

CAN CHINA CHALLENGE THE TECHNOLOGICAL SUPREMACY OF THE UNITED STATES: CURRENT STANDPOINT AND PERSPECTIVES

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ABSTRACT

The aim of this paper is to project the future dynamics of US-China relations and assess the associated risks of bifurcation of the global economy between the two blocs. The United States and China face a strategic paradox in their long-term competition to research, develop, and acquire new and emerging technologies. In the commercial sphere, the two nations' research and development (R&D) of emerging technologies is now deeply integrated, potentially providing mutual benefits to each country's markets. However, despite their commercial interconnectedness, national security planners in each country continue to view each other as potential adversaries. By using the methods of explanatory research and an inductive approach for analysing the management of technological innovation and economic development, the authors argue that China's economic transformation towards the upper end of global industrial value chains and the seizure of entire product ranges or supply chains have put at risk the US's hegemonic status. By imposing export sanctions, the United States is trying to force technological decoupling and disable the functioning of global supply chains in the domains critical for Chinese high-tech in order to slow down or contain China's technological and economic rise. Consequently, the conclusion drawn is that the United States will continue its efforts to maintain primacy over China in emerging technologies, such as artificial intelligence, semiconductors, and nanotechnology, by mobilising investments in research and development as well as by using export bans and other kinds of sanctions. In this way, it is likely that a state of cohabitation between the two trading blocs will be developed, which would create the conditions for the evolution of the strained relations between the US and China.

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Introduction

Geopolitics is shaped by the use of technology, which brings not only economic and social progress but also power and comparative advantages to those who command it. All technological revolutions and innovations have led to profound power asymmetries and inequalities (Khan et al. 2022). Geopolitical constraints are pivotal to technological development, which could lead to competition between states for geopolitical dominance and security (Khan et al. 2022). Hence, great powers perceive that access to new technologies could be critical to their sovereignty, prompting them to engage in fierce competition to develop their technological capabilities. The five key technology areas defining countries' capacities to operate are artificial intelligence (AI), cloud computing, semiconductors, 5G and mobile equipment, and quantum technology. The weaponization of the interconnectedness of technology and information has led to fierce disputes over critical digital infrastructure (such as 5G and submarine cables), raw materials (such as rare earths), industries (such as artificial intelligence or semiconductors), and data flow and its control and storage, while at the same time defining standards for new technologies. The technological revolution, which will undoubtedly continue, will be shaped not only by market logic, economic actors, and multilateral institutions but also by national security and the geopolitical interests of governments.

While contemporary political liberalism is based on the belief that certain rights and values are universal, the arrangement in which it operates today is fraught with tensions, internally fragmented, and asymmetrically vulnerable. It seems that in order to survive in any form, the liberal order will have to change dramatically (Cooley and Nexon 2021). In an environment characterised by technological fragmentation, splinternet, and geopolitical competition for spheres of influence, traditional global governance institutions, such as the United Nations and the World Trade Organisation, cannot maintain a rules-based order that guarantees equal access to critical technologies. However, unlike in the past when the power of states was based on the control of land or oceans, nowadays the sovereignty of states is defined by the control of the flows of people, commodities, money and data, and the connections of the streams they create. The new geopolitical map is consequently a consequence of the success of the great powers to control the aforementioned flows or prevent competitors from doing the same. As the world is crisscrossed by networks where some forces are more important than others, this gives them increased opportunities for influence. It seems that along with military potential and population size, the most important spheres are the fields of economy and technology (Leonard 2021). Taking

into consideration that data is a source of economic and political power, ownership and control of data flows have become the primary domain of global competition for economic and geopolitical supremacy. Access to databases has become a key variable of power, while the lack of global management of data streams creates an acute risk of disputes over them.

This paper will try to elaborate on whether China could put at risk the US's hegemonic status by means of its economic transformation towards the upper end of global industrial value chains and seizure of entire product ranges or supply chains in emerging technologies, such as artificial intelligence, semiconductors, and nanotechnology. Having in mind that the technological competition between the United States and China is one of the most important fields of competition for hegemonic power in the organisation of the international relations system, the struggle between the two blocs has often been portrayed as a race between two different political regimes (Mead 2014; Sun 2019). It has become increasingly evident that the United States and China are engaged in a century-defining struggle for technological supremacy. By using the methods of explanatory research, data analysis, and an inductive approach for analysing the management of technological innovation and economic development, the authors point out that the clash between the US and China, as two major tech titans, has brought into sharp focus the relatively new concept of digital sovereignty. This concept has been used as an umbrella term to suggest a spectrum of different technical and non-technical proposals, ranging from the construction of new undersea cables to stronger data protection rules (Maurer et al. 2015).

