreted by Western countries, China faces enormous challenges to make itself attractive to the Western world.

It is essential for a country to create an attractive appearance and shape the public opinion in the realm of the internet, which can be seen and defined as the soft power 2.0 (Nye, 2019). This research examines the digital presence of China in Hungary from this aspect and seeks to find out whether the local digital manifestation of Chinese soft power can cope with the obvious growth of the Chinese economic and military power, and if it is able to convince people to accept China's leading role in the world.

2. A General Outlook on the Digital Presence of China

2.1. The Soft Power of China

When examining the digital presence of China, we must start from defining soft power, which aims to achieve control by networking, communicating powerful narratives, creating international influence, consequently making the country attractive to the world. Soft power consists of many aspects, such as culture, achievements, political values, and foreign policy. Later new terms evolved, such as "smart power", which means learning better how to combine hard and soft power (Nye, 2004, p. 32). Another term is "sharp power", which uses the appeal of culture and values to increase a country's strength and is also a tool for authoritarian regimes to coerce and manipulate opinion abroad, thus often describing the practice of China and Russia (Walker – Ludwig, 2017).

The digital revolution upgraded the importance of soft power, hence shaping public opinion by digital means is a key element of soft power 2.0. The explosion of information has caused a "paradox of plenty", as plenty of information leads to scarcity of information. Therefore, reputation and credibility are more essential than ever, which is increasing the importance of soft power even further (Nye, 2019). This effect multiplies in case of a country. South Korea is a good example how pop culture—the Korean wave—has grown popular all over the world in recent decades with a support from the government (Gibson, 2020). On the contrary, if information seems to be propaganda, it can easily squander a country's soft power (Nye, 2019). In case of China, all kinds of cultural products' production and export are still under heavy control and this process is obviously disadvantageous for achieving the same success as South Korea (Salát, 2021).

In the context of China, soft power reflects a broader idea than the definition by Nye, as it also includes economic and diplomatic tools, investments, participation in multilateral organizations. This is the "charm of a lion, not of a mouse" (Kurlantzick, 2007, p. 6). Still, the soft-power policy in China "remains largely ad hoc and primarily reactive, aiming to counter the China-threat theory" (Glaser – Murphy, 2009, p. 10). Since the reform and opening-up policy in 1978, China has been searching for an alternative unifying ideology that can offer a substitute for Western influence. Chinese cultural values were found as source of value for the national ideology and soft power (Ibid., p. 15).

The result of the Chinese economic expansion is obviously a strong source for the charm of the country, therefore China strives to host big, international events, such as the Beijing Olympic Games in 2008 and the Shanghai World Expo in 2010 (Salát, 2010, p. 10), or the Winter Olympic Games in 2022. As to the cultural expansion, the biggest endeavor of China is undeniably the Confucius Institutes' worldwide network, which has reached 541 Institutes and 1170 Confucius Classrooms in 162 countries by the end of 2019 (Hanban, n.d.), paired with a generous scholarship system, as an attractive language learning platform for international students.

The development of world-level universities, scientific-technological cooperation, sport achievements, international branding of Chinese products, or blockbuster movies and soap operas also serve the country's soft power (Salát, 2010, p. 110). After the outbreak of coronavirus epidemic in 2020, China was providing protective medical equipment to many countries. The "mask diplomacy" and later the "vaccine diplomacy" were also attempts to give the impression that China is not the source of the problem, but part of the solution (Karásková – Blablová, 2021).

2.2. Chinese Diplomacy in the Digital Age

The scientific term of "public diplomacy" was coined in 1965 by Edmund Gullion, although the phrase had already been used at least for a hundred years. According Gullion's concept, public diplomacy "...deals with the influence of public attitudes on the formation and execution of foreign policies" (Cull, 2006). It has two basic kinds. Cultural communication or branding is a long-term tool for governments to improve their image in the world, by creating goodwill and fostering cooperation. Political advocacy, on the other hand, is aiming for short term, rapid results, to build foreign support for immediate policy objectives (Encyclopaedia Britannica, n.d.).

The term has evolved a lot since its inception as a concept in the 1960s. The United States has realized the need to replace the phrase propaganda with "public diplomacy" in the 1960s, however, this term was implemented and redefined in China only after 2000. Public diplomacy was officially put on the government's agenda by General Secretary Hu Jintao in July 2009 (Yang, 2011).

According to Zhao (2013), former director of the State Council Information Office: "Those institutions and people who have close contacts with foreign countries... are not government officials, but they are very influential... In the public diplomacy that is undertaken by the public, the social organizations, mass organizations and

other NGOs all play an important role. The basic task of China's public diplomacy is to explain China to the world and promote foreign public awareness of the real China, including China's traditional culture, social development, economic situation, political system and domestic and foreign policies" (author's translation).

The concept of "digital diplomacy" is part of public diplomacy and is generally described as carrying out diplomatic objectives with the help of the internet, especially using the social media (Hanson, 2010). China was a latecomer to digital diplomacy, but it has developed rapidly. In December 2003, Foreign Minister Li Zhaoxing communicated with the public online on two forums, with more than 20,000 people participating in the events (Wang, 2016). In 2011, China's Ministry of Foreign Affairs has established a Weibo (Chinese microblog) page to release China's diplomatic information in a timely manner. Later, WeChat (a multi-purpose messaging, social media, and mobile payment app), WeiShi (Chinese video sharing platform) and Facebook pages were also added to the platform (Ibid.).

From 2017, the second term of the Xi Jinping administration, China's foreign policy has started a more active and assertive involvement in international society (Son, 2017). Since the end of 2019, the spokespersons of the Chinese Ministry of Foreign Affairs, as well as Chinese diplomats in the EU and other countries became much more assertive than ever before. The phase "wolf warrior" evolved around this time and refers to the "new approach among the Chinese diplomatic corps to more aggressively defend their home country online". The term originates from a Chinese nationalist and patriotic blockbuster series (Brandt – Schafer, 2020).

Many European policymakers are concerned about the rise of Chinese digital power, due to the involvement in critical European digital infrastructure (Shi-Kupfer – Ohlberg, 2019, p. 11). It could become a crucial question how different European governments deal with the economic opportunities associated with China's digital rise if the US considers this as a strategic field in its competition with China (Ibid.). China's cyber power also appears as a direct threat. The narrative of the infiltration of critical infrastructure, military espionage to gain intelligence, and industrial espionage to gain economic advantage surfaces regularly in the US (Hjortdal, 2011, p. 3). The Chinese viewpoint is that China supports the peaceful use of cyberspace and takes the position of "no first use" of cyber weapons and no attack on civilian targets (Zhang, 2012).

2.3. The Rise of Digital China and a Unique Digital Ecosystem

For several decades, following the reform and opening-up policy initiated in 1978, China expanded its economic influence on a large scale, eventually creating possibilities for Chinese companies to "Go Global", according to the Chinese company expansion policy starting in 1999. Now Chinese companies are also competing in the ICT sector with great success worldwide, and the country is striving to become a leader in shaping international standards for new technologies. In 2006, China's State Council launched a plan to strengthen China's science and technology sector (Keane – Yu, 2019, p. 4627). The creation of the "Digital Silk Road" is based on the National Informatization Strategy (2016–2020), as well as other policy initiatives such as "Made in China 2025" and "Internet+" to promote domestic innovation in both digital and industrial sectors. Europe is increasingly concerned about the loss of competitiveness in emerging ICT technologies compared to Chinese high-tech companies (Shi-Kupfer – Ohlberg, 2019, p. 8).

Backed by the state industrial policies, the IT sector is "leveraging the country's fast-growing markets to build market power and drive innovations with global reach" (Lee, 2017). China's internet economy has become the most dynamic start-up incubator in the world, and there are also several corporate giants that can rival with similar US tech companies in size, such as search engine Baidu, e-commerce giant Alibaba Group or social media company Tencent (Ibid.).

China has one of the largest Internet user communities in the world, the number of online shoppers in China is already larger than the entire population of Europe (Statista, n.d.). The size of the digital economy has surged from 15 percent of GDP in 2008 to 33 percent in 2017 (Zhang – Chen, 2019). The Chinese internet is not only unique for its home-bred internet ecosystem—basically a Chinese Intranet—or the high rate of mobile internet users, but also for the very app-centric users and the convenience of the mobile solutions. China has become number one in mobile payment markets in the world, both in transaction volume and penetration rate (Huang – Wang – Wang, 2020).

The penetration of mobile internet has accelerated the separate evolution of the unique Chinese internet ecosystem. The restriction of foreign companies operating in China in the field of internet or social media, also the banned Western internet sites have led to the flourishing of local internet companies, social media platforms and apps (Verkasalo, 2016). It is also important to mention the censorship of the internet, commonly referred to as the Great Firewall of China. Yet behind the Great Firewall,

mainly occupied by local tech solution providers, the Chinese internet ecosystem is advancing into the "Galápagos of the Internet" (Beech, 2015).

3. China and the Chinese Diaspora in the Hungarian Digital Space

3.1. Diaspora Diplomacy of China

The term "Chinese diaspora" refers to "Chinese descendants of any citizenship residing outside mainland China, Hong Kong, and Taiwan... representing different generations, places of origin, tenures outside China, and political and ideological stances. The Chinese diaspora consists of Chinese nationals working and residing overseas (*huaqiao*), ethnic Chinese with foreign citizenships (*huaren* or *huayi*), and students (*liuxuesheng*)." Diaspora populations are playing an important intermediary role between their country of origin and the host country, in the field of politics and foreign affairs as well (Li, H., 2012, p. 2249).

China has always paid attention to Chinese residing in other countries since the establishment of the People's Republic of China (PRC). The two main organizations are the All-China Federation of Returned Overseas Chinese (*Qiaolian*) and the Overseas Chinese Affairs Office under the State Council (*Guowuyuan Qiaoban*), although the latter was absorbed by the United Front Work Department of the Chinese Communist Party in 2018 (Joske, 2019). From the provincial level, the diaspora offices try to trace the associations and important personalities of Chinese migrants from the area under their jurisdiction, and some are also given nominal official positions. In 2000, at least two Chinese living in Hungary held provincial positions (Nyíri, 2000, p. 88).

According to Li Minghuan (2012), members of the Chinese diaspora often live in "two worlds", as they try to convert their achievement in one society into capital in another society, and this greatly influences the relationship between Chinese emigrants and their *qiaoxiang* (the region in China where they have migrated from). Until the end of the Cold War, the Chinese immigrants in Europe remained to be a mostly silent group, living their social lives in isolation from the European society. Since the reform and opening up policy, Chinese immigrants in Europe started to become more visible by setting up associations, organizing activities, and integrating into local politics. Citizenship status of overseas Chinese people is a contentious issue, since dual citizenship is still not recognized by the PRC (Li, M., 2012, p. 271).

In 2008, just before the Beijing Olympic Games, pro-Tibet protesters rioted in several cities during the Olympic Torch Relay. The West was caught by surprise to see that various Chinese communities living outside of China with obviously no ideological allegiances to the motherland were united in voicing their support of China and strong opposition to the Western pro-Tibet standpoint. Western journalists failed to understand the phenomenon, that the Chinese diaspora—willingly and without Chinese pressure—supports the Beijing Olympics, therefore indirectly backs the Chinese government's soft power diplomacy project. These pro-China demonstrations indicate the increasing consciousness of the diasporic Chinese, but at the same time, they also project that the diaspora is willing to take a more active part in the growing presence of the nationalist agenda of the PRC (Sun, 2012, p. 434).

3.2. The Chinese Diaspora in Hungary

To have a better understanding of the Chinese presence and the local Chinese diaspora's role in the Hungarian digital space, we should briefly explore how the Chinese diaspora appeared in Hungary. After the introduction of reform and opening-up policies in China, relations with Hungary and other Eastern Bloc countries began to warm up. In the 1980s, the exchange of students, researchers, engineers restarted again (Nyíri, 2007, p. 49). Back in 1989, several factors brought about the Chinese migration flood to Eastern Europe, including Hungary. First, the Tiananmen crackdown shook the private sector with the fear of possible withdrawal of the economic reforms by the government, also many of the intelligentsia were affected by the possible or actual arrests after Tiananmen. Second, Chinese state-owned companies who could not sell their stock were heavily affected by the economic recession around 1990 (Ibid., pp. 52-53).

At this time, stories of getting rich in Eastern Europe encouraged tens of thousands of people to try their luck in trading, especially in Hungary, where Chinese citizens enjoyed visa-free entry between 1988 and 1992. In this short period, according to the estimations of Hungarian officials and the local Chinese, about 40,000 Chinese citizens came to Hungary. The reason for this huge number was not only the visa-free entry policy, but also the success of the first traders and the high standard of living and being the most open economy in Eastern Europe. This favorable business and social climate was passed on by the local Chinese population to friends and relatives back home, resulting in further influx (Ibid., pp. 52-54).

"Shuttle trading" has been a feature of East European shortages since the 1960s, but the Chinese traders arriving in Hungary have continued to fill in the vacuum left by declining retail chains of cheap clothing. Dozens of "Chinese markets" have been established, even in smaller towns (Nyíri, 2007, p. 83). But the measures taken by the Hungarian authorities in 1992 to curb migration, as well as the worsening market conditions have forced many Chinese in Hungary to relocate to other Eastern or Western European countries. After a graduate decline in numbers, at the turn of the millennium, the estimated population of the Chinese living in Hungary stabilized at about 15,000 people (Nyíri, 1999, p. 163).

According to the result of investigative journalism by a leading Hungarian media portal, this number increased again to 20-25,000 people after 2010, due to the Residency Bond Scheme immigration policy of the second Orbán government (Előd – Csurgó, 2018). The Hungarian Residence Bond program was introduced in 2013 and discontinued in 2017 (About Hungary, 2017). Consequently, Hungary has the largest Chinese diaspora among the Central-European countries, although many of the new immigrants do not stay in Hungary continuously or at all (Előd – Csurgó, 2018). The Chinese diaspora today in Hungary became a well-developed community, with several religious congregations, newspapers, schools, and an extensive service sector covering almost all needs of the Chinese community, including legal services, hairdressers, massages, or real estate agencies (Mohr et al., 2019, p. 166).

3.3. Digital Presence of China in Hungary

People's opinions about China are often polarized, which poses a great challenge for China when shaping its image abroad. Negative opinions are mainly created about the Chinese political establishment or the misunderstanding and misinterpretation of its nature, heated by stereotypes, and distorted news. Seemingly, China's previous image as a poor Third World country is now replaced by a ruthless communist state with a strong desire for power. The handling of the coronavirus pandemic, the trade frictions, conflicts with the minorities are all factors in the worsening opinion of Western people about China. The prejudice about the unknown Chinese political system and its effect on the external relations also raises eyebrows, such as the recent news about the spying accusations of Fudan University establishing a campus in Hungary (Licskay, 2021).

The local community—both Hungarian and local Chinese—seems to be spreading cultural and educational values of China within a relatively small circle, and these activities are not enough to influence the general population. Again, China has not yet found

its distinctive contemporary cultural voice, but the political issues often cast a shadow over the cultural or other values, even among those, who are open to Eastern cultures.

From China's perspective, however, the situation in Hungary is still better than in other Western European countries. A broad study of public opinion in 13 European countries on China from the second half of 2020 shows that only Eastern Europe holds positive views, while Western and Northern European countries hold significantly negative ones. Central Europe lies somewhere in between, but is still predominantly negative (Turcsányi et al., 2020, p. 2).

When we examine China's digital presence in Hungary, we need to understand that there are many different layers to this presence. It is quite different whether the information source is a state or nonstate actor, whether the target audience aims the Chinese community or the local general population. The differences can appear not only in terms of content but also in terms of channels. However, according to this research, there seem to be no signs or patterns of the implementation of an expert-based strategic China image communication plan at country level, although the frequency of communication and the amount of content are noticeably increasing.

3.4. State Actors

Given the nature of Chinese political life, it is natural to look first at examples of digital presence at the government level. Sometimes it is not easy to draw a clear line between Chinese governmental and civilian activities, as the government—especially in international relations—closely monitors and supports all activities related to and affecting the country's external image. The Hungarian government and its administration also have certain activities serving the soft power policy of China. In this chapter, we look at these government level actors.

The real goal of China's digital presence in Hungary, or the use of soft power, would be to address the local population in their native language and provide attractive information about China. There is also a large Chinese community in Hungary, and after a few years of rigid and dismissive policy towards the Chinese community right after the 1989 Tiananmen events, the overseas Chinese became an important factor in facilitating China's foreign relations. Therefore, the local Chinese community is also an important target for the Chinese government and media, and there are no language or cultural obstacles in this process. On the contrary, targeting the local community in Hungarian seems to be quite difficult and there are only few successful

examples, as it seems to be difficult for the Chinese government to find Western-friendly messages or package messages in a Western-compatible form.

The Embassy of the People's Republic of China in Hungary is the highest level of diplomatic representation. The embassy maintains a relatively extensive Chinese-language website with official announcements and communications. Its English- or Hungarian-language website is quite outdated, far less comprehensive, and deals mainly with political and diplomatic issues. Compared to the Embassy of Japan in Hungary, on the website of the Chinese Embassy there is no information on cultural events, China-related education, or scholarships.

However, the embassy also operates a Facebook and a Twitter link. The official Facebook page is mainly in English and was created in October 2019. It has more than 1,000 followers. Both Facebook and Twitter pages show regular activity, and the amount of Hungarian content is also growing. The China Cultural Center in Budapest is the official cultural institute of China in Hungary with a very active Facebook page. Since its creation in June 2020, the page has attracted more than 2,300 followers. The center posts regularly in Hungarian and Chinese.

Interestingly, we can find virtually no official Chinese government WeChat accounts targeting the Chinese diaspora in Hungary. The Chinese embassy in Hungary does not have an official channel, which is quite strange as the Chinese Embassies in Poland, the Czech Republic or Romania all have one. Chinese newspapers, magazines, or news agencies with an office in Budapest, like Xinhua News Agency, Economic Daily, or other government agencies like Chinese National Tourism Bureau also do not have a dedicated official WeChat account for Hungary. Only the China Cultural Center in Budapest seems to have an official Chinese presence on WeChat.

The only logical explanation we can find for this is that the Chinese diaspora creates enough and acceptable content so that the government does not need to create separate official channels for its content, but it is possible to channel their messages through the existing platforms of the local Chinese community.

Apart from the relatively active Facebook pages of the Chinese Embassy and the China Cultural Centre in Budapest, there are several other Facebook pages, such as China Radio International (CRI) in Hungarian with a massive 74,000 followers. Just like its international counterparts, BBC and VOA, CRI has also established various channels to broadcast China internationally (Chen – Colapinto – Luo, 2010, p. 5). The local language websites, radio broadcasts and social media pages are all part of this

international online service. In Hungary, there is another tourism-related CRI offshoot page on Facebook called China's Charm (Kína csábereje), which has 23,000 followers.

There are also five Confucius Institutes (CIs) in Hungary located in five different cities (Budapest, Szeged, Miskolc, Pécs and Debrecen). The Confucius Institutes are commonly considered "dragon-slayers" or "spying centers", although on the other hand, China's public diplomacy claims that CIs can serve as a "Great Stage of Facebook Outreach", due to their partnership with the host university, non-profit, unofficial status, and their cultural and educational quality background (Gong, 2014). The Hungarian example shows the latter.

All institutes in Hungary offer colorful cultural and educational activities, well beyond the obligatory programs often attributed to CIs. This is mainly due to the fact, that the Institutes create their programs based on the cooperation between the Chinese staff and sinologists working in the institutes, therefore creating localized programs compatible with the Hungarian audience's interest. Also, the case of the Institute at the University of Szeged shows clearly the possibility, that Confucius Institutes are able to facilitate and call into existence actual scientific China-studies at their host university (SZTEInfo, 2021).

All CIs have Hungarian, English and Chinese websites, all of them have a presence on Facebook, four of them have a YouTube channel and two of them also run an Instagram profile. The five institutes together have almost 9,000 followers on Facebook, which shows a keen interest of the general population in the CIs' work and events. The YouTube channels of the institutes have more than 24,000 views cumulatively. Due to its 15-year history, central location, and the well-established China-research in its university, the videos of the Budapest Institute boast four-fifths of the views.

The Hungarian–Chinese bilingual school in Budapest—also functioning as a Confucius Classroom—has a 15-year history. It has a Hungarian website, a Facebook page with 653 followers, a YouTube channel with 12 subscribers and only two videos, plus an Instagram profile.

In addition to Confucius Institutes and their host universities, several other institutions have established a Chinese department or China-related research, such as Pázmány Péter Catholic University, Károli Gáspár University of Reformed Church in Hungary, University of Public Service, Budapest Corvinus University or Budapest Business School – University of Applied Sciences (Mohr et al., 2019., p. 179). These research bases and other research centers regularly publish their research online. Since the

closures in early 2020 due to the coronavirus epidemic, online teaching has boomed, including Chinese language education. As many Chinese teachers could not come or return to Hungary, they teach Chinese language online directly from China. Pre-recorded lessons, lectures and other study forms have also become very popular.

For the past nearly two decades, all Hungarian governments have taken a China-friendly stance, and despite fierce controversies in domestic politics, it seemed to be an issue commonly supported by all major political parties. In the last decade, the policy of "opening up to the East" and the China-friendly communication have even been reinforced. In 2015, Hungary was the first country to sign an agreement with China related to the One Belt One Road plan (Reuters, 2015). In 2019, Hungary again signed an agreement with China in connection with the Digital Silk Road (Béni, 2019).

The Hungarian government and media clearly support China's presence in Chinese language. The Hungarian national central television station m1 and the Duna World Channel have been broadcasting daily news in Chinese since January 2016 (Mohr et al., 2019, p. 170). The videos are also available on the public media's dedicated YouTube channel Mediaklikk. We do not have data from the Chinese community on views of the live news; YouTube access numbers are roughly in the range of 100-400 views per broadcast.

There are also some other examples of providing information in Chinese to the local community, such as the website of the Hungarian Tax Authority, which provides information in Chinese as well. The project was initiated and implemented by the School of Eastern Languages in Budapest based on a call for tenders from the European Union. According to the Tax Authority, the Chinese homepage has 3000 readers (HVG, 2016).

According to a research about the mentions of China in the local media, the Hungarian government politicians were the dominant opinion leaders influencing public opinion on China in the mainstream media during the study period between 2010 and 2017. Eleven government politicians represented more than a third of all articles, and they made only positive statements about China (Matura, 2018).

3.5. Nonstate Actors

The nonstate actors related to China can be divided into two big groups: the local Hungarians and the Chinese diaspora. Typically, actors of both types mainly provide information in their own language to their own community, but naturally there are many

examples of cross-cooperation and connections. Moreover, both groups build their own community also through real-life activities, so their digital presence is often just an auxiliary channel for this. Later on, nonstate actors will be introduced separately in the following categories: business sector, social organizations, and influencers.

As mentioned above, the Chinese population in Hungary is about 20-25,000 people, with a very well-developed community life. In the last three decades, many Chinese-language newspapers have been established and distributed. In the 1990s, there were about nine or ten Chinese print newspapers, but nowadays there are only two major ones published in Hungary. The publishers do not only rely on the newspaper business, but also run language schools, advertising agencies, event organizing companies and other business enterprises (Csurgó – Előd, 2018).

The Chinese diaspora in Hungary communicates mainly on WeChat. If we search for the Chinese word "Hungary" (*Xiongyali*) among the official WeChat channels, we can find 131 results (this is not a comprehensive list of official WeChat accounts related to Hungary, but only those that include "Hungary" in their name). Within this result, there are some channels maintained by Hungary or Hungarians, such as the official WeChat channel for the Hungarian diplomatic missions in China, the Hungarian Tourism Agency, etc. There are also some companies, tourism agencies, consultants, real estate companies, investment opportunities, language groups and schools, study abroad channels and blogs. We can also find a few civil organizations, such as Mutual Assistance Association of Chinese Parents in Hungary (*Xiongyali Jiazhang Huzhu Liangmeng*), or the Clansmen Association of Qingtian County (*Xiongyali Qingtian Tongxianghui*).

Not only has there been a longstanding China-friendly political climate in Hungary, but we can also sense a longstanding interest in China. Having a common understanding of Eastern ancestry, Hungarians have already started the scientific exploration of China in the 19th century (Salát, 2009). The Chinese community in Hungary is well-accepted by the locals, and many of the second-generation of locally raised Chinese children still remain in Hungary, despite the rapidly growing xenophobia; their online socializing is based on the international social networking sites, such as Facebook (Nyíri, 2014, p. 1260).

3.6. The Business Sector

When examining China's digital presence in Hungary, we should also look at the representatives of the business sector. In 2005, the Hungarian Chamber of Commerce and Industry established the Committee of Hungarian–Chinese Relations and is

mainly engaged in organizing business events, seminars, forums, and webinars; receiving Chinese delegations and organizing the Chinese visit of Hungarian delegations; compiling a monthly newsletter for members; providing business information and acting as a representative organization. The Committee does not have a Facebook or other social media page but provides detailed information about online events in its regular newsletter.

The ChinaCham Hungary Hungarian–Chinese Chamber of Economy was founded in 2003 to support Hungarian businesses in the form of a non-profit association. The main objective of ChinaCham is to provide services to SMEs to help them explore, find, establish, and operate effective collaborations with Chinese companies. ChinaCham organizes regular events for its member companies, such as conferences, business seminars and a monthly ChinaCham Business Club. It has a website in Hungarian, English and Chinese, and has more than 700 followers on Facebook.

As for Chinese companies, digital device manufacturers, such as Huawei or ZTE, are also investors in Hungary, and these brands contribute greatly to the formation of public opinion about China. There are some negative stereotypes of public opinion about China, especially about the cheap and low-quality products—although this rather reflects the Hungarian market demand—but in terms of digital devices, cheap Chinese products do not necessarily represent poor quality, and even high-quality and expensive branded digital products from China are already widely accepted.

E-shopping for Chinese goods and digital devices is a particularly popular aspect of China in Hungary. Due to the low price, acceptable quality, extremely wide range of products and relatively cheap or free delivery, despite the extremely long delivery time, it is very popular to order everyday items from the numerous Chinese online shopping platforms. There are several Hungarian webshops that offer a direct shopping option, and there are also many test sites in Hungarian, with introductions, tests, news, and direct links to product pages in Chinese web shops. Besides several other web and Facebook pages, one of the most popular pages is RendeljKínait (OrderChinese), with more than 23,000 followers on Facebook.

There are also many Facebook groups dedicated to ordering products from Chinese webshops. Some examples are "Wish, Aliexpress: All in one place" with 34,700 members, "Group of people ordering from China" with 16,500 members, affiliated to the website RendeljKínait, "Group of people buying from China" with 11,700 members, "Aliexpress Hungarian Community" has 13,700 members and "Xiaomi Fans" also has 6,100 members. There are thematic groups, such as "Fishing from Aliexpress"

with 12,600 members and even the "Site of Chinese private label knives" has 1,500 members. The above data clearly show that one of the most popular and welcome digital presences of China is related to the cheap products and easy availability from Chinese webshops.

It is also interesting to point out that despite the massive Chinese population in Hungary, almost no local or international non-Chinese companies offer online services in Chinese on WeChat. One example is Magyar Telekom (Hungarian Telecom), which opened a Chinese-language storefront in Budapest's 8th district, and has an official WeChat account set up, but which seems to have had no new posts since 2017.

The two mainstream newspapers are published online, but the print version is still available for free in most Chinese supermarkets or restaurants (Csurgó – Előd, 2018). Besides the online edition on the website, the New Review has a Facebook and a Weibo page and also runs a mobile application and a YouTube channel, with only 15 subscribers, the most popular video had only 618 views. Their Facebook page is a personal page, not an institutional one, with nearly 3000 friends. The New Review article "Chinese vaccine is really coming to Hungary!" on January 15, 2021 had a WeChat read count of 3,343, while on the same day on Facebook there was only one Chinese post about the ambassador's New Year greetings.

In the case of United News, their Facebook article on January 15, 2021 about the disease situation in Hungary had a WeChat read count of 1,448, but their Facebook post about the ambassador's New Year greetings letter received 8 likes. United News also runs a Twitter page with 155 followers and a YouTube channel with 38 subscribers. Their most viewed video about "Chinatown by the River Danube" reached more than 5,000 views.

There is another relatively small but well-known news media called Chinese Headline New Media (Huaren Toutiao, CHNM). CHNM is an online news network and is a repetitive name on Facebook for overseas Chinese news sites. CHNM in Hungary has 290 followers on Facebook, 141 followers on Twitter. CHNM does not run an official WeChat account, but the individual user behind CHNM shares articles on his own WeChat account's post sharing platform (Moments). He also runs a successful YouTube channel with more than 1,500 subscribers. His most popular video has nothing to do with Hungary, but it has been watched by almost one million people.

3.7. The Civil Sector

Among the 105 results for the Chinese word "Hungary" (*Xiongyali*) on Facebook, there are several place or organization pages from Hungary, such as the Hungarian Central Television, Hungarian Central Bank, some museums, football clubs, church districts, health care providers, and geographic locations that probably only include the string "Xiongyali" in their names or description tags. The few that are worth mentioning are the Hungarian Chinese Christian Church with 600 followers, the Hungarian Chan Buddhist Church with 514 followers, the Puji Temple Budapest with 645 followers, and the Hungarian–Chinese Cultural Association with 1,100 followers.

There are some well-known opinionated civil organizations in Hungary related to China. The Hungarian–Chinese Friendship Society (MKBT) was founded in 1959, it is the oldest civilian organization in Hungary promoting the Hungarian–Chinese friendship and cultural exchange. The new and young leadership of MKBT has successfully increased the visibility of the association, not only through its colorful events, but also in the virtual space, so that more people have become aware of the cultural relations between Hungary and China. The MKBT has a website, runs an active Facebook page with 1,734 followers and has an Instagram profile with 54 followers. The Great Wall Hungarian-Chinese Friendship Association is another organization with similar goals, it has 680 followers on Facebook and shows regular online activity, but the link to the website is broken, or the website is down. According to Internet Archive Wayback Machine, the last snapshot of the association's website was saved in 2013.

The Chinese Art Center (formerly known as Center of Chinese Culture and Arts) was founded in 1995. It is the best-known China-related arts and culture non-profit organization in Hungary, organizing or actively participating in many of the China-related arts and culture programs in Hungary. The center has 2,752 followers on its Facebook page, with regular, roughly weekly posts. It also has a LinkedIn page with 88 followers. The Chinese Art Center has a few affiliated schools that popularize different aspects of Chinese art, such as music, calligraphy, and martial arts. The individual schools also have their Facebook pages or websites.

The Hungarian–Chinese Cultural Association has 1,100 followers on Facebook and is directly related to the Hungary New Review newspaper. The association targets both the Chinese and Hungarian communities. The Cinema Hungarian–Chinese Art and Cultural Association is a cooperation between Chinese and Hungarian filmmakers. The association has a Hungarian website and a Facebook page with 795 followers.

Sports and leisure are also represented. There are several clubs for wushu, kung-fu and various branches of Chinese Martial Art throughout Hungary, with some online presence, undeniably contributing to the local presence and recognition of China. There are also some other representatives of less known Chinese sports, such as Mediball Association with more than 2,500 followers on its Facebook page, or the Hungarian Shuttlecock Association with 1,300 Facebook followers and 128 YouTube subscribers.

Some popular public Facebook groups also worth mentioning, such as the Hungarian–Chinese Meeting with 2,700 members, the Chinese–Hungarian Community Page with 5,400 members or the Daily Chinese with 1,500 members. These groups are mainly platforms for meetings and information exchange for those who have a general interest in China.

The number of Chinese students in Hungary has been growing steadily. At the beginning of 2020, there were 2,772 Chinese students studying in Hungarian universities (Alon, 2020). Chinese students form student associations. Such organizations are usually closed groups, but the "Chinese Student in Budapest" is a public group with 1,500 members.

Unlike Korean K-pop or Japanese Anime and manga, the actors in the field of culture are not very well-known and there is no popular contemporary cultural product from China yet that could become a success story. Chinese culture is very interesting, but highly complex and too difficult to understand, therefore not very attractive and popular. The Confucius Institutes organize many cultural events, many of them also available online, but these events still reach only a limited number of people.

Chinese cuisine is much easier to digest, even in the online space. The "Foodies Guide Chinatown Budapest" Facebook group has nearly 3,000 members. There are some other Facebook pages that help people understand Chinese food and restaurants in Hungary, and many Chinese restaurants have their own website and Facebook page. Chefs and gastro-vloggers are described in the next chapter.

There are some other popular and positive phenomena of Chinese culture. One of them is the Traditional Chinese Medicine (TCM). The public TCM Facebook group has more than 5,000 members and another private group called "Everyday Chinese Medicine" has 4,700 members. Kung-Fu, Martial Arts, calligraphy are also among these phenomena as mentioned earlier. Chinese Astrology and Fengshui, as part of mystical esotericism are distorted from their original Chinese meaning and background, but are still quite popular.

3.8. Influencers and Other Individuals

The ChinafluenCE's Media Analysis on Hungary paints a clear, statistical picture of the number of articles published in the Hungarian media about China in relation to politics or economics. From the analysis, we can draw the conclusion, that the widespread image of China in Hungary is primarily shaped by individual politicians. The studies show that the positive image of China originates predominantly from government politicians. Politicians from the opposition are not represented among the opinion-makers about China. Since the outbreak of coronavirus—with the 2022 Hungarian elections surfacing on the horizon—a large number of negative opinions are appearing, partly voiced by the opposition politicians, as a part of the anti-government protest. Although we found no available research on the recent wave of negative news about China, mostly about the Chinese vaccine or the Fudan University, but it seems that an anti-China spirit is flared up in the Hungarian public and turning into a new one of the many fault lines of Hungarian politics.

ChinafluenCE analysis is a summary of 3,921 Hungarian media articles between 2010–2017. According to the study, the topics of the articles were mainly focused on political, economic, and bilateral relations. Sensitive issues such as human rights, Tibet or the protection of intellectual property rights were hardly mentioned (Matura, 2018). The analysis shows that the number of China-related articles was quite stable during the study period, with a peak only during the People's National Congress in 2013. The approach or angle of the articles was strongly influenced by the Hungarian political position of the respective media or author. In more than 52 percent of the articles, the original source was the Hungarian News Agency (MTI), so only less than half of the articles were produced by other media. Notwithstanding the fact that most of the articles were pragmatic and neutral, the rate of articles with a negative tone has shown a growing trend, from 6 percent in 2010 to 15 percent in 2017 (Ibid.).

According to the analysis, the list of opinion leaders in Hungary about China is surprisingly short compared to the Czech Republic or Slovakia. Fewer than seventy people have commented on the issue more than three times in the entire period, and only fourteen have commented twice in each year between 2010 and 2017. In the nearly four thousand articles, there are a total of 764 speeches by various opinion makers. Thus, public opinion in the mainstream media is influenced by a few domestic opinion makers about China (Ibid.).

The opinion makers are partly dominated by government politicians, although there were only eleven among the seventy opinion makers, who account for 38 percent

of all articles. Members of the opposition, on the other hand, are not represented among the seventy. Government members and politicians made the most positive statements, without any negative tone. On the other hand, journalists proved to be the most critical. This group accounted for two-thirds of the opinion leaders. 19 percent of their articles had a negative tone and only 5 percent a positive one. The so-called "pro-government" media and journalists were less critical of China than the other media and journalists. Experts and researchers play a very modest role in forming the public opinion on China-matters (Ibid.).

According to Nye (2004, p. 17), "private sources of soft power are likely to become increasingly important in the global information age". Looking at this statement today, in the age of the new social media, it proved to be extremely true. Due to the three-decade history of the Chinese community in Hungary, there are already some second-generation Chinese-born influencers on various social media platforms, such as short-track speedskater Liu Shaolin Sándor and his brother Liu Shaoang. They play a significant role in shaping a positive China image among the locals (Mohr et al., 2019, p. 172).

There are few vlogs and YouTube channels run by Chinese individuals targeting Hungarians. Lu Zhao Luca's vlog with 33,800 subscribers is worth mentioning, although she defines herself as a "Hungarian with Chinese roots", but many of her videos are about Chinese culture and behavior. Her most popular video about the coronavirus reached 645,000 views. Master Wang is a well-known chef, who runs popular Chinese restaurants in Budapest. His Facebook page has 17,000 followers and his YouTube channel has more than 3,000 subscribers. One of his videos has received more than 111,000 views, but the video about him by popular gastroblogger Fördős Zé and the Chinese gastronomy video on the Street Kitchen channel reached 846,000 views.

It is worth mentioning that besides the popular social media channels, such as Facebook, Instagram, TikTok (it is also a social platform of Chinese origin, so it serves as an example of indirect Chinese digital presence), the Chinese community in Hungary and in the world prefers WeChat, not only as a communication channel, but also as a platform for sharing posts through WeChat Moments. In our personal experience, Chinese individuals and groups who are in Hungary also rely heavily on receiving news from WeChat, especially from local Chinese media outlets, such as Xin Daobao (New Review) among others, which provide timely translations of important Hungarian news articles along with self-produced news content. Chinese people tend to share news among themselves or read and post them in their WeChat Moments.

Therefore, much of the communication of the local Chinese community remains hidden from Hungarian eyes. While relevant data on the prevalence of WeChat among local Chinese could not be found, in our personal experience, every single Chinese in Hungary who owns a mobile phone has WeChat installed and uses it frequently.

Some Chinese people in Hungary are also quite active on other social media platforms that are more popular among locals, such as Facebook or Instagram. However, figures in this regard could not be detected, although it is certain that many more Chinese in Hungary use WeChat rather than Facebook or Instagram, due to their connections in China or WeChat payment, which is already possible in Hungary, as Budapest Airport was among the first in Europe to introduce WeChat and Alipay payment systems (Budapest Airport, 2019). Also, WeChat is the tool with which they can maintain connections with their countrymen in China, as most of the Western social media is banned or restricted in China.

Public opinion is also formed through social media of all kinds. There are many blogs and vlogs about China by travelers, students, photographers, and people living in China, among others. However, the popularity and number of views of the blogs are difficult to confirm. Vlogs have a number of views, so it is easier to find out the real influencers. Csaba Magyarósi's travel-related vlog (380,000 subscribers) includes travel in China and Chinese gastronomy videos with 100-300,000 views. Rita Vizer (almost 19,000 subscribers), who lives in China, runs her YouTube channel from China, and her video about coronavirus in China has been viewed by nearly 500,000 viewers. Lilla's vlog (35,000 subscribers) describes Lilla Horváth's life in China, and the most popular video is her self-introduction with 138,000 views. There are also a few other vlogs with several thousand views.

4. Conclusion

The results of the research confirmed the preliminary assumptions that the image of China in the Hungarian society is based on quite limited information. The Chinese diaspora in Hungary, as well as the people and groups interested in various aspects of Chinese culture can create only a very limited online presence and able to connect merely to a relatively small number of people. Chinese cuisine, travel, food, kung-fu can create a certain amount of interest, but we could not find any other part of popular Chinese culture that would create a common public appreciation.

On the other hand, the perception of China seems to be directly connected with politics. The governing parties have been proved to maintain a friendly attitude towards China during the last two decades, and the Eastern descent of the Hungarians also created a general China-friendly atmosphere. However, the growing negative attitude of Western Europe and the US towards China and the recent negative news in Hungary about the Chinese vaccine or the Fudan University are dominating the public opinion and boosting distrust in China. China has no visible successful strategy yet to help the anchoring of the traditional cultural values of China in people's mind against the significant headwind of negative judgement and to pursue the Western community to appreciate China without political overtones.

From the point of view of bilateral relations between Hungary and China, it is encouraging that China's cultural values are increasingly present in Hungarian education, and that these values are also reflected in the digital space. Human relations that promote mutual knowledge, and appreciation of each other's culture can be the most important key to understand China and to further a peaceful common development.

References

About Hungary (2017): Hungary halts residency bond scheme. [online] available: http://abouthungary.hu/news-in-brief/hungary-halts-residency-bond-scheme/

Alon (2020): Koronavírus – Az egyetemek felkészültek: 2772 kínai hallgató tanul Magyarországon [Coronavirus – The Universities are ready: 2772 Chinese students study in Hungary]. [online] available: https://www.alon.hu/aktualis/2020/02/koronavirus-a-magyar-felsooktatas-felkeszult-2772-kinai-hallgato-tanul-a-magyar-felsooktatasi-intezmenyekben

Beech, H. (2015): The Other Side of the Great Firewall. Time. Beijing, June 11, 2015. Volume 185, No. 23. [online] available: https://time.com/magazine/south-pacific/3917933/june-22th-2015-vol-185-no-23-asia-europe-middle-east-and-africa-south-pacific/

Béni, A. (2019): Orbán: One belt, one road initiative in line with Hungary's interests. Daily News Hungary. [online] available: https://dailynewshungary.com/orban-one-belt-one-road-initiative-in-line-with-hungarys-interests/

Brandt, J. – Schafer, B. (2020): How China's 'wolf warrior' diplomats use and abuse Twitter. Brookings Institution, October 28, 2020. [online] available: https://www.brookings.edu/techstream/how-chinas-wolf-warrior-diplomats-use-and-abuse-twitter/

Budapest Airport (2019): Budapest Airport among the first in Europe to introduce multiple Chinese payment systems. [online] available: https://www.bud.hu/en/passengers/tips_and_offers/tips/news/budapest_airport_among_the_first_in_europe_to_introduce_multiple_chinese_payment_systems.html

Chen, C. C. – Colapinto, C. – Luo, Q. (2010): China Radio International in the Digital Age: Propagating China on the Global Scenario. Global Media Journal, 2010. Volume 9, Issue 16. [online] available: https://www.globalmediajournal.com/open-access/china-radio-international-in-the-digital-age-propagating-china-on-the-global-scenario.pdf

Cull, N. J. (2006): "Public Diplomacy" Before Gullion: The Evolution of a Phrase. USC Center on Public Diplomacy. [online] available: https://uscpublicdiplomacy.org/blog/public-diplomacy-gullion-evolution-phrase

Economist (2017): What to do about China's "sharp power". The Economist, December 14, 2017. [online] available: https://www.economist.com/leaders/2017/12/14/what-to-do-about-chinas-sharp-power

Előd, F. – Csurgó, D. (2018): Bejártuk a budapesti kínaiak zárt világát. [We have explored the closed world of the Chinese people in Budapest]. Index.hu, 2018. [online] available: https://index.hu/gazdasag/2018/09/16/tarsadalom_kinaiak_budapesten_longform_kinai_negyed/

Encyclopaedia Britannica (n.d.): Public Diplomacy. [online] available: https://www.britannica.com/topic/public-diplomacy

Gibson, J. (2020): How South Korean Pop Culture Can Be a Source of Soft Power. In.: Lee, C. M. – Botto, K. (Eds.): The Case for South Korean Soft Power. [online] available: https://carnegieendowment.org/2020/12/15/how-south-korean-pop-culture-can-be-source-of-soft-power-pub-83411

Glaser, B. – Murphy, M. (2009): Soft Power with Chinese Characteristics: The Ongoing Debate. In.: McGiffert, Carola (Dir.): Chinese Soft Power and its Implications for the United States – Competition and Cooperation in the Developing World, Washington, Center for Strategic and International Studies (CSIS), 2009, pp. 10-27.

Gong, C. (2014): Social Media and China's Public Diplomacy: A Path to the Future. Conference: The 5th ECPR Graduate Students Conference at: Innsbruck, Austria, July 2014. [online] available: https://www.researchgate.net/publication/265397582_Social_Media_and_China%27s_Public_Diplomacy_A_Path_to_the_Future

Hanban (n.d.): Guanuyu Kongzi Xueyuan / Ketang. (About Confucius Institutes and Classrooms. [online] available: https://web.archive.org/web/20210113044953/http://www.hanban.org/confuciousinstitutes/node_10961.htm

Hanson, F. (2010): A Digital DFAT: Joining the 21st Century. Sydney, Australia: Lowy Institute for International Policy. [online] available: http://lowyinstitute.richmedia-server.com/sound/A_digital_DFAT.pdf

Hao, S. (2019): Zhongguo weishenme juebuhui zoushang "Qiangguo bi ba"de daolu. [Why will China never embark on the path of "a strong country must hegemony"]. China Commission of Discipline Inspection, November 11, 2019. [online] available: http://www.ccdi.gov.cn/yaowen/201911/t20191112_204238.html

Huang, Y. – Wang, X. – Wang, X. (2020): Mobile Payment in China: Practice and Its Effects. Asian Economic Papers, Volume 19, No. 3., pp. 1-18. [online] available: https://econpapers.repec.org/article/tprasiaec/v_3a19_3ay_3a2020_3ai_3a3_3ap_3a1-18.htm

Hjortdal, M. (2011): China's Use of Cyber Warfare: Espionage Meets Strategic Deterrence. Journal of Strategic Security, Volume 4, No. 2., pp. 1-24. [online] available: https://scholarcommons.usf.edu/jss/vol4/iss2/2

HVG (2014): Csak a magyar adóhatóság honlapja tud kínaiul. [Only the Hungarian Tax Authority's webpage speaks Chinese]. Hvg.hu. [online] available: https://hvg.hu/kkv/2014025_Haromezer_kinai_bongeszi_a_NAV_honlapjat

Joske, A. (2019): Reorganizing the United Front Work Department: New Structures for a New Era of Diaspora and Religious Affairs Work. China Brief, Volume 19, Issue 9. [online] available: https://jamestown.org/program/reorganizing-the-united-front-work-department-new-structures-for-a-new-era-of-diaspora-and-religious-affairs-work/

Karásková, I. –Blablová, V. (2021): The Logic of China's Vaccine Diplomacy. An in-depth look at where China's vaccines are going hints at the motivations behind the campaign. The Diplomat, March 24, 2021. [online] available: https://thediplomat.com/2021/03/the-logic-of-chinas-vaccine-diplomacy/

Keane, M. – Yu, H. (2019): A Digital Empire in the Making: China's Outbound Digital Platforms. International Journal of Communication, Volume 13, pp. 4624–4641.

Kurlantzick, J. (2007): Charm Offensive. How China's Soft Power is Transforming the World. Yale University

Lee, J. (2017): The rise of China's tech sector: The making of an internet empire. Lowy Institute, The Interpreter. May 4, 2017. [online] available: https://johnmenadue.com/john-lee-the-rise-of-chinas-tech-sector-the-making-of-an-internet-empire/

Li, H. (2012): The Chinese Diaspora and China's Public Diplomacy: Contentious Politics for the Beijing Olympic Float in the Pasadena Rose Parade. International Journal of Communication. Volume 6., pp. 2245–2279. [online] available: https://ijoc.org/index.php/ijoc/article/viewFile/718/792

Li, M. (2012): The Chinese in Europe: population, economy and links with qiaoxiang in the early twenty-first century. In.: Chee-Beng, T. (Ed.): Routledge Handbook of the Chinese Diaspora. London; New York: Routledge. pp. 261-274.

Licskay, P. (2021): Fudan University's Budapest campus to be constructed by a Chinese company involved in spying scandals? Daily News Hungary, April 7, 2021. [online] available: https://dailynewshungary.com/fudan-universitys-budapest-campus-to-be-constructed-by-chinese-company-with-chinese-loan/

Matura, T. (2018): A kínai jelenlét Magyarországon. [The Chinese presence in Hungary]. Amo.cz. [online] available: https://www.chinfluence.eu/wp-content/uploads/2018/06/AMO_A-k%C3%ADnai-jelenlét-Magyarországon.pdf

Mohr, R. – Osváth, G. – Sato, N. – Székács, A. (2019): Japán, kínai és koreai üzleti kultúra. Távol-keleti menedzsment interkulturális és gyakorlati nézőpontból. [Japanese, Chinese and Korean Business Culture. Far-Eastern management from an intercultural and practical viewpoint]. Budapest Business School. OBIC Book Series. Budapest

Nye, J. S., Jr. (2004): Soft power: the means to success in politics. Public Affairs, Perseus Book Group. New York

Nye, J. S. Jr. (2019): Soft Power 2.0: The Future of Power in the Digital Age. Dubai Policy Review. [online] available: https://dubaipolicyreview.ae/soft-power-2-0/

Nyíri, P. (1999): Új ázsiai migráció Kelet-Európába: a magyarországi kínaiak. [New Asian migriation to Eastern Europe: the Chinese people in Hungary]. Regio. Volume 10, No. 3-4., pp. 93-104.

Nyíri, P. (2000): Kivándorolni hazafias? – Peking szerepe a kínai diaszpóra identitásépítésében. [Is emigrate patriotic? – Beijing's role in building the identity of the Chinese diaspora] In.: Sík, E. – Tóth, J. (Eds.): Diskurzusok a kivándorlásról. [Discourses on emigration]. Hungarian Aceademy of Sciences, Centre for Social Sciences, Institute for Minority Studies. Budapest, pp. 82-91.

Nyíri, P. (2007): Chinese in Eastern Europe and Russia. A middleman minority in a transnational era. Routledge

Nyíri, P. (2014): Training for transnationalism: Chinese children in Hungary. Ethnic and Racial Studies, Volume 37, No. 7, pp. 1253-1263.

Reuters (2015): Hungary first European country to sign up for China Silk Road plan. [online] available: https://www.reuters.com/article/us-china-hungary-idUSKBN0ON01W20150607

Salát, G. (2009): Budapesttől Pekingig, a magyar–kínai kapcsolatok múltja. [From Budapest to Beijing, the past of Hungarian-Chinese relations]. Konfuciusz Krónika, 2009/2. [online] available: http://www.konfuciuszintezet.hu/index.php?menu=muveltseg&almenu=7&cikkszam=49

Salát, G. (2010): Kína puha ereje. [The soft power of China]. Kommentár. Volume 6, pp. 100-113.

Salát, G. (2021): Mind meghalunk egy amerikai-kínai háborúban – podcast Salát Gergellyel. [We all die in an American–Chinese war. Podcast]. Reaktor, 2021. [online] available: https://reaktor.hu/2021/01/25/mind_meghalunk_amerika_kina_haboru_podcast_salat_gergellyel

Shi-Kupfer, K. – Ohlberg, M. (2019): China's Digital Rise. Challenges for Europe. Mercator Institute for China Studies, Berlin. [online] available: https://merics.org/sites/default/files/2020-06/MPOC_No.7_ChinasDigitalRise_web_final_2.pdf

Son, D. (2017): Xi Jinping Thought Vs. Deng Xiaoping Theory. The Diplomat, October 25, 2017. [online] available: https://thediplomat.com/2017/10/xi-jinping-thought-vs-deng-xiaoping-theory/

Statista (n.d.): Number of online shoppers in China from 2009 to 2020. [online] available: https://www.statista.com/statistics/277391/number-of-online-buyers-in-china/

Sun, W. (2012): China's rise and (trans)national connections: the global diasporic Chinese mediasphere. In.: Chee-Beng, T. (Ed.): Routledge Handbook of the Chinese Diaspora. London; New York: Routledge. pp. 433-446.

SZTEInfo (2021): Kínai specializáció a Szegedi Tudományegyetemen. [China-specialization on the University of Szeged]. SZTE Info, January 18, 2021. [online] available: https://u-szeged.hu/sztehirek/2021-januar/kinai-specializacio?objectParentFolderId=19355

Turcsányi, Q. R. – Šimalčík, M. – Kironská, K. – Sedláková, R. et al. (2020): European public opinion on China in the age of COVID-19. Differences and common ground across the

continent. Palacký University Olomouc and Central European Institute of Asian Studies, 2020.

Verkasalo, H. (2016): Why the Mobile Industry Needs to Watch China's Unique Ecosystem. Verto Analytics, May 24, 2016. [online] available: https://vertoanalytics.com/mobile-industry-needs-watch-chinas-unique-ecosystem/

Walker, C. – Ludwig, J. (2017): The Meaning of Sharp Power. How Authoritarian States Project Influence. Foreign Affairs, November 16, 2017. [online] available: https://www.foreignaffairs.com/articles/china/2017-11-16/meaning-sharp-power

Wang, C. (2016): Shuzi waijiao de lishi kaocha yu weilai qushi. [Historical investigation and future trends of digital diplomacy]. Chinese Social Sciences Today, August 11, 2016. [online] available: http://www.cssn.cn/sjs/sjs_ycsf/201608/t20160830_3181400.shtml

Yang, J. (2011): Nuli kaituo Zhongguo tese gonggong waijiao xinjumian. [Efforts to open up a new situation in public diplomacy with Chinese characteristics]. The Central People's Government of the People's Republic of China, February 16, 2011. [online] available: http://www.gov.cn/gzdt/2011-02/16/content_1804457.htm

Zhang, L. (2012): A Chinese perspective on cyber war. International Review of the Red Cross. Volume 94, No. 886. [online] available: https://international-review.icrc.org/sites/default/files/irrc-886-zhang.pdf

Zhang, L. – Chen, S. (2019): China's Digital Economy: Opportunities and Risks. Working Paper No. 19/16. [online] available: https://www.imf.org/-/media/Files/Publications/WP/2019/wp1916.ashx

Zhao, Q. (2013): Gonggong waijiao he kuawenhua jiaoliu. [Public diplomacy and intercultural communication]. Raduga.com, China Social Sciences Academic Press Digital Communication Platform for Chinese Social Science Books in the Russian-speaking Region. [online] available: http://www.raduga.com.cn/skwx_eypt/LiteratureReading.aspx?ID=304480

Security or Insecurity: The Role of Chinese Vendors in 5G The Hungarian Perspective

Esztella Fazekas

1. Internet of Everything

Internet of Everything (IoE) is woven into the fabric of our life, revolutionizing every aspect of it. The development of communication technologies has been moving fast ever since it evolved from very limited connectivity to hyperconnectivity and super-fast broadbands. "The Internet of Everything (IoE) is the next evolutionary stage of the Internet of Things (IoT). The Internet of Everything is described as the networked connections between smart devices, people, processes and data" (Kalyani – Sharma, 2015), and moves further beyond IoT, the concept embracing only networked, inter-connected physical objects. In a few years, the current 4G networks will not be able to support the increased data traffic, reduced end-to end latency needs, the increased network speed, quality, the security and availability requirements generated by IoE, increases the capacity needs of current networks as we move towards data-driven-economy.

Wide-spread, exponentially growing application and use-cases of IoE has been observed recently with life rapidly going on-line due to the Covid-19 pandemic. The use of IoE proved the need for tailored, customer-specific solutions. End-users and the different industrial or governmental players have different requirements towards 5G networks. On the end-user side it is expected that they will require improved virtual and media experience, for example by using VR and AR technologies for improved entertainment (streaming), learning and high-speed gaming, and for uninterrupted video calls or for social media purposes. For end-users 5G offers vastly increased bandwidth and decreased latency compared to existing 4G services. The industry will benefit from the increased operation of automated factories, artificial intelligence, robotics, connectivity, low operating and energy costs of various devices (e.g., remote controlled machines, tracking systems, big data, SMART metering etc.) implemented on top of the 5G network. In addition, IoE is not only transforming a wide range of industries but by giving machines the ability to connect and communicate with each other, it leads to the development of "SMART" solutions from self-driving vehicles, SMART homes, SMART health and ultimately to SMART cities. The operation

of these complex systems will require massive reliability with sub-millisecond latency.

These newly emerging technologies and communication devices are the catalysts of massive accumulation of data which can be turned into knowledge and into revenue. Data is a source of value which, when accessed, analyzed and used with wisdom, provides endless opportunities to tap into new markets, create extra profit, so no wonder that it is of utmost interest of governments to maintain monopoly to data and data use as their strategic asset.

2. International Context of 5G

Data is the new gold, therefore there is a fierce competition on the 5G market that goes beyond international companies competing with each other and which can only be understood by considering the larger geopolitical context: the intensifying political, economic and technological rivalry between the US and China for world hegemony. What is seen today is a shift from a unipolar word, with the absolute dominance of US to a multipolar world involving China and US.

The recent years have seen an overpoliticized 5G and severe restrictions on the 5G market towards Chinese companies, influenced by US interests. The US has launched The Clean Network program: "a comprehensive approach to safeguarding the nation's assets including citizens' privacy and companies' most sensitive information from aggressive intrusions by malign actors, such as the Chinese Communist Party" (US Department of State, 2020). Protectionist measures of the US are wrapped in security concerns towards the dominant Chinese players (Huawei and ZTE) and they can be explained by the US losing its competitive position on the field of 5G and their insecurity in losing their global hegemony. There are barely any major US suppliers of 5G technology, not to mention US vendors that can provide end-to-end 5G systems, like Huawei does. No wonder that President Trump stated that "we cannot allow any other country to out-compete the United States in this powerful industry of the future" and he has urged American companies to "step up", compete to provide the next generation 5G services. In relation to the 5G, "US officials urged allies in bilateral meetings not to use Huawei equipment over concerns that it could enable eavesdropping by authoritarian regimes" (Fung, 2019).

Protectionist measures are not only the characteristics of the US. China is equally protective, which forces the European Union to strive for more balanced, reciprocal

trade relations and to push China to deliver more on their commitments towards the EU. However, the EU's negotiating position with China is weakened by the lack of unity, un-coordinated efforts and by the divergent political interests of the EU Member States towards China. This, coupled with the weakened EU–US relations under the Trump administration, might pave the way to China's further growing influence across the EU. The latest sign of this is the trade deal signed between the EU and China in the last week of 2020 just before the end of German Chancellor Merkel tenure and before the inauguration of the new US President, Joseph R. Biden Jr. (Erlanger, 2021).

Before the Trump administration, the United States and the European Union were stronger allies. The Trump administration, however, deteriorated the EU–US trade relations[1] and even though under the new US Government formal transatlantic trade discussions with the EU might re-open,[2] the EU's relationship with the US has become more fragile and distanced, pushing the EU towards striving for a more balanced US–China trade-, and diplomatic relations and towards a more sovereign path.

3. The EU Legislative Background

Ensuring sovereignty on the field of 5G networks—considered as critical infrastructure—is the major objective of the European Union. The European Union will not compromise on the security of the new 5G networks, even though it is lagging behind in 5G rollout in the international competition. Internationally, the US, China, South Korea and Japan lead the way in the commercial 5G rollout, while the EU is facing delays due to postponements in spectrum frequency auctions as a result of the coronavirus crisis. Based on the GSMA Mobile Economy 2020 report, it is estimated that by 2025, 5G penetration will be close to 50 percent of the total connections in China, Japan, South Korea and the US, whereas in the case of Europe the same figure is estimated to be 34 percent (GSMA Association, 2020, p. 10).

The EU-China relation in the field of 5G networks can be characterized by cooperation and competition. It started in a positive tone in 2009 and has been reinforced in the "EU-China 2020 Strategic Agenda for Cooperation" in 2013. In 2015, a "EU-China Joint Declaration on strategic cooperation in the area of the fifth generation of mobile

1 Due to US trade deficit with Europe.
2 On the first day of his presidency, President Joe Biden issued orders to re-join the World Health Organization and the Paris Climate Agreement.

communication networks" (European Commission, 2015) was signed in Beijing with strong commitments on both sides to cooperate along the following lines:

- "reach a global understanding on the concept, basic functionalities, key technologies and time plan for 5G,
- explore possibilities in cooperating and implementing joint research actions in the area of 5G and to facilitate bilateral participation of enterprises in 5G research projects in China and the EU,
- jointly promote global standardization for 5G,
- cooperate in facilitating the identification of the most promising radio frequency bands to meet the spectrum requirements for 5G,
- explore jointly the possibilities for cooperative research on the services and applications for 5G, especially in the area of the Internet of Things (IoT)".

As a result, business ties rapidly strengthened between the European and Chinese ICT companies. In 2016, to support the deployment and uptake of 5G networks, the Commission presented the "5G Action Plan" (European Commission, 2016).

In 2019, there was a shift in the EU rhetoric, as more cautious tones emerged. In the European Commission's Communication of March 12, 2019 on "EU–China – A strategic outlook", China appeared as "an economic competitor in the pursuit of technological leadership" (Ibid., p. 1) and it was declared to protect "EU industrial competitiveness and strategic autonomy" (Ibid., p. 8). In order to protect the European Union Members' interest, several initiatives and measures have been taken in recent years:

- On March 26, 2019 the European Commission adopted the Recommendation on the cybersecurity of 5G networks[3,4] (European Commission, 2019).
- In October 2019 the EU Coordinated Risk Assessment on Cybersecurity in 5G Networks[5] (European Commission, 2019) report was published.

3 On March 26, 2019, following a call from the European Council, the Commission adopted a Recommendation on Cybersecurity of 5G networks.

4 This Recommendation takes into account the wide-range of instruments already in place to reinforce cooperation against cyber-attacks and enable the EU to act collectively in protecting its economy and society, including the first EU-wide legislation on cybersecurity (Directive on Security of Network and Information Systems), the Cybersecurity Act and the new EU telecoms rules (European Electronic Communications Code).

5 October 9, 2019.'Based on these national risk assessments, Member States—with the support of ENISA and the Commission—published the report.

- On November 21, 2019, the EU Cybersecurity Agency published a report on the "Threat landscape for 5G Networks" (European Union Agency for Cybersecurity, 2019).
- On January 29, 2020 the EU endorsed the Cybersecurity of 5G networks EU Toolbox of risk mitigating measure (European Commission, 2020).
- By April 30, 2020 the Commission called on Member States to take steps to implement the set of measures recommended in the toolbox.
- By June 30, 2020 based on the Member States inputs the Commission presented the Report on Member States' Progress in Implementing the EU Toolbox on 5G Cybersecurity (European Commission, 2020).
- By October 1, 2020, Member States—in cooperation with the Commission—assessed the effects of the Recommendation in order to determine whether there is a need for further action. This assessment takes into account the outcome of the coordinated European risk assessment and of the effectiveness of the measures.

The above-mentioned EU guidelines do not make any explicit references to Chinese vendors but give EU member countries the right to interpret the regulations freely and make their own decisions in what way they will continue doing business with Chinese companies in the establishment of their new 5G networks based on careful consideration of various factors from security concerns to foreign policy and economic implications.

4. The 5G Market and its Trends

4.1. Global 5G Infrastructure Market Trends

The global 5G network equipment market is dominated by four key market players: Huawei, Nokia, Ericson and ZTE, where despite the Covid-19 pandemic, the sanctions imposed by the United States and the shrinking market opportunities for Huawei in Europe, the company have still managed to keep its unquestionable world leading position and their revenue is the double of Nokia's and Ericson's combined figures for 2020, according to the report made by market research firm Dell'Oro Group (Dell'Oro Group, 2020).

Table 1

Top 7 global 5G network equipment suppliers' market share

Top 7 global 5G network equipment suppliers	Year 2019	1Q20 to 3Q2020
Huawei (China)	28%	30%
Nokia (Finland)	16%	15%
Ericson (Sweden)	14%	14%
ZTE (China)	9%	11%
Cisco (US)	7%	6%
Ciena (US)	3%	3%
Samsung (South Korean)	3%	2%

Source: Dell' Oro Group estimates

Based on the annual report of the four biggest 5G network equipment market players, the European market players and Huawei revenue have significantly declined from 2019-2020, while ZTE have realized significant year-on-year revenue increase.

Table 2

Year-on-year increase/decrease in operating revenue (%) for the major 5G network equipment market players

Major 5G network equipment provider	2020	2019
Huawei	3,18	19,1
ZTE	11,81	6,11
Nokia	-6,70*	3,23*
Ericsson	2,24*	7,22*

Source: Annual report of the companies
* Calculated values by the author.

The decline in revenues of the European actors can be partly explained by the pandemic, as several European countries have postponed their 5G spectrum auction for the year 2021.

It further diversifies the picture that although Nokia and Ericson estimate to grow above the market as government initiatives in Europe intensifies, it is still most likely that Asian 5G infrastructure markets,—especially China—will grow more than the European or the American markets with the rapid domestic rollout of 5G. This situation is much more favorable for Huawei and ZTE than for Nokia or Ericsson, which companies are mainly operating in Europe and in the United States.

4.2. 5G Infrastructure Challenges

IoE and 5G architecture developments and implementations go hand-in-hand by mutually reinforcing each other. 5G infrastructure comprises radio assess network (RAN), core network and transport technology (Fortune Business Insights, 2020).

Speeding up 5G network developments is critical, yet it is not without challenges. The launch of 5G requires serious preparations on the national and international legislative sides: governments need to set up the regulatory background and provide new frequencies to telecom network operators, new equipment must be installed by network equipment suppliers on behalf of service providers, and new equipment and applications must be developed by equipment manufacturers and software developers.

From a technological point of view, the 5G networks are more disaggregated and heterogeneous with more components and functions hosted than the earlier 3G or 4G networks. The 5G network is a complex, diverse, and evolving architectural design and ecosystem with various actors. The 5G network is not just building a layer on top of an existing 3G-4G networks, but it is deployed by integrating existing, evolving and new technologies based on various user needs.

Development and deployment costs of 5G are running high to scale the network, enhance the hardware and software technologies and to provide cutting-edge end-user, industry and government product and service solutions. Costs are especially high when it comes to expanding not only the wireless networks but the wired infrastructure too. Network infrastructure developments have very high fixed costs, but without the expansion of the fixed broadband infrastructure IoE requirements of the future will be difficult to meet. For example, in Hungary, depending on the regions, 20-50 percent of the towers are connected to the optical networks, but this should be raised to at least 50-90 percent (Barta, 2020).

IoE requires a fast network that can tie devices and services together, and due to the large amount of data, a high volume of small cells will be required in urban and city environments, more mobile transmission towers are necessary to be connected with optics, in addition to significantly increasing the number of base stations too. To reduce OPEX and CAPEX, optimize infrastructure utilization, network operators and service providers otherwise in strong competition might be better-off to cooperate.

Restricting competition on the 5G market is therefore not in the economic interest of European citizens and industries, nor in the interest of 5G industry's representatives themselves. As Ericsson CEO Borje Ekholm said in an interview in relation to banning Huawei in Sweden: "The decision is restricting free competition and trade". He also added that "the ban will delay the rolling out of the new technology" (Gsmarena, 2020) and it will set back innovation and further weaken the EU' position in the international competition in the 5G field.

5. Huawei and ZTE

5.1. Company Profiles

5.1.1 Huawei

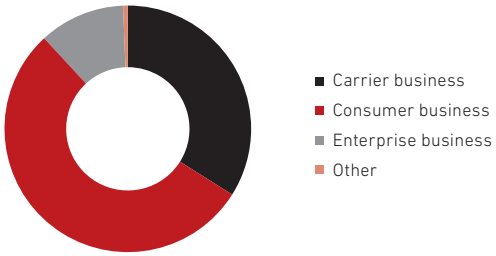
Huawei is a leading global provider of information and communications technology (ICT) infrastructure and smart devices. Huawei is a private company operating in 170 countries, and it is an unquestionable lead force in 5G. Huawei is the only vendor on the commercial 5G market world-wide which can provide end-to-end commercial solutions. According to a new report from research and consulting firm Strategy Analytics (Dano, 2020), Huawei provided more overall contributions to end-to-end 5G and standard setting than any other company in the world. It gained a strong voice in the EU and even in the US, despite all the restrictions against the company.

The company operates in 3 business domains and provides tailored, specific services to all customer segments: Carrier Business, Enterprise Business and Consumer Business, according to the company's annual report (Huawei Investment & Holding Co. Ltd., 2019). The biggest revenue generating business for Huawei is Customer business which includes, developing, manufacturing and selling ICT infrastructure and smart devices such as smartphones, PCs, tablets, wearables, smart audio, smart screen, VR, but also chipsets and operating systems. Huawei's Carrier business is focused on connectivity and cloud & computing, and in particular on information distribution, interaction, transmission, processing, and storage. This business activity is closely connected to the 5G rollout and deployment world-wide. As part of their activities Huawei builds and provides infrastructure for commercial 5G networks; they provide complex infrastructure and service solutions, e.g., 5G Radio Access Networks, 5G Transport Network, optical transport networks, etc. The business also focuses on data infrastructure solutions and building home broadband and providing private line services. The Enterprise Business of Huawei provides solutions to government and enterprise customers by using new ICT

technologies such as artificial intelligence, cloud, big data, Internet of Things, video and data communication to provide products and services that help various industries go digital. These latest mentioned two businesses—especially Huawei's heavy involvement in the infrastructure side—worry the most governments all over the world rather than the consumer business interests of the company. The Huawei Operating Revenue 2020 (CYN) by business units is presented in the figure below:

Figure 1

Huawei Operating Revenue 2020 (CYN)

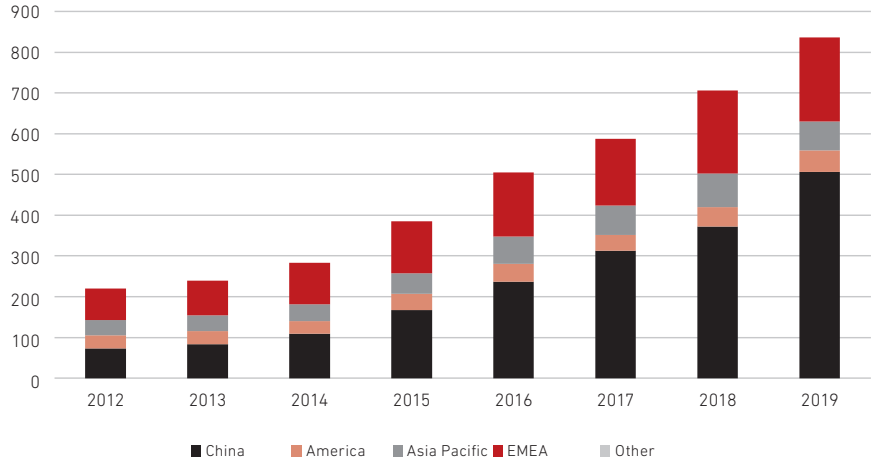


Source: Huawei Investment & Holding Co. Ltd., 2020.

The company's main market is China followed by Europe, the Middle East, and Africa (EMEA), Asia Pacific and the Americas.

Figure 2

Huawei's revenue by geographical region from 2012 to 2019 (CYN)



Source: Statista Research Department, 2020.

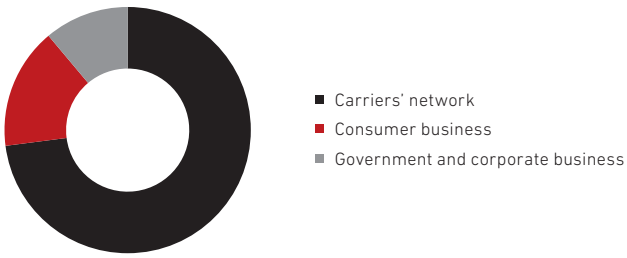
5.1.2. ZTE

Based in Shenzhen, Guangdong Province, ZTE Corporation is a leading Chinese provider of integrated communication and information solutions on the global telecommunications market with business presence in more than 160 countries and regions. The company operates R&D centers in China, the US, Europe, Japan and Canada. ZTE has also been a big smartphone vendor in the US, with products sold by companies like AT&T (T), Verizon (VZ) and T-Mobile (TMUS).

ZTE was originally a state-owned company, under the Shenzhen municipal government, but as of 2015 Zhongxingxin, a state-owned entity, is the company's largest shareholder, owning some 30 percent of the company. According to ZTE Corporations Annual Report 2020 (ZTE Corporations, 2020, p. 301) "the carriers' network is focused on meeting carriers' requirements in network evolution with the provision of wireless access, wireline access, bearer networks, core networks, telecommunication software systems and services and other innovative technologies and product solutions. The government and corporate business is focused on meeting requirements of government and corporate clients, providing informatization solutions for the government and corporate sectors through the application of communications networks, IOT, big data and cloud computing technologies. The consumer business is focused on bringing experience in smart devices to customers while also catering for the requirements of industry clients through the development, production and sales of products such as smart phones, mobile data terminals, home information terminals and innovative fusion terminals, as well as the provision of related software application and value-added services."

ZTE is considerably smaller than Huawei, the company's 2020 operating revenue figures are presented below.

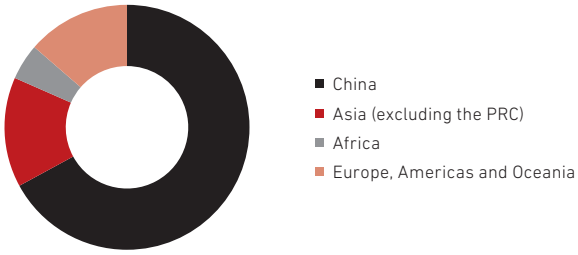
Figure 3
ZTE Operating Revenue 2020 (CYN)



Source: ZTE Corporations Annual Report, 2020.

The company's main market is China followed by Asia, Europe, Americas and Oceania and Africa.

Figure 4
ZTE's revenue by geographical region 2020 (CYN)



Source: ZTE Corporations Annual Report, 2020.

5.2. Chinese Vendors' Challenges

The last two years' political turmoil and uncertainty found Huawei and ZTE in the middle of a political and economic war between the US and China. The campaign against Huawei intensified by the US, and coupled with the Covid-19 pandemic, set serious market access and supply chain challenges for the companies, and affected their core businesses not favoring Chinese vendors doing business outside China.

5.2.1. Market Access Challenges in Europe

As an effect of the US pressure, the spread of Chinese technologies in relation to 5G has been slowed down as the Chinese companies are facing bans, regulatory and business contract restrictions from the government and from the major telecom network operators. Huawei fights against bans and exclusions from 5G network rollouts with legal steps to defend its markets and business interests.

As a result of US active lobbying, the UK and the Northern European countries like Sweden[6,7] were committed to ban Chinese products and services entirely from their

6 Swedish authorities say Huawei and ZTE's devices cannot be used under the tenders for the deployment of Sweden's 5G network. The decision to prohibit was taken by the Swedish authority overseeing telecommunications on the basis of an investigation by the army and the security service. The devices currently part of the network should be replaced by 2025.
7 Swedish court has dismissed an appeal by Huawei against its exclusion from the country's 5G network roll out.

5G networks. The UK banned Chinese vendors 5G equipment after December 2020 and requires removing all Huawei equipment from its 5G networks by the end of 2027. As Digital Secretary Oliver Dowden said in a statement to the House of Commons: "By the time of the next election we will have implemented in law an irreversible path for the complete removal of Huawei equipment from our 5G networks" (Gov.UK, 2020). Besides pure politics, the UK decision was partially motivated by the fear that based on tightening US sanctions Huawei will not be able to produce and supply important 5G network products which might equally be risky for the UK being so dependent[8] on Huawei products and equipment. In addition, a few countries from Central and Eastern Europe, including countries from the Baltic to the Adriatic seas (e.g., Estonia, Romania and Lithuania) have sided with the US, too, and signed Clean Network core principles, ultimately distancing themselves from Chinese products and services in their 5G networks.

Yet, there are still a few large European countries (like Germany and France) which are only considering partial restrictions (for example limiting vendors on critical or integral parts of the network), being committed to stricter regulations and will likely continue business with China as usual.

Although on September 30, 2020, the EU and US signed a joint statement on the synergies between the Clean Network and the EU 5G Clean Toolbox, it is clear that the EU is not unanimous in relations to Chinese vendors on 5G.

5.2.2. Supply Chain Challenges

Parallel with launching The Clean Network, the Trump administration introduced other severe bans on Chinese vendors' products:

- forbidding the US companies from supplying Huawei and ZTE with hi-tech chips, components and software;
- barring the US government from buying goods or services from any company that uses products from Chinese companies; and
- blocking foreign firms to work with Chinese vendors when they use US technology and US equipment (Kharpal, 2020).

8 Huawei holds a 65 percent market share of EE's 2G and 4G wireless access networks and occupies a 50 percent market share of Vodafone's 2G, 3G and 4G networks.

Not getting access to some of the most important components (e.g., displays or rams from Samsung) and other cutting-edge technologies hinders Huawei's ability to procure its smartphones and thus seriously affects the company's supply chain. For example, in 2019, Google stopped licensing its Android mobile operating system to Huawei and ZTE. Not having Google services on Huawei's and ZTE's smartphones caused many buyers to turn away from the companies' products outside China. As an alternative to Android, Huawei plans to shift phones to its own new distributed operating system HarmonyOS.

The companies have faced further pressure from Washington in 2020. While Huawei designs its own processors, they are manufactured by Taiwans' TSMC, which is affected by the above-mentioned new US rule. ZTE also relies heavily on US-made materials for smartphones and computer networking gear. US companies like Qualcomm (QCOM) Intel (INTC) accounted for 43 percent of the materials used in ZTE's handsets and networking equipment, according to tech research firm IDC (Sánchez del Campo, 2020).

The US sanctions started under the Trump administration against Chinese vendors are unlikely to loosen up even under the new US government, as technology, commercial, military and political tension between US and China intensifies.

5.3. Chinese Vendors' Adopted Strategies

To mitigate risks the Chinese vendors have made several steps to maintain their world-wide competitive position despite the hostile political, economic and legal environment. The companies possibly cannot be stopped but their world-wide expansion can be considerably slowed down. They might need to remodel and rebrand their operations and position away in some businesses in Europe. To be caught up in legal battels to defend their companies' business and market interests might pose further risks to Chinese vendors competitive standing.

5.3.1. Focus on Chinese Market and Less Hostile European and Emerging Markets

Since 2019 the companies concentrated more on the Chinese market and they both realized revenue increase on their domestic market (the year-on-year increase in operating revenue for Huawei was 15,4 percent (Huawei Investment & Holding Co. Ltd., 2020, p. 17), for ZTE it was 16,89 percent (ZTE Corporations, 2020, p. 24.) as a result

of China's massive rollout of 5G networks, large-scale deployment of the new technologies and the country's advocacy for patriotic choice.

In Europe the companies will probably be able to maintain a reduced sized operation mainly in countries which take a more conservative approach against the US pressure and continue to follow a more sovereign path. For example, Germany or Finland are planning cybersecurity risks mitigation by strict, uniform legislation for all vendors regardless where vendors are from. Huawei welcomes stricter regulations and they believe "that there will be higher and uniform security standards for all technology vendors" (Euronews.com, 2020). Germany's cybersecurity policy and strategy considered a role model in Europe and their ruling on the subject could impact other European countries' 5G policy-making.

Chinese vendors will likely to remain major players in Africa, South Asia and in many Latin American countries—although the US pressures intensify here as well—as long as they can maintain the high quality standards of their products, supply the markets despite the difficulties concerning the availability of major components and technologies supplied by the US or related vendors, and as long as they continue to innovate.

5.3.2. Remodeling the Company's Operation and Solving Supply Chain Issues

Although both companies have highly diversified product and service portfolios, and they continuously invest into R&D and innovation, they most probably need to reset their operational structure significantly in the forthcoming years. They need to reinvent and maybe rebrand themselves as a result of the sanctions against their companies, and because of the insecurities about the company's future in the Western world. Also, because of losing key strategic US partners Huawei and ZTE used to work with, the companies need to invest into cultivating new supply chain relations and partnership and develop new in-house capacities and capabilities. This, however, is obviously time-consuming and costly and threatens the companies' competitive position. One recent recognizable step in the remodeling of Huawei was when in November 2020 Huawei finalized a deal to sell its smartphone subsidiary, Honor to Shenzhen Zhixin New Information Technology of China. "The deal might open possibilities for Honor to establish its own supply chain in the industry and regain access to crucial US hardware and software technologies" (Li, 2020).

6. 5G and Digital Transformation in Hungary

6.1. 5G in Hungary

The Professional draft of Hungary's 5G Strategy was introduced in 2019 in cooperation between the Ministry of Innovation and Technology, the Digital Success Programme of Hungary and the 5G Coalition. It aims to make Hungary "become one of the European centers of the latest, fifth-generation mobile telecommunications developments and to play a regional leading role in the development and testing of 5G-based applications" (Digitális Jólét Program, 2019). The draft builds on country relative strengths in broadband connectivity.

Hungary's 4G network is amongst the most highly ranked in the world. According to Open OpenSignal's report (Boyland, 2020) which measures yearly mobile network experience based on various metrics (e.g., 4G availability, 4G coverage, latency, game experience), Hungary is performing outstandingly. On the other hand, according to their recent report in 2020 devoted to 5G, Hungary is not among the world's frontrunners in 5G deployments, just like European countries in general, where deployment of 5G is lagging behind in the world rankings.

According to the Digital Economy and Society Index (DESI) 2020 – Hungary report[9] (European Commission, 2020) Hungary ranks 21st out of 28 EU Member States in the DESI 2020.

Table 3
Hungary's DESI ranking and score between 2018-2020

	Hungary		EU
	rank	score	score
DESI 2020	21	47,5	52,6
DESI 2019	22	42,3	49,4
DESI 2018	22	40,0	49,5

Source: Digital Economy and Society Index (DESI), 2020.

Although Hungary's DESI rank is less impressive—based on the same above-referenced report—in terms of overall connectivity indicators (such as coverage, fixed

9 The European Commission has been monitoring Member States' digital progress through the Digital Economy and Society Index (DESI) reports since 2014.

broadband take-up) and in particular in 5G readiness,[10] Hungary performs particularly well; it is ranked 7th in terms of connectivity and 3rd regarding 5G readiness among the EU Member States.

The first deployment of commercial 5G networks has started in 2019 in Hungary. It was Vodafone Hungary, in partnership with Huawei which launched the first commercial 5G services in Budapest and later in larger rural towns and around Lake Balaton. In April 2020, Magyar Telekom also launched a commercial 5G service, and their services are now available in 23 towns (Major, 2020) making ultra-fast mobile internet accessible to 40 percent of Hungarian homes and businesses (Trade.gov, 2020). The third operator, Telenor also plans to launch commercial 5G services using ZTE Corporation' technology.

6.2. Hungarian 5G Players

The structure of the 5G market includes telecom network operators, technology and service providers in support of the ongoing 5G rollouts. Further, it includes national and international regulators, national governments, intergovernmental organizations, end-users, other non-governmental players. Like telecom markets worldwide, the Hungarian telecom market is highly concentrated, since most of the services are provided by a few internationally recognized telecom network operators in strong cooperation with technology providers.

6.2.1. Telecom Network Operators

As part of the new 5G network development during 2020 spring, wireless carriers in Hungary bid on the spectrum auction for the higher spectrum bands of the 5G networks roll out in the country. On the bid the Magyar Telekom (German), Vodafone Hungary (British) and Telenor Hungary[11] (Czech)[12] won 5G licenses to provide services. These telecom network operators have the most important stake in the new 5G networks development in Hungary as they design, build, and operate mobile networks. In the recent years the sector has seen significant consolidation/M&A activities. As a result, Magyar Telekom and Vodafone Hungary are considered so-called

10 The 5G spectrum readiness indicator is based on the amount of spectrum already assigned and available for 5G use by 2020.
11 Partly state-owned since October 2019.
12 Part of the PPF group (owner Petr Kellner).

"quad players"[13], as beside the traditional telecom services, they also act as providers of digital services such as enhanced mobile broadband and IoT. Telenor Hungary, on the other hand, only has wireless services.

6.2.2. 5G Network Equipment Suppliers

After the spectrum auction, the three main players quickly put forward tenders for the physical deployment of the new networks. This work can be carried out by companies such as Ericsson (Sweden), Nokia (Finland) or Huawei and ZTE (China). These players are the biggest and most relevant players on the global 5G market, as it was presented above. Based on the tenders, Magyar Telekom—the most significant player on the Hungarian market—will continue its working relations with Ericson, while Vodafone Hungary will work with Huawei and Telenor Hungary with the other Chinese company, ZTE. The results of the tenders show that relations between telecom network operators and network equipment suppliers are strategic, the telecom network providers and operators maintained their established working relations with their previous equipment suppliers on the Hungarian market despite of the security concerns raised in relation to Chinese vendors.[14] Indeed, there is no sign of any restrictions towards Chinese vendors in Hungary. Vodafone Hungary's unchanged relation to Huawei in Hungary is especially interesting in the light of the restrictions introduced in Vodafone's home country, the UK.

6.3. Huawei and ZTE in Hungary

6.3.1. Huawei

Huawei Technologies Hungary is a key actor on the Hungarian market, and it is deeply embedded in 5G deployments. Huawei expanded its operations to Hungary in 2005, opened its biggest European Supply Center outside China in 2009, and signed strategic partnership with the Hungarian Government in 2013.

According to the report published by Huawei, commissioned Oxford Economics, "...in 2019, Huawei made a direct GVA contribution to Hungarian GDP of EUR 39.4 million,

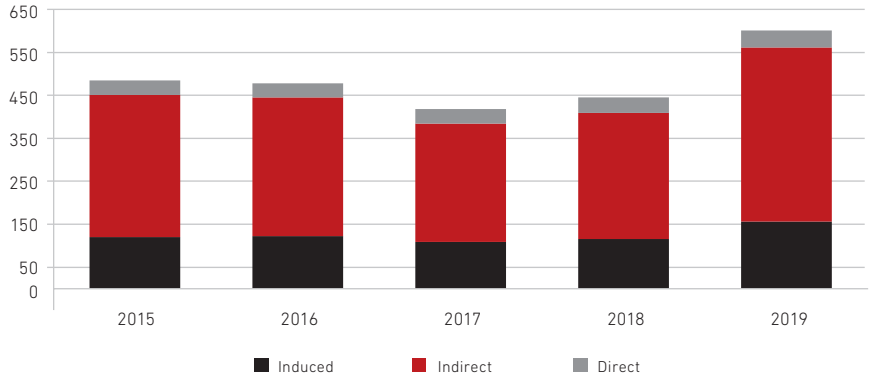
13 Combining the triple play service of broadband Internet access, television and telephone with wireless.

14 Huawei denies accusations and cyber security concerns and fights for its rights by taking legal action. The company states that there is no proven evidence showing the company ever causing any major cyber security incident.

an increase from EUR 33.3 million in 2015—equivalent to average annual growth of 4.3 percent. Huawei's operations around Europe supported an overall contribution to Hungarian GDP of EUR 600.5 million in 2019, accounting for 0.4 percent of Hungary's total economy that year (see Figure 5 below). The firm's contribution to the Hungarian economy has increased notably in recent years, recording an average annual real growth rate of 5.5 percent between 2015 and 2019" (Oxford Economics, 2020).

Figure 5

Huawei's direct, indirect and induced contribution to Hungary GDP, 2015-2019 million EUR (2019 prices)



Source: Oxford Economics, 2020.

The numbers speak for themselves, and it is no accident that the Hungarian Minister of Foreign Affairs, Péter Szijjártó said in Beijing, "it is in Hungary's national economic and strategic interests to continue its excellent cooperation with Chinese telecommunications giant Huawei" (Magyar Hírlap, 2019).

Huawei's position in unquestionable on the Hungarian telecommunication market, it cooperates with all major mobile network operators, including Magyar Telekom, Vodafone Hungary and Telenor Hungary. It has been involved in the development of 4G mobile networks alongside Vodafone, worked with Magyar Telecom and Vodafone to test 5G technology and—as mentioned earlier—it took active part in the launch of Hungary's first commercial 5G networks. It is not only Vodafone Hungary whose portfolio currently features Huawei 5G-capable devices; Magyar Telekom portfolio also includes Huawei technologies. Huawei has also participated in upgrading the EU's emergency call system, the so-called 112.

Huawei's latest achievement in Hungary is that it will continue its strategic partnership with Vodafone Hungary on the Hungarian market, and it will unquestionably play a vital role in the 5G deployment in Hungary. As a result, Huawei has consolidated its market position in Hungary.

In relation to 5G, Huawei is not only included as a technology supplier for the network developments, but it also plays an important role in R&D&I and education. In October 2020, Hungarian Minister of Foreign Affairs, Péter Szijjártó announced that Huawei had opened a new research and development center in Budapest, indicating that to date Chinese investments amounted to USD 5 billion. The company cooperates with Széchenyi István University, Győr (2020), supporting the university with lab and equipment development and recently they announced to launch new, free English-taught training programs built on the company's infrastructure. Huawei has been cooperating with the University of Óbuda, too, since 2018, and very recently they extended their educational collaboration. In November 2020, they signed an agreement to launch joint, accredited, infocommunication and telecommunications courses (Óbuda University, 2020). Also, the University and Huawei ran a one-week educational program called "SEEDs" organized for IT and telecommunications engineering students. Highlights of professional online training including 5G, artificial intelligence, and cloud technologies.

6.3.2. ZTE

ZTE's presence in Hungary is considerably smaller compared to Huawei and much less is known about their operation or future plans. ZTE works in close cooperation with Telenor Hungary, and it is Telenor's key 5G technology vendor and network partner on the Hungarian market. ZTE was involved in Telenor's network modernization between 2010-2013 under the former Norwegian ownership. It is still a question what role ZTE will play in Hungary's 5G business, especially after Telenor's announcement in 2019 (Telenor Hungary, 2020) to implement a new telecommunication service provider model based on the separation of the mobile service provider's commercial activity from its active and passive infrastructure under a newly formed network infrastructure service company, CETIN Hungary. CETIN in the Czech Republic set clear sides with the US according to the latest news in October 2020 (Chikermane, 2020) they are excluding Chinese vendors from 5G rollout and this decision might affect the company's business interests outside the Czech Republic, too. In 2019, in cooperation with Széchenyi István University, Telenor ran a 5G mobile test network and the tests showed that ZTE is capable of providing 5G technology. However, unlike the other two network operators in Hungary, after the frequency auction Telenor still has not launched commercial 5G services (Világgazdaság, 2021).

7. Conclusion

The technological war between the US and China for 5G dominance is causing collateral world-wide damage, slowing down the 5G rollout and dividing the 5G industry. The US is motivated to set back China's geopolitical and economic advancement and leadership in the 5G industry, and the battle will be maintained on this field even under the new US presidency. The US sanctions and its political campaign hit Chinese vendors hard and questioned their ambitious goal to be the global leader in 5G technology and to play key role in the telecommunication industry's future. Europe is a significant market for Chinese vendors. The lack of unity, un-coordinated efforts and the divergent political interest of the EU Member States supports Chinese 5G vendors to preserve some of their markets in Europe.

2020 has seen Chinese companies consolidating their position in Hungary and they will likely remain key actors in shaping 5G developments in the county. It is unlikely that Hungary will follow the path of the US or the UK and would hinder the implementation of its 5G infrastructure projects by banning Chinese vendors from the 5G network rollout. From Hungary's perspective, excluding Huawei or ZTE from 5G would jeopardize the country's economic performance, its aim to maintain an outstanding 4G network experience for users, having a diversified, multi-vendor portfolio, access to the most technologically advanced 5G solutions or to play a regional lead role in the development and testing of 5G-based applications.

Hungary is more likely to take a similar path to Germany in the mid-run and commit to stricter regulations, standards and vetting system across all operators and vendors to mitigate risks related to critical and sensitive assets defined in the EU-wide coordinated risk assessment.

Although the path the Hungarian government is taking is not without risks due to the Chinese vendors' supply chain challenges, limiting competition on the Hungarian 5G market is justifiable neither from an economic point of view, nor concerning technological advancement. If political distrust prevails, everybody stands to lose.

References

Barta, A. (2020): 2020 még nem az 5G éve lesz. Vagy mégis? Vajon mit hoz a jövő?. [2020 will not be the year of 5G yet. Or will it? What does the future hold?]. [online] available: https://www.invitech.hu/techpercek/2020-5g-mit-hoz-a-jovo.

Boyland, P. (2020): The state of mobile experience. [online] available: https://www.opensignal.com/sites/opensignal-com/files/data/reports/global/data-2019-05/the_state_of_mobile_experience_may_2019_0.pdf.

Chikermane, G. (2020): Czech Republic's CETIN does what the government could not: reject Huawei. [online] available: https://www.orfonline.org/expert-speak/czech-republics-cetin-does-what-the-government-couldnt-reject-huawei/.

Dano, M. (2020): Study: Huawei was the biggest contributor to 5G standards. [online] available: https://www.lightreading.com/5g/study-huawei-was-the-biggest-contributor-to-5g-standards/d/d-id/758279.

Dell'Oro Group (2020): Telecommunication Equipment Market 1Q20 to 3Q20 +China's New 5G Base Stations. [online] available: https://techblog.comsoc.org/2020/12/03/delloro-telecommunication-equipment-market-1q20-to-3q20-chinas-new-5g-base-stations/

Digitális Jólét Program (2019): Elkészült a magyar 5G Stratégia szakmai tervezete. [The professional draft of the Hungarian 5G Strategy has been completed]. [online] available: https://digitalisjoletprogram.hu/hu/hirek/elkeszult-a-magyar-5g-strategia-szakmai-tervezete.

The Economist – YouTube (2019): Is America right to fear Huawei? [online] available: https://www.youtube.com/watch?v=1ylleTbizgU&list=WL&index=126

Ericsson (2020): Ericsson Annual Report 2020. [online] available: annual-report-2020-en.pdf (ericsson.com).

Erlanger, S. (2021): Will the Sudden E.U.-China Deal Damage Relations With Biden?. The New York Times. [online] available: https://www.nytimes.com/2021/01/06/world/europe/eu-china-deal-biden.html

Euronews.com (2020): German government backs bill requiring security pledge on future 5G network. [online] available: https://www.euronews.com/2020/12/16/german-government-backs-bill-requiring-security-pledge-on-future-5g-network.

European Commission (2013): EU-China 2020 Strategic Agenda for Cooperation. [online] available: https://eeas.europa.eu/archives/docs/china/docs/eu-china_2020_strategic_agenda_en.pdf

European Commission (2015): EU-China Joint Declaration on strategic cooperation in the area of the fifth generation of mobile communication networks – European Sources Online. [online] available: https://www.europeansources.info/record/eu-china-joint-declaration-on-strategic-cooperation-in-the-area-of-the-fifth-generation-of-mobile-communication-networks/

European Commission (2016): 5G for Europe: An Action Plan. [online] available: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2016:588:FIN.

European Commission (2019): EU Coordinated Risk Assessment on Cybersecurity in 5G Networks [online] available: https://digital-strategy.ec.europa.eu/en/news/eu-wide-coordinated-risk-assessment-5g-networks-security.

European Commission (2020): 5G security: Member States report on progress. [online] available: 5G security: Member States report on progress (europa.eu).

European Commission (2020): Cybersecurity of 5G networks - EU Toolbox of risk mitigating measures. [online] available: Cybersecurity of 5G networks - EU Toolbox of risk mitigating measures | Shaping Europe's digital future (europa.eu).

European Commission (2020): Digital Economy and Society Index (DESI) 2020 – Hungary. [online] available: https://ec.europa.eu/digital-single-market/en/scoreboard/hungary.

European Union Agency for Cybersecurity (2019): Threat landscape for 5G Networks. [online] available: https://www.enisa.europa.eu/publications/enisa-threat-landscape-report-for-5g-networks

Fortune Business Insights (2020): 5G Infrastructure Market Size, Growth & Share | Forecast [2027]. [online] available: https://www.fortunebusinessinsights.com/industry-reports/5g-infrastructure-market-100869.

Fung, B. (2019): China's Huawei bigfooted U.S. companies in 5G technology. [online] available: https://www.washingtonpost.com/technology/2019/04/10/us-spat-with-huawei-explained/

Gov.UK (2020): Huawei to be removed from UK 5G networks by 2027 (2020). [online] available: https://www.gov.uk/government/news/huawei-to-be-removed-from-uk-5g-networks-by-2027.

GSM Association (2020): GSMA Mobile Economy2020. p. 10. [online] available: https://www.gsma.com/mobileeconomy/wp-content/uploads/2020/03/GSMA_MobileEconomy2020_Global.pdf.

Gsmarena (2020): Ericsson argues against Huawei's ban in Sweden. [online] available: https://www.gsmarena.com/ericsson_huaweis_biggest_competitor_sides_with_its_rival_against_ban_in_sweden-news-46369.php

Huawei Investment & Holding Co. Ltd. (2019): Annual Report. [online] available: https://www-file.huawei.com/-/media/corporate/pdf/annual-report/annual_report_2019_en.pdf?la=en.

Huawei Investment & Holding Co. Ltd. (2020): Annual Report. [online] available: https://www-file.huawei.com/minisite/media/annual_report/annual_report_2020_en.pdf

Kalyani, V. L. – Sharma, D. (2015): IoT, Machine to Machine (M2M), Device to Device (D2D) Internet of Everything (IoE) and Human to Human (H2H): Future of Communication. [online] available: https://www.researchgate.net/publication/289249209_IoT_Machine_to_Machine_M2M_Device_to_Device_D2D_Internet_of_Everything_IoE_and_Human_to_Human_H2H_Future_of_Communication.

Kharpal, A. (2020): Huawei overtakes Samsung to be No. 1 smartphone player in the world thanks to China as overseas sales drop. [online] available: https://www.cnbc.com/2020/07/30/huawei-overtakes-samsung-to-be-no-1-smartphone-maker-thanks-to-china.html.

Li, D. (2020): What will happen to Honor Smartphone Users after separation from Huawei? Drop your questions here. [online] available: https://www.huaweicentral.com/what-will-happen-to-honor-smartphone-users-after-separation-from-huawei/.

Magyar Hírlap (2019): Szijjarto praises good cooperation with Huawei. [online] available: https://www.magyarhirlap.hu/english/20190428-szijjarto-praises-good-cooperation-with-huawei.

Major, Sz. (2020): Már 23 településen érhető el a Telekom 5G-je. [Telekom's 5G is already available in 23 settlements]. [online] available: https://computerworld.hu/tech/mar-23-telepulesen-erheto-el-a-telekom-5g-je-283584.html

Memo 26 March 2019, Strasbourg: Questions and Answers – Commission recommends common EU approach to the security of 5G networks [Updated on 9/10/2019]. [online] available: https://ec.europa.eu/commission/presscorner/detail/en/MEMO_19_1833

Nokia Corporations (2020): Nokia Annual Report on Form 20-F 2020. [online] available: https://www.nokia.com/system/files/2021-03/Nokia_Form_20F_2020.pdf.

Oxford Economics (2020): The economic impact of Huawei in Hungary. [online] available: https://resources.oxfordeconomics.com/hubfs/Report_Huawei_Hungary.pdf.

Óbuda University (2020): Az Óbudai Egyetemmel bővíti hazai oktatási együttműködéseit a Huaweiel. [Huaweiel is expanding its domestic educational collaborations with the Óbuda University]. [online] available: https://m.facebook.com/ObudaiEgyetem/posts/10159092668472841.

Sánchez del Campo, A. (2020): 5G rollout runs into problems in Europe. [online] available: https://www.garrigues.com/en_GB/garrigues-digital/5g-rollout-runs-problems-europe.

SK Telecom (2015): 5G Architecture Design and Implementation Guidelines, version 1.35. [online] available: https://www.sktelecom.com/img/pds/press/151020_5G_architecture_design_and_implementation_guideline.PDF.

Statista Research Department (2020): Huawei's revenue by region 2012-2019. [online] available: https://www.statista.com/statistics/368509/revenue-of-huawei-by-region/.

Széchenyi István University (2020): Tech giant Huawei and Széchenyi István University - a close partnership. [online] available: https://admissions.sze.hu/tech-giant-huawei-and-szechenyi-istvan-university-a-close-partnership.

Trade.gov (2020): Hungary ICT - 5G Development. [online] available: https://www.trade.gov/market-intelligence/hungary-ict-5g-development.

Telenor Hungary (2020): Hungary telco market sees launch of new Telenor spin-off infrastructure company named CETIN. [online] available: https://en.telenor.hu/press/press-release/cetin_hungary_launch.

US Department of State (2020): The Clean Network. [online] available: https://2017-2021.state.gov/the-clean-network/index.html.

Világgazdaság (2021): Még nem indítja el az 5G-t a Telenor. [Telenor is not yet launching 5G]. [online] available: https://www.vg.hu/vallalatok/vallalati-hirek/meg-nem-inditja-el-az-5g-t-a-telenor-2-3461476/

ZTE Corporations (2019): Annual Report. [online] available: https://res-www.zte.com.cn/mediares/zte/Investor/20200417/E1.pdf/

ZTE Corporations (2020): Annual Report. [online] available: https://res-www.zte.com.cn/mediares/zte/Investor/20210408/E2.pdf

The Role of ICT Investment in Increasing Financial Inclusion in East-Central Europe

Blanka Kovács*

1. Introduction

Every civilization and culture going back to Mesopotamia develops financial services. The concept of financial inclusion has become widely researched after the establishment of the formal financial system and the rapid development of technology in the last decades. Why is financial inclusion important? Economists have been finding a plethora of benefits including increased savings, female empowerment and consumption and productive investment of entrepreneurs (Dupas – Robinson, 2013; Aportela, 1998; Ashraf et al., 2010). Thus far, the research suggests that the deeper financial inclusion has contributed to increasing living standards across the globe.

However, there has been a misconception about financial inclusion in the literature, one of them is for example having a bank account itself is enough. However, there has been a misconception of financial inclusion in the literature and global initiatives such as having a bank account itself is enough. The World Bank defines the final objective to be universal access and frequent account usage on the same level, however, literature reveals that the focus should be on account usage but not universal access, since they precede each other as different stages as described in the research. Since frequent account usage refers more to cashless payments, The paper will instead focus on cashless payments, which can be seen as interchangeable with the concept of financial inclusion. In addition to this the financial and ICT infrastructure are on the same level in the World Bank model and defined as critical enablers of cashless payments. However, the development level of the ICT infrastructure is a prerequisite for a digitally mature financial system.

The ICT infrastructure is one of the main determinants of cashless payments because enabling more interconnectivity is crucial for increasing payment system efficiency. Thanks to the advances in information and communications technology

* The study does not reflect the official position of the Magyar Nemzeti Bank (Central Bank of Hungary, MNB).

(ICT), telephone networks and computers allowed the first debit cards, credit cards and automated teller machines (ATM) in the 1960s. Realtime gross settlement (RTGS) systems for interbank payments arose in the 1980s (BIS, 2016). As a result of this rapid diffusion of new innovations, the payments volume increased by 12 percent during 2016-2017—the highest in the last two decades. The emerging Asia (32%) and Sub-Saharan Africa (19%) were responsible for the growth, while mature markets such as Western Europe experienced 7 percent growth (Capgemini, 2019). In the coming years we expect more rapid digitalization of payment services as our societies are becoming increasingly cashless due to innovative payment solutions, such as the Chinese Alipay and WeChat Pay and other forms of e-money, such as the M-Pesa in Kenya. However, not all countries are developing equally. Sweden is the leader of cashless payments as only 19 percent of payments are made using cash, compared to the European average of 80 percent. In Asia, China has achieved a great amount of success in recent years. More than half of the Chinese population say they now use cashless payments to make more than 80 percent of purchases. China has historically been underserved by the traditional banking sector which represents itself in the approach to cashless payments. The Chinese FinTech companies mainly focus on business to customer (B2C) models. In addition, the Chinese middle-class has been increasing and the consumers tend to be more tech savvy.

2. Determinants of Cashless Payments

Although there are differences between developed and developing countries in terms of the motive of using noncash payment methods, the global trends—including the increasing competition between technology companies and financial institutions—are homogenizing these tendencies are forming these habits more homogenized. In the following section, the literature will be compiled on the determinants of cashless payments on both micro and macro level.

2.1. Micro Level Determinants

As there is a lack of transaction of specific data on the behavior of consumers, surveys are the most widespread to foster a deeper understanding of cardholders. However, these surveys are not repeated over time and include very different factors, which makes them largely incomparable. For example, based on a survey among Dutch credit card owners Kosse (2010) indicates the level of confidence in financial institutions, the risks of counterfeiting or theft of data as the most important factors

determining the willingness to pay cashless. At the same time, the cashless payment level is lower in Germany, where consumers have a cautious approach to financial institutions. By looking at the European framework, the countries closest to a cashless society are Scandinavian countries where Sweden is leading in the use of digital payments. The deep trust in the institutions including the payment system in par with the very high openness to new innovations and technologies can be considered vital factors to the growth of cashless payments (Arvidsson, 2019). In addition to this, having a low population density also contributed to the trend in cashless payments. For Austria, Stix (2004) finds that those people who make purchases frequently with debit cards on average hold 20 percent less cash in their wallets, and those that frequent ATMs hold 18 percent less cash in their wallets. By putting developing countries in the focus, Demirgüç-Kunt and Klapper (2012) finds that lower income inequality, higher literacy levels and better physical and communication infrastructure are all associated with greater financial inclusion. In India, Sarma and Pais (2011) and Karmakar et al. (2011) focus on the challenges of financial inclusion and came to the conclusion that higher income households tend to exhibit greater usage of credit cards, ATMs, direct deposit, internet banking, and other electronic transfers.

2.2. Macro Level Determinants

The first set of variables used to predict the level of financial inclusion across countries is macroeconomic indicators, including the national income level measured by GDP per capita. Ardic et al. (2011) shows that GDP per capita is significantly and positively associated with deposit account penetration, based on multiple statistical models set up with data from the IMF Financial Access Survey (FAS) database. The same results are shown by (Beck et al., 2007; Kendall et al., 2010; Allen et al., 2011). As Figure 1 shows, ICT investment has not been studied extensively in the literature in connection with cashless payments.

Figure 1
Determinants of cashless payments

Macroeconomic indicators	Significant	Not significant
GDP per capita	Ardic et al. (2011) Kendall et al. (2010) Allen et al. (2016) Allen et al. (2014) Beck et al. (2007)	
Broad money	-	-
Banking sector concentration	Ardic et al. (2011)	Kendall et al. (2010)

Infrastructure indicators	Significant	Not significant
ATMs penetration	Allen et al. (2016) Kendall et al. (2010)	
Number of commercial bank branches	Ardic et al. (2011) Kendall et al. (2010) Allen et al. (2016)	
ICT investment	-	-
Socioeconomic indicators	**Significant**	**Not significant**
Population density	Ardic et al. (2011) Kendall et al. (2010) Allen et al. (2014)	
Rural population	Allen et al. (2016)	
Proportion of people aged 65 and over	Beck et al. (2007)	

Source: own compilation

3. Importance of ICT

After IBM invented the world's first random access computer storage system in 1956 and the internet catalyzed the production and sharing of data, ICT transformed the economic landscape and has become one of the key sources of economic growth. According to the definition of OECD, information and communication technology (ICT) refers to both different types of communications networks, the integration of telecommunications (telephone signals and wireless signals) as well as software, storage and audiovisual systems that enable users to access, store, transmit, and manipulate information. In short, it consists of three components: information technology equipment, communications equipment; and software (OECD, 2020). In what follows, some of the key academic papers will be audited that have examined the impact of ICT investments on economic growth. The common method that these studies utilized was the Cobb-Douglas production function to estimate the contribution of the ICT investment to economic growth. Based on the research of Lau (1992) between the period of 1960 and 1990, half of the national output was credited to ICT investment rather than non-ICT investment in the US. Lau (1992) and Schreyer (2000) evaluated the effect of ICT on work efficiency among G7 countries. He found that the following countries Germany, Canada, Italy, Japan, US and UK had profited altogether from ICT investment in terms of annual labor productivity growth over the period 1990 to 1996 (Schreyer, 2000). By looking at Asia, Bai et al. (2002) came to the same conclusion in Singapore. After two years, Kim et al. (2008) analyzed the effect of ICT on profitability in Korea during 1971 to 2000 example period. The outcomes demonstrated that ICT capital contributed 16.3 percent to the economic development and has had solid constructive outcome on the development of work profitability in the long run (Kim et al., 2008). They find that on average over the past three decades, a USD 1

investment in digital technologies has led to a USD 20 rise in GDP. This return on investment dwarved the USD 3: USD 1 return for non-technology investments in the same period (Huawei, 2017). As the economies are becoming more digital, besides the direct productivity boost, a more profound change of indirect benefits take place within industries and throughout the supply chain. As to negative findings, they were found on firm level. Berndt examined the contribution of ICT capital to US industries' productivity growth and found a negative relationship (Berndt et al., 1992). Moreover, Parsons et al. (1993) contended that Canadian banks didn't receive great rewards from their ICT capital ventures. A few studies have inspected the effect on developing countries lately. A number of research studies have point out the disparity in ICT dissemination among developing and developed countries (Mudiarasan, 2009).

ICT infrastructure is intrinsically related to payment systems because they offer the software solution that digitizes economic processes and the hardware backbone for payment systems to work. Bossone and Cirasion (2001) analyzes the digitization of payment systems and emphasizes that importance of the pressing issues of electronic payment systems can be offered by private actors outside the banking community and national financial regulators. There are complex issues of infrastructure, regulatory policies, and even details of user interface design that can affect the success of digital financial services (Mas – Morawczynski, 2009; Medhi et al., 2009).

To capture the development level of the ICT infrastructure, ICT regulation and investment were chosen as they act as a proxy for the ICT infrastructure, which is based on the adapted model from the World Bank. Due to the heterogeneity between countries in terms of ICT infrastructure and the lack of data, it is difficult to compare them because they use different types of infrastructure for their cashless payments.

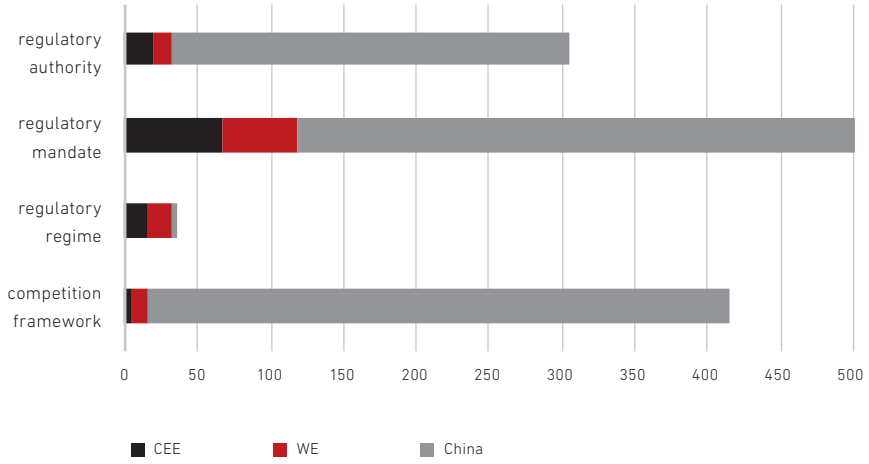
3.1. ICT Regulation

While the speed of digital transformation is accelerating, and the economy is being driven by everything digital, the regulatory approaches towards ICT differ among countries. The ITU has set out an ICT Regulatory Tracker that identifies the changes taking place in the ICT regulatory environment. The tracker consists of 50 indicators that are organized in the following 4 clusters: regulatory authority (focusing on the functioning of the separate regulator), regulatory mandates (who regulates what), regulatory regime (what regulation exists in major areas) and competition framework for the ICT sector (level of competition in the main market segments). Based on these indicators, the ITU introduced the concept of the regulation of generations

which categorizes countries to measure and compare the evolution of ICT regulation in the world. The four categories are the following:

G1: Regulated public monopolies—command and control approach;
G2: Basic reform—partial liberalization and privatization across the layers;
G3: Enabling investment, innovation and access—dual focus on stimulating competition in service and content delivery, and consumer protection;
G4: Integrated regulation—led by economic and social policy goals.

Figure 2
Increase in the four clusters from 2007 to 2019



Source: ITU Regulatory Tracker, 2020.

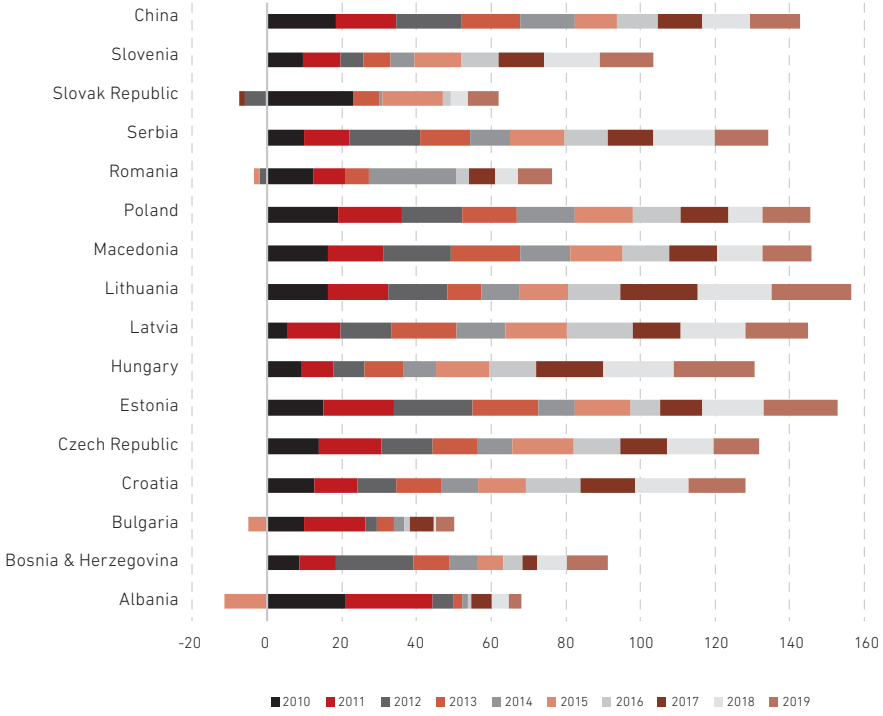
The East-Central European and the Western European regions both belong to Generation 4, meaning they have integrated regulatory framework and the implementation of ICT regulations are led by economic and social policy goals. However, China belongs to Generation 2 where the basic reform—partial liberalization and privatization across the layers was implemented. Figure 2 shows the increase by percentage in each category in East-Central Europe, Western Europe and China from 2007 until 2019. The highest increase took place in the regulatory regime category for both regions and China as well, which means that the scope and the number of regulations were increased from 2007 to 2019.

3.2. ICT Investment

Investment data on ICT assets is available through the national accounts compiled in the OECD database only until 2016, therefore data were used provided by the Conference Board. Their database contains data on the contributions of factor inputs—labor (Labor Quantity and Labor Quality), capital (Non-ICT Capital Services and ICT Capital Services) and Total Factor Productivity Growth (TFPG)—to GDP growth, obtained using a growth measuring method. The change in natural log shows the growth rate of capital services.

Figure 3

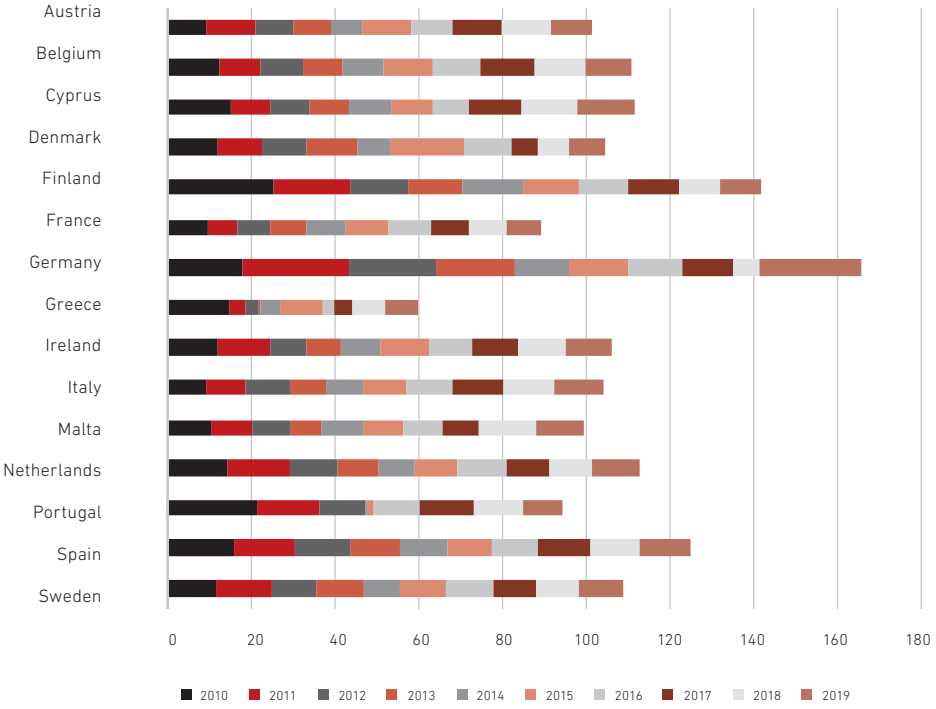
Growth of Capital Services provided by ICT Assets in the East-Central European countries and China between 2010 and 2019 (change in the natural log)



Source: The Conference Board, 2020.

Figure 4

Growth of Capital Services provided by ICT Assets in the Western European countries between 2010 and 2019 (change in the natural log)



Source: The Conference Board, 2020.

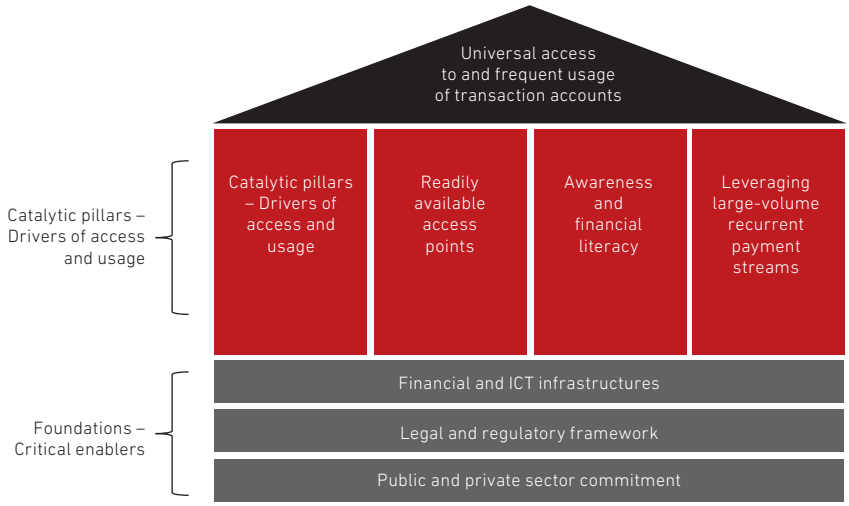
Based on Figure 3 and Figure 4, Ireland has the highest growth in capital services provided by ICT assets, followed by Malta and the Baltic countries (Lithuania, Latvia, Estonia). In terms of growth rate, China is on par with the East-Central European countries while the Western European countries are lagging behind in this timeframe.

4. ICT Digital Spillover Effect to Financial Systems

As Figure 5 shows, a well-established ICT infrastructure is one of the critical enablers of a financially inclusive payment system. The direct link between ICT and payment systems is described by the concept of the "digital spillover" effect—the term includes both vertical and horizontal spillovers and is a new approach introduced recently by

Huawei and Oxford Economics to capture the effects of digital investments. Vertical spillovers can occur in any supply chain, but the effect is particularly powerful with digital innovations, and the World Bank model above exemplifies the vertical spillover effect well. This is on the grounds that a) digital technologies are extensively embedded in a wide scope of areas and business exercises, and b) by means of frameworks redesigns, or upgrades, enhancements have the potential to expand rapidly over an enormous network of users.

Figure 5
World Bank Model

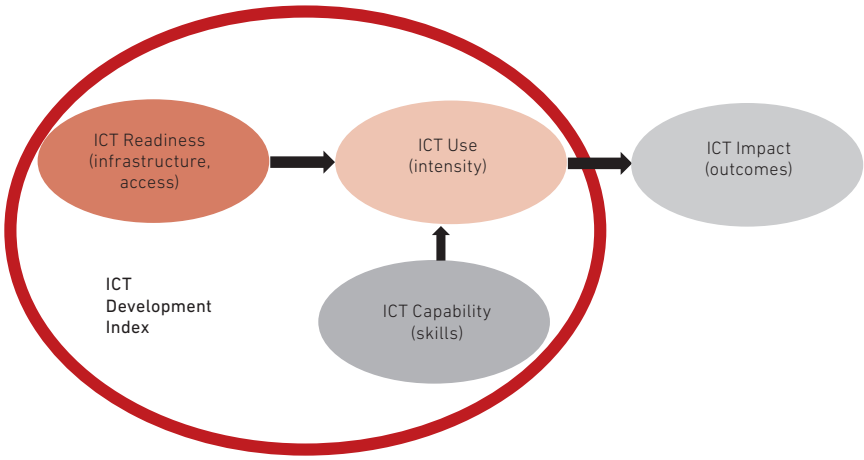


Source: World Bank, 2017.

Right now, the source of technological developments is broadening and developing progressively, and the advantages can spillover to different organizations, up and down the supply chain. E-commerce is a case of digital investment which provided merchants vertical spillovers and clients with increasingly effective channels to connect and digitize their business models and speed up digital transformation downstream. Numerous innovation related advancements are currently taking place outside the technology areas, in financial systems, for example payment systems and frameworks (Huawei, 2017). As illustrated by the World Bank model in the figure above, cashless payments are intrinsically related to financial inclusion. Financial inclusion is on the agenda both on global and national level. By 2020, the World Bank had set achieving universal financial access by improving digital technologies as a

policy goal, and several countries had formed their own financial inclusion policies as well.

Figure 6
ITU flowchart model for ICT Impacts



Source: ITU, International Telecommunication Union, 2017.

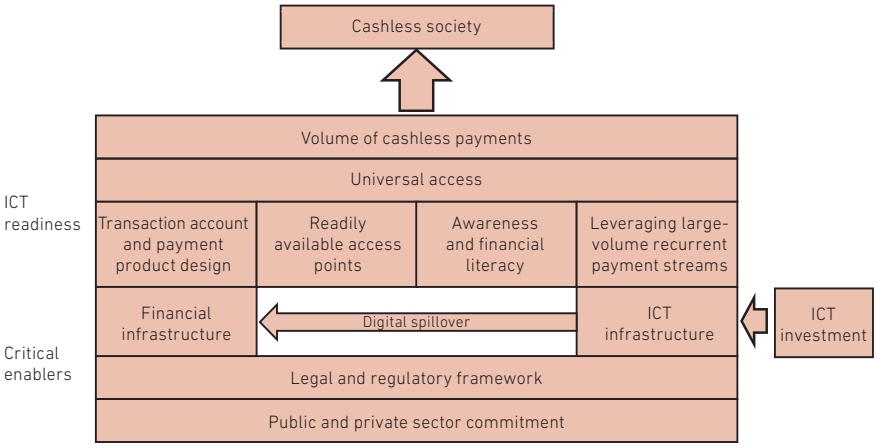
In accordance with and in partial support of the framework above, the International Telecommunications Union published an annual report on the ICT Development Index, which includes the factors of infrastructure and access as the basis to reach a digital society (ITU, International Telecommunication Union, 2017). The ITU model in Figure 6 illustrates the difference between the two models on the road to attaining financial inclusion and what those determinants are. As we can see, there is a discrepancy between the structures of the two models in terms of logical connection. The World Bank model considers access and usage to be on the same level as opposed to the ITU, which identifies access first and then usage as main determinant for the policy outcome. In order to amend this, we need to disaggregate the two terms vertically. As for the horizontal spillover effect, the ITU model describes the following five indicators: fixed telephone subscriptions, mobile-cellular telephone subscriptions, Internet bandwidth per Internet user, households with a computer and households with Internet access (ITU, Measuring the Information Society Report, 2017). The ICT readiness indicators have a horizontal spillover effect on the payment infrastructure. In general, this is portrayed as a process by which an innovation by one company is imitated by others, prompting efficiency gains across a wider sector. For instance,

banks and fintech startups investing heavily in blockchain and instant payment mechanisms today, are contriving solutions that will be eventually recreated throughout the financial service sector. In addition, horizontal spillovers rely upon data and information held by one company transferring to others. This can come from the movement of staff, the information sharing, sharing of knowledge, or simply by replication (Huawei, 2017). These two models together form a good framework for the process by which payment systems are built upon. The models have a common goal which is achieving an increased number of cashless payments which will ultimately increase financial inclusion, which is a common policy goal.

5. Conceptual Framework – Stages of Payment System Development

In order to amend the logical disconnection between the World Bank and ITU model as noted in the literature, a new model is proposed as below in Figure 7. This model combines the World Bank and the ITU model into one. Firstly, formal inclusion is disaggregated from cashless payments because one leads to the other logically. Secondly, the horizontal spillover effect is added where the investment into ICT flows into the financial infrastructure, since there needs to be an ICT investment in the first place.

Figure 7
Improved World Bank Model



Source: own compilation

A new approach is suggested by Natarajan (2019) who proposes five stages of innovation in payments.

Table 1

Five stages of innovation in the business of payments

Stage1	Traditional banking	This was the main means of managing money and payments throughout the 19th century, centered around bank accounts and paying through cash or cheques.
Stage2	Introduction of digital access to bank accounts	This is the digitization of traditional banking with debit and credit cards, and online banking to process cashless payments.
Stage3	Prepaid accounts and mobile money	This includes prepaid payment cards, apps and mobile money accounts which may not require a bank account.
Stage4	Decoupling payment systems	This includes digital wallets where payment is initiated through a connected device, and the money remains in a bank or prepaid account.
Stage5	Decoupling currency accounts	This includes digital wallets where money is converted into a private and local currency available only on the device or application.

Source: Gevaudan – Lederman, 2020.

Europe is a segmented region with different types of payment systems in use. Before the digitization of traditional banking, cash and cheques were dominant. After the introduction of the Euro in 2002, the harmonization and reduction of friction for payments have become one of the priorities for policy makers with the aim of having a quick and smooth flow of payments at low cost in the whole region. As a priority, the large-value euro payments system, the Trans-European Automated Real-time Gross Settlement Express Transfer (TARGET) system was created. Today 19 members have the Euro as their national currency, and the Single European Payments Area (SEPA), which enables consumers and businesses to make euro payments in the area was introduced by the Payment Services Directive in 2007. The global payments system is growing; and because of the quick change in ICT, the business players and administrative bodies need to adjust quicker than previously. As the ageing infrastructure is facing renewal, they are accepting the open door to re-design and renew the system (ECB, 2020). To enter the new decade, one of the most innovative solutions is the Global Payments Innovation service (SWIFT gpi); gpi, payments can be tracked in real time and are credited same-day, usually in just seconds or minutes, with full fee transparency (Wandhöfer – Casu, 2017).

In addition to this, instant payment systems are another response from countries to improve customer experience and match up with the competition. These payments are settled in seconds or minutes, 24 hours a day, 365 days a year. By the end of 2018, in Europe, some 17 domestic systems had become operational or in the process of

implementation for instant payments in euro and other European currencies, and by the end of 2018, Europe had also had two crossborder instant payment services: EBA CLEARING's RT1 and the Eurosystem's Target Instant Payments Settlement (TIPS) (ECB, 2020). Taking the fast adoption of instant payment systems, they could become the "new norm" in the payments sphere (Hartmann et al., 2019). If this happens, the new norm will determine the economies of scale of instant payments and the efficiency gain in the payment system as a whole. The migration to efficient retail payment instruments stimulates the overall economy and trade, ultimately benefiting consumers with lower prices and better services (Hasan et al., 2013). Moreover, the retail payment transaction technology has proven to be positively associated with real economic aggregates (Scholnick et al., 2008). Therefore, the presence and diffusion of new payment technologies, such as mobile and online payments, may have a positive impact on economic growth and trade in a similar way as ATMs and point-of-sale (POS) terminals had, when they became the main technologies for accessing funds and carrying out transactions, respectively. According to the comparative study of the ECB on instant payment systems, the development level of an infrastructure has a positive effect on the use of instant payments. The higher levels of internet use and, in particular, mobile internet use may have contributed to the success of instant payments in Denmark, Sweden and the UK. In the first two in particular, the high use of mobile payments based on instant payments would not have been possible without the widespread use of mobile internet: Eurostat reports that in 2016 more than three-quarters of individuals in these countries accessed the internet via a mobile device. The increasing number of mobile phone owners and the high rate of Internet usage in the households (above 80 percent in the East-Central European countries) also helped the launch of the instant payment system in the region. Hungary launched the Hungarian Retail Instant Payment System in March 2020. It is a central bank driven approach with a special feature due to its obligatory nature, and all the 35 Payment Service Providers had to prepare themselves for the launch and start at the same time. However, the instant payment system has not reached the wide population in Mexico, for instance, because of the lack of access to such infrastructure. Statistics show that only 2.6 percent of the total number of mobile phone subscribers had access to mobile banking (Hartmann et al., 2019).

The first Payment Services Directive laid the groundwork for SEPA in 2007, and it introduced regulations and a new category of payment services which increased competition in the payments sphere. As technology advanced and challengers entered the playing field, the directive was updated in 2015 to become Payment Services Directive 2 (PSD2) to improve existing rules and cover digital payments services in more depth. The new PSD2 was officially introduced in 2018. It includes

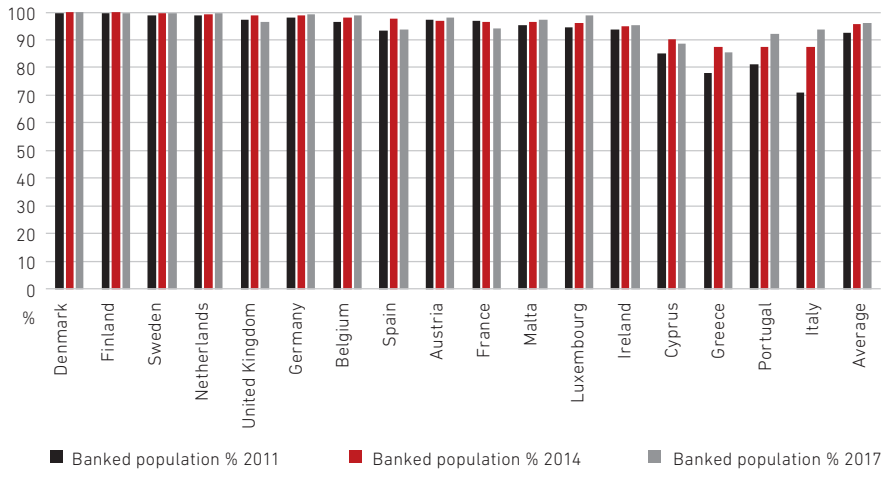
provisions to make it easier and safer to use internet payment services, strengthen consumer rights, better protect consumers against fraud, promote innovative mobile and internet payment services and strengthen the role of the European Banking Authority. The new directive eased access for new market entrants, resulting in even more competition and choice for consumers.

6. Level of Financial Inclusion Development in Western Europe and in East-Central Europe

Figure 8 shows that the banked population is quite evenly distributed in Western Europe. The Scandinavian countries, Sweden, Finland and Denmark are leading with almost 100 percent of their population banked. The middle section includes Germany, France and Spain which achieved a 94 percent level. In the last section we find the Southern European countries for example, Greece, Italy, Cyprus and Portugal with the lowest rate of banked population among the Western European countries. The average number in 2011 was 92 percent, in 2014 95 percent and similarly, in 2017 95 percent. It is presumed that these countries reached stage two where the banked population has almost total coverage. In addition, their card penetration is high and the payment infrastructure is well-developed to process card transactions.

Figure 8

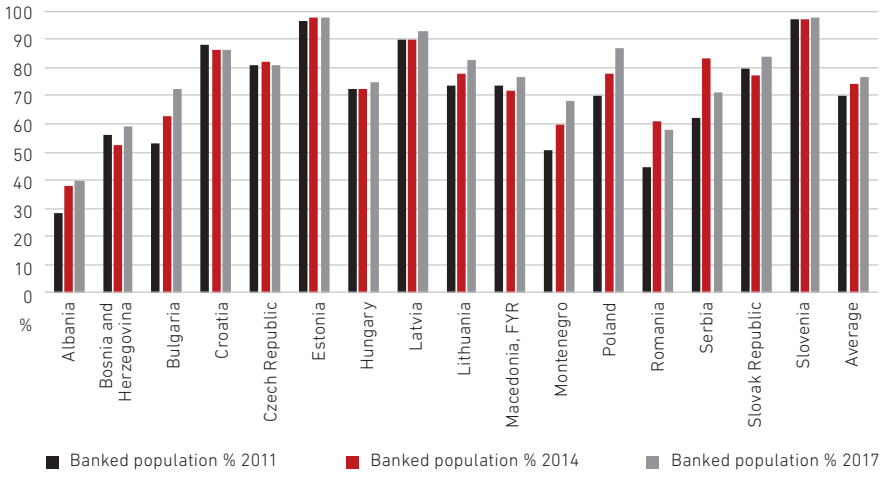
Banked population in Western Europe



Source: Global Findex Database, 2020.

Figure 9

Banked population in CEE countries

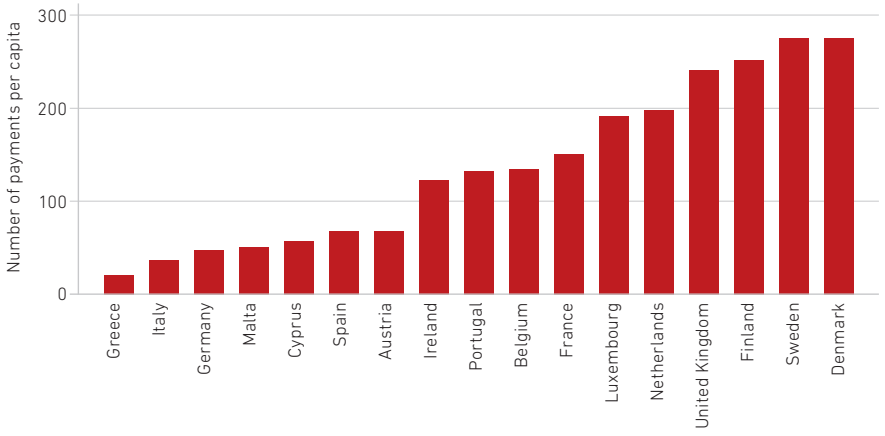


Source: Global Findex Database, 2020.

According to Figure 9 the Baltic countries (Estonia and Latvia) and Slovenia are on par with Western European countries in terms of banked population. Overall, we can see a clearly growing trend in the case of individual countries over the years. The average number in 2011 is 69 percent, in 2014 74 percent and in 2017, 76 percent.

Figure 10

Average number of card transactions in Western Europe

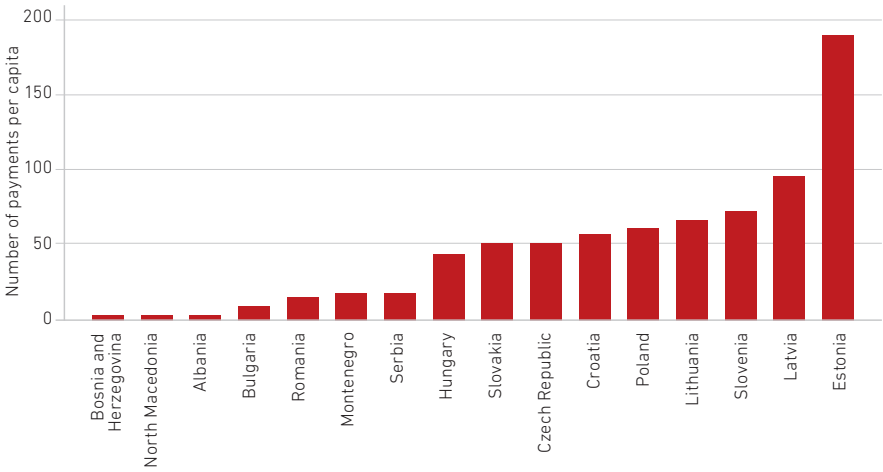


Source: ECB, 2020.

As these are the average number of payments per capita, the numbers for each country don't play a role in the time-effects. However, it can be noted that the Northern European countries rank consistently higher than the Central and Southern parts of Europe, which can partly be due to the higher GDP per capita as there's a clear correlation with the GDP. Secondly, there is a cultural similarity and customer habits between the Northern European countries.

Figure 11

Average number of card transactions per capita in East-Central Europe



Source: ECB, 2020; Central Bank of Albania, 2020; The Central Bank of Bosnia and Herzegovina, 2020; Central Bank of North Macedonia, 2020; Central Bank of Montenegro, 2020; National Bank of Serbia, 2020.

The Baltic countries with Estonia in the first place have the highest average number of card transactions. Among the Balkan countries, North Macedonia has the lowest number of card transactions. As far as the Visegrad4 countries concerned, they have room to increase their cashless transactions.

7. The Chinese Road

We have witnessed a rapid progress in including a growing number of the population in the financial sector. According to the Global Findex, the number of globally unbanked people has decreased from 2.5 billion to 2 billion in the past three years,

and China's progress has been a major driver of this change. China has experienced a payments revolution as the country moved from a cash-based system to a system that is based on smartphones and QR codes. The new financial technologies and Chinese applications have created a viable payments system model, where banks play a less central role. China has reached a high level of banked population over the years. As opposed to the Western European region, China increased its banked population from 62 percent to over 80 percent in 6 years, despite having a less developed infrastructure from a Western perspective. China's Plan for Advancing the Development of Financial Inclusion (2016–2020) focused on small and micro businesses, peasants, urban low-income groups, impoverished groups, the disabled, the aged and other special groups. In addition, as the Center of Financial Inclusion states, financial services are provided through a diverse and competitive marketplace, with "a range of providers, robust financial infrastructure and clear regulatory framework." The Chinese government realized that non-cash payment and bank cards payment would be the developmental trend in the world; and the practical benefits for the Chinese economy would include reducing the circulation of cash, reducing transaction costs, elevating anti-money laundering, stimulating consumption. Due to these reasons, in April 2005, the People's Bank of China issued the "Several Opinions on Promoting the Development of Bank Cards Industry" which attempted to further create a favorable policy environment for the bank cards development (Li, 2014). Nonetheless, the reception of the card-based terminals among Chinese vendors ran into resistance. To start with, vendors didn't agree with the fees. Paying even 100 basis points for installing POS terminals met with opposition. Merchants did not welcome card readers, hesitant to either ingest the expenses or pass them along to clients. Second, card readers require either a wired telephonic system or a wireless system to communicate which expect merchants to integrate that technology and pay those costs. Again, merchants showed little interest in doing so, which explains why there were only just over 34 million point-of sale terminals in China at the end of 2018 (Ghosh, 2018). Due to the reasons above, the competition in the payment services market has become fierce since 2000, and traditional financial institutions were forced to share the floor with non-financial institutions. This was due to the rapid rise of computer technology, electronic communication technology, the Internet and electronic commerce. The fast-technological advancement also resulted in new regulations. The new Internet payment law stipulated that "the People's Bank of China especially Internet third party payment), virtual currency payment, mobile payment, telephone payment and more and more new payment instruments have been created" (Li, 2014). With vendors opposing cards and having difficulties with money, the utilization of an alternative framework becomes almost indispensable. The solid development of mobile phone reception and QR codes made space for an elective

framework. In the card-based framework the customer isn't required to be online, and the dealer gives the terminal and connection. The customer at that point gives the payment instrument (card). As opposed to the card-based system, the merchant is offline and provides the QR code while the customer is online. The two payment platforms that have become the market leaders in cashless payments are Alipay and WeChat Pay. A favorable aspect of this framework is that the card reading terminal has been removed totally. WeChat or Alipay work rather straightforwardly from account to account without a processor in the middle. This speeds up the process and cuts cost at the same time. It also explains why China has so few point-of-sale terminals and one of the strongest digital payment systems in the world (Klein, 2019). As opposed to the West, in China the payments processing moved from banking to the space of commerce. Unlike the Swedish model, the Chinese payments market was developed for B2C purchases. China has experienced a payments revolution as the country moved from a cash-based system to a system based on smartphones and QR codes. Although China established its own card provider—UnionPay, the merchants were slow to adapt and install the technology because of the high fees. At the same time, the internet system was well established, and the smartphone penetration rate was high. As opposed to card payments, the QR code enables the merchant to operate on lower fees because they don't have to be connected to the payment system, only the customer has to be. Digital wallets store the consumer's payment credentials electronically and allow consumers to transmit funds in multiple settings. Wallets can be funded by another digital wallet or by linking a bank account to it.

There was a regulatory gap in China allowing FinTech services to leapfrog China from being a virtually stage 1 payments system, which is dependent on traditional payment systems and cash, into being a stage 4 country, as currency accounts were created with mobile payment systems such as Alipay and WeChat Pay. This was the case before 2017, when Alipay and WeChat had used customer funds to park in overnight funds and earn interest. In 2017, however, a new regulation came into effect, and 20 percent of customer funds had to be kept in a custodial account which didn't have interest. In 2018, this increased to 50 percent and in 2019 to 100 percent. As a result of the regulation, a USD 1 billion interest, earned by Alipay and WeChat pay, was transferred to the banking system. It is proved that the government supports the banking system and lets digital payments boom. However, China went back to being a stage four payments country as the currency accounts were moved back into the banking sector (Klein, 2019).

Despite China's rapid growth, there still exists a mismatch between China's physical banking infrastructure and its non-physical telecommunications infrastructure. In

Western Europe, commercial banks have a higher penetration of physical branches near customers, and ATMs are also within reach of the population. According to 2018 World Bank data, there are 14.98 bank branches in Sweden and 8.48 in China. This indicates that Western Europe has a rather developed stage two payment system, dependent on ATMs and bank branches. However, in China the mobile money revolution has changed these determinants of financial inclusion as it has recently been developing as a stage four payment systems country. Based on Natarjan's framework, China "leapfrogged" from an early stage two payments system to a stage four payment system based on the fact that the majority of their cashless payments are transacted through Wechat Pay and AliPay in addition to the rapid growth of bank accounts and card transactions. It is also presumed that due to Western Europe's lower penetration of ATMs and bank branches, they are already saturated, and the marginal increases in the financial infrastructure in this sense do not fully have a proportional increase in the volume of card transactions per capita. However, since this is based on early-stage empirical results, the threshold between the payment stages is not quantified yet and should be left to further research down the line. This is expected because China has a strong ICT infrastructure and a high volume of cashless payments, so this also reinforces that China is at a relatively higher stage as a payment system as it has leapfrogged ahead of the major Western countries.

The 17+1 initiative was founded in 2012 between China and seventeen East-Central European countries. The aim was to promote cooperation in the fields of investment, transport, finance, science, education, and culture. China has defined three potential priority areas for economic cooperation: infrastructure, high technologies, and green technologies. China has developed extensive bilateral cooperation with the European Union. At the country level, the relationship with Germany, the UK and France has been strong, too. East-Central Europe has been having a good relationship with China on a political level. For instance, some of the countries were the first ones to establish diplomatic relationships with China. After the transition period in the 1990s, the East-Central European region started the integration process into Western Europe, while at the same time, China experienced a rapid economic growth and went global. The ties—that have loosened between China and East-Central Europe—were found again after the financial crises, and after the 17+1 cooperation was born. The Digital Silk Road was formally set down in a 2015 joint statement by China's National Development and Reform Commission, Ministry of Foreign Affairs, and its Ministry of Commerce. The stated aim was to build and strengthen China's internet infrastructure, deepen cooperation in space, and to develop common technological standards among the BRI host countries. Financial technologies being developed in China have the potential to increase financial inclusion in the countries along the Belt and

Road. China's top FinTech firms have carved out a market in e- and m-financial services in an environment in which large state-owned banks dominate and small and medium-sized enterprises (SMEs) and individuals in other developing Belt and Road Initiative (BRI) countries. Mobile payment systems could boost consumption and SME trade. The government of China is supporting the roll out of data storage infrastructure that underpins these services (Jungmann, 2018). There are two areas in which Chinese firms are particularly strong and likely to influence FinTech developments elsewhere. One is in combining separate functions in a single app, such as online shopping or gaming, micro-loans, online payments and in-person payments. The other is in making use of the large amounts of consumer data generated by these systems to provide smarter, more customized services.

8. Conclusion

Covid-19 had an impact on all segments of the economy, and payments are not an exception. Although it propelled digitalization, consumer spending declined sharply all over the world due to uncertainty which resulted in a drop in payments revenues. Simultaneously, it contributed to the decline in cash, while bringing more attention to how much the socially, technologically, and financially excluded still rely on it. Covid-19 also showed that countries with a more developed ICT infrastructure tend to enjoy the benefits of digitalization. As per the new amended model based on the World Bank and the ITU model as a means to achieve higher amounts of cashless transactions, the policy implications this paper would suggest to a policymaker would be following the same logical sequence as the conceptual framework. First of all, the policymaker needs to consider incentivizing private and public commitments towards ensuring that more people take part in a financial system in which the main determinant is the frequent usage of payment accounts. Secondly, there needs to be a regulatory and legal framework put in place with an innovative regulatory approach—for instance, creating a regulatory sandbox—in countries where it does not already exist—in order to allow for more FinTech companies to participate. The introduction of PSD2 opens up the sphere for Chinese companies as well, which would make the competition fiercer. These are all necessary steps to attain the goal of bringing more investments into the ICT infrastructure which serves as the platform for the operation of the financial infrastructure. After all, you cannot have Alipay without having smartphones in the first place. This is an example of the horizontal spillover effects as explained by the Huawei GCI report, where investments into ICT infrastructure spillover into the financial sector. The second layer highlights the different aspects of the payment system which can be explained by ICT readiness which is highlighted

in the ICT development report. When there is enough ICT readiness and the payment systems are operational, we can have more bank accounts which further the formal inclusion measures, although as we know from the literature, is not a reliable enough metric to focus on because people can have a bank account without using it, which goes against the purpose. In the final stage, accounting for everything previously said, if the economic conditions are conducive, the payment transactions will gradually shift into becoming cashless thanks to the conveniences of the system. Overall, this will all enhance economic growth, and increase the efficiency of the economy.

References

Allen, F. – Demirguc-Kunt, A. – Klapper, L. – Martinez, P. – Maria, S. (2012): The foundations of financial inclusion: understanding ownership and use of formal accounts (English). World Bank Group, Policy Research working paper; No. WPS 6290. Washington, DC.

Aportela, F. (1998): Effects of Financial Access on Savings by Low-Income People, Banco de México Research Department

Ardic, O. – Heimann, M. – Mylenko, N. (2011): Access to Financial Services and the Financial Inclusion Agenda around the World. World Bank Policy Research Working Paper 5537.

Arvidsson, N. (2019): Building a Cashless Society - The Swedish Route to the Future of Cash Payments. SpringerBriefs in Economics

Ashraf, N. – Karlan, D. – Yin, W. (2010): Female Empowerment: Impact of a Commitment. World Development, pp. 333-344.

Bai, F. – Ang, B. W. – Poh, K. L. (2002): A comparative analysis of R&D project evaluation methods. R&D Management, Volume 31, No. 1., pp. 63-75.

Beck, T. – Demirguc-Kunt, K. – Soledad, M. – Martinez, P. (2007): Reaching out: Access to and use of banking services across countries. Journal of Financial Economics, Volume 85, No. 1., pp. 234-266.

Berndt, E. – Paul, C. – Rosenblum, L. (1992): High Tech Capital Formation and Labour Composition in US Manufacturing Industries: An Explanatory Analysis. NBER Working Paper #4010.

BIS (2016): Fast payments - Enhancing the speed and availability of retail payments. Bank for International Settlements

Bossone, B. – Cirasion, M. (2001): The oversight of the payments system: a framework for the development and governance of payment systems in emerging economies. World Bank Working Paper

Capgemini (2019): World Payments Report. Capgemini Research Institute.

Central Bank of Albania (2020): Payment systems statistics. [online] available: https://www.bankofalbania.org/Payments/Payment_systems_statistics/

Central Bank of Montenegro (2020): Payment system. [online] available: https://www.cbcg.me/en/statistics/statistical/payment-system

Central Bank of North Macedonia (2020): Payment statistics. https://www.nbrm.mk/platiezhna_statistika-en.nspx

Demirgüç-Kunt, A. – Klapper, L. (2012): Measuring Financial Inclusion, The Global Findex Database. World Bank. Policy Research Working Paper 6025.

Dupas, P. – Robinson, J. (2013): Savings constraints and microenterprise development. American Economic Journal: Applied Economics, Volume 5, No. 1., pp. 163-192.

European Central Bank (2020): Payment Statistics: 2019. [online] available: https://www.ecb.europa.eu/press/pr/stats/paysec/html/ecb.pis2019~71119b94d1.en.html

Gevaudan, C., – Lederman, D. (2020): Stages of Development of Payment Systems: Leapfrogging across Countries and MENA's Place in the World. Policy Research working paper; no. WPS 9104. Washington, D.C.: World Bank Group

Ghosh, S. (2018): Payments Overview - China. Finance Finland. [online] available: https://www.finanssiala.fi/wp-content/uploads/2019/01/Payment20Overview20China.pdf

Global Findex Database (2020): [online] available: https://globalfindex.worldbank.org/node

Hartmann, M. – Gijsel, L. – Plooji, M. – Vandeweyer, Q. (2019): Are instant payments becoming the new normal? A comparative study. European Central Bank, Occasional Paper Series

Hasan, I. – Renzis, T. – Schmiedel, H. (2013): Retail Payments and The Real Economy. European Central Bank. Working Paper Series No. 1572/ August 2013.

Huawei (2017): Digital Spillover - Measuring the true impact of the digital economy. Huawei and Oxford Economics

International Telecommunication Union (ITU) (2020): Global ICT Regulatory Outlook 2020. [online] available: https://itu.foleon.com/itu/global-ict-regulatory-outlook-2020/home/

International Telecommunication Union (ITU) (2017): Measuring the Information Society Report. [online] available: https://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis/methodology.aspx

Jungmann, M. (2018): The 16+1 Cooperation and China-EU Relations - Window of Opportunity for Sustainable Development?. In.: Xin, C. (Ed.): The 16+1 Cooperation and China-EU Relationship. China-CEE Institute. [online] available: https://china-cee.eu/wp-content/uploads/2018/11/161-cooperation.pdf

Karmakar, K. – Banerjee, G. – Mohapatra, N. (2011): Towards Financial Inclusion in India. New Delhi: SAGE Publications India

Kendall J. – Mylenko, N. – Ponce, A. (2010): Measuring Financial Access around the World. World Bank Policy Research Working Paper 5253.

Kim, Y. – Kang, H. – Lee, S. (2008): Differential effects of IT investments: Complementarity and effect of GDP level. International Journal of Information Management, Volume 28, No. 6., pp. 508-516.

Klein, A. (2019): Is China's new payment system the future? The Brookings Institution.

Kosse, A. (2010): The safety of cash and debit cards: a study on the perception and behaviour of Dutch consumers. DNB Working Paper 245.

Lau, L. (1992): The Impact of computer technology on the aggregate productivity of the United States: an indirect approach. unpublished working paper, Stanford University, USA

Li, W. (2014): The Regulation of New Electronic Payment Services in China. Doctoral Thesis. Queen Mary University of London

Mas, I. – Morawczynski, O. (2009): Designing Mobile Money Services: Lessons from M-PESA. Innovations, Spring, pp. 77-91.

Medhi, I. – Gautama, S. – Toyama, K. (2009): A comparison of mobile money-transfer UIs for non-literate and semi-literate users. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, pp. 1741-1750.

Mudiarasan, K. (2009): Whose ICT Investment Matters to Economic Growth–Private or Public? The Malaysian Perspective. Electronic Journal of Information Systems in Developing Countries, Volume 37, No. 1., pp. 1-19.

National Bank of Serbia (2020): Statistics. [online] available: https://nbs.rs/en/ciljevi-i-funkcije/platni-sistem/statistika/

Natarajan, H. (2019): Developing Payment Services in the Middle East and North Africa: A Strategic Approach. The World Bank Group, Washington, DC.

OECD (2020): OECD Library. [online] available: https://www.oecd-ilibrary.org/science-andtechnology/ict-investment/indicator/english_b23ec1da-en

Parsons, D. – Gotlieb, C. – Denny, M. (1993): Productivity and Computers in Canadian Banking. In.: Griliches, Z. – Mairesse, J. (Eds): Productivity Issues in Services at the Micro Level. Springer, Dordrecht

Sarma, M. – Pais, J. (2011): Financial inclusion and development. Journal of International Development, Volume 23, No. 5., pp. 613-628.

Scholnick, B. – Nadia, M. – Saunders, A. – Santiago, C. – Fransico, R. (2008): The Economics of Credit Cards, Debit Cards and ATMs: A Survey and Some New Evidence. Journal of Banking and Finance, Volume 32, No. 8., pp. 1468-1483.

Schreyer, P. (2000): The Contribution of Information and Communication Technology to Output Growth: A Study of the G7 Countries. OECD Science, Technology and Industry Working Papers.

Stix, H. (2004): The Impact of ATM Transactions and Cashless Payments on Cash Demand in Austria. Oesterreichische Nationalbank (Austrian Central Bank), Issue 1., pp. 90-105.

The Conference Board (n.d.): Economy Database. [online] available: https://conference-board.org/data/economydatabase/total-economy-database-productivity

Wandhöfer, R. – Casu, B. (2017): The Future of Correspondent Banking Cross Border Payments. Swift Institute Working Paper No. 2017-001.

Chinese and European Ambitions in the Digital Space: A New Field for Post-Covid Competition and Cooperation

Eszter Boros

1. Introduction

The pandemic has shown that nowadays digitalization is more important than ever: digital technologies play a decisive role not only in the economy, but also in social interactions and geopolitics, i.e., in the unfolding competition among major players in our new multipolar world. Against this background of international power struggle, global actors—including China, the US and the European Union—have asserted great ambitions in the digital space in recent years, aiming at a leading role in high-tech development and setting international standards.

Although the daily news mainly covers the US–China competition, one of the most exciting aspects of this global (digital) "warfare" is the EU–China relationship. While the EU is clearly part of the Western alliance, it also wants to avoid being trapped between the two major powers (the US and China). Instead of being a "battleground", it wishes to build its own autonomous digital ecosystem (to the extent reasonably possible). This makes the EU–China relations even more complicated since the parties are generally inclined neither towards obvious cooperation, nor total confrontation. The intricate situation is well reflected in the late 2020 consensus on the Comprehensive Agreement on Investment (CAI). The shift in power within the United States spiked an important moment in the EU-China cooperation. Nonetheless, conflicts soon surfaced again between the two parties (in the form of sanctions during the spring of 2021). Thus, it will not be easy to make the CAI operational due to hostile actions and divergent views in many fields.

In this context, the interactions of the two parties' digital ambitions need to be analyzed in greater detail. The outcome is relevant not only from a geopolitical perspective, but also in terms of the global economic outlook. The pace of post-Covid recovery and prospects for long-term sustainable development depend, among others, on the success of aligning European and Chinese interests in the digital space.

This study seeks to examine the recent state of EU–China digital relations in a broader strategic context as well as in three major "technical" dimensions, i.e., 5G networks and data, online platforms and artificial intelligence (AI) and global standards and regulation. Accordingly, the paper is structured as follows. Chapter 2 discusses the digital strategies of the two parties, with relation to their economic and social governance, principles and international ties. Next, Chapter 3 aims to highlight how these considerations are reflected in more specific issues of technology and digitalization (i.e., the aforementioned three fields). Finally, Chapter 4 concludes with an outlook for the coming years.

2. Strategic Ambitions of China and the EU in the Digital Space

2.1. China

2.1.1. The Chinese Model of Digital Economy

Digitalization has long been part of China's economic development and strategic plan. This fact has also been highlighted by the pandemic as the so-called "touchless economy" (online, automatic transactions), which played a huge role in producing GDP growth even in 2020. China was the only major economy registering positive growth last year (+2.3 percent according to the data released by the country's National Bureau of Statistics on January 18, 2021 [Xinhuanet, 2021]). Previously, the Ministry of Commerce reported that China's online retail sales increased by 9.7 percent in the first nine months of 2020, compared to the same period in 2019 (Ibid., 2020). Electronic channels contributed to avoid a collapse in foreign trade: total trade rose by 1.9 percent, while cross-border e-commerce reached an outstanding 31.1 percent growth compared to 2019 (Global Times, 2021). Overall statistics show that more than one third of China's GDP comes from the digital economy (its share was 36.2 percent in 2019), and innovations in the fields of science and technology are the primary drivers of growth (CGTN, 2020; NDRC, 2020).

These results are largely underpinned by past development policies. The 13th Five-Year Plan, which was concluded in 2020, paid special attention to technology, innovation and value added within the borders of China. This is also reflected in "Made in China 2025", a program aimed at fostering domestic technology and knowledge embodied in Chinese products and services. The initiative clearly highlights the need for the fusion of traditional manufacturing and the internet, as well as building new capacities in machinery, robotics, aviation and the semiconductor industry (Ito, 2019).

During the 13th Five-Year Plan, the Chinese economy entered a new stage of development, which allows China to actively shape the landscape of global innovation. This model is going to be further extended by Beijing's renewed flagship policy line, the so-called "dual circulation." The notion, which is not completely new, but takes a new form, was first introduced by President Xi Jinping in May 2020. According to this policy, the development of China is based on the interaction of the domestic and the international economy ("internal and external circulation"). The East Asian nation intends to move further away from a purely export-led growth model. Instead, the country puts an even stronger emphasis on domestic value chains, i.e., inland production and consumption (Reuters, 2020a).

The development of domestic manufacturing and services will increasingly rely on indigenous innovation, internal skills and capacities. China aims to provide high-quality goods and services to its consumers both in domestic and foreign markets. The "dual circulation" strategy is thus not about "isolation", but the transformation of the supply side of the Chinese economy and promoting new, digital forms of consumption.

The "dual circulation" serves as a basis of the 14th Five-Year Plan, the economic and social blueprint of the Chinese government for the period between 2021 and 2025. In October 2020, party leaders endorsed the policy lines of the plan, along with a new document, a long-term strategy up until 2035 (State Council, 2020; Global Times, 2020). These plans have "technological self-reliance" at their heart: they wish to reduce China's dependence on foreign (Western) technologies. On the one hand, this is a natural reaction to the sanctions taken by the US in past years, such as limiting Chinese access to American microchips (Oertel, 2020). On the other hand, this ambition is clearly part of a comprehensive strategy to make China the number one high-tech and digital player on the world stage. Beyond manufacturing, special attention is paid to the opening-up of the services sector and transforming supply chains. The 14th Five-Year Plan and the long-term 15-Year Plan envisage a country which relies on online platforms more than ever ("platform economy") and provides "touchless" services to its customers, no matter at which point they are connected to the digital value chain. One of the most striking examples of such an integrated economy might be the automated distribution systems, with autonomous vehicles (robots) used for "last-mile" delivery.

Many of these solutions are already available in China, e.g., widespread mobile payments, online platforms for all aspects of everyday life (shopping, social interactions, entertainment), 5G networks, smart cities and smart agriculture (drones, experiments for weather modification, etc.). Since the 1990s, platforms like Alibaba, Baidu

and Tencent (together: BAT) have become an integral part of China's economy and its international image. The "digital revolution" has also been supported by manufacturers of telecommunications equipment like Huawei and ZTE. All these companies have been playing a key role in spreading Chinese technology worldwide, so their activities have gained more and more attention in geopolitics.

The rise of Chinese technology can largely be attributed to the country's characteristic innovation model, deeply rooted in history and culture. Its key feature is the interdependence of the state and the economy, or put otherwise, "a dynamic change in the power balance between the state and the private sector" (Ito, 2019, p. 51). Government policies and market innovation are hard to separate, and actual circumstances may decide which of the two plays a relatively more pronounced role in a certain period. Experts usually argue that the "digital revolution" was kickstarted by some entrepreneurs (like Jack Ma, founder of Alibaba Group) and an enthusiastic society quickly realizing the benefits of the internet. Nonetheless, after the global recession in 2008-2009, state policies started to dominate the agenda (for the case of Alibaba, see Zhang, 2020). Some aspects of this innovation model are the following: huge amounts of public finance, central and local incentives, knowledge and information sharing and a special approach to regulation (Shi-Kupfer – Ohlberg, 2019). As a legacy of Deng Xiaoping, Beijing usually prefers experiments, creating space for innovation. This is well reflected in principles like "first develop, then regulate" and "running fast in small steps." (The latter also means, at a more technical level, that in most scientific and industrial applications, China initially develops a prototype, which is then flexibly modified in several ways to achieve a breakthrough [Financial Times, 2020a].)

Just like the Western-type market-oriented model, this approach has some weaknesses, too (see Chapter 3.2 for an example). Nevertheless, special economic areas resting on the above principles have already produced global success stories like the video-sharing giant TikTok or the Xiaomi smart devices. Experimental zones are an integral part of China's reform policy, and some of them (high-tech innovation development zones [HIDZ] and demonstration zones) are specifically devoted to cutting-edge digital innovation and its use cases (China Briefing, 2020a). In 2020, there were almost 170 HIDZ in China. These provide significant tax incentives and other financial support to enterprises which qualify for national high-tech certification. Recently, the Chinese government has been putting strong emphasis on demonstration zones, too. These urban districts promote the opening-up of the services sector and the "touchless economy" (China Briefing, 2020b).

2.1.2. The Digital Silk Road

As domestic markets are becoming more mature, Chinese tech giants have started to expand globally, in line with the central government's strategy (Mogni – Goethals, 2020). The main driver of the "external circulation", the Belt and Road Initiative (BRI) has recently taken a pronounced digital turn. Beijing first extended the BRI in 2015 to include an "Information Silk Road"—its current name is "Digital Silk Road" (DSR)—, which has taken center stage since the outbreak of the pandemic. The DSR aims to merge infrastructure projects and Chinese technology. In a broader sense, the initiative is meant to create a united digital Eurasia, based on common principles, rules and standards. Participating countries can access Chinese technology in the fields of telecommunications networks, AI, cloud computing, e-commerce, electronic payments, smart cities and cybersecurity. According to data gathered by the Council on Foreign Relations (CFR), at least 16 countries have already signed related memoranda of understanding (MoU) with China or have embarked on projects connected to the DSR (CFR, 2020). These countries include Hungary, Poland, the Czech Republic, Serbia, Estonia, Turkey, Kazakhstan, South Korea and several Southeast Asian nations (see also Eurasia Group, 2020). Estimates show that until the end of 2019, China spent USD 79 billion on related investments, and this sum is expected to grow significantly in the 2020s (Deloitte China, 2019a).

A boost in DSR projects may come from the growing need for affordable digital technology. This is most prevalent in the developing countries, but even Europe is eager to mobilize funds for digital transformation (Shapiro, 2020). China can become a key source of finance and technology. (For example, in Africa, Chinese investments in the telecommunications and IT industry have already surpassed those of leading democracies and multilateral development agencies [CFR, 2020].) For emerging countries, the DSR might provide a chance to leapfrog and capitalize on the newest technologies. At the same time, this might result in a "lock-in effect", i.e., a sustained use of Chinese solutions due to high switching costs and significant network effects.

In a nutshell, Europe is now facing a very ambitious Chinese digital strategy, which has direct implications even within the borders of the EU. Related factors such as several EU members' participation in the BRI/DSR, need for investments and EU-level regulations all play an important role in a difficult EU–China relationship.

2.2. The European Union

The EU-China relations have changed significantly over the past couple of years. As Donald Trump took office as President of the United States in 2016, deep US–China divisions started to unfold at a quicker pace. Ever since, one of the main battlegrounds has been the digital space. This has put the European Union in a rather controversial position, not least because the community lost much of its "digital sovereignty" as a result of the rise of foreign big tech companies during the last two decades. Although Europe has several high-tech centers, which are important nodes in global innovation networks, the overall European digital landscape clearly depends on American and (increasingly) Chinese players (Shapiro, 2020). This is reflected in many recent developments like investigations into data practices and taxation of Facebook and Google or the debates on Huawei's participation in European 5G networks. The takeover of the leading German robotics group, KUKA, in 2016 was also a sign of increasing Chinese influence in the European market (Financial Times, 2020b).

All of these events have created the need for digital sovereignty. This notion resonates well with broader ambitions of strategic autonomy—a policy endorsed by French President Emmanuel Macron (inter alia). According to this approach, the European Union and its values should play a distinguished role on the world stage in addressing global issues such as climate change or digital standards. This idea has gained significant ground in Europe's China policy, too. Beijing has been facing stronger European demands in terms of reciprocity, level playing field and transparency.

2.2.1. The Digital Europe Strategy

The EU's digital ambitions are reflected in a comprehensive strategy and the related documents published in February 2020. Building on the 2015 European Digital Single Market Strategy, the new Commission led by Ursula von der Leyen compiled the Digital Europe Strategy (DES; see European Commission, 2020a), along with a White Paper on Artificial Intelligence and a European Strategy for Data. These documents aim to create the Union's critical digital capacities and resources, while supporting the digital transition of economies and societies (Mogni – Goethals, 2020).

The fundamental goals of the Digital Europe Strategy are the following (European Commission, 2020a):

- Technology that works for people: digital development should primarily focus on improving people's everyday life;

- A fair and competitive digital economy: level playing field, equal opportunities for developing digital skills and protection of consumer rights;
- An open, democratic and sustainable digital society: respecting fundamental rights, privacy and European values, while contributing to sustainable development;
- Europe as a global digital player: the EU is open to everyone who respects its rules, and the Union wants to play an active role in shaping the international digital space.

Key areas of the DES include AI, digital services, high-performance computers, telecommunication networks, data protection and cybersecurity, the digital transformation of industrial activities and the development of digital skills.

To address the economic and social fallout of Covid-19 and achieve sustainable development, the EU Member States and institutions made a final agreement on the next seven-year budget of the Union (Multiannual Financial Framework 2021-2027) and an auxiliary USD 750 billion recovery fund (Next Generation EU) in December 2020. The decision allows for injecting a record amount of capital (USD 1.82 trillion) into the single market over the next seven years. According to the European Council, a significant share of these funds (USD 143.4 billion) is going to be directly channeled into the fields of innovation, digitalization and the development of the single market (European Council, 2020). (Other programs accounting for almost USD 1.1 trillion are intended to promote cohesion, resilience and European values, and as such, provide further incentives for digitalization.)

2.2.2. Consequences During the Pandemic

The European efforts for digital sovereignty have been reinforced by the pandemic. After the Covid-19 outbreak in February 2020, the Union had to realize its huge dependence on China in many respects. Regarding the digital space, one of the ongoing debates is about the spread of Chinese narratives in Western online media. Last spring, many Europeans felt that Beijing took advantage of the European free press to advance its own diplomatic goals (Le Corre – Brattberg, 2020). According to such reports, Chinese commentators were re-interpreting criticisms raised against China regarding the source and control of the virus, and they tried to focus attention on medical help provided by Beijing to its European partners ("mask diplomacy") (Zeneli – Santoro, 2020). Some representatives of Chinese diplomatic missions (the so-called "wolf warriors") provoked harsh debates as they lashed out at alleged mistakes of European health authorities and governments in social media (e.g., Twitter). Some observers pointed to the fact that, at the same time, European counterparts were not granted similar access to the press within China (Zhu, 2020; Reuters, 2020b). As a pushback, the EU prepared

a report on Chinese "disinformation campaigns", which Beijing reportedly tried to block (Reuters, 2020c). In addition, the Union went on preparing an action plan against disinformation, and doing so, EU representatives clearly referred to China (WSJ, 2020). Action against "deceptive content" constitutes a part of the Digital Europe Strategy.

The EU-China tensions culminated at the high-level online summit on June 22, 2020, when Commission President Ursula von der Leyen firmly raised the issues of reciprocity and level playing field, calling for more ambition on the Chinese side to address European concerns (Le Corre – Brattberg, 2020). The EU also made it clear that the development of digital technologies must go hand in hand with respecting fundamental rights and privacy (European Commission, 2020b).

Nonetheless, the second half of 2020 saw a significant momentum of cooperation. In September, the first round of the EU–China High-Level Digital Dialogue was held. Margrethe Vestager, Vice-President for a Europe Fit for the Digital Age, stressed that both the EU and China play a decisive role in driving global trends in technology. Thus, it is vital to address existing divergences on reciprocity, data protection and fundamental rights (Ibid.).

The end of 2020 brought a kind of surprise for many, as on December 30, the Union and China concluded talks on the CAI. Although the two parties had earlier committed themselves to reaching an agreement before 2021, chances for this were regarded as rather low due to the above-mentioned difficulties (European Parliament, 2020). The consensus ensures that European investors have wider access to the Chinese market (as it reduces barriers like obligatory joint ventures in many industries and eliminates forced transfer of technology). China also tried to fulfil some related European requests (e.g., higher degree of transparency for state subsidies, adopting ILO conventions on labor rights). The CAI is not set to include rules directly affecting Chinese companies in the European digital market. EU markets are already largely open to Chinese investors, and the Union was careful not to grant (further) access to critical sectors like infrastructure and 5G (Fallon, 2021). Regarding digitalization, the CAI is mostly relevant due to the message it conveyed about cooperation.

Having said that, one must not forget that the CAI was set up in an exceptional period when the shift in power in the US created an incentive for both parties to conclude talks. (Both of them could demonstrate their "strategic autonomy" and individual strength on the world stage.) Following the agreement, it took the parties only three months to engage in outright hostility. In March this year, the EU imposed sanctions on different Chinese officials in connection with alleged human rights abuses against

the Uighur and other Muslim communities in Xinjiang. (Beijing responded with similar steps, banning some EU officials and experts from the country.) Taking the most severe direct measures against China since decades, the Union's decision may well signal a change in its cautious approach towards Beijing (Reuters, 2021). The hardening EU stance certainly follows from the fact that the Biden administration went on taking a hard line on China (for an offensive Alaska meeting of US and Chinese diplomats, see BBC, 2021b). Consequently, the European Parliament halted preparations for the ratification of the CAI (China Briefing, 2021; Financial Times, 2021d).

Albeit the lengthy process of ratification still leaves plenty of time to resolve problems, it will take a lot of diplomatic efforts to make the CAI operational and maintain the momentum of cooperation. This is because much of the tension between the West and China is rooted in long-term, structural problems. In this regard, intra-EU frictions also need to be taken into account. Several Member States are annoyed by the fact that the community's China policy is dominated by Germany and France (Politico, 2021). Many fear that these two countries use their power to navigate EU–China relations to serve their own interests (i.e., economic benefits in the case of Germany and geopolitical ambitions of France). These internal conflicts make it more difficult to stabilize relations both for Brussels and Beijing.

3. Competition and Cooperation in Particular Fields of Digitalization

3.1. Telecommunications Networks and Data Security

The next generation internet (5G) serves as the basis for current and future high-tech solutions and as such, it is necessary to maintain and increase competitiveness. By the end of 2020, China reached a high level of domestic 5G coverage: according to official data, nearly 700,000 base stations were built, which is more than planned before and remarkable in international comparison (SCMP, 2020a). 5G allows for the operation of a huge number of interconnected devices (internet of things, IoT), e.g., in smart cities and integrated manufacturing. This generates an extraordinary data flow, which has been drawing attention to privacy issues and national security.

Due to the interconnected aspects of business, technology, cybersecurity and geopolitics, 5G has become one of the most critical points in the Sino-Atlantic relations. This is because Chinese telecommunications giants made a huge progress in terms of 5G development in the last decade. Huawei and ZTE acquired an important role in building 5G infrastructure in many places in the Middle East, Central and Southeast Asia,

Africa as well as Europe (Dekker et al., 2020). The DSR may further accelerate the international expansion of these companies, including telecommunications service providers as well (China Telecom, China Unicom, China Mobile) (Stec, 2018).

The rise of Chinese telecommunications giants is primarily attributed to their cost advantage. The demand for new infrastructure expands quickly, not only in developing countries, but also in developed ones, where some regions are relatively underserved in terms of internet coverage and speed (Shapiro, 2020). Thus, the cost of network elements and devices is also a key issue in the EU. Meanwhile, the two European contenders, Nokia and Ericsson provide more expensive alternatives compared to Huawei (Ortega Klein, 2020). Huawei and ZTE, along with Xiaomi, Oppo, Vivo and Tecno are strengthening their positions in the market segment of cheap smartphones. In the developing world, there is a huge demand for devices priced below USD 300. Serving this segment opens up further business opportunities: manufacturers can also sell applications and provide other types of services to customers using their phones (Ito, 2019). This way, users get connected to the networks of the company (internet platforms, smart city solutions etc.).

Realizing the increasing role of Chinese companies in 5G development, Donald Trump decided to make Huawei a special target amid his efforts to isolate China within the international community. The most comprehensive package to curb Chinese influence came a few months before the end of Trump's presidency. This was the so-called Clean Network Program which aimed to exclude Chinese players from American telecommunications networks, cloud services and mobile apps (Straits Times, 2020). But long before endorsing the Clean Network initiative, President Trump had already put pressure on Western allies to ban the use of Huawei equipments in their 5G infrastructure. The Trump administration also made it more difficult for Chinese tech companies to access US microchip technology and supplies, which was a severe hit as the East Asian country is still quite dependent on semiconductor imports (Oertel, 2020).

The hard stance on Chinese players was explained by national security concerns. Since the Chinese model of governance and innovation is built on the interlinkages between the state, the ruling party, the state-owned and private enterprises, Western politicians started to express fears about potential data breaches and attacks. According to these concerns, Beijing could use backdoors (hidden points in 5G infrastructure) to gain confidential information and increase its influence illegally (Ortega Klein, 2020). Such fears may be underpinned by China's legal system, as according to the 2017 National Intelligence Law, telecommunications companies are obliged to share data

with domestic intelligence services in any cases (Dekker et al., 2020). Besides, there is a legal requirement to store any data on servers located within China (Puddephatt, 2020).

Huawei rejected the espionage charges several times. Even so, the American action has largely hindered the company's expansion in EU markets. Poland, the Czech Republic, Romania, Estonia and Latvia quickly accepted Donald Trump's request on 5G restrictions. These countries signed joint statements with the United States on cutting market access to vendors which might be subject to foreign interference (Politico, 2020a). Big EU countries such as France and Italy also inched closer to the American stance. Both states passed regulations which allow for government intervention to exclude "risky" vendors or the use of their equipment in telecommunication networks. As a consequence, in July 2020, Telecom Italia (TIM) did not invite Huawei to participate in its bid for the construction of Italy's 5G network. By doing so, TIM gave up a multi-year partnership with the Chinese giant (Formiche, 2020).

By and large, EU countries now have to face a really unpleasant situation as 5G-related restrictions have increased the cost of building new infrastructures, while they might also be worrying about a deterioration in Chinese relations and trade. The case of Germany is especially interesting in this regard. Chancellor Angela Merkel was among the first leaders who were approached by Donald Trump on the Huawei issue. The German stance remained, however, opaque for quite a long time. This was due to the fact that Chinese vendors had already been involved in the country's telecommunications networks (4G). Another reason was, of course, the strong economic relationship between Germany and China (Politico, 2020a). After all, the German cabinet approved a draft regulation in December 2020, which allows for the exclusion of 5G suppliers in case of security concerns. The legislation requires contenders to provide prior information and certain guarantees, which serve as a basis for authorities to evaluate the "reliability" of the project. Nonetheless, this does not entail a complete and automatic ban on Chinese equipments. The application of the new rules will become clear in future practice (Financial Times, 2020c).

To handle the controversial situation regarding foreign suppliers, the EU published a toolbox (Cybersecurity of 5G networks: EU Toolbox of risk mitigating measures) in January 2020, which is a guideline for Member States on how to set related national restrictions. Countries should pay attention to the location of the headquarters of the vendor, the surveillance rules it is subject to in its home country, and the extent to which it can withstand state interference (Politico, 2020b). The document calls on Member States to "(...) apply relevant restrictions for suppliers considered to be high risk—including necessary exclusions to effectively mitigate risks (...)" (EU Toolbox, 2020, p. 18).

These issues related to 5G infrastructures and data security lead to further questions about the use of digital content, the operations of online platforms and different approaches to global internet governance.

3.2. Online Platforms and Artificial Intelligence

The rise of large Chinese platforms (BAT) can be attributed to several factors: besides state incentives, the huge size of the domestic market, the quick social take-up of online services, and a rather unconstrained access to consumer data have all played a crucial role (Stec, 2018). In recent years, these platforms have embarked on various innovative projects. Just like their American counterparts, they have started to invest in autonomous vehicles, medical imaging and other data-driven fields (Eurasia Group, 2020). Compared to European data protection rules and approaches to privacy, data management at these Chinese firms is much more "flexible." This may be a source of difficulties and conflicts when they try to expand in EU markets.

In accordance with state policies and business plans, BAT platforms have recently increased their efforts to gain market shares in Europe. In 2019, AliExpress, operated by Alibaba, was among the top 3 online marketplaces in 13 EU member countries (mostly in Central Europe) (Dekker et al., 2020). Of course, the popularity of Chinese platforms lags well behind Amazon, e-Bay and other Western web shops. Still, they try to challenge incumbents. This is reflected in AliExpress's step of opening up its platform for local sellers in some EU countries (Spain, Italy) in 2019 (Ecommerce News Europe, 2019). In the future, Chinese marketplaces may become more attractive as a result of further progress in BRI projects. Upgraded infrastructure will namely reduce the time needed for delivering Asian products to Europe.

In recent years, the EU has taken steps to regulate platforms operating in its jurisdiction. The General Data Protection Regulation (GDPR) has proved to be an important milestone, which enables the EU to apply its rules to any market players, regardless of where they are headquartered or where they store data (Renda, 2020). In the framework of the DES, two further regulations are currently high on the agenda: the Digital Services Act and the Digital Markets Act. These proposals aim to create a strong and competitive European digital single market. To that end, platforms should expect the following actions to take place (European Commission, 2020a; Digital Services Act, Digital Markets Act):

- Enhanced oversight of platforms, especially those which reach more than 10 percent of the EU's population;
- Transparency measures regarding the algorithms used for recommendations;
- Obligations to share data with sellers who use the platform;
- Rules for level playing field, e.g., own products must not be treated more favorably in ranking compared to similar products sold in the platform;
- Ensuring that sellers can use other platforms and sell products outside the platform as well.

Based on experience with GDPR, some experts note that accepting such rules may be difficult for Chinese companies (Eurasia Group, 2020). Nevertheless, this challenge may become easier in the future as Chinese authorities themselves started to tighten market conduct rules in the digital space. By the way, this is a typical example of Chinese "ex post regulation" when the state embarks on keeping players "on the right track" after a new industry or market segment is created and has reached a certain level of "saturation." In the case of online platforms, the central government's forceful intervention first manifested itself last November when the initial public offering (IPO) of Ant Financial, Alibaba's financial arm, was suspended just before its official launch (Financial Times, 2020d). The step was motivated by fears of an online lending bubble. Yet in a broader sense, Beijing intended to curb certain distortive practices, excessive market power and social influence of online giants. In the last couple of years, these companies have been increasingly pushing for questionable price discrimination, bundling practices and constraining access to competitors' services and platforms. In fact, they have become huge and powerful enough to control many social interactions – in a way which was regarded as excessive by the central government. In April this year, Chinese regulators eventually fined Alibaba a record USD 2.8 billion on the grounds that the online giant had abused its market power (Financial Times, 2021a). Shortly afterwards, the market regulator (State Administration for Market Regulation) opened an investigation into the business practices of Meituan, China's biggest food delivery app. Furthermore, 13 companies (including Tencent, ByteDance and the financial arms of Baidu, JD.com, Meituan and Didi) were summoned to the People's Bank of China (PBOC) to discuss "prominent problems" regarding their operations (Financial Times, 2021b; 2021c). The interventions affecting these companies reveal that the Chinese innovation model may also have some "side effects", i.e., extraordinary corrections which might weaken trust.

At the same time, new state action against distortive market practices may contribute to the adaptation of Chinese platforms to the European regulatory environment. The future will tell whether the different approaches to internet and data governance

would converge. At least for today, there are three distinctive "internets" in the world (Puddephatt, 2020):

- the American internet where regulation mostly comes from private companies, through their privacy policies and terms and conditions,
- the Chinese internet regulated by the state and used for the governance of social structures,
- the European internet, which is some kind of a mixture of the aforementioned two, and the EU aims to provide a comprehensive framework for its operation.

The existence of these types of internet is actually consistent with President Xi Jinping's stance, which he explained at the 2nd World Internet Conference (WIC) in 2015. According to his remarks, every country has the right to "(...) independently choose their own path of cyber development, model of cyber regulation and Internet public policies, and participate in international cyberspace governance on an equal footing" (FMPRC, 2015). Based on this notion of "cyber sovereignty", Beijing wants to participate in setting international internet policies, and this is why it has been organizing the annual WIC (Wuzhen Summit) since 2014 (Dekker et al., 2020). The difference between the Western and Chinese models of the internet could persist in the long run, so hosting each other's platforms requires strong cooperation on particular issues.

These considerations are also valid for the field of AI, which will gain more and more importance in the upcoming years. Separate studies and further research are needed to uncover this topic in greater detail. Nevertheless, it can be asserted that China invests more and more resources in these innovative technologies. According to Deloitte China (2019b), the AI industry can be regarded as the best functioning innovation ecosystem in the East Asian country. This is due to the large amount of data available to companies and the human capital applied in the sector. Chinese companies are planning to use AI to revolutionize traditional industries like manufacturing, mining or even pig farming. As Huawei's revenues fell considerably (by 42 percent on an annual basis) in the last quarter of 2020 due to US restrictions, the tech giant is now eyeing a more diversified business portfolio, which would leverage its cutting-edge technology in creative ways. According to media reports, the company has embarked on using face recognition in pig farming in order to track the health condition, weight and diet of individual pigs (BBC, 2021a). (Considering that China has the world's biggest pig farming industry, the relevance of this step should not be downplayed.) Other Chinese use cases of AI may even be a threat in the fields of security and intelligence. All these developments point to the conclusion that AI will become a major tool of economic and geopolitical "warfare" in the near future.

Just like China, the European Union has also set the target to become a global leader in AI. The European Commission's White Paper on Artificial Intelligence (2020) envisages the establishment of excellence and testing centers and public-private partnership in this field. The document pays special attention to AI ethics and regulation as well. EU work on AI is all the more crucial as this is an area where the community still has a good chance to take the lead with regard to international regulation and standards. Europe can actually become the first major player to provide official guidance in this high-tech segment. This April, the Commission proposed a set of rules for the use of AI, including a ban on applying it for purposes like mass surveillance or "social scoring" (which would hurt personal rights and manipulate human behavior) (Voanews, 2021). If it came to global standard setting, such an approach would certainly confront that of China where a "social credit system" (i.e., a set of databases to assess the trustworthiness of individuals and entities) is being implemented (SCMP, 2020b). Human rights are just an example of many more, less visible issues which could entail controversy among the West and China once an international framework for AI is to be laid down.

3.3. Regulation and Standards

As China is rising as a high-tech power, its ambitions to participate in international standard-setting are also getting stronger. The example of the Wuzhen Summit clearly shows that Beijing aims to play a prominent role in laying down protocols for new technologies, also by strengthening its voice in multilateral standard-setting bodies (e.g., International Telecommunication Union [ITU], International Organization for Standardization [ISO]) (Eurasia Group, 2020). China is now working on a comprehensive standardization strategy called China Standards 2035. This 15-year blueprint is going to set the stage for creating high-tech standards with Chinese characteristics (Dekker et al., 2020). Efforts to produce domestic standards in the fields of 5G, AI, IoT and other cutting-edge technologies may then translate into a widescale international adoption. The DSR will certainly play a key role in this process since investments along the New Silk Road rely on Chinese technology.

The European Union has also realized the importance of global digital standards. This is a field where the community has achieved remarkable results in recent years as it managed to extend its rules to foreign players as well. First and foremost, this is true in the case of the GDPR (companies wishing to enter the EU single market have to comply with it regardless of where they process and store data). The Union has similar ambitions regarding AI regulation. When creating such "extraterritorial"

rules, the EU relies on the attractiveness of its large single market. The EU legislation also inspires other countries to pass similar regulations: as some experts highlight, the 2017 Cybersecurity Law of China includes some elements of the European data protection framework (e.g., prior consent to obtain users' data) (Ibid.).

Nevertheless, Europe is aware of the fact that a prominent role in global standard-setting also requires own high-tech achievements (i.e., not just advanced regulation). As noted earlier, the Union has been lagging behind the US and China in terms of research and development in the digital space and several related cutting-edge tech segments. Europe does not have its own global digital "champions" comparable to Facebook, Google, Amazon or even Alibaba and Tencent. The DES has just been created in order to catch up. This will impact the EU–China and the EU-US relations in the coming years. Most likely, we will see varying or mixed phases of competition and cooperation. Extreme turbulence might be expected in some high-tech segments, which now count as top drivers of European innovation. Edge computing is one example. This technology can process and store data closer to the place of use, as an alternative or complement to cloud applications. It can thus contribute to achieving a higher degree of European digital sovereignty (Shapiro, 2020).

4. Outlook

Efforts for technological "self-reliance" and "autonomy" have recently been strengthened both on the Chinese and European side. In the case of China, we can expect a quick mobilization of inherent innovation skills and capacities, which may have a profound impact on the global economic and geopolitical landscape in the medium term. A true breakthrough would follow if Beijing managed to cut back its dependence on foreign (Western) technology in critical fields like chip making.

The upcoming years will most probably see rising tensions between the US and China as their conflicts are of a systemic and structural nature (not constrained to rhetorical struggles). The new US President Joe Biden has been voicing similar criticisms and doubts on China just like his predecessor, Donald Trump. Biden's approach seems to be new in terms of building alliances: he wishes to closely align his China policy with that of European counterparts. This will actually leave less room for maneuver for Europe and more "ammunition" for European voices who urge a tougher stance towards China in terms of market conduct and other issues (intelligence, transparency, civil society, etc.). This has already become apparent considering the renewed condemnations of Beijing's human rights record. Nonetheless, the strong European

interest in economic cooperation with China will also remain a major driving force in the following years.

In sum, current global developments suggest that the European Union needs to take even more sophisticated action to reach mutually beneficial agreements on particular issues with Beijing. While such an outcome is now less likely regarding 5G, other fields like e-commerce and AI (along with another global issue, climate change) still provide good opportunities for matching interests. To reap the potential benefits of cooperation, the two parties can resort to the regular EU–China digital dialogue as well as monitoring the progress made on the CAI (if any) and incentives for firm-level partnerships.

References

BBC (2021a): Huawei Turns to Pig Farming as Smartphone Sales Fall. February 19, 2021. [online] available: https://www.bbc.com/news/business-56121470

BBC (2021b): US and China Trade Angry Words at High-Level Alaska Talks. March 19, 2021. [online] available: https://www.bbc.com/news/world-us-canada-56452471.

CGTN (2020): China's Digital Economy Reaches $5 Trillion in 2019. July 6, 2020. [online] available: https://news.cgtn.com/news/2020-07-05/Value-added-of-China-s-digital-economy-totals-5-trillion-USD-in-2019-RSMcs86HmM/index.html

China Briefing (2020a): Where to Invest in China: A Primer on its Economic Development Zones. April 17, 2020. [online] available: https://www.china-briefing.com/news/chinas-economic-development-zones-types-incentives/

China Briefing (2020b): How Beijing Is Driving China's Services Sector Expansion. September 22, 2020. [online] available: https://www.china-briefing.com/news/chinas-services-sector-expansion-beijing-9-industry-reforms/

China Briefing (2021): EU-China Investment Deal in Doubt, Businesses Caught in Geopolitical Crossfire. March 26, 2021. [online] available: https://www.china-briefing.com/news/eu-china-investment-deal-in-doubt-businesses-caught-in-geopolitical-crossfire/

Council on Foreign Relations (2020): Assessing China's Digital Silk Road Initiative. A Transformative Approach to Technology Financing or a Danger to Freedoms? [online] available: https://www.cfr.org/china-digital-silk-road/

Dekker, B. – Okano-Heijmans, M. – Zhang, E. S. (2020): Unpacking China's Digital Silk Road. Clingendael Netherlands Institute of International Relations. July 2020. [online] available: https://www.clingendael.org/sites/default/files/2020-07/Report_Digital_Silk_Road_July_2020.pdf

Deloitte China (2019a): BRI Update 2019 – Recalibration and New Opportunities. [online] available: https://www2.deloitte.com/content/dam/Deloitte/cn/Documents/ser-soe-br/deloitte-cn-bri-update-2019-recalibration-and-new-opportunities-en-190422.pdf

Deloitte China (2019b): Rising Innovation in China. China Innovation Ecosystem Development Report. September 2019. [online] available: https://www2.deloitte.com/content/dam/Deloitte/cn/Documents/innovation/deloitte-cn-innovation-china-innovation-ecosystem-report-en-191101.pdf

Ecommerce News Europe (2019): AliExpress Welcomes Sellers from Europe. May 10, 2019. [online] available: https://ecommercenews.eu/aliexpress-welcomes-sellers-from-europe/

Eurasia Group (2020): The Digital Silk Road: Expanding China's Digital Footprint. April 8, 2020. [online] available: https://www.eurasiagroup.net/files/upload/Digital-Silk-Road-Expanding-China-Digital-Footprint-1.pdf

European Commission (2020a): Shaping Europe's Digital Future. Brussels, February 19, 2020. [online] available: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0067&from=EN and The European Digital Strategy. [online] available: https://ec.europa.eu/digital-single-market/en/content/european-digital-strategy

European Commission (2020b): EU–China: Commission and China Hold First High-level Digital Dialogue. Press Release. September 10, 2020. [online] available: https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1600

European Parliament (2020): EU–China Comprehensive Agreement on Investment. Levelling the Playing Field with China. European Parliamentary Research Service, Briefing. September 2020. [online] available: https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/652066/EPRS_BRI(2020)652066_EN.pdf

European Strategy for Data (2020): European Commission, Brussels, February 19, 2020. [online] available: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0066&from=EN

EU Toolbox of Risk Mitigating Measures (2020): NIS Cooperation Group, CG Publication 01/2020. [online] available: https://ec.europa.eu/digital-single-market/en/news/cybersecurity-5g-networks-eu-toolbox-risk-mitigating-measures

Fallon, T. (2021): The Strategic Implications of the China-EU Investment Deal. The Diplomat. January 4, 2021. [online] available: https://thediplomat.com/2021/01/the-strategic-implications-of-the-china-eu-investment-deal/

Formiche (2020): Major Italian Telecoms Company TIM Drops Huawei from 5g Bidding. July 9, 2020. [online] available: https://formiche.net/2020/07/major-italian-telecoms-company-tim-huawei-5g/

Financial Times (2020a): China Plans Hybrid Assault Vessel to Strengthen Overseas Power. July 25, 2020. [online] available: https://www.ft.com/content/5f0e15d8-406a-47f1-9be3-1a9ace242830

Financial Times (2020b): China Is Putting EU Countries Against Each Other. May 24, 2020. [online] available: https://www.ft.com/content/4ca9aafe-9c37-11ea-adb1-529f96d8a00b

Financial Times (2020c): Germany Sets High Hurdle for Huawei. December 16, 2020. [online] available: https://www.ft.com/content/cadc6d26-97e1-4e63-b6ca-f24110c90379

Financial Times (2020d): Beijing Says it Halted $37 Billion Ant IPO to Protect Market Stability. November 4, 2020. [online] available: https://www.ft.com/content/eb0746f1-51fe-438d-886b-18bb7cc9456f

Financial Times (2021a): Chinese Regulators Fine Alibaba Record $2.8bn. April 10, 2021. [online] available: https://www.ft.com/content/bb251dcc-4bff-4883-9d81-061114fee87f

Financial Times (2021b): Meituan Becomes Second Chinese Tech Giant to Be Hit with Antitrust Probe. April 26, 2021. [online] available: https://www.ft.com/content/e59d7c0a-95d9-41eb-b068-b10c71e6da48

Financial Times (2021c): Chinese Regulators Tell Fintech Groups to Fix 'Problems.' April 30, 2021. [online] available: https://www.ft.com/content/e69d7064-a126-47c4-a57c-58489ba59d0b

Financial Times (2021d): Sanctions Row Threatens EU-China Investment Deal. March 24, 2021. [online] available: https://www.ft.com/content/6b236a71-512e-4561-a73c-b1d69b7f486b

Global Times (2020): China Sets 'Pragmatic' Targets Through 2035. October 29, 2020. [online] available: https://www.globaltimes.cn/content/1205131.shtml

Global Times (2021): Cross-Border E-Commerce Contributes to China's Foreign Trade in 2020, with 31.1% Annual Growth Amid Pandemic. January 14, 2021. [online] available: https://www.globaltimes.cn/page/202101/1212876.shtml

Ito, A. (2019): Digital China: A Fourth Industrial Revolution with Chinese Characteristics? Asia-Pacific Review, 26:2, pp. 50-75.

Le Corre, P. – Brattberg, E. (2020): How the Coronavirus Pandemic Shattered Europe's Illusions of China. Carnegie Endowment for International Peace. July 9, 2020. [online] available: https://carnegieendowment.org/2020/07/09/how-coronavirus-pandemic-shattered-europe-s-illusions-of-china-pub-82265

Ministry of Foreign Affairs of the People's Republic of China (FMPRC) (2015): Remarks by H.E. Xi Jinping President of the People's Republic of China at the Opening Ceremony of the Second World Internet Conference. Wuzhen, December 16, 2015. [online] available: https://www.fmprc.gov.cn/mfa_eng/wjdt_665385/zyjh_665391/t1327570.shtml

Mogni, A. – Goethals, A. (2020): Perspectives on an EU Dialogue with China on Digitalization. European Institute for Asian Studies, Policy Brief, 06/2020 (July 2020). [online] available: https://www.eias.org/wp-content/uploads/2019/07/Policy-Brief-5G_Mogni_Goethals_EU-CN-Dialogue-Digitalization.pdf

National Development and Reform Commission (2020): Report on the Implementation of the 2019 Plan for National Economic and Social Development and on the 2020 Draft Plan for National Economic and Social Development. Delivered at the Third Session of the Thirteenth National People's Congress on May 22, 2020. [online] available: http://www.xinhuanet.com/english/download/nationaleconomic.pdf

Oertel, J. (2020): China: Trust, 5G and the Coronavirus Factor. In: Hobbes, C.: Europe's Digital Sovereignty: From Rulemaker to Superpower in the Age of US-China Rivalry. Essay Collection, European Council on Foreign Relations. July 2020. pp. 24-32. [online] available: https://ecfr.eu/archive/page/-/europe_digital_sovereignty_rulemaker_superpower_age_us_china_rivalry.pdf

Ortega Klein, A. (2020): The EU's Bid for Digital Sovereignty. In: Hobbes, C.: Europe's Digital Sovereignty: From Rulemaker to Superpower in the Age of US-China Rivalry. Essay Collection, European Council on Foreign Relations. July 2020. pp. 32-43. [online] available: https://ecfr.eu/archive/page/-/europe_digital_sovereignty_rulemaker_superpower_age_us_china_rivalry.pdf

Politico (2020a): Trump and Friends: Where European Countries Come Down on Huawei. May 26, 2020. [online] available: https://www.politico.com/news/2020/05/26/europe-huawei-5g-281701

Politico (2020b): Europe's Huawei Plan Explained. January 29, 2020. [online] available: https://www.politico.eu/article/europe-eu-huawei-5g-china-cybersecurity-toolbox-explained/

Politico (2021): Germany's Drive for EU-China Deal Draws Criticism from Other EU Countries. January 1, 2021. [online] available: https://www.politico.eu/article/germanys-drive-for-eu-china-deal-draws-criticism-from-other-eu-countries/

Puddephatt, A. (2020): Governing the Internet. In: Hobbes, C.: Europe's Digital Sovereignty: From Rulemaker to Superpower in the Age of US-China Rivalry. Essay Collection, European Council on Foreign Relations. July 2020. pp. 13-24. [online] available: https://ecfr.eu/archive/page/-/europe_digital_sovereignty_rulemaker_superpower_age_us_china_rivalry.pdf

Renda, A. (2020): Artificial Intelligence: Towards a Pan-European Strategy. In: Hobbes, C.: Europe's Digital Sovereignty: From Rulemaker to Superpower in the Age of US-China Rivalry. Essay Collection, European Council on Foreign Relations. July 2020. pp. 54-62. [online] available: https://ecfr.eu/archive/page/-/europe_digital_sovereignty_rulemaker_superpower_age_us_china_rivalry.pdf

Reuters (2020a): What We Know About China's 'Dual Circulation' Economic Strategy. September 15, 2020. [online] available: https://www.reuters.com/article/china-economy-transformation-explainer/what-we-know-about-chinas-dual-circulation-economic-strategy-idUSKBN2600B5

Reuters (2020b): As China Pushes Back on Virus, Europe Wakes to 'Wolf Warrior' Diplomacy. May 14, 2020. [online] available: https://www.reuters.com/article/us-health-coronavirus-europe-china-insig/as-china-pushes-back-on-virus-europe-wakes-to-wolf-warrior-diplomacy-idUSKBN22Q2EZ

Reuters (2020c): China Pressured EU to Drop COVID Disinformation Criticism: Sources. April 25, 2020. [online] available: https://www.reuters.com/article/us-health-coronavirus-eu-china/china-pressured-eu-to-drop-covid-disinformation-criticism-sources-idUSKCN227030

Reuters (2021): EU, China Impose Tit-for-Tat Sanctions over Xinjiang Abuses. March 22, 2021. [online] available: https://www.reuters.com/article/us-eu-china-sanctions-idUSKBN2BE1AI

Shapiro, J. (2020): Europe's Digital Sovereignty. In: Hobbes, C.: Europe's Digital Sovereignty: From Rulemaker to Superpower in the Age of US-China Rivalry. Essay Collection, European Council on Foreign Relations. July 2020. pp. 6-13. [online] available: https://ecfr.eu/archive/page/-/europe_digital_sovereignty_rulemaker_superpower_age_us_china_rivalry.pdf

Shi-Kupfer, K. – Ohlberg, M. (2019): China's Digital Rise. Challenges for Europe. Mercator Institute for China Studies (MERICS). No. 7 (April 2019). [online] available: https://merics.org/sites/default/files/2020-06/MPOC_No.7_ChinasDigitalRise_web_final_2.pdf

South China Morning Post (2020a): China Says it Has Built 700,000 5G Base Stations, More than Rest of World Combined. November 12, 2020. [online] available: https://www.scmp.com/tech/big-tech/article/3109512/china-says-it-has-built-700000-5g-base-stations-year-more-rest-world

South China Morning Post (2020b): What is China's Social Credit System and Why Is It Controversial? August 9, 2020. [online] available: https://www.scmp.com/economy/china-economy/article/3096090/what-chinas-social-credit-system-and-why-it-controversial

State Council of the People's Republic of China (2020): China Proposes Development Targets for 14th Five-Year Plan Period. [online] available: http://english.www.gov.cn/news/topnews/202010/29/content_WS5f9abb2dc6d0f7257693e9e5.html

Stec, G. (2018): The Invisible Silk Road: Enter the Digital Dragon. European Institute for Asian Studies. EU-Asia at a Glance, May 2018. [online] available: https://www.eias.org/wp-content/uploads/2016/03/EU_Asia_at_a_Glance_Stec_DSR_2018-1.pdf

The Straits Times (2020): US Moves to Cut China out of its Telecoms, Internet Landscape. August 6, 2020. [online] available: https://www.straitstimes.com/world/united-states/us-moves-to-cut-china-out-of-its-telecom-internet-landscape

Voanews (2021): European Union Moves to Regulate Artificial Intelligence. April 21, 2021. [online] available: https://www.voanews.com/europe/european-union-moves-regulate-artificial-intelligence

The Wall Street Journal (2020): EU Levels Sanctions Over Hong Kong Security Law, Inching Toward Tough U.S. Stance on China. July 28, 2020. [online] available: https://www.wsj.com/articles/eu-countries-sanction-china-over-hong-kong-security-law-11595957097

White Paper on Artificial Intelligence (2020): European Commission. Brussels, February 19, 2020. [online] available: https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf

Xinhuanet (2020): China's Online Retail Sales up in First Three Quarters. November 1, 2020. [online] available: http://www.xinhuanet.com/english/2020-11/01/c_139482505.htm

Xinhuanet (2021): China's GDP Tops 100 Trillion Yuan in 2020. January 18, 2021. [online] available: http://www.xinhuanet.com/english/2021-01/18/c_139677413.htm

Zeneli, V. – Santoro, F. (2020): China's Disinformation Campaign in Italy. The Diplomat. June 9, 2020. [online] available: https://thediplomat.com/2020/06/chinas-disinformation-campaign-in-italy/

Zhang, L. (2020): When Platform Capitalism Meets Petty Capitalism in China: Alibaba and an Integrated Approach to Platformization. International Journal of Communication, Volume 14, pp. 114-134.

Zhu, Z. (2020): Interpreting China's 'Wolf-Warrior Diplomacy.' The Diplomat. May 15, 2020. [online] available: https://thediplomat.com/2020/05/interpreting-chinas-wolf-warrior-diplomacy/.

Media and Reality: The Chinese Soft Power in Action and the Geopolitical Relevance of News Media

Henrietta Hegyi

1. Introduction

In today's geopolitics, cyberspace has become not just the 5th domain of power but in some respects, one of the most important "place" for a country to establish a steady brand. The soft power of a country is a key factor in diplomacy, trade and social relations. In this paper, the economic relations of Hungary and China in the 2017-2019 is analyzed and compared with the country's image in the Hungarian online media to examine whether it shows a real a picture or a distorted one.

The two theses are the following:

- China does not have as much economic influence in Hungary as the media coverage of key China-related events would suggest.
- The Hungarian online news media presents the news about China in the form of either unilaterally negative or unilaterally positive or neutral press releases, real analysis, while the appearance of critical, multi-position writing is not typical, and the distortion is conspicuous compared to foreign news.

It is crucial to note that the image of China presented in the (online) media is not the same as the public opinion, although they have a strong effect on each other. It is also relevant that the market is dominated by foreign investors, so it can be said that the Hungarian media (similarly to other countries in the region) is strongly influenced by power interests (Paál, 2013, pp. 30-35). While western consumers are able to support independent journalists directly or indirectly—for example through donations, in small Central European markets neither the possibility (income) nor its tradition have developed.

According to a poll by PAIGEO from 2018-19, people are primarily informed about current foreign policy issues through television (58.6%), while the second largest source is the Internet (24%). The popularity of the two categories depends on age. Younger people are more likely to learn from the Internet, older people more likely to learn from television (Bendarshevskij – Gere, 2019, pp. 11-12).

A 2017 survey made by the Publicus Institute shows that half of the adult population (50%) learns from television and about the third (36%) from the Internet (Ibid.). Although the number of those who choose television is still significant, it seems that, on the one hand, it is constantly declining as a primary medium, and, on the other hand, it is already much less important in the lives of younger generations. There are fewer and fewer people choosing the print media too, regardless of age.

Thus, in order to examine China's image, it would be useful to examine television content as well, however, this is problematic in several respects: on the one hand, it is difficult to find any information about previous broadcasts. On the other hand, this market is much more limited, the content presented is highly dependent on ownership, and the number of channels is finite. In comparison, the possibilities of online media are limitless. Although major news portals are also exposed to political influence, the same news can usually be read in plenty of places, including various blogs or studies by experts. In this respect, the online source of information is freer and consumers have more choice.

Within the framework of the Chinfluence project, a total of 3,921 Hungarian publications published between June 2010 and June 2017 on topics related to China's economic and/or political affairs were examined. The sources of the articles were provided by the national media covering the 15 most read, listened or viewed political and/or economic topics—dailies, economic and political weekly newspapers, radio and television broadcasters, and online news portals. Among the examined media were tabloid news sources, public service and commercial service providers, so the sample was very diverse.

The China CEE Institute conducted several researches on the perception of Hungarian-Chinese relations among Hungarian citizens, and the most recent and most relevant publication of which was published in 2018, edited by Chen Xin. This research presents not only the opinion and information of Hungary, but also the countries of the whole region, thus providing an opportunity for comparison. However, it is important to emphasize in connection with the methodological part of the research that the majority of the respondents did not come from average laymen, but from the staff of various research institutes, institutions and foundations, presumably partly from the working relationships of the research institute. This distorts the results somewhat, as a large number of experts also took part in the survey, representing a completely different category in terms of information than the average Hungarian citizen. In total, 16,000 people surveyed formed the sample based on the number of states participating in the 16+1 cooperation. The survey is considered representative by gender, age and education (Xin, 2018, p. 6).

Based on the results revealed by GKI, Slovenia, Romania, Serbia and Bulgaria are considered to be the fastest in China over the past two years, and Bosnia and Herzegovina and Macedonia the slowest (Ibid., p. 2). Regarding whether China's importance has increased or decreased in the last 5 years, 61 percent of respondents answered that it has increased very much or much (category 4 or 5 on the original scale), while only 4 percent claimed that it decreased. Perhaps more surprisingly, slightly more than half of those surveyed had heard of 16+1 collaboration, although only 1 percent knew all the details, 28 percent knew almost nothing about its goals or operation, and 24 percent were aware of only a few details (Ibid.).

Research on Hungary shows that people have rated China's growth rate over the past two years on a scale of -100 to 100, which does not seem slow, but only ranks 11th among the rest and is below the +43 Central European average (Ibid., p. 41). Regarding how the importance of China has changed in the last five years, the Hungarian respondents gave a value of +17, which is high above the average of +1 (Ibid., p. 42). To the question of how strong our country's relationship with China is, the answer of +8 is again not too strong compared to the EU average of +13.

It is important to note that this research is not intended to (and cannot) provide a complete picture of Chinese soft power in the media, but only to add a contribution to the growing body of analysis on the subject currently underway.

2. Soft Power and Country Image

In order to research China's influence in our country, we need to introduce concepts such as "soft power" and "country image". The examination of the soft power of different countries has a long history and can take many different forms, depending on the purpose. The concept of soft power was introduced by Joseph Nye in the late 1980s. According to him, power is the ability to influence the behavior of others in order to achieve a desired goal or outcome, and this can be done in several ways: by threat; by payment; or by attractive qualities that make the subject want to cooperate (Nye, 2005, p. 5). In the case of states, this may involve a wide variety of attributes: wealth, power, success, a particular sympathetic attribute such as good food or public mood. In this sense, it is also important in world politics to identify and exploit positive characteristics in order to control others and set the agenda—especially in today's globalized, digitalized world.

It is difficult to measure the soft power of a country, especially in terms of a particular dimension (e.g., the soft power of its image in online news media). As it is a complex process, it is worth looking at a number of existing studies and drawing conclusions from all of them. The present study aims to contribute to this complex picture by providing a new building block—noting that it is far from giving a complete picture of Chinese soft power in our country.

The IfG-Monocle Soft Power Index measures the soft power resources of 26 countries by combining statistical metrics and subjective panel assessments. Jonathan McClory, creator of the Soft Power 30 Index and author of the annual Soft Power Report, was one of the main contributors of the list (Softpower30, 2019). The metrics were organized according to a framework of five sub-indices covering culture, diplomacy, education, business/innovation and government. The index is supposed to measure the soft power resources of countries and does not translate directly into the influence of skills.

China's traditional culture has always attracted many foreign people, as a result of which hundreds of Confucius Institutes have been established around the world to teach its language and culture. Foreign student enrolment in China has grown from 36,000 a decade ago to at least 240,000 in 2010 (Segev, 2016, p. 192). Despite all this, China has so far not ranked particularly highly in aggregate global soft power lists, usually coming in 10th place in the Soft Power 30 Index (softpower30.com). Yet it has achieved higher and higher ranks over the last six years: it was the 30th in 2015 (Softpower30, 2015), 19th in 2018-19 (Monocle Soft Power Survey, 2018-19) and 17th in 2019 (McClory, 2019, p. 5).

Beyond the overall rankings, it is also worth noting that China performs well in some areas, for example, it is the world's leading destination for African students in terms of education - and is popular with international students overall (Breeze, 2018), and according to some analyses, the second most popular education 'powerhouse' in the world (Cai, 2020). China also has the largest diplomatic network in the world, overtaking the US in 2019, according to the Lowy Institute's Global Diplomacy Index (Lowy Institute, 2019).

Among the soft power measures, it is also important to highlight the Global Presence Index compiled by the Royal Elcano Institute, which shows the presence of individual states in the world and in Europe, along several dimensions (technological presence, culture, diplomacy, military presence, etc.). Also, with the assistance of the Royal Elcano Institute, the ETNC (European Think-tank Network on China) has prepared its 2021 Soft Power Report, which shows that Chinese soft power in Hungary is

negligible, that the news focuses on economic events and that the pro-government media tend to paint a slightly positive picture, while the opposition media a slightly negative picture of the Eastern state. The Chinese side focuses its persuasive power on the political elite (Matura, 2021, p. 51) rather than the general public. This is probably partly the reason why China's popularity is more in the field of education programs. However, the majority of Hungarians have a rather negative view of China. One good example is that 40 percent of Hungarians fully or partly believe that the Chinese state deliberately created and spread the coronavirus (Matura, 2020).

A country's image is a concept at the crossroads of policy studies, tourism and marketing, the definition of which, but especially its measurability, serves as an ongoing topic of discussion for researchers. However, pretty much everyone agrees that the better the image of a given country, the more favorable the conditions for promoting economic growth, the more attractive it is to tourists or even foreign investors. One of the basic tools for building a positive country image is to appear in the media. The condition for someone to be able to think good about a given country is that they must first and foremost know the country, if not in its full depth, but at least have a general picture of it.

Although in today's world, thanks to the transport achievements, we can travel relatively freely and cheaply to the most remote areas, we are not expected to embark on the road without knowing Hungary, for example, and use a finite number of other countries. resources to get to know our country. In situations such as this, it is quite specifically a question of selling a product or justifying the sale. This requires some knowledge first, which makes our country attractive, just like a desirable product. For this process to be as successful as any other product, differentiation is needed. How is a country different, how is it better than its competitors in a given category? This is one of the main issues in building any brand (Bauer-Berács, 2007).

A country's image, on the other hand, is a multidimensional, dynamically changing concept. The consensus among experts about it is only that every country has an image. According to the most common perception—the culture, economy, political life, products, inhabitants, etc. of a country—its complex judgment, i.e., the totality of the image of each factor, is what we refer to as a country image. According to a possible, sufficiently broad but concise definition, "the image of a country is the totality of views, beliefs, opinions formed about a given country" (Kotler et al., 1993, p. 141). In real life, this develops spontaneously among recipients based on information, but in the same way, whether the image of a person or brand, it can be consciously shaped. Examples of conscious image formation can be found over the years, which continuously shape both the internal and external image of countries.

The most frequently researched area of country image is the country-of-origin effect, which is also strongly connected to the economic field of international relations and marketing. Perhaps its popularity is also due to the latter, as it is able to provide more tangible, numerical data as opposed to the approaches of social science. However, this says little about the picture of society, atmosphere, political situation, technological development and just because it can be quantified in some form, it does not mean that it is more accurate in all respects—especially if we look at it from the field of political science and international studies. The image of the country itself, like the brand names, is mostly made up of stereotypes and preconceptions.

According to the orientation of the country image it can be; internal image and external image (Szeles, 1998; Barát, 1997). The internal image is what the inhabitants of one country think of themselves, and the external image is what foreigners think of another country. There is no consensus in the profession that the cultural, religious, political, geographical, etc.—that is, their concepts treated as products—experiences, impressions can be better described by the duality of image and image, or that the country is itself simply an extremely complex product to which the characteristics of the product image apply.

Thus, the country image itself is a complex concept, for example, Barabara Jenes (2012) collected the following types of definitions from a plethora of different concepts; perception-based, belief-based, opinion-based, association-based, stereotype (schema)-based, attitude-based. A full description of these would, of course, exceed the scope and content of the dissertation. Hereafter, by country image I mean the set of knowledge, opinions, stereotypes that people think about and which influence their behavior, for example, by choosing a destination, choosing a place of residence, intent to invest, planning studies abroad, actually one country is chosen over the other.

Since the definition of country image is also a matter of debate, it is not surprising that completely different solutions have been found for its examination. Country theories usually focus on products, while others line up consumers' perceptions of topics such as economic, political, or societal perceptions, by questionnaires on these topics. For example, a questionnaire can be used to research the impression of a given country in a given circle of recipients, or the impressions of the people of a country about their own country (internal image). In the case of product testing, market data can help; when and how much of the same product is consumed—or by examining specific periods, it is also possible to find out how a piece of news that generates a lot of media coverage affects consumption. Finally, media research can also provide useful guidance for mapping the country's image. What is certain is that the tests should

be performed in parallel, and the results obtained thereby should be compared or even repeated periodically for a more accurate end result.

3. The Economic Relationship between China and Hungary

After a detailed analysis of the concepts, the size and nature of China's economic role in Hungary have been described. In the course of the analysis, the directions of trade and investments are in the focus, but other, at least as important processes, such as finance or the real estate market will also be mentioned. The latter is an interesting cross-section of the Hungarian economy and Chinese relations today, as the Chinese people (mostly businessmen) are buying more and more expensive real estates in Budapest, but data are not yet available due to the novelty of the phenomenon. The analysis does not cover other topics because they appear less in the media in connection with the news presented later, so their role in image formation is smaller.

On the Chinese side, aspects that often form the five pillars of the Belt and Road Initiative (BRI) are generally presented, on the basis of which the structure of political, economic and trade cooperation with China can be understood. These are, in order: 1) politics, 2) trade and investment, 3) finance, 4) cultural relations, and 5) people to people, i.e., direct relations between people. While trade and finance belong to the economic side, direct relations between politics, culture and people belong to the subject of communication, governance, international relations, sociology. It also shows how important non-economic factors are in the diplomatic relationship, such as the image of the country, or specifically the image of the Sino–Hungarian relationship and the public opinion formed about it.

Focusing on trade, China is a key partner being our most important source of imports (USD 5.4 billion) after Germany (USD 25.4 billion) (OEC, 2017). According to OEC data, China exports the largest amount of vehicles, 20 percent, with starters accounting for 8.5 percent, followed by automotive parts with 6.7 percent. In 2018, Hungary carried out 80 percent of its exports and 74 percent of its imports with the European Union. The foreign trade surplus in products decreased by EUR 173 million.

Overall, the main goal of Asian FDI flowing into the CEE region is to enter the EU market and, at the same time, to enter the markets of the CIS region, the Mediterranean countries and the EFTA. According to a study published in 2018, for almost all Asian companies surveyed, the existing Western European connection in the European market means significant motivation. Another important aspect is stability, under which

one can think of benefits such as better protection of property rights compared to mainland countries (Szunomár – McCaleb, 2018, p. 10).

In addition to China, Hungary and South Korea are among Hungary's largest Asian investors. At the same time, other Asian countries are also worth considering. The role of Hong Kong, Macao and Taiwan is particularly interesting.

Table 1

Capital stock of East Asian countries in Hungary (2018)

Country	FDI	FDI by ultimate investor	direct investment as a percentage of total	direct investment by ultimate investor as a percentage of total
China	166	1826	0.22	2.39
Hongkong	505	168	0.66	0.22
India	-14	2078	-0.02	2.72
Japan	839	2374	44197	44266
Korea	1447	1358	1.89	1.78
Taiwan	91	284	0.11	0.37
Total of the 6 Asian countries			3.96	10.59
Germany	20333	22134	26.68	44315
Austria	7791	6026	44491	44386
Total	76202	76202	100	100

Source: Magyar Nemzeti Bank (Central Bank of Hungary, MNB), 2018.

Table 2

Capital stock of East Asian countries in Hungary, based on 2017-19 data, EUR million*

Country	2017	2018	2019
South-Korea	1 663,20	2 469,30	2 945,30
Hongkong	274	575,5	379,9
India	-13,5	-0,5	-2,6
Japan	968,5	1 138,30	1 325,20
China	177,3	128,4	172,8
Taiwan	39,7	-4,6	41,1
Total of the 6 Asian countries	3 109,30	4 306,40	4 861,60
Austria	8 452,80	8 865,70	9 315,90
Germany	17 957,40	16 984,30	17 804,60
Total	29 519,50	30 156,40	31 982,10

Source: Magyar Nemzeti Bank (Central Bank of Hungary, MNB), 2020.
*Table of investments from the final investor was not yet available at the time of writing.

It can be seen that the capital stock invested by many Asian states shows a moderate increase compared to 2017 and 2018 based on the data examined, while the reduction in the capital stock comes from Chinese direct investment. A visible change in the basic economic partnership for the most recent Asian countries, German relations, is that their share in total foreign investment is much smaller. This means that the data are not surprising, however, the test results presented by the media should be taken into account. It is also noteworthy that the capital stock of our western neighbor, Austria, is almost three times that of the six Asian countries examined.

As far as direct and indirect investment are concerned, interesting observations have been made as to how misleading China would be if it were to look at direct FDI for Hungary, since indirect FDI comes from China, a breakdown for final investors points. If we look at it in comparison with other Asian countries, it seems that Korea is doing well in this regard, while the Japanese, Hong Kong and Indian companies are following a similar path. Unfortunately, there aren't any data about the IFDI for the years after 2018 yet.

It can also be seen that although the number of Chinese investments is high and (even in the long run) on an upward trend, it has just surpassed that of Korea, while Japan is not yet in their footsteps. We always look at the general trends, and it is clear that the development of economic relations is characterized by the consolidation of trade relations and then investments.

Investments, especially in China and in other Asian countries, may be characterized in some cases by the fact that brownfield investments seek to invest in stocks, which is just enough to give them a say (Szunomár – McCaleb, 2018, p. 10). In addition to the above-mentioned factors motivating the market position, other striking factors also play a role in the political elections. One such factor is economy. It is still true that skilled labor is relatively cheap in Hungary and Poland, although these values are generally even more favorable in Romania and Bulgaria. Although corporate taxation is not the most favorable in Hungary and Poland, in general it can be said that this is an important aspect in the choice of the target country and in the case of Asian companies. In some cases, the motivating factor is that these companies want to acquire a certain brand or other intangible assets, to learn technology. On the Chinese side, a good example of this is the acquisition of BorsodChem by chemicals company Wanhua. A Polish example is Dongren Investment Co.'s 33-point investment in the biotechnology company Bioton, which specializes in insulin production. Contrary to the above, the fact that in the case of many companies the personal factor plays a role in Hungary is not more surprising. Thus, according to the mentioned research, a

Japanese investor chose Hungary because the company manager's son studied here and fell in love with the country (Ibid.).

The data and comparisons discussed in the previous chapters show that China does not yet play such a prominent role in Hungary as it appears at first sight. Compared to other Asian countries, it can be said that its role in our economic relations is growing, but—for the time being—it does not spectacularly exceed that of other countries in the region. Hungary, and the whole of Central and Eastern Europe, is important to China because it is a gateway to the European market, and it also proves to be a good ally with the United States, as Europe is also an economic power. In the following section, the positive and negative aspects of the relationship with China will be reviewed, focusing first on trade and investment, and then go on to summarize the role of other important collaborations, placing them in a (international) political context.

In terms of trade relations, our role as a member of the V4 group shows a positive picture. The three largest global players in international trade are the EU-28, China and the United States (since 2004, when China overtook Japan). In 2016, the volume of trade in goods (exports and imports) between the EU-28, China and the United States was almost equal. Trade in goods was the highest in the EU-28 (excluding intra-EU trade) at USD 3,455 billion. This value exceeded the trade turnover of China by EUR 109 billion and that of the United States by EUR 125 billion. (Japan came in fourth with USD 1131 billion.)

In 2014, for the first time since the founding of the EU, the values were overtaken by China. Although the EU-28 still had the second largest share of global merchandise exports and imports, accounting for 15.6 percent of total world merchandise exports, China came in first, with a share of 16.1 percent in 2016, which increased to 17.0 percent. Meanwhile, the share of the US (11.8%) lags behind that of the EU-28; in terms of import share, the United States (17.6%) was ahead of both the EU-28 (14.8%) and China (12.4%). All this shows that the EU Member States and China are the two most important players in international trade. The next step in this regard is to increase Chinese investment in the region.

Within the European Union, trade with China in the CEE region is as follows:

Table 3

International trade between China and the CEE region (2015 and 2017)

Subregions	Share of all exports of the region to China (%)	Share of all exports of the region from China (%)
2015		
Baltic countries (3 countries)	3	9
V4 (4 countries)	76	71
East-Balkan (2 countries)	15	10
West-Balkan (7 countries)	6	10
2017		
Baltic countries (3 countries)	7	4
V4 (4 countries)	70	80
East-Balkan (2 countries)	3	7
West-Balkan (7 countries)	19	9

Source: Kusai, 2017, p. 44.; based on the 2016 Chinese Statistical Yearbook, own compilation based on the 2018 Chinese Statistical Yearbook

The grouping of sub-regions is necessary because, from a Chinese perspective, the relationship with each country is negligible. Of course, the yearbook contains the relevant data, but in practice it makes no sense to gather them separately.

It can be seen that in terms of exports, the weight of our region has decreased somewhat in favor of the Western Balkans, but in terms of imports it has increased in recent years, so it still occupies a prominent place in the ranking of relations. As for investment, our region lags behind in terms of relations with China in a global comparison, but its importance is growing. If we look at the relationship of our country (and our region) with China from an economic point of view, the situation—in line with the echo of the media—is really not very favorable. Merics data show that in 2016, China's working capital stock changed negatively for our own region in a European-level comparison (Hanemann – Houtari, 2017).

As has been mentioned several times, China is not important from an economic point of view, but primarily because of the direct benefits (although, for example, greenfield investments in Hungary also provide direct benefits). There are several other aspects of the relationship that would be difficult to quantify but are still extremely important from a practical point of view. From a foreign policy and financial point of view, the strengthening of the RMB and the strengthening of economic relations can also be used to counterbalance the monopoly power of the United States and the USD, thus creating more room for maneuver and more favorable conditions. However, their usefulness or uselessness is difficult to predict, which is also due to the fact that so far there have been few tangible results.

The promised projects in the EU Member States were consistently missed: at the end of 2017, an analysis was published detailing what investments had been made in each country in the last 8-10 years and what results had ultimately materialized. The list of missed investments is long: in Hungary and Poland there were several projects that did not materialize: the Western Transdanubia cargo airport, the construction of the V0 railway line bypassing Budapest, the airport high-speed railway, and the appearance in the Debrecen industrial park. The situation is similar also in other countries in the region, such as Poland, where the construction of motorways started by COVEC ended in failure and was eventually abandoned (Szczudlik, 2017, p. 115).

In addition to infrastructure and greenfield investments, the share of corporate acquisitions is also high, but it is a fact that since 2010 the number has fallen to almost zero; the latest major Chinese investment is the BYD bus plant. It is also worrying that there have been a number of preparations in the past in this area which, for various reasons, have not yet materialized. This also raises doubts about current high-volume projects. By the end of 2015, the cumulated Chinese investment had reached 3.5 billion, according to government announcements, although the accuracy of the data on this is subject to considerable uncertainty. Good proof of this is that while, according to the Magyar Nemzeti Bank, Chinese direct investment was around USD 200 million in 2015, the government is talking about 3-3.5 billion (Matura, 2018). The largest Hungarian investors are; Huawei, ZTE, Lenovo, Wanhua, Orient Solar, Sevenstar Electronics Co., BYD Electronics, Xanga, Canyi and Comlink.

While the negative biased part of the online media often emphasizes that Central Europe expects too much from the Chinese side and the actual outcome of the relationship is barely visible, the reality is that China does not even imagine that kind of cooperation as reflected in the news. Of course, the skeptical mood is also due to the fact that although Hungary has by far the highest number of Chinese and greenfield investments in the Central and Eastern European Region, no major new steps have been taken in recent years, which some experts see as weakening the relationship. This trend does not exist in the Czech Republic (European Commission, 2018).

Among the financial collaborations, the RMB program in Budapest is outstanding. The following introduction can be found on the official website of the initiative:

"The aim of the Budapest Renminbi Initiative is to expand Hungary's investment range and financing sources, and to strengthen Sino-Hungarian foreign economic relations. An important goal of the MNB with the initiative is to create money, foreign exchange and capital market infrastructures, to develop the settlement system, and to start

negotiations on Chinese capital market licenses with the involvement of financial, corporate and governmental actors related to renminbi settlements" (RMB Budapest, 2019).

It is important to see that although the online press, which distorts the results in a positive direction, tends to record the RMB program as a Hungarian success, it is in fact part of a global process in which several central banks participate and the MNB joins in this process: in foreign trade, it could not settle in RMB. The clear consequence of rapid growth and foreign trade liberalization is that China is also trying to encourage the international use of the RMB. The internationalization of the Chinese currency has been an increasingly widely discussed topic recently, mainly because making the Chinese currency international and convertible by 2020 is one of the key goals of the Chinese economic policy. (Incidentally, the central bank also concluded several foreign exchange contracts, of which the Chinese had only one (Erhart, 2015a; 2015b)).

According to the announcements, central banks will seek closer cooperation with the Chinese authorities on relevant supervisory issues, share the necessary information, and continuously evaluate the possibility of improving cooperation. Joining the foreign exchange basket used by the IMF has played a key role in internationalization since October 2016, as a result of which the RMB is weighted 10.92 percent in determining the exchange rate of the SDR used as the settlement currency (Oven, 2016, p. 1). The SDR—or Special Drawing Rights—is a special currency introduced by the IMF that can be freely used by members as a reserve currency. SDRs are defined by combining the major international currencies used in international trade into a single basket of currencies. Until 2015, currencies in the basket by weight include: US dollar, euro, Japanese yen and British pound sterling; From October 1, 2016, the Chinese renminbi will also be included (IMF, 2019).

Diplomatic events are also linked to financial progress, such as the award of the Lamfalussy Prize in 2017 by the Hungarian National Bank to Zhou Xiaochuan, Governor of the People's Bank of China (which he received in 2018).

The last pillar of the BRI, the implementations of the people-to-people relationship, are perhaps the most spectacular. There are various Chinese programs that provide opportunities for European and Hungarian young people to network. These include scholarships, various conference programs, language courses and cultural events organized by Confucius institutes. In addition to the obvious larger programs, each Chinese university also organizes international programs that are fully covered for invited students, lecturers, professionals. One such example was the Bridge of the

Future event organized by Shanghai International University, the essence of which is to bring together people from the 16+1 cooperating states.

4. Chinese Image in the Hungarian Online Media

4.1. Methodology

Before presenting the results, it is important to be stated that the news published in the media does not reflect the position of the Hungarian population or the government, but the totality of the interests of the stakeholders and gatekeepers. Therefore, it is not my intention to use these opinions to describe the social point of view, it is not the origin that is interesting, but the awareness that these opinions influence the understanding, views and ideas of the population, experts, politicians about China, i.e.; they affect the country's image and through this also the diplomatic relations.

Content analysis aims to quantify the information contained in different pieces of communication content and was originally conceived with the realization that if a sufficient number of texts are available, by counting certain elements, meaningful comparisons between different texts can be made. Reviewing the theory of content analysis, it can be concluded that the content that appears in large quantities and with high frequency acquires a special significance: it appears more important, more meaningful, more dominant than contents that appear in smaller quantities, and, consequently, it attracts the attention of individuals in a given socio-cultural context. Nevertheless, the most interesting aspects of the content are not the overt messages but the multiplicity of meanings, most of them hidden, present in the texts. Modern definitions of content analysis are consistent in treating qualitative and quantitative methodologies as interrelated and in conceptualizing the two elements as being combined or linked in studies. In itself, the decision on the basis of which categories are chosen and coding systems are set up in content analysis, is a qualitative task, which is complemented by a further qualitative element when evaluating and formulating the results (Móré, 2010, pp. 14-15). According to McQuail (2003, p. 266), in content analysis, the information value of the media text can be measured in several different ways. The simplest approach is to count the facts in the text. Another way is to measure readability, which is the same as measuring redundancy: news is more readable if there is more redundancy. Experiments have shown that the less information a text contains, the easier it is to read and understand. The diversity of texts and the amount of information flow can also be measured.

In turn-of-the-century America, content analysis was associated with press research and was defined, in effect, as the provision of data for the critique of journalistic activity. Content analysis was first used widely for practical purposes in World War II. In the 1940s in the United States, the "Experimental War Communications Division", headed by Harold D. Lasswell, was established to conduct quantitative analyses. At the same time, the "American Federal Communications Commission" monitored enemy radio transmissions to understand and anticipate events. They were able to predict several major military and political offensives and to assess the Nazi leadership's own assessment of the situation. After the war, they processed these reports and produced the book Propaganda Analysis, edited by George (1959), the first methodological summary (Ibid., p. 3).

Interest turned towards the contingency and close juxtaposition of symbols. One of the first examples of contingency analysis was the analysis of Goebbels' speeches. Goebbels never openly said anything bad about the Italians, but content analysts noticed that in his speeches the word "Italian" always appeared in the context of difficulties, problems, troubles. The second content analysis conference in 1967 focused on standardized categories and produced the first dictionary of categories. Content analysis developed into a scientific method that allowed conclusions to be drawn from communication data. In Hungary, the first content analyses were carried out by the staff of the Mass Communication Research Centre (Ibid.).

For sampling, Google search was used, as this is the search engine most often used by readers when they want to find information on a given topic, although it is a fact that a very large proportion of internet users use social media, for example, as their primary source of information, rather than search engines, so it is not possible to draw accurate conclusions from this research alone. Rather, the aim of the research is to complement existing results and to provide a basis for other comparisons. To eliminate as much as possible the bias of Google's algorithm, the search was conducted on a freshly installed virtual machine with no search history, cookies or other settings. Using this method, the following amount of articles were collected.

Table 4

Number and publication time of articles

Topic	Amount of articles		Period of time (publication of the articles)
	Hungarian	International	
16+1 Summit	56	45	16/06/2016-04/12/2017
CIIE	26	20	22/10/2018-06/11/2018
Budapest-Belgrade Railway	194	156	21/02/2013-06/03/2019

Source: own compilation

When searching for topics, the name of the event itself was used as a search word, but in several ways: in the case of the Budapest–Belgrade railway and the 16+1 meeting, the search was simple, as these events do not have remarkably different press language names. However, in the case of the Shanghai Import-Export Expo, it was necessary to use several variants of the designation.

The subjective characteristics appearing in the content of the articles were examined in three areas within each article: in the title, in the introduction or, in the absence thereof, in the lead, and in the body. This division was considered to be important because different areas also mean different levels of importance: the title contains the most important words and elements about the news. The essence of the article, along with its emotional and intellectual connotations, appears in the lead—based on this, the reader decides whether to move on to the body of the text. The indicating structures, mood-creating elements and the main content that appear in the body of the text are often ignored by the reader, because if one have already learned what he/she wanted from the introduction or the first paragraph, one will not necessarily read the whole article. Thus, different areas also perform different functions although, at the same time, there is not only a hierarchical difference between them.

In examining the parts of each article, four categories were used: positive (g: green), critical (but not negative) (y: yellow), negative (r: red), and neutral (w: white).

All words and expressions were assessed of the texts as positive, when there was an overtone of trust-building, progress, social benefits. Such were, for example, the body of the articles announcing the economic recovery, but also, for example, the titles which, although asked a question, the question itself implied a positive answer, which was then confirmed by the lead or the body. The frequency of occurring words and their usage instead of objective concepts, such as "sensational", "unprecedented success", "insane tempo", etc., were also decisive in the categorization. It is important to note that the "positive" category therefore refers to the tone of the article from a semantical perspective, not to the value judgment of the research. In this respect, it would be more positive if the author's article belonged into the critical category, as this means that he/she strives for balance—but of course this does not reveal much about the quality of the article itself. Based on previous experience in the field of communication studies, it was assumed that journalists would try to emphasize the mood and main theme of the article in the title and lead to grab the reader's attention as soon as possible.

Table 5

Sample of the resource material table

Title	URL	Date	Portal	Title	Lead	Body	Economy
Tényleg épül a Budapest–Belgrád szupervasút. [The Budapest–Belgrade superhighway is really under construction].	https://444.hu/2014/12/16/tenyleg-epul-a-budapest-belgrad-szupervasut	16/12/2014	444.hu	w	g	r	2
Megépül a magyar-szerb kerítés, de lesz közös gázvezeték is, egymás vállára borult a két kormány. [The Hungarian–Serbian fence will be built, but there will also be a joint gas pipeline, the two governments have fallen on each other's shoulders].	https://444.hu/2015/07/01/megepul-a-magyar-szerb-kerites-de-lesz-kozos-gazvezetek-is-egymas-vallara-borult-a-ket-kormany	01/07/2015	444.hu	r	r	r	3
A budapesti olimpia miatt lesz még sokkal drágább az eddig is teljesen értelmetlen vasútfejlesztés. [The Budapest Olympics will make the already pointless railway development much more expensive].	https://444.hu/2016/09/12/a-budapesti-olimpia-miatt-lesz-meg-sokkal-dragabb-az-eddig-is-teljesen-ertelmetlen-vasutfejlesztes	12/09/2016	444.hu	r	r	r	3
Gyanús az EU-nak a kínaiakkal leboltolt vasútfelújításunk. [The EU is suspicious of our railway renovation blocked with the Chinese].	https://444.hu/2016/09/15/gyanus-az-eu-nak-a-kinaiakkal-leboltolt-vasutfelujitasunk	15/09/2016	444.hu	r	r	r	3
Magyar Nemzet: Valójában nem 550, hanem 700 milliárdba kerülne a Budapest–Belgrád-vasútvonal felújítása. [Magyar Nemzet: In reality, the renovation of the Budapest–Belgrade railway line would cost not 550, but 700 billion euros].	https://444.hu/2016/11/04/magyar-nemzet-valojaban-nem-550-hanem-700-milliardba-kerulne-a-budapestbelgrad-vasutvonal-felujitasa	04/11/2016	444.hu	y	y	y	3
Megalakult a Kínai–Magyar Vasúti Nonprofit Zrt. [The China–Hungary Railway Nonprofit Ltd. was established].	https://444.hu/2016/11/05/megalakult-a-kinai-magyar-vasuti-nonprofit-zrt	05/11/2016	444.hu	w	r	w	2

Source: own compilation

In the case of the negative category, it mattered whether there was any adjective or phrase in the writing that was not solely factual, but negative from an emotional aspect. As the aim was not to examine the truth of the articles, there were also articles and excerpts containing words for example, about "harmful business" to the European Union or that "the prime minister was undermining" the European balance. Since it is not known exactly what is meant by the terms "harmful" or "undermining", it is not

possible to examine the truth of the claim due to the lack of a definition. It is important to be noted that supposedly the journalist, editor (or other person who ultimately influences the appearance of the news—his/her identity is irrelevant to us) consciously (and more or less freely) chooses the subject of the news and related emotional elements. This means that the very fact that he writes about corruption is also the result of a decision, a choice from lots of alternative perspectives. This is what communication science calls thematization. All of this is important to highlight because for the reader, this essential but less conspicuous layer of presenting news often goes completely unnoticed, while subconsciously playing a major role in the process of interpretation.

The next two categories are a little more difficult to define. Those articles were classified into a critical category, which gave an objective description of the news, with the exception of negligibly few elements, but the negative factors related to the described event and situation came to the fore. The neutral category included articles that either presented the positive and negative sides of the topic in a balanced way, or described the topic only tangentially and in a neutral tone. Of course, the role of thematization can immediately arise as a question here, since if a prominent role is attributed to it in the previous ones, it cannot be ignored here, either. However, during the categorization, it was also observed how balanced the listing of negative and positive facts within the article was.

In addition to studying the tone of the articles, another research was done on the same data. This research was conducted based on the values under the "ECONOMY" column in the table and inserted it into the relevant parts of the study continuously throughout the description. Although the basic aim of my research is to communicate about China in the media and the image that emerges in this way, the extent to which the economic relationship between Hungary and China is mentioned in the articles was also examined.

0 - no economic content appears at all, or the article is not about economic relations;
1 - at the level of mention (up to 1-2 sentences, insignificant in relation to the length of the article);
2 - the author explains the given economic topic in at least one paragraph, but the article is not just about economic relations;
3 - the article is about an economic topic; the topic already appears in the title or more than 50 percent of the article deals with an economic topic.

The research does not include the news that describe the three examined events without mentioning Hungary. Although there is no obstacle to shaping public opinion,

this information is equally relevant, as the relationship is only indirect, the data obtained from it would be more difficult to analyze and could mislead the results of the research.

This is important because in many articles the author bases the success or failure of the entire Hungarian–Chinese relationship on the degree of economic return. At the same time, however, it omits several important aspects from the formula. Hungary can be good at maintaining a good relationship with a great power not only because it will entail "extra income". Many other complex factors play a role in the background, such as creating a foreign economic balance, reducing economic influence from other powers through a new relationship, asserting political interests, and helping or mitigating the strengthening of the Chinese minority in the country at the social level. These aspects are intricately interrelated, so it is not worth discussing them in detail. In this case, the point is that we must not forget their existence.

It is important to note that this kind of study cannot be conducted purely by using mathematical algorithms because it depends strongly on the semantical layer of the Hungarian language, therefore it cannot be 100 percent objective. The analysis of the texts had been conducted manually, precisely for this reason—after a long period of examining the performance of different text analyzing sofwares. Since the tone of an article cannot be labelled only by analyzing the words, it is preferable to use the competences of a native speaker instead.

4.2. The Image of China in the Hungarian Online Media – 3 Examples

In this section, three key events were examined in the light of the Hungarian media, in an international perspective. First, the analytical method explained above was applied to three recent events that are significant for the Hungarian–Chinese relations, and then the data are summarized one by one, as well as in comparison with each other. This is necessary in order to compare the conclusion thus obtained with the actual economic indicators to see whether there is a difference between the image appearing in the media, the emphasis on economic topics and the real economic indicators.

4.2.1. The Budapest–Belgrade Railway

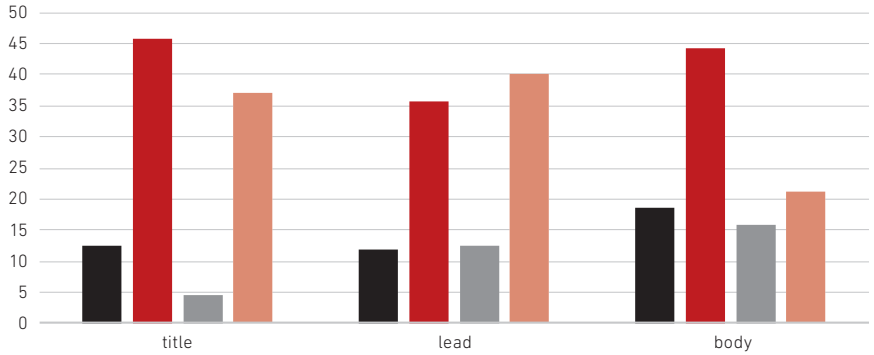
The plan of the Budapest–Belgrade railway line was officially announced in 2014. Since then, a wealth of new information has come to light about the project, while no substantive change has taken place so far.

The Budapest–Belgrade Railway is one of the key points of the 17+1 cooperation mechanism, which aims to connect the mainland Central and Eastern European region with the ports in the Mediterranean, especially the Greek Piraeus. In November 2015, at the Hangzhou Summit, Serbia, Hungary and China reached an agreement on the implementation of the project's medium-term goals (Kusai, 2017, p. 41), which did not receive relevant press coverage.

Of the articles included in the analysis, the two earliest were dated December 18, 2014 (foreign online media) and February 21, 2013 (Hungarian online media). The latest number of articles are dated to March 6, 2019 and March 1, 2019.

Figure 1

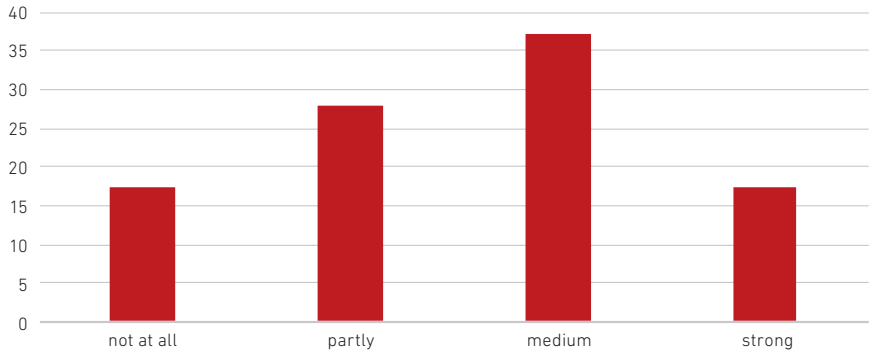
Budapest–Belgrade Railway line (Hungarian)



Source: Sample of the resource material table, own compilation

Figure 2

Budapest–Belgrade railway: Weight of economy – topic (Hungarian)



Source: Sample of the resource material table, own compilation

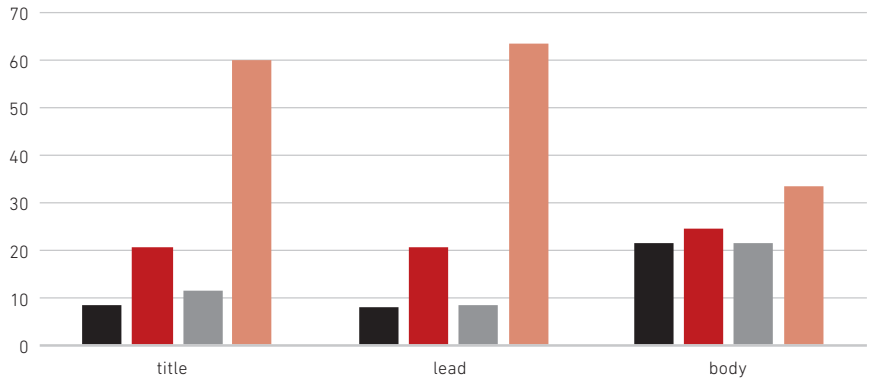
In connection with the topic of the Budapest–Belgrade railway line, the distortion in the negative direction is striking in the Hungarian online media, although this is often only reflected in the body of the text. Neutrality is usually common in the title and first paragraph, after which the description of the topic often becomes one-sided.

According to the methodological categories mentioned in the previous chapter, the extent of the appearance of the economic topic in the articles on a four-level scale were. Regarding the topic of the Budapest–Belgrade railway, articles of an economic nature appeared in almost the same proportion as articles that dissected little of this aspect of non-economic or Sino-Hungarian relations. The "not at all" and "few" categories together account for 45.3 percent, while the "medium" and "strong" categories account for 54.6 percent. Based on this, it can be said that more than half of the articles focus on economic problems and opportunities. Only 17.5 percent of the articles deal entirely with other aspects (culture, political influence, etc.).

It is clear that articles appearing in international online media tend to be somewhat more neutral. They are less characterized by distortions and exaggerations.

Figure 3

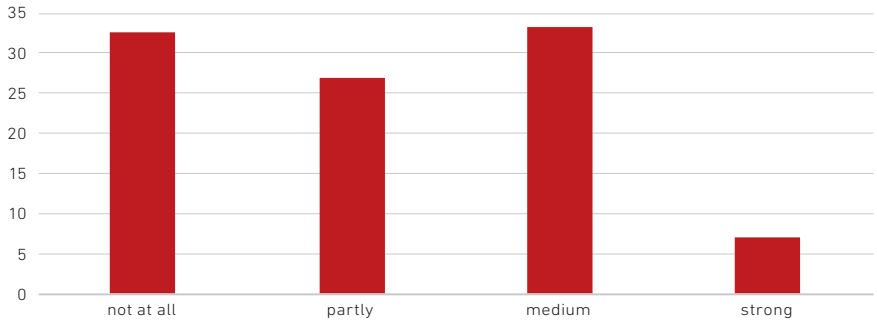
Budapest–Belgrade Railway line (International)



Source: Sample of the resource material table, own compilation

Figure 4

Budapest–Belgrade Railway line: Wight of economy – topic (International)



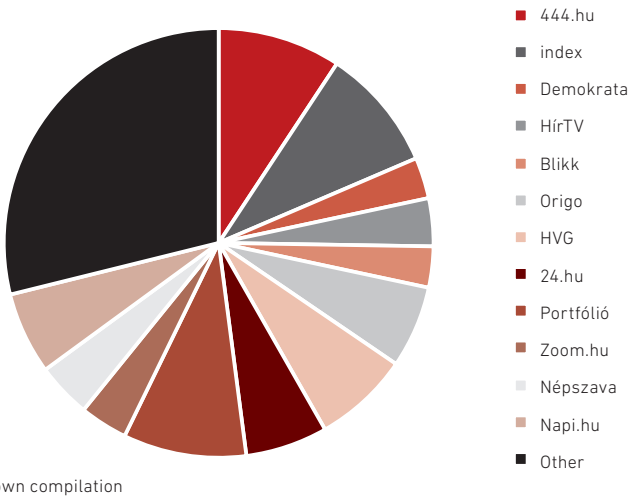
Source: Sample of the resource material table, own compilation

A much higher percentage of foreign articles follow a different system of perspectives from the economy in the presentation of the Hungarian–Chinese relations dealing with the topic of the Budapest–Belgrade railway.

In this analysis, the number of times a medium published an article on the same topic was examined, as it was striking when making the list that some online pages pop up many times. Out of a total of 194 articles, 18 were written by 444.hu, 18 by Index and 18 by Portfólió.hu. 14 appeared on HVG, 12 on Origó, 12 on 24.hu, and 12 on Napi.hu.

Figure 5

Frequency of articles related to the Budapest-Belgrade Railway on Hungarian portals



Source: own compilation

The "other" category in the pie chart above includes all other pages that have published articles on the topic less than six times. It is clear that the appearances on the main news sites, including the contents of the Index, 444.hu and HVG, account for almost a third of all articles. Of course, the fact that several articles appear in an online magazine could lead to different resolutions from articles by different journalists, but this is generally not true for the Hungarian media, as the market is small.

It is interesting to note in relation to the articles that in some cases they are self-repetitive, not writing about a new turn on the topic, but processing the same opinion and event with more or less changes in the same medium. This is undoubtedly due to the fact that journalists are consciously use thematization as their tool, trying to assert their own position multiple times. Such articles were common on both positive and negative sides, but were particularly characteristic of the most frequently featured websites depicted in the pie chart.

4.2.2. The 16+1 Meeting in Budapest

The 16+1 meeting is not about a specific economic and investment topic, but about the framework that makes the agreements possible. Still, it was held in Budapest in 2018 and the event was surrounded by a lot of media attention.

Interestingly, with regard to Hungarian citizens, the research which was conducted by the aforementioned China-Central and Eastern European Institute, which assessed the region's awareness of Sino–Hungarian relations, reveals that 38 percent of people have not even heard about cooperation between 16+1 countries. Of those who have heard of it, 40 percent do not know exactly what the collaboration is about, 50 percent think they understand its essence, 8 percent say they know its circumstances in detail, and 2 percent say they are fully aware of it (Xin, 2018, p. 43).

As the Hungarian state often refers to Chinese relations, Chinese researchers and diplomats also talk about Hungary on many occasions in such a way that it is presented in a more positive and privileged status—which is the usual way of cultivating political relations. In 2011, when President Wen Jiabao visited Hungary on June 25, 2011 at the China-CEEC Trade and Economics Cooperation Forum, the fate of future cooperation was decided (Xin, 2017, pp. 1-2).

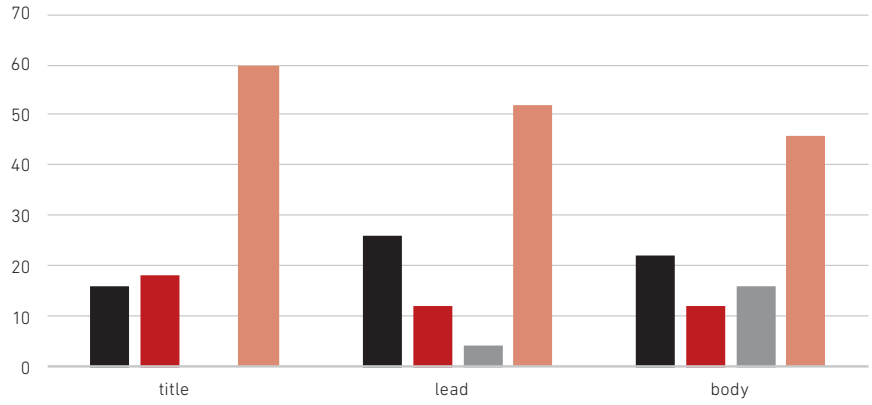
However, the idea of the 16+1 collaboration was not born overnight, but as the culmination of a process that has been going on for about six years. The first detailed document was unveiled at the Bucharest Summit in November 2013, which also reported

a USD 10 billion loan to the region and formally laid the groundwork for cooperation. The participants stated that they would work together on the developments under the coordination of Beijing and discuss the results with each other in regular meetings. The documents were supplemented in 2014 by a new document in Belgrade, which finalized the sectoral coordination centers in the different areas (Kusai, 2017, pp. 40-41).

Thus, the media analysis of the 16+1 meeting shows that the public in the country is skeptical about the Chinese, while on the West they approach the topic from a distinctly negative point of view and largely pay attention to its harmful aspects. Most of the articles focus on investments and on other economic factors, mentioning less tangible topics such as soft power, political convergence or image.

In relation to the 16+1 meeting, neutral, objective news that did not take a position on the meeting was generally more common. In addition to the factual descriptions, the negative news included several that did not relate to the 16+1 meeting with negative indicators, but to one of its content elements, especially the topic of the construction of the Budapest–Belgrade railway.

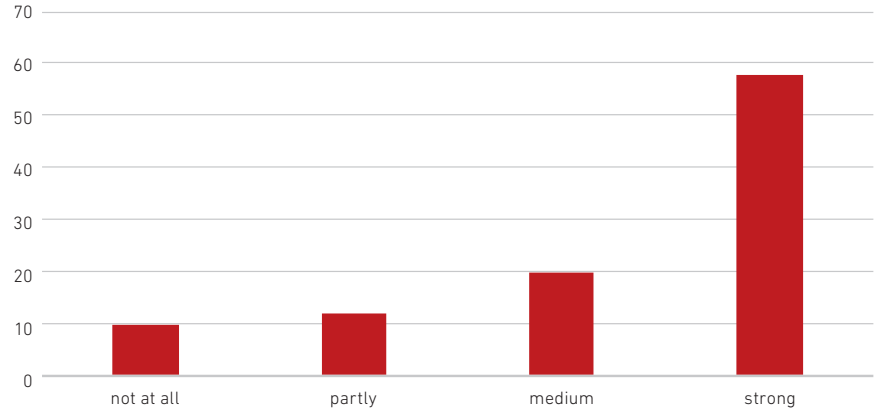
Figure 6
16+1 Summit (Hungarian)



Source: Sample of the resource material table, own compilation

Figure 7

16+1 Summit: Weight of economy – topic (Hungarian)



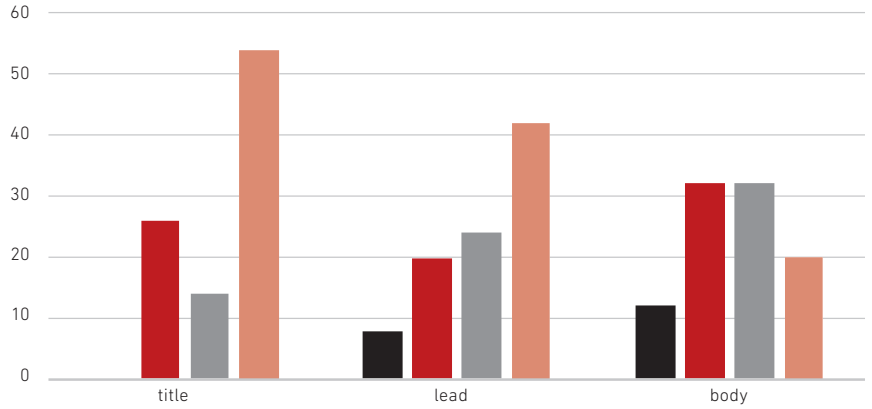
Source: Sample of the resource material table, own compilation

Regarding the appearance of the economic topic, it is clear that the number of articles dealing with the economic aspect is remarkably high. These articles also largely report on the construction of the Budapest–Belgrade railway. There are few articles that approach the meeting specifically from a diplomatic point of view, discussing its historical aspect or cultural implications. This is interesting because, the nature of the event would make this more justified, as it is an informal, policy-oriented diplomatic discussion rather than an economic strategic consultation.

Regarding the 16+1 meeting, the foreign media tend to paint a negative picture. The neutral tone still dominates here, while reading the articles further reveals the critical and negative content. This is perhaps due to the fact that editing articles is more conscious, the writer tries to engage the reader with a more factual or somewhat sensationalist negative title and then mitigates this in the content.

Figure 8

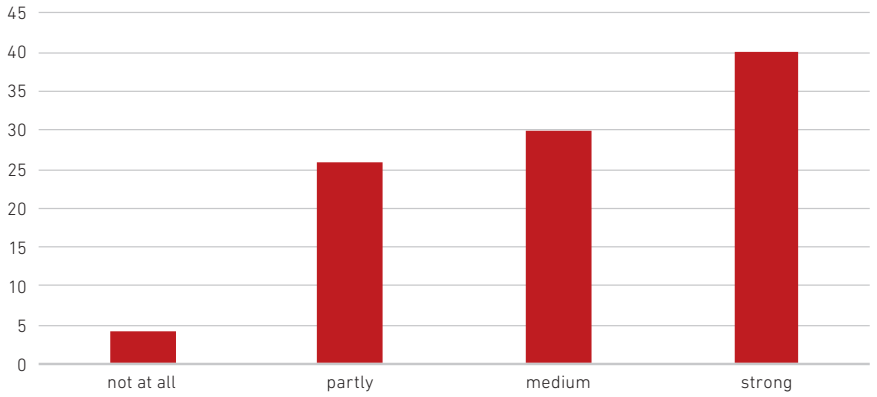
16+1 Summit (International)



Source: Sample of the resource material table, own compilation

Figure 9

16+1 Summit: Weight of economy – topic (International)



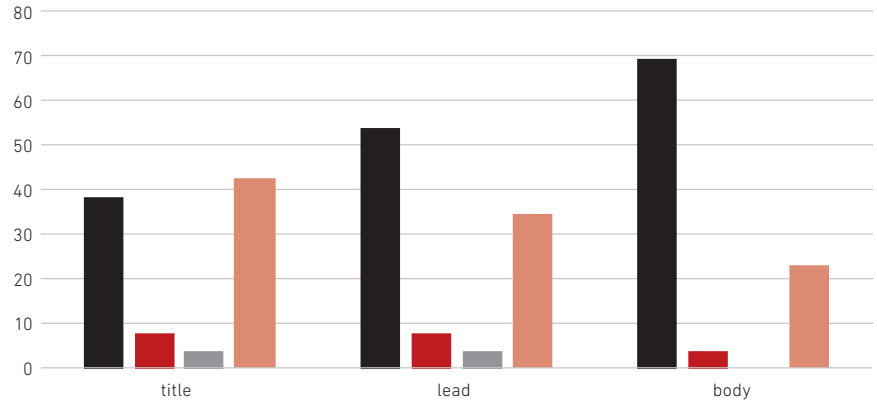
Source: Sample of the resource material table, own compilation

There is a big difference in the appearance of the economic topic compared to the Hungarian data. Although railway construction is often the focus of attention in the international media, writings on China's economic influence have been published several times. However, there are also a number of articles on strategic cooperation between 16+1 countries and the political implications of the initiative.

4.2.3. CIIE – Import-Export Expo in Shanghai

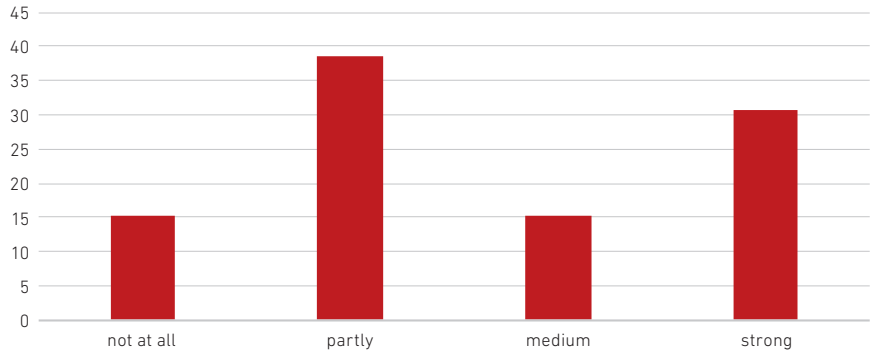
On November 8, 2018, China hosted for the first time the Shanghai Import-Export Exhibition, which became known to the world as CIIE. Compared to the previous two topics, the expo enjoyed much less press coverage, with only 26 articles in the Hungarian media during the research.

Figure 10
CIIE (Hungarian)



Source: Sample of the resource material table, own compilation

Figure 11
CIIE: Weight of economy – topic (Hungarian)



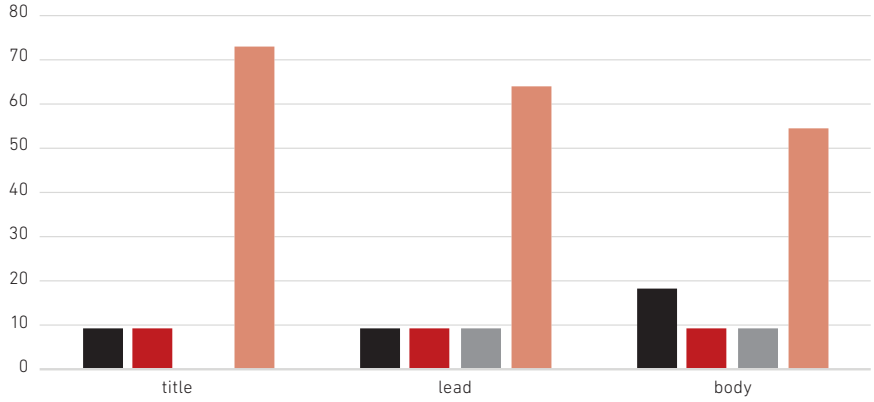
Source: Sample of the resource material table, own compilation

The few articles do not provide as good an opportunity for analysis as those done in the two previous topics, which build on a larger amount of data, but the difference is still striking. The number of both positive and neutral articles related to the expo is higher than in the previous two cases.

The appearance of the economic topic also differs significantly from the content of the articles dealing with the previous two topics, forming a kind of reflection of them.

Figure 12

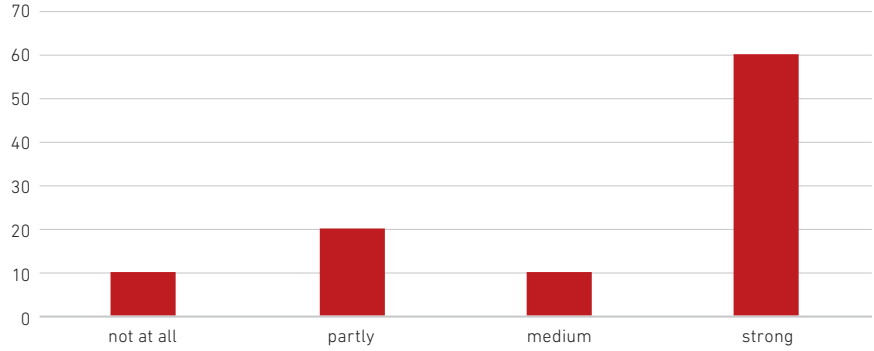
CIIE (International)



Source: Sample of the resource material table, own compilation

Figure 13

CIIE: Weight of economy – topic (International)



Source: Sample of the resource material table, own compilation

The number of foreign articles published about the CIIE expo were almost negligible during the research period, with a total of ten on the list. Although the sample is quite small, the trend typical of previous international media appearances also appears here, and the predominance of neutral tone is clearly visible. Interestingly, the few articles that have appeared in the international media about the expo are almost 100 percent factual and do not attempt to take a stand on either side. This seems rather unusual compared to previous peds.

4.2.4. Evaluation of Data from Media Analysis

The above data really make sense when compared to previous research that has already been published. These are, of course, based on a completely different methodology and have a different purpose, so the comparison is not interesting because of the differences, but because of the conclusions that emerge from the comparison of the two types of information.

Of the above three topics, it has already been mentioned in connection with the Budapest-Belgrade railway line that about a third of the large volume of articles comes from the same few online media. Chinfluence draws attention to the same phenomenon. In the project, more than half of all articles examined were produced by a handful of online news portals, hvg.hu alone published almost a third of all articles, index.hu 14 percent and origo.hu 11 percent.

The authors of Chinfluence also point out that at least 52 percent of all news reports originally came from the re-publication of news from the Hungarian Telegraph Office (MTI). As the MTI articles are written in a factual, neutral style and their essence is to quickly inform journalists about recent events, it is worth examining the data received with and without them. 86 percent of the news based on Chinfluence, reported by MTI were neutral.

Considering all the articles, we can see that according to Chinfluence data, between the first half of 2010 and 2017, less than 4.8 percent of Hungarian media reported explicitly positive, nearly 9.4 percent negative, and 85.8 percent neutral news about China. Because of articles gathered from the MTI news feed, however, the data show that only 3.7 percent of Hungarian media's own products were positive, while nearly 12 percent were negative about China, although the overwhelming dominance of neutral news prevailed.

Although Chinfluence has analyzed whether an article is negative, positive, or neutral from other perspectives, it is still worth noting how large the discrepancy is between the three topics examined above and the overall image of China measured by Chinfluence.

Among the most common topics, a large number of concepts related to the economy also appear here, as confirmed by the research related to the dissertation. In this connection, the researchers of Chinfluence also note that the Hungarian discourse in relation to China is one-sided, focuses on mere economic factors and data, and on the other hand, it is strongly politicized. Given the structure of the Hungarian media market, the latter statement is not a big surprise, and the glaring presence of the economic topic seems less justified. A connecting point may be that, as the perception of Hungarian–Chinese relations in the media is influenced by the media's proximity to the government or opposition, no productive debate has begun about the country's relationship with China. Researchers at Chinfluence point out that public discourse is influenced by a handful of voices, primarily some politicians, which means experts in the subject are given far less space.

Regarding the predominance of economic news, it is worth noting that, according to Chinfluence, compared to Czech data, "the Hungarian media takes a much more materialistic, economy-focused approach, and topics related to political values, democracy, human rights and minorities are almost completely missing from the discourse" (Chinfluence, 2018).

5. Results – The Relationship between China's Image and the Economic Reality Seen in Online Media

Thus, the image of the three examined topics related to China in the Hungarian online media is rather distorted compared to the economic impact of the Eastern state. However, this distortion is not clearly negative or positive. It mostly paints a false picture of China in terms of overemphasizing the economic relations.

As can be seen from the economic analysis, the events reported in the press as drastically positive or even blatantly negative are usually based on normal processes, which do not show a significant difference compared to other Asian countries in the examined period of time. Some of the criticisms do not concern the People's Republic of China, but the Hungarian government with positive or negative indicators. At the same time, this is not a problem, as it means that pro-government and

anti-government positions also appear in the media, which is one of the main features of free expression. On the other hand, it is much more problematic that none of the positions is sufficiently substantiated, the arguments and counter-arguments are largely based on emotions and seek to convince Hungarian readers about whether China's presence in the economy is dangerous or useful.

In the present study, the influence of China on the Hungarian economy was examined based on three examples, and the overall picture of the Hungarian online news media was also analyzed.

As for the first hypothesis, after a detailed examination of the data, it was confirmed that China does not have as great an economic role in Hungary as it appears in the Hungarian media. This is also related to the fact that Hungarian articles overemphasize the economic factor (which becomes spectacular mainly compared to the international media). The path taken by China can be paralleled with our other major Asian economic partners. Japan, Korea and India all started with trade relations and then gradually became involved in investing in Hungary, as is the case with China currently.

Although the second hypothesis was also supported, it is important to note that the negative-positive and neutral-sounding articles showed a relative balance overall, at least regarding the chosen three events. Examining the three topics, it does not seem to be the situation that (due to the predominance of government media, for example) we can see an image clearly distorted in one direction. However, it is essential to indicate that very few critically voiced articles have been published on all three topics, which means that opposing views typically do not play a role within a writing.

During the writing of the study, several possible directions and crossroads emerged, which were not given the opportunity to be traversed due to various obstacles (time, resources). These are, for example, additional information that can be extracted from existing data and a more accurate comparison of these, and the supplementation of the data later.

Once humanity leaves the pandemic behind, it may be worth repeating the research, especially on mask diplomacy. The possible changes and the results overall could affect how the decision makers think about China and how the news in the online media affect the public opinion—but to dig deeper in this topic, further research needed.

References

Barát, T. (1997): Hozzászólás a Magyarország 2000 konferencia ország-kép témájához. [Comment to the country-image theme of the Hungary 2000 conference]. In.: Papp-Váry, Á. F. (2007): Az országmárkázás szerepe és hatásai: Országimázs a kibővült Európai Unióban. [The role and impacts of country branding: National image in the enlarged European Union]. PhD dissertation, University of Sopron

Bauer, A. – Berács, J. – Kenesei, Zs. (2007): Marketing alapismeretek. [Basics of Marketing]. Aula Kiadó, Budapest

Bendarzsevszkij, A. – Gere, L. (2019): Geopolitikai közvéleménykutatás 2018. [Political Opinion Poll 2018]. Pallas Athéné Innovation and Geopolitical Foundation, Budapest

Breeze, V. (2018): China tops US and UK as destination for anglophone African students. The Conversation. [online] available: https://theconversation.com/china-tops-us-and-uk-as-destination-for-anglophone-african-students-78967 (Last seen: 2021.05.02)

Cai, Y. (2020): China's 2020 target: reshaping global mobility flows. EAIE. [online] available: https://www.eaie.org/blog/china-2020-target-reshaping-global-mobility-flows.html

Chinese Statistical Yearbook (2017, 2018, 2019): National Bureau of Statistics. [online] available: http://www.stats.gov.cn/tjsj/ndsj/

Chinfluence (2018): Médiaelemzés. [Media Analysis]. Result of the Chinfluence project. [online] available: http://www.chinfluence.eu/hu/mediaelemzes/

Erhart, Sz. (2015a): A jegybanki renminbi program stratégiai keretei a nemzetközi gyakorlat fényében. [The strategic framework of the central bank renminbi program in the light of international practice]. MNB. [online] available: https://www.mnb.hu/sajtoszoba/hirek-2015-juniusig/erhart-szilard-ajegybanki-renminbi-program-strategiai-keretei-a-nemzetkozi-gyakorlat-fenyeben

Erhart, Sz. (2015b): Jüan: úton a világpénz státusz felé? [Yuan: on the way to global currency status]. Portfólió. 13 February, 2013. [online] available: https://www.portfolio.hu/gazdasag/juan-uton-a-vilagpenz-statusz-fele.210143.html

Hanemann, T. – Huotari, M. (2017): Record Flows And Growing Imbalances – Chinese Investment in Europe in 2016. Merics. No. 3 January, 2017. [online] available: https://web.archive.org/web/20170707191317/https://www.merics.org/fileadmin/user_upload/downloads/MPOC/COFDI_2017/MPOC_03_Update_COFDI_Web.pdf

European Commission (2018): Nemzetközi árukereskedelem. [International trade in goods]. [online] available: https://web.archive.org/web/20180422040422/http://ec.europa.eu/eurostat/statistics-explained/index.php?title=International_trade_in_goods/hu

George, A.L. (1959): Propaganda Analysis: A Study of Interferences Made from Nazi Propaganda is World War II. Evanston, IL: Row, Peterson

IMF (2019): Factsheet. Special Drawing Rights (SRD). [online] available: https://www.imf.org/en/About/Factsheets/Sheets/2016/08/01/14/51/Special-Drawing-Right-SDR

Jenes, B. (2012): Az országimázs mérésének elméleti és gyakorlati kérdései. Az országimázs és az országmárka dimenziói és mérési modellje. [Theoretical and practical questions of measuring the country image. Dimensions and measurement model of national image and national brand]. Corvinus University of Budapest, Doctoral School of Business and Management

Kotler, P. – Haider, D. – Rein, I. (1993): Marketing Places: Attracting Investment and Tourism to Cities, States and Nations. Free Press

Kusai, S. Z. (2017): A New Look at Some Lessons of and Prospects for the 16+1 Cooperation. In.: Xin, C. (Ed.): How Hungary perceives the Belt and Road Initiative and China-CEEC Cooperation. China Social Sciences Press, Peking, China, pp. 39-54.

Lowy Institute (2019): Global Diplomacy Index. 2019 Country Ranking. [online] available: https://globaldiplomacyindex.lowyinstitute.org/country_rank.html

Matura, T. (2018): Chinese investment in Hungary: Few resuts but great expentations. Chinfluence. February 14, 2018. [online] available: http://www.chinfluence.eu/chinese-investment-hungary-results-greatexpectations/

Matura, T. (2020): The Chinese COVID-19 Information Campaign in Hungary. Digicomnet. [online] available: http://www.digicomnet.org/china-in-hungary

Matura, T. (2021): Hungary: no need for a Chinese soft-power strategy. In.: Ties, D. – Xiaoxue, M. – Vera, K. (Eds.): China's Soft Power in Europe. Falling on Hard Times. pp. 48-51. [online] available: https://www.ifri.org/sites/default/files/atoms/files/etnc_2021_-_chinas_soft_power_in_europe_-_falling_on_hard_times.pdf

McClory, J. (2010): The new persuaders: an international ranking of soft power. Institute for Government website. Institute for Government. [online] available: https://web.archive.org/web/20110724053803/http://www.instituteforgovernment.org.uk/publications_download.php?id=20

McQuail, D. (2003): A tömegkommunikáció elmélete. [Theory of mass communication] Osiris, Budapest

Monocle (2019): Soft Power Survey 2018-19.Video. December 21, 2018. [online] available: https://monocle.com/film/affairs/soft-power-survey-2018-19/

Móré, M. (2010): A tartalomelemzés, mint a szakdolgozatírásban alkalmazható kutatási módszer. [Content analysis as a research method applicable in dissertation writing]. In.: Kovácsné Bakosi, É. (Ed.): Társadalomtudományi tanulmányok III. [Social Sciences III.]. pp. 47-64. [online] available: http://files.moremariann.webnode.hu/200000041-a0b8ba1b32/A%20tartalomelemz%C3%A9s,%20mint%20a%20szakdolgozat%C3%ADr%C3%A1sban%20alkalmazhat%C3%B3%20kutat%C3%A1si%20m%C3%B3dszer.pdf

Nye, J. S. Jr. (2005): Soft Power: The Means to Success in World Politics. Public Afaairs US, New York

Paál, V. (Ed.) (2013): A magyarországi médiaháború története – Média és politika 1989-2010. [History of the Hungarian Media War – Media and Politics 1989-2010]. CompLex, Budapest

Publicus (2017): Médiafogyasztási szokások és egyes médiumok politikai megítélése. [Media consumption habits and political judgment of some media]. Publicus Research, May 21, 2017. [online] available: https://publicus.hu/blog/mediafogyasztasi_szokasok_es_egyes_mediumok_politikai_megitelese/

RMB Budapest (n.d.): RMB Kezdeményezés. [RMB Initiative]. Budapest Renbinbi International. [online] available: http://hu.rmbbudapest.hu/rmb-kezdemenyezes

Segev, E. (2016): International News Flow Online Global Views with Local Perspectives. Series: Mass Communication and Journalism, Volume 19. [online] available: https://web.archive.org/web/20160611205324/http://www.peterlang.com/index.cfm?event=cmp.ccc.seitenstruktur.detailseiten&seitentyp=produkt&pk=85473&concordeid=312985

Softpower30 (2015): Index Results. Ranking. [online] available: https://web.archive.org/web/20150716214928/http://softpower30.portland-communications.com/ranking

Szeles, P. (1998) A hírnév ereje. Image és arculat. [The power of fame. Image and appearance]. Star PR Ügynökség, Budapest

Szeles, P. – Nyárády, G. (2004): Public Relations I-II. Perfekt Kiadó, udapest

Szunomár, Á. – McCaleb, A. (2018): Chinese and Other East Asian Foreign Direct Investment in Central and Eastern Europe: Motives, Location Choices and Employment Approaches. Cesinfo Forum, Volume 19. No. 4.

Szczudlik, J. (2017): Poland's Measured Approach to Chinese Investments. In.: Seaman, J. – Huotari, M. – Otero-Iglesias, M. (Eds.): Chinese Investment in Europe. A Country-Level Approach. ETNC Report. December 2017.

Xin, C. (2017): How Hungary perceives the Belt and Road Initiative and China-CEEC Cooperation. China Social Sciences Press, Peking, China

Xin, C. (Ed.) (2018): How the CEE citizens view China's developement – based on a household survey. China-CEE Institute Nonprofit Ltd., Budapest