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Conditions and assumptions of the Technology, Trade and Investment Collaboration framework (TTIC)

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Abstract: The US-Taiwan Technology, Trade and Investment Collaboration framework is one of the American responses to the semiconductor Global Value Chains pandemic disruptions. It calls for closer economic and technological cooperation in the microchip industry including two-way investment. The aim of the study is to determine the potential positive and negative effects of TTIC within the context of complex Sino-American relations, and new approaches to globalisation with a special focus on its friend-shoring features. As the outcome of the analysis of the secondary data from research papers or reports and the descriptive research method conducted in this paper, TTIC appears as a balanced means of addressing the supply chain disruptions in the key sectors of the economy.

Keywords: GVC, friend-shoring, semiconductors, US, China.

JEL Classification: F5, F52.

1. Introduction

Relations between the United States (US) and the People's Republic of China (PRC) have been one of the central geopolitical and economic issues recently. These countries are the two biggest economies with huge military potentials and populations that together represent more than a fifth of all people on the planet. Therefore, the importance of how the coexistence (or rather the competition) between them develops is crucial in shaping the global picture. As in 2017 the PRC-US relation reached a milestone with the Chinese Gross Domestic

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Product (GDP) in purchasing power parity surpassing the American for the first time (The World Bank, n.d., a), this competition has intensified, and from now on the world will be a witness of how the two great powers strengthen their efforts to secure for themselves the position of the global leader.

The rivalry takes place on multiple platforms such as production, trade, research and technology, cybersecurity and military development. In view of that, the growing dependency of the American economy on raw materials and parts imported from China such as rare earth metals and microchips – started appearing for the US government as a problematic issue. Global value chains (GVCs) built on the principle of the comparative advantage (mainly lower labour costs), thus in significant part based on Chinese production, happened to be a serious problem when Chinese-American trade war (2018-2020) rendered difficult and costly importing materials from PRC, and later – the COVID-19 pandemic disrupted the production and deliveries. Developed economies previously using the benefits of globalization to a great extent (especially offshoring strategies), now started to rethink that process, and have come up with some alternative approaches which may divert the course of the global economy. The first concept is based on pulling the production back to the home country – expressed by the term reshoring. The second idea consists of moving it to a different country that pursues similar values or geopolitical interests – called friend-shoring.

The new initiative between Taiwan and the United States: the Technology, Trade and Investment Collaboration framework (TTIC) will be analysed in this paper as an example of friend-shoring and assessed in the stated above context to compare its possible positive and negative outcomes for economics and geopolitics. The argument will be raised that even though the friend-shoring policy is more expensive than unbound offshoring, the recent events prove it to be necessary insurance against the GVCs disruptions. The importance of economic security in a given country has recently been compared to the significance of military-secured safety. Therefore, the security of supply chains – an important part of economic security – is a strategic goal for every country.

First, the background of the US-China rivalry in the field of economics and technology will be outlined (section 2), then the effects of the pandemic on the key GVCs will be presented (section 3). The next focus point will be the semiconductor industry, its role for the global economy as well as main participants of the semiconductor supply chain (section 4). Then the picture of how TTIC answers the American interests will be provided, and its impact will be assessed (sections 5 and 6). At the end, some general conclusions will be drawn (section 7).

To achieve that, analysis of scientific papers, reports, government-issued documents, releases and some other online sources will be applied. Given the developing nature of the issue, it is necessary to use data presented in the reports and studies when referring to recent periods. However, the renown databases will be used when referring to the historical data. Therefore, the presented paper will be prepared mainly by means of descriptive research and secondary data analysis.

2. The United States – China competition

Since the 1970s, when diplomatic relations between the People's Republic of China and the United States were established, their economic cooperation started to grow making the US currently the biggest recipient of Chinese exports – about 577 billion US dollars (USD) in 2021 (UNCTAD, 2022a) and China the third most important destination for American exports – 151 billion USD in 2021 (UNCTAD, 2022b). Since 1977 Chinese GDP growth rate rarely dropped below 5% often reaching double-digit numbers, while in the given period, the American economy rarely exceeded a 5% growth rate (The World Bank, n.d., b). This historically rapid expansion of the Chinese economy in 2017 made it the first country to surpass the American GDP (converted by purchasing power parity). In terms of the GDP per capita however, it is still far behind both the United States and the European Union (EU) (Ambroziak et al., 2021, p. 13). Nevertheless, the growing position of this Asian economy is reducing the importance of previous leaders, for example, in 1990 the EU and the US combined share of the global GDP totalled 43% while China was responsible for just 3%. In 2020 China's share alone reached 17% while the US and the EU together created just 31% (Ambroziak et al., 2021, p. 12).

Alongside the economic competition, the race for technological superiority was mounting. Chinese spending on research and development is presented in Figure 1. It almost quintupled between 1996 and 2020 reaching 2.4% − which is more than the value for the European Union. In the respective period, the United States starting from 2.45% increased its research and development (R&D) spending by one percentage point (The World Bank, n.d., c). The gap between the two countries was dwindling, and the chase was becoming fiercer. Washington's policymakers started to realise that competing with China and being dependent on Chinese supplies at the same time creates a strategic vulnerability and possible security threat.

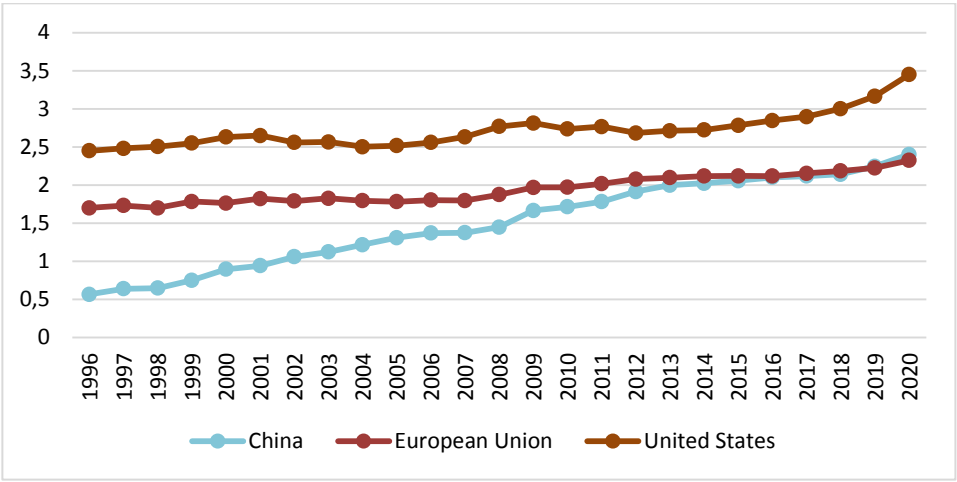

Figure 1. R&D expenditures (as % of GDP) – China, US and European Union

Source: The World Bank (n.d., c).

In 2008 China became the biggest foreign creditor for the US taking the place of Japan which was one of the first red flags connected with the American growing dependency on China (Council on Foreign Relations, n.d., a). In 2011 the administration of Barack Obama trying to strengthen the US presence in the Asia-Pacific region proposed the 'pivot to Asia' and negotiated the Trans-Pacific Partnership trade agreement (Office of the United States Trade Representative, n.d.). The next year brought a 'request for consultations' filled by the United States and some of its allies at the World Trade Organization (WTO) regarding Chinese rare earth metals export restrictions that would force some companies to move production to China (Council on Foreign Relations, n.d., b). In the following years, some tensions and accusations related to the industrial and cyber espionage actions conducted by Chinese citizens occurred (Council on Foreign Relations, n.d., a).

With Donald Trump in office (2017-2021) the US assumed a more hard--line approach towards China. Trump's election campaign revolved around the 'America first' and 'make America great again' slogans. Then in the National Security Strategy opening address (NSS from December 2017) he similarly focused not only on the protection against military threats but also on securing workplaces and business interests of American nationals and keeping America in the position of global leader (The White House, 2017, pp. I-II). The whole second pillar of the National Security Strategy was dedicated to economic prosperity,

'free, fair and reciprocal economic relationships', technological research, education and innovation (The White House, 2017, pp. 17-23). What is more, some unfair trade activities like 'discriminatory non-tariff barriers, forced technology transfers, non-economic capacity, industrial subsidies' were mentioned, and direct accusation against Chinese practices of stealing technology was raised (The White House, 2017, p. 19, 21). The same issues – subsidies to the companies, forced technology transfers and violating patents – soon became the reasons for imposing severe tariffs on China which started a serious trade war spiral with retaliatory measures and some hard-line declarations. Trade conflict lasted from March 2018 to January 2020 when the first normalising deal was signed (Council on Foreign Relations, n.d., a). Year 2020 however, did not bring a relaxation in the relations but new accusations and economic disruptions as the COVID-19 pandemic spread globally originating in the Chinese city of Wuhan.

3. Pandemic effects on key GVCs

The pandemic of unprecedented global scale brought some serious economic effects. As presented in Figure 2 – the world's level of GDP growth dropped from 2.6% in 2019 to –3.1% in 2020, and from the economies pictured in Figure 2 only China kept its positive rate of growth, but it was smaller by 3.7 percentage points GDP per capita levels decreased by 4.1% in 2020 relative to 2019 (The World Bank, n.d., d). According to the United Nations Conference on Trade and Development (UNCTAD), global trade losses in 2020 reached 2.5 trillion USD which is a 9% regress compared to the year before (UNCTAD, 2022c, p. 6). Rogowska mentioned some factors such as simultaneous demand and supply shocks, many restrictions from mask-wearing mandates to quarantines, curfews and lockdowns, many of which were never seen before. That all affected stronger some specific areas of the economy like big cities, transportation and tourism sectors all being beneficiaries of the robust globalisation (Rogowska, 2022, pp. 105-106). According to Yeyati and Filippini COVID-19 pandemic caused the biggest recession since the Great Depression resulting in more than 90% of the global economy in regress with disruptions in the global value Chains as one of the main reasons (Yeyati & Filippini, 2021, p. 4).

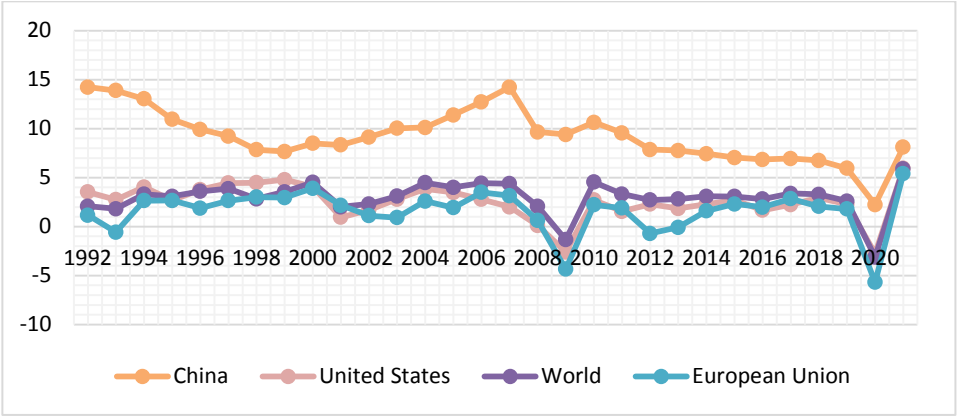

Figure 2. Annual GDP growth (%) in China, US, EU and world aggregate

Source: The World Bank (n.d., e).

As WTO stated in their report, transnational corporations that represent about a half of global trade, a third of GDP, and a quarter of employment experienced a significant drop in reliability on deliveries from countries of low and middle income (over 75% of surveyed transnational corporations had an experience of lower reliability in GVCs) (WTO, 2021, p. 151). Said report analyses many alternative scenarios of how the length and severity of lockdowns with the spatial distribution of affected countries may have influenced the economy. The costs of the pandemic came out to be correlated with the number of countries affected and the length of lockdown to a greater extent than the strictness of imposed restrictions. For example, if only China was subject to the COVID-19 epidemic, global value added would decrease by 3.5% of GDP, but if the United States and developed European countries were affected by the virus, lost value added would amount to 12.6% (WTO, 2021, p. XXX). In any scenario, however, all sectors that depend on GVCs would be exposed to losses with some factors like scarcity of substitutes even multiplying the risks. Because of their high complexity, many interconnections and linkages with trade hubs like the US, Germany and China that facilitated the spreading of the virus, GVCs were both the cause and the casualty of the pandemic (WTO, 2021, pp. 149, 152, 155).

COVID-19 exposed many vulnerabilities of the globalised economy and gave an impulse to make changes. Starting in China and then spreading all over the world, the pandemic was an even more vivid picture of how the world became dependent on Beijing. Some manufacturing processes were being quickly reshored but some proved to be too hard to bring back and substitutes were not

that easy to find. One of those key GVCs was the semiconductor supply chain. It was enough for the disruption to occur at any stage of this chain to cause problems with production in any company around the world using semiconductors (electronics and automobile production were especially affected industries). The problem was even bigger due to the just-in-time strategy in supply chains, the high complexity of this branch and the limited geographical distribution of semiconductor producers. COVID-19 induced disruptions in production due to labour force shortages and restrictions especially in China caused shortages in supply, and countries that could mitigate that GVCs imbalance were facing extreme weather conditions which only strengthened the shock (WTO, 2021, pp. 145-149, 160).

4. Semiconductor supply chain

The semiconductor industry is one of the highest importance in the economy and technology nowadays. Semiconductors are used to make integrated circuits also called microchips whose applications range from loudspeakers and cell phones to electric cars and end with high-technology military equipment. As innovation progresses, the perspectives for its use (and demand) are boundless. This is why countries pay so much attention to how the semiconductor supply chain is organised, which country it is dependent on, and who is going to control it.

The very complex technology behind the semiconductor production process corresponds to the complexity of the global supply chain. Rare earth elements used in the production are relatively easy to find in the Earth's crust but industrial extraction needs resources that are more concentrated, therefore, mining operations are mostly conducted in countries with bigger resources. According to the U.S. Geological Survey estimations, in 2021 the biggest producer (and the biggest reserves holder) was China with almost 58% global share, second came the US 14.5%, then Burma with about 12% and Australia with almost 8.3% (U.S. Geological Survey, 2023, pp. 142-143).

The microchip production consists of many stages which can mount up to over 1000 steps in the six to eight-week period, connected with traveling to different countries (sometimes back and forth) and different companies that specialise in certain stages of integrated circuits manufacturing. GVC is dominated by two distinct models: IDM – integrated device manufacturer and fabless--foundry company. Companies that are organised in line with the first model are responsible for all main production phases – from design through manufacturing and assembling to final step – tests and packaging. In an alternative model a de-

signing company outsources all the processes connected with manufacturing to other entities (Grimes & Du, 2022, p. 4).

The biggest value added to the supply chain comes from the technology--intensive phases like designing, and therefore in 2018 top ten producers with the biggest capacities accounted for almost 73% of the market share. Among them are five US-based corporations – Intel, Qualcomm, Broadcom, Micron and Texas Instruments, South Korean Samsung and SK Hynix, Taiwanese TSMC, Japanese Toshiba and Dutch NXP. The biggest ten design companies also are dominated by developed countries with six American entities and one British. The other three are based in Taiwan (Grimes & Du, 2022, pp. 5, 7).

In Figure 3, this phenomenon is presented in the light of the 'smiling curve' concept. According to that idea, the upstream (R&D for example) and down-stream (e.g. marketing and brand management) participants of the GVC add the biggest value to the product and capture the biggest revenues, while middle-stream companies (manufacturing, assembling, etc.) add and capture a relatively small portion of the value. Thus the supply chain operations presented on the chart where value is placed on the Y axis and time on the X axis create a smile-shaped curve (Namchul, Kraemer, & Dedrick, 2012, pp. 90-91). Figure 3 presents three segments of the semiconductor GVC: design (fabless entities revenue share) as an upstream and manufacturing (foundries), assembling, testing and packaging (outsourced assembly and test − OSAT) as a middle-stream. The IDMs were omitted to simplify the analysis, given their presence in data as a separate sector and their activities covering all stages of the GVC. Due to the limited data on the geographical distribution of equipment production, this small but key upstream element − 8.2% in market share (Namchul, Kraemer, & Dedrick, 2012, p. 6) was also omitted. Figure 3 shows that 57% of the value concentrates on design, and the biggest share belongs to developed countries (65%) with the US being a leader. Developing countries, however, dominate the middle-stream operations with Taiwan being an unmatched leader and the People's Republic of China being the biggest potential player.

Taiwan as a lower cost economy – a destination for outsourcing and off-shoring processes – was developing its specialization in the integrated circuits industry and now is a leading country in founding (with Taiwanese Semiconductor Manufacturing Company, TSMC − the world's biggest company in this part of the industry), assembling and testing, with significant market share in designing processes (73%, 54% and 18% of total revenue for segment respectively) (Namchul, Kraemer, & Dedrick, 2012, pp. 4, 7).

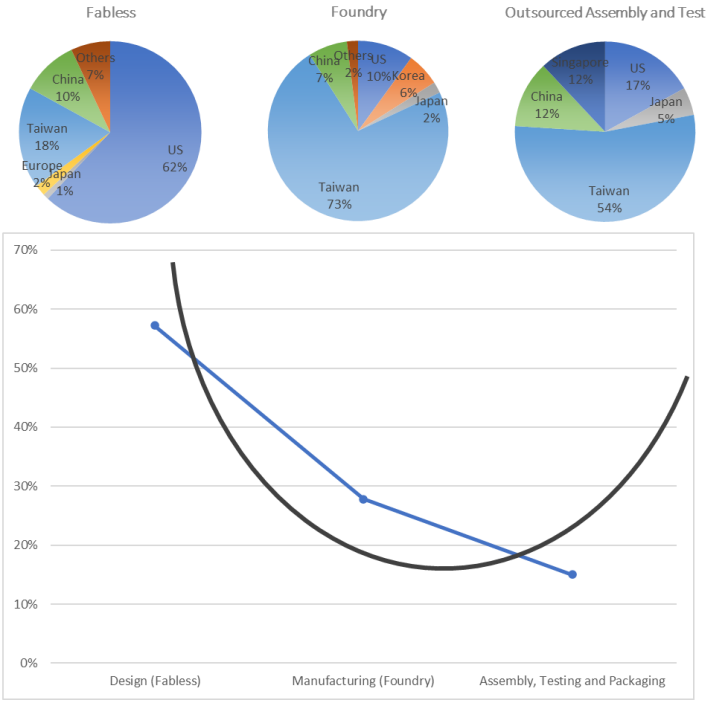

Figure 3. Semiconductor value chain on the 'smiling curve'

Source: Author's own study based on: Grimes & Du (2022, p. 4-7).

PRC, on the other hand, being a latecomer in the industry, drew semiconductor investments with its low labour costs, rich supply of rare earth metals and the biggest market for microchips (Chinese demand covered over 58% of global production in 2018). Foreign companies like TSMC, Intel or Qualcomm to secure their access to those key resources, cheap labour and highly absorptive microchip market were moving their production to China. Their cooperation with local entities was the main source of the technology transfer. Chinese ambitions to grow semiconductor self-reliance, however, were inhibited by low value--added phases of the supply chain localised in the country and the problems with intellectual rights protection that were discouraging investors from moving more advanced designs to China. Thus, even though China accounted for 13% of fabless companies' share globally in 2018 (almost reaching Taiwan's position of 16%), it was only able to produce microchips accounting for 15.3% share of the Chinese market and still has problems with designing and manufacturing highly efficient high end integrated circuits (Namchul, Kraemer, & Dedrick, 2012, pp. 6-7, 9).

5. US – Taiwan Technology, Trade and Investment Collaboration framework

In spite of that, Washington's advantage over China in the semiconductor industry is not certain. While China is spending significant amounts on research and development and is a subject to catching-up effect, the United States is still reliant on supplies from China. Therefore, as China strives for more self--dependence in its innovation base and supplies, the US does the same. The ideas of developing an innovation base, strengthening science, technology, engineering and mathematics education (STEM) as well as fostering resilience were present in the National Security Strategies of presidents Obama, Trump and Biden but the approach was evolving with the changing contexts. Those concepts generally relate to long term strategies, but what the COVID-19 pandemic made even more evident some GVC imbalances already jeopardise economic security and needed to be resolved faster as American Secretary of Commerce Gina Raimondo said: "It is not an exaggeration to say at the moment that we have a crisis in our supply chain. Not that long ago, America led the world in making leading-edge semiconductor chips. Today we produce 0% of those chips in America, 0%. That's a national security risk and an economic security risk" (US Senate, 2021).

Besides the upheld tariffs and sanctions on China imposed under Donald Trump's administration (Council on Foreign Relations, n.d., a), targeted at slowing down the Chinese semiconductor industry, Joe Biden looked for some measures to promote the restructuring process of the semiconductor supply chain and development of the industry in the United States or rather reestablishment of its manufacturing stage in America (He & Malkin, 2021). One of the most significant actions on the way to secure the semiconductor supplies was passing the Chips and Science Act aimed at providing funding for 'Creating Helpful Incentives to Produce Semiconductors' (CHIPS) – the tool for funding the new investments in integrated circuits manufacturing in the United States (The United States Congress, 2022). Another, and more attainable strategy however, seems to be friend-shoring described by the US Treasury Secretary Janet Yellen as: "favoring the friend-shoring of supply chains to a large number of trusted countries, so we can continue to securely extend market access, will lower the risks to our economy as well as to our trusted trade partners" (Atlantic Council, 2022). Or as stated in The Diplomat regarding microchips – "intention to work with 'like-

-minded' countries to build a more reliable semiconductor supply chain that does not involve China" (He & Malkin, 2021).

The Technology, Trade and Investment Collaboration framework (TTIC) seems to be such a cooperation with a 'like-minded' partner. Taiwan and the US have a long-lasting history of political and military cooperation. Common democratic and free market values and economic cooperation create the platform for mutual understanding and coworking in the 'critical supply chains'. The Framework proposed in December 2021 during the talks between American Secretary of Commerce Gina Raimondo and Taiwan Minister of Economic Affairs Mei-hua Wang was aimed at strengthening critical supply chains, particularly the semiconductor supply chain and deepening economic relationship by focusing on the investment environment (U.S. Department of Commerce, 2021). The proposition was created after the suspended cooperation with the People's Republic of China in the microchip industry which interrupted the uninhibited offshoring processes. Being an alternative to the mentioned reshoring strategies (e.g. Chips and Science Act), TTIC is an example of the middle-ground solution – a friend-shoring framework.

As pictured in Figure 4, the US was offshoring its production of microchips to the PRC in order to benefit from its lower costs. Later, due to the decrease of its dependency on that partner, it could withdraw semiconductor production from China either by trying to bring it back to the United States (2a) or placing it in Taiwan (2b) or – as words of some American officials my suggest – move the production of the chips to Taiwan, and bring it back to the US later (3).

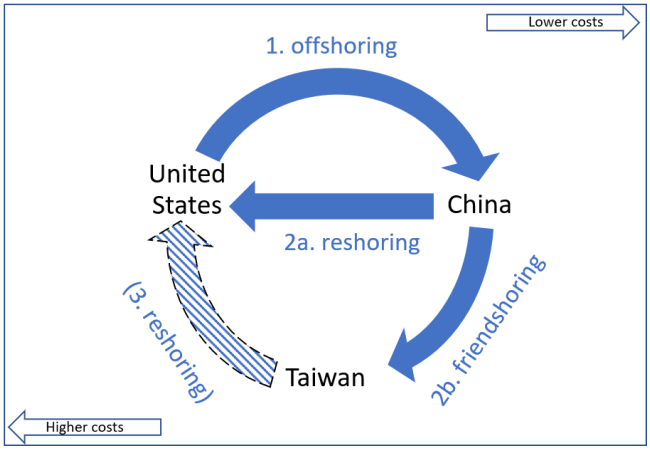

Figure 4. The US semiconductors supply chain changes

Source: Author's own study.

Taiwan's robust semiconductor sector with a highly-skilled, experienced labour force and relatively low cost of labour, offers an alternative to China as a destination for locating manufacturing plants. Surely, the costs of moving the production to Taiwan are bigger than keeping the manufacturing in the PRC would be, but at the same time, they are relatively lower than moving the whole production back to the US (see Figure 4). With its leader position in the industry – cooperation with Taiwan would enhance the supply chain security, and two-way investments would facilitate technology transfers and know-how sharing. Some talks through the TTIC framework have already taken place, encouraging investors from both countries to increase their cooperation. In 2021 the Ministry of Economic Affairs and Bureau of Energy prepared a seminar on the cooperation in the field of renewable energy and battery storage (another focus of the TTIC) promoting Taiwanese-American business cooperation (American Institute in Taiwan, n.d.). In April