Moreover, the authors point out that China is becoming digitally sovereign gradually, thus challenging US technological supremacy, in part because of US sanctions imposed to slow down its technological advancement, which has made it more motivated to never again rely on external supplies. The decoupling of supply chains was accelerated by the COVID-19 pandemic, which was already underway with the largely successful US campaign to bar Huawei from next-generation telecommunications networks. Furthermore, the key reason for the strong growth of China's economy is the high share of both savings and investments in its GDP over a very long period, together with its strong technological development, which is a consequence of huge investments in the development of the country's scientific base. The United States' ban on chip exports to China, which is perceived as an attempt to preserve Washington's unipolar power or even as an implicit declaration of war on Beijing, will most certainly have a strong negative impact on China's semiconductor industry. This move can be compared to the so-called Wolf Amendment of 2011, which completely blocked US-China aerospace

cooperation and significantly slowed down the development of Chinese commercial aircraft (Purkayastha 2022; Woo 2022). The costs for the US semiconductor industry due to the loss of China - its largest market - will be huge and will have significant long-term consequences, noting that even strong lobbies in the chip industry could not and will not be able to reverse the course of US policymaking.³

Although the global economy has become more dependent on China since the beginning of the COVID-19 pandemic, the negative geopolitical climate still has a more significant impact. It is clear that Washington's policy, which puts national security goals ahead of economic resonance, will make Chinese companies' efforts to retain Western markets through price competition increasingly difficult. Washington's efforts to block Beijing's access to high-tech technologies are increasingly affecting Chinese corporations. It is indicative that Chinese IT experts also expect the development of the domestic artificial intelligence sector to significantly slow down over the next few years due to new US bans on exports of chip equipment, despite Chinese IT giants increasing research and development (R&D) spending to build their own AI chips, which will take them at least half a decade (Pao 2022). Faced with a possible shortage of the "21st-century oil" – chips – China is mobilising national resources to achieve breakthroughs in basic technologies, mainly in the development of chips, software, and industrial materials. It is clear that Beijing can no longer rely solely on market mechanisms for advances in semiconductor technology. While private investors often prioritise profits over technological results, China is poised to steer public resources towards critical technologies. Since state investments have already been used to break technical bottlenecks in aviation and other strategic sectors, there is the necessary know-how for this endeavour.

In the following chapters, the authors will examine whether the intensification of the struggle for dominance in emerging technologies could be perceived as a state of "New Cold War" between the US and China. Also, the authors will try to provide an answer as to whether China could close the technology gap, bearing in mind the technology-gap models, which argue that two main dimensions determine a country's ability to catch up. "The first is its absorptive capacity, i.e., its ability to imitate foreign advanced technologies. The second is its innovative capability, namely the extent to which the country is able to produce new advanced knowledge" (Castellaci

³ Boston Consulting Group (BCG) estimates that US companies would lose 18% of their global market share and 37% of their revenues, leading to the loss of 15,000 to 40,000 high-skilled domestic jobs, if Washington pursued a hard technological decoupling and completely banned domestic semiconductor companies from selling to Chinese clients (Feng 2022).

2011, 180). Thus, the objective of this paper is to examine the technological and economic conditions for a peacetime competition between China and the United States within strategies that combine different forms of engagement and decoupling, as well as collaboration and competition between the two blocs.

Is the Intensification of the Struggle for Supremacy in High Technology the beginning of a New Cold War?

Jean Pisani-Ferry (2021) believes that from the famous affair that virtually removed Huawei from Western markets to the dispute with AUKUS, the new reality shakes the global economy – the (hostile) takeover of the international economy by geopolitics. Namely, although economics and geopolitics have never been completely separate areas, global international economic relations have been shaped by their own rules for nearly eight decades. However, it seems this era has come to an end. The problem for Washington represents its own practical abandonment of the process of globalisation, with Beijing struggling to promote it. In this regard, protectionist policies have begun to gain increasing public support in the United States, as so-called populist politicians are increasingly emphasising that their countries would be less exposed to recent shocks if they were more self-sufficient, i.e., not so dependent on international trade (deglobalisation, fragmentation, decoupling, or separation have already become domesticated phrases in the public discourse of Western societies).

According to Weaver (2022), historians will mark US President Joe Biden's decision to ban chip exports to China on October 7, 2022, as a moment when the separation of American and Chinese technology became inevitable. The key question is how China will respond to the most consequential US political decision since the end of the Cold War, which aims to tilt the global balance of power in favour of the US since the chips are the "brains" of every modern device. According to the Semiconductor Industry Association (2022), although China's share of the global market is growing strongly, it has only a 7% share of the global semiconductor market. Further aggravating for Beijing is that not all semiconductors are equal. In connection with this, the new US controls are finely calibrated: they apply only to these state-of-the-art chips, i.e., those that China cannot produce on its own. Beijing is reliant on US-based companies and US allies for state-of-the-art computer chips that power smartphones, supercomputers, and artificial intelligence systems. Furthermore, every advanced semiconductor manufacturing facility in the world critically depends on US technology. In addition to banning the export of chips to China, the US restricts exports of software, equipment, and

components that China could use to establish a sovereign advanced semiconductor manufacturing industry. Furthermore, US personnel with specialist skills are limited in their ability to work with their Chinese counterparts, which limits the transfer of knowledge. In addition, US controls extend extraterritoriality to all advanced chipmakers outside the US. Overall, the US policy is one of actively “strangling” large segments of China’s tech industry — “strangulation” with the intention of destroying China’s high-tech. The implications of this are far-reaching. The controls will limit all Chinese research that depends on advanced computing. This will make developing and deploying artificial intelligence (AI) across the country difficult, impeding China’s progress in e-commerce, autonomous vehicles, cybersecurity, medical imaging, drug discovery, and climate modeling. This policy is not only about maintaining US technological supremacy; it has the potential to degrade Chinese research in all disciplines. Yet the problem for the US, and even more so for Taiwan and South Korea, is that China is their biggest trading partner. For Taiwan and South Korea, China is also one of the largest suppliers for a range of products. The forced separation of China’s supply chain in the semiconductor industry is likely to be accompanied by separation in other sectors as well.

After a ban on chip exports to China was imposed in October 2022, the US has implicitly committed its foreign policy goals in terms of engaging but without entering into a hot conflict, i.e., war, in order to stop Beijing’s rise. However, efforts to isolate China’s high-tech sector could accelerate Beijing’s attempts to take political and territorial control of Taiwan, where the major chip factory (TSMC) is located and which is by far the world’s largest producer of the same. Furthermore, the United States National Security Strategy (The White House, 2022), released in October 2022, clearly states that the containment of China has finally become an explicit foreign policy goal for Washington, and the current escalation marks the final break with decades of US foreign policy based on the assumption that China’s global integration will tame its rise as a superpower. This shows that the mental map of the old Cold War, with all its obvious contradictions, still has a powerful foothold. Although it was written in an effort to avoid the notion of a new Cold War and resist the world of “rigid blocs”, the document remains a manifesto for the binary US President Joe Biden declared at the beginning of his presidency: the one between “democracies” and “autocracies”. While the US, along with its allies, previously focused on preventing China from acquiring technology that would enhance its military capabilities, the ambition is now much greater: the goal is to limit the development of China’s high-tech economy and thwart its rise as a challenger to US (and Western) technological supremacy.

At the beginning of 2023, prospects of a strong economic rise by China, which in the future should lead to some kind of economic-technological parity with the United States, seem encouraging for Beijing. It appears that all the prerequisites for true global bipolarity will be established in the upcoming decade, as China's manufacturing sector is already twice the size of the US's, China is the top trading partner for nearly two-thirds of the world's nations, and its GDP is once again on the trajectory to bring the "Middle Kingdom" to the position of the global leader (overtaking the US). Most importantly, it is precisely the strengthening of China's global status that could be a key factor in curbing US interventionism. In the end, unlike the Cold War, which was characterised by the asymmetry of the positions of the two sides, where the Soviet bloc could only militarily rival NATO, this time, the economic balance could be a key condition for the sustainability of a new and fairer order that would bring benefits to most of the world's population (Duffy Toft and Kushi 2023).

Can Beijing close the Technology Gap?

The success of China's economic reform since the 1980s and the growth of the country's innovation capacity can partly be attributed to the policy of attracting foreign direct investment (FDI) (Buckley, Clegg and Wang 2002; Liu and Wang 2003). Attracting FDI is one of the most effective means for China to gain access to foreign technology. FDI not only helps promote free flows of labour and build high-quality teams of personnel but also stimulates domestic firms through competition and promotes economic and technological exchange and cooperation at home and abroad. However, some researchers point out that as a result of the huge influx of foreign direct investments, China has become overly dependent on foreign technology and that the rapid expansion of China's exports is largely boosted by the growth of China's low-wage manufacturing industries (Gilboy 2004). In the last few decades, China has attracted FDI by providing fiscal incentives as well as institutional and physical infrastructure. Over time, the Chinese government has gradually shifted its preferential fiscal policy from low-tech labour-intensive industries to high-tech manufacturing and service industries. In 2007, the Chinese Ministry of Commerce and Central Administration of Customs amended the list of low-tech goods whose production should be restricted (Huang and Soete 2007). This restricted the establishment of foreign firms wanting to produce low-tech goods in China's coastal provinces, but encouraged the development of domestic manufacturers in its interior provinces. The amendment signaled the end of low-tech FDI in China (Huang and Soete 2007). Along with regulating FDI, the Chinese government also

increased its support of innovation in enterprises. To finance innovations, China also aimed to establish a well-functioning financial system, especially a venture capital system, to support technology-based enterprises. Local governments and state-owned organisations contributed to the establishment of a fund to facilitate venture capital investments.

Even a cursory analysis shows China's current FDI stock is impressive. However, more detailed analyses yield important insights likely to have significant policy implications. What stands out is that most of China's FDI is concentrated in manufacturing and related industries. Despite being underdeveloped, the service industries have the greatest potential for creating jobs and absorbing FDI in the short and medium terms. However, that largely depends on the government's determination to deregulate them and introduce more competition by opening them up to foreign participation. Many restrictions are preventing foreign enterprises currently operating in China from getting involved in such service industries as banking, insurance, transport, and the legal sector. The Chinese government needs to tap foreign expertise in the service industries and thereby gain experience operating in open environments (Dahlman and Aubert 2001). Besides foreign direct investments, foreign trade is another channel through which Chinese enterprises can tap into global knowledge and technology. First, high-tech products and capital goods embody tremendous amounts of knowledge and technology. Second, active engagement in foreign trade also brings beneficial spillovers to Chinese firms and the Chinese economy. However, while China has been active in importing technology embodied in tangible goods, it has been less active in importing disembodied technology, which normally incurs royalties or licensing fees. Low imports of disembodied technology have a negative effect on the utilization of technological knowledge. While importing capital goods is a major way of acquiring foreign technology, the management and knowledge support that goes hand in hand with it should also be acquired in order to maximize technology investment productivity. For example, more resources should be spent training workers and hiring foreign experts to make the best use of imported equipment.

While one year may not be critically important to the world's economic and political order, China's strong expected growth, coupled with its increasingly successful high-tech sector actively adapting to precisely targeted White House sanctions, appears set to further improve Beijing's position on the global stage. This is also due to the success of the Chinese leadership in mitigating Washington's intensified efforts to move the EU economically and technologically away from the positions of Beijing, which is aided by the seemingly ambivalent and certainly skilled attitude of the Chinese leadership towards the conflict in Ukraine. Namely, China seems to be able to prevent

the conflict in Ukraine from deteriorating its relations with Europe's leading economies, while at the same time not agreeing to isolate Moscow from preventing the only negative outcome for itself in terms of Russia's fate: the collapse of the Kremlin regime and its replacement with leadership that would inevitably take a pro-Western course. A conflict with the US, which has long seemed inevitable, Beijing is trying to delay as much as possible with its patient positioning, waiting for the dividends of decades of much faster economic growth than its main rival to finally be such as to either deter the White House from containment or make the policy as ineffective as possible. From a diplomatic perspective, China's main goal is to improve relations with major European powers (undermined by Beijing's implicit support for Moscow in the war in Ukraine). Important EU countries are otherwise opposed to decoupling, which marks a clear difference in Washington's relationship. The key is maintaining economic and technological cooperation with the EU, which is China's largest trading partner (with several leading European companies among the largest foreign investors in China).

Given the importance of chips to the contemporary economy, China cannot accept a near defeat even though it faces difficult challenges, such as the complexity of supply chains in the semiconductor industry. Although facing a technological gap, Beijing has some institutional advantages, namely the capacity to concentrate its efforts to achieve major scientific and commercially applicable breakthroughs in a given field. The new US restrictive measures will certainly bring new momentum to China's existing efforts to achieve self-sufficiency in the chip industry, but the key question remains how far those ranges will be. Contrary to popular belief, Beijing does not need a state-of-the-art chip to be export competitive. This massive investment puts China on track to become a world leader in machine learning, the technology with the greatest potential to cause significant economic and military disruption. Still, the US has many critical advantages, despite lagging behind China in 5G and AI. It has the market size, innovation drive, and financial resources to challenge China's leadership in these areas. Meanwhile, China has a well-funded industrial strategy designed to achieve technological sovereignty and can leverage the power of its vast market.

However, the US dominates databases and bandwidth use, giving them the opportunity to disclose data from other powers both openly and secretly. Nevertheless, China has emerged as an increasingly important player, primarily through huge investments in research and development. Its leadership in surveillance technology enables it to strengthen the repressive power of the state, build vast databases for AI, and establish links with other countries that want to use its technologies to control societies (Torreblanca 2021). While full support for the broad economic separation of the US from

China remains limited, the growing rivalry produces a partial shift away from market liberalism in the name of competitiveness and strategic autonomy (Cooley and Nexon 2021).

Western Sanctions' Limits on China's Semiconductor Industry

In an attempt to limit China's technological rise and its rise to a respectable challenger to the hegemonic role of the United States, Washington imposed a series of widespread restrictions in October 2022, banning US companies from exporting technology for the production of chips smaller than 14 or 16 nanometers. This has made it difficult for China's leading manufacturer, SMIC, to catch up with advanced competing corporations, such as Taiwan's TSMC. The US has also begun targeting potential "chip stars" in China with new restrictions to close the loopholes left after the wide-ranging limits imposed in October 2022.

It all started with Huawei, which was blocked as early as 2019; since then, Washington has added many Chinese technology firms to the ban list, including surveillance companies, chip makers, drone developers, smartphone manufacturers, and institutes suspected of collaborating with the Chinese military. However, the results seem to be unsatisfactory. Hua Hong, a relatively small company that seems to have received a strong financial injection, has adopted a different strategy to optimize its manufacturing techniques for mature "nodes" or generations of its less miniaturized chips to maximize the performance and reliability of its products (which have found widespread use in 5G telecommunications equipment, the Internet of Things, and electric vehicle markets). Very soon, Chinese equipment manufacturers began to replace imported equipment with Hua Hong products to a much greater extent. The same company also localized its suppliers in areas such as equipment and materials while giving priority to domestic customers. Hua Hong seems to be giving China new hope with its old chip technology, and it is the US restrictions and Beijing's longing for chip self-sufficiency that have pushed the firm into the spotlight.

According to Scharre (2023), the United States' introduction of comprehensive controls on semiconductor exports to China is a mistake and will generally have a negative impact on US security. In doing so, Washington is relinquishing its long-term leverage over the development of Chinese artificial intelligence, which will bolster Beijing's efforts on the road to independence in the semiconductor industry. The consequent "separation" of technological ties between the US and China will not ensure US interests in long-term competition. Scharre believes a better approach is to keep China dependent on US technology, thus enabling the US to deny China access to

the key technologies when needed. However, the massive increase in the use of chips of older technologies reduces the effectiveness of US bans. Specifically, SMIC is stepping up the production of semiconductors with more than a decade-old technology, which is crucial to supply chains in many industries. Thus, China, which accounted for 9% of the global chip market in 2020, flooded the market with cheaper products, primarily in the fields of solar panels and 5G telecom equipment. What makes the situation more difficult for the United States is that SMIC (and other chipmakers in China) are already using government subsidies to sell and specifically export older technology chips at a low price. There has already been a strong increase in the number of new semiconductor factories across China, which will dramatically increase the supply of chips from the beginning of 2024 and, especially in 2027, drastically reduce their prices.

Will the Technological Separation Due to US-China Rivalry Divide the World into Two Blocks?

The full engagement of the US and its allies in the economic blockade of the Russian Federation from February 2022 and the application of restrictive measures in the area of high-tech (semiconductors) against China, which intensified in October 2022, have underscored the importance of economic power in maintaining the existing, Western-centric, world order. In this regard, the global decoupling has received a new strong impetus with the consequent reshaping of the world market as multinationals are increasingly pressed to choose sides (Choyleva 2022). Thus, certain corporations that have invested too much in China will be forced into a painful and expensive reorientation. As multinationals will have to create parallel production plans oriented towards the US and China, the consequent fragmentation and duplication of supply chains will reduce productivity globally, which will continue to drive inflation due to the bifurcation of global supply chains. The US restrictions on capital flows to China are on the horizon as Washington prepares to make it even harder for Wall Street to finance the economic development of its main strategic adversary. Furthermore, Beijing is also working hard to create its own sphere of economic and financial influence, with the intention of separating itself from the dollar-based global financial order (which creates a strategic vulnerability for China).

However, there is no complete decoupling or separation of the US from China, and this is neither practical nor desirable for the so-called West. Washington is trying to create separation at a high-tech level, at the frontiers of new technologies, where the potential impacts of progress and discovery are the greatest. That assumes that the US can identify technologies critical

to its leadership; therefore, it is assumed that the US will not be at a disadvantage due to the loss of access to Chinese skills and successes. Yet, as Friedberg (2021/2022) argues, the world will not face complete de-globalisation or the creation of a new global order led by China. This author believes that we will soon see the contours of either partially closed regional trade blocs or alliances of states gathered based on the common political values and strategic interests. He sees this option, which he considers most likely, as the least desirable for Washington. Namely, the US, abandoning the idea of an integrated global economy, will have to recreate its bloc of states that will be economically open to each other but also opposed to another alliance led by China. This option implies that standards regarding freedom of expression, data privacy, or cyber espionage would be the basis for the formation of a “digital version of the Schengen Agreement” (within the framework of the so-called Democratic Digital Bloc), but, unlike the Cold War, trade and investment flows with the rival side (Beijing) would continue, although narrowed and strictly regulated.

At the same time, China is intensifying efforts to strengthen partnerships with non-Western countries, or the Global South, where it otherwise enjoys broad reception for its development aid and diplomatic messages. The cementing blocs of countries that will support it, or at least will not stand by Washington, could increase Beijing’s immunity to possible Western sanctions, especially given Moscow’s experience and the fact that China is much more dependent than Russia on foreign trade and technology. A kind of conceptualization of all these efforts is Beijing’s “Global Security Initiative”, unveiled in April 2022, which is receptive to third-world countries due to its insistence on a multilateral global order (the goal is to discourage them from joining the military or other US-led groups). By including a reference to “indivisible security”, the strategy confirms the strategic alignment between China and Russia (Lin and Blanchette 2022).

Furthermore, Beijing’s diplomatic offensive relies on the country’s strong economy. China’s exports to the largest economies of the Global South have nearly doubled from pre-COVID levels because of strategic investments in digital and physical infrastructure, from broadband networks in Indonesia and Brazil to power plants in Turkey and railways in Southeast Asia. The economic approach to the Global South and the consequent generation of its own independent growth driver is the key to neutralizing US efforts to contain China. Beijing is not only promoting domestic consumption and exports but is also trying to strengthen its presence in the Silk Road countries (in Asia, Africa, and Latin America) to create a “backstop” in the event of a conflict with the West. Foreign trade data indicates that Chinese investments in most developing countries are finally bearing fruit. Trade with the Global

South (along with South Korea and Taiwan) caught up with total exports to the US and Europe.

There are many examples of the separation between the two major trading blocs revolving around the US and China. The “Made in China 2025” programme, implying Beijing’s technological independence, represents a clear step in that direction. When it comes to Washington, it has excluded a number of Chinese enterprises from US financial markets and imposed financial sanctions against certain Chinese companies and individuals. In addition, the Biden administration has done little to reduce the anti-China influence in the White House that has grown during Donald Trump’s presidency. Not only that, Biden signed a “chip bill” that includes \$50 billion in federal grants to companies that build advanced semiconductor manufacturing in the US (all recipients of the funds are required not to invest in any factories in China in a decade; non-US companies are also included, where South Korean and Japanese ones are particularly important). In line with the incentives of their administration, US companies are intensifying supply chain restructuring. For example, Apple has moved some of its iPad production from China to Vietnam, while Apple’s Foxconn and Pegatron are considering moving the production of iPhones to North America from China to Mexico.

In the meantime, the US and China will undoubtedly expand their techno-political influence. As the economic pressure grows and the political space decreases, other countries will have few options, and it will be simpler to join one of these two spheres of influence. An example of this is the close cooperation between the intelligence services of the United States, Britain, Australia, Canada, and New Zealand (“Five Eyes”), especially with regard to technological methods of espionage. Second, states can strategically exploit existing interdependencies by selectively choosing to rely on technologies from both spheres of influence, which could become increasingly difficult over time. Third, countries may try to reduce dependence in individual technology sectors. The example of Russia trying to become autonomous by establishing its own equivalents to dominant US services such as Google (Yandex) and Facebook (VKontakte) is indicative, but with only partial success until the administrative ban on the presence of many foreign social networks in the Russian Federation with the onset of the war in Ukraine. The option of developing domestic alternatives for all key technologies and consequently developing its own techno-political sphere of influence entails huge financial costs that few (para)state entities could bear.

It is possible that the competition over techno-political spheres of influence will lead to the US imposing additional sanctions on Chinese companies and increasing pressure on third countries to do the same.

Furthermore, corporations in third countries will face a strategic choice to do either business with the United States or China. In the case of critical technologies, this would be a step towards a world divided between Chinese and American standards and systems. Therefore, most countries would choose an alliance with both the US and China. For example, although Indonesia and Vietnam hail the US presence in Southeast Asia as a counterweight to China, their economies are too dependent on China to make an effective break with it.

Although decoupling is already happening, there are at least three significant limitations to this. The first concerns the US's inability to drag other countries into the process, even close allies like Japan, essentially due to the high cost to domestic companies. Second, from both the Chinese and American sides, corporate resistance to accelerated separation will be quiet but significant. Business relationships, investments, and supply chains are not trivial ties that can be quickly broken, and the Chinese market remains the most attractive for-profit destination in the long term. Likewise, Chinese companies cannot afford the exit of foreign technologies and the sudden interruption in their learning curve. The third issue is time, and there is an indicative example of tax breaks for firms moving the electric vehicle battery manufacturing chain from China to the US, which will require (according to Goldman Sachs) a period of four to seven years for each of the main points in the supply chain.

What is somewhat paradoxical is that the eventual abandonment of globalisation by the US increases China's advantage. In a world of limited trade and migration between countries, states with large populations may have more opportunities to increase their GDP through internal trade and specialization. Consequently, if barriers to migration rise high enough, multi-human countries will outperform smaller countries in innovation, even if they are wealthier. Since long-term growth is driven by improvements in technology, this translates into a major economic advantage for countries with larger populations (Desmet et al. 2018). Thus, with current constraints, we get a reversal in productivity, with many of today's high-density and low-productivity regions in sub-Saharan Africa, South Asia, and East Asia becoming regions of high density and high productivity, and North America and Europe lagging behind. One of the key determinants of these patterns is the correlation between GDP per capita and population density observed in the very long term (this is because people move to more productive areas and denser locations become more productive over time since investing in local technologies in dense areas is generally more cost-effective), although today this correlation is negative. Thus, when restrictions on migration are eased, Europe and the eastern regions of the US benefit greatly by remaining the

most developed parts of the world. This indicates that the United States' success is largely due to the processes of migration and globalisation.

Conclusion

China's economic and technological rise towards the upper end of global industrial value chains and seizure of entire product ranges or supply chains has put at risk the US's hegemonic status in terms of its technological supremacy. Despite all the achievements, China's attempt to technologically rival the so-called West encounters many barriers. Namely, economic and technological bifurcation or decoupling represents a real danger to China's development model as a "workshop of the world". By imposing sanctions and export bans, the United States is trying to force technological decoupling and disable the functioning of global supply chains in the domains critical for Chinese high-tech in order to slow down or contain China's technological and economic rise. However, China is one of the world's largest technology investors; in 2022, its research and development (R&D) investment reached a record of \$443 billion or 2.55% of its GDP (Yu and Meidong 2023). Therefore, it is possible that the two superpowers coexist successfully, e.g., by collaborating to prevent climate change even as they compete in technology and trade or fight for advantage in the South China Sea and around Taiwan. The rivalry will be widespread but not all-encompassing. There will be room for engagement, and if the globe is lucky enough to get through this rivalry, the New Cold War may be over. This will happen when one or both countries cease to see the other as a major threat to their interests, either because the capabilities and intentions of the opponent have changed, because common interests have been reimagined, or because the odds of winning are minimal.

Consequently, the conclusion drawn is that the United States will continue with its efforts to maintain primacy over China in emerging technologies, such as AI, semiconductors, and nanotechnology, by mobilising investments in research and development as well as by using export bans and other kinds of sanctions. In this way, it is most likely that a state of cohabitation between the two trading blocs will be developed, which would create the conditions for the evolution of the tight political and economic relations between the US and China. If Washington and Beijing realise that they cannot decisively win the ongoing competition, they will begin to develop a state of cohabitation, which would create the conditions for the evolution of the strained relations between the two digitally sovereign states.

On the one hand, the US is trying to build a sphere of influence based on its control over information technologies and the central position its economy

and military power have in the global world system. On the other side, the Chinese interests are based on trade and investment flows, as well as infrastructure projects and a huge population (a large population does not in itself make a state a great power, but in the modern world, it is practically impossible to achieve and maintain the status of a great power without it). Furthermore, US-China competition in emerging technologies is unprecedented because of the rapid disruption cycles in emerging technologies and the deep fusion of cross-border foreign direct investments, research, and migration. Instead of the Cold War's managed interactions between commercial communities, US and Chinese trade and commercial companies are fundamentally intertwined. The economic gains, strategic risks, and fluid interactions of communities across borders present a paradox for US-China competitive strategies, as both sides are simultaneously friends and enemies. For the coming decades, the peacetime competition between China and the United States will likely continue to take place in a strategic paradox of "frenemies." What we are likely to witness is a largely, but not entirely, separate global system of production and commerce, with two technologically advanced blocks competing with each other.

To avoid dangerous scenarios, a number of experts propose strategies that combine different forms of engagement and decoupling, as well as collaboration and competition (Moldicz 2022). All the above options essentially involve developing mutually respected red lines, high-level diplomacy for their implementation, and cooperation on globally important domains. Economic issues should be separated from the so-called value issues since describing the conflict as a conflict between an authoritarian and democratic model of governance will not contribute to the resolution of disputes between the two sides. For the scenarios that are not too optimistic, such as true multilateralism, the best scenario is the G-2, where the US and China act as an "informal steering committee" to address global problems such as climate change, financial stability, pandemics, and economic development challenges.

The unwillingness of the so-called West to accept greater participation by China and other developing countries, in accordance with their economic power, in the management of the global economy is due to the assessment of leading power centers that greater involvement by Beijing, Moscow, and other non-Western capitals would make decision-making more difficult, slow it down, and most importantly, make decisions made less beneficial to the West. Given the technological supremacy of the US and its allies, it is estimated that today's global system can be maintained for a long time with possible marginal concessions. Linked to the intention to strengthen the White House's global position are attempts to minimally involve certain

countries in the Western structures in order to thwart their grouping with China and Russia. The main reason for this is that both China and the US understand that they would lose relative gains if trade and capital flows split up. However, security imperatives are practically pushing the two largest global powers towards economic separation. Given the unwillingness of the two sides to bear the enormous costs of the consequent breakup of global supply chains in the short term, it is very possible that it suits both countries to delay, at least as much as possible, what seems inevitable to them. In one of the worst-case scenarios, global supply chains will fall apart, and the world could plunge into a global recession. Also, technological wars could lead to the “balkanization” of knowledge and to the control of critical systems and components becoming points of geopolitical blockades and crises. As the world embarks on a dramatic transition beyond carbon, there is a risk that all elements of the process will be “weaponized”. Moreover, as the global population grows and people are increasingly on the move, migration will continue to be central to global economic development, cultural vibrancy, and world politics.

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МОЖЕ ЛИ КИНА ДА ОСПОРИ ТЕХНОЛОШКУ НАДМОЋ САД: ТРЕНУТНО СТАЊЕ И ПЕРСПЕКТИВЕ

Апстракт: Циљ овог рада је предвиђање будуће динамике односа између САД и Кине и процена ризика бифуркације глобалне економије између два блока. Сједињене Државе и Кина суочени су са стратешким парадоксом у својим дугорочним надметањима у истраживању, развоју, као и у прибављању нових технологија. У комерцијалној сфери, истраживање и развој (*R&D*) технологија две земље сада је дубоко интегрисано, што потенцијално пружа обострану корист привредама сваке од њих. Међутим, упркос њиховој комерцијалној међуповезаности, стручњаци за националну безбедност у обе земље и даље перципирају једни друге као потенцијалне противнике. Коришћењем метода експанаторног истраживања и индуктивног приступа за анализу управљања технолошким иновацијама и економским развојем, аутори тврде да економска трансформација Кине према врху глобалних индустријских ланаца вредности, као и њено освајање целокупних асортимана производа или ланаца снабдевања, доводе хегемонски статус САД у питање. Увођењем извозних санкција, Сједињене Државе покушавају да спроведу технолошко раздвајање (*decoupling*) и онемогуће функционисање глобалних ланаца снабдевања у доменима који су критични за кинески високотехнолошки сектор како би успорили или сузбили технолошки и економски успон Кине. Стога, закључак је да ће САД наставити са својим напорима да одрже примат над Кином у новим технологијама, као што су вештачка интелигенција, полупроводници, и нанотехнологија, повећаним улагањима у истраживање и развој, као и коришћењем забрана изоза и других врста санкција. Сходно томе, вероватно је да ће доћи до кохабитације између два трговинска блока, што би створило услове за еволуцију затегнутих односа између САД и Кине.

Кључне речи: технолошки развој; нове технологије; *high-tech*; *decoupling*; Кина; Сједињене Америчке Државе; Нови Хладни рат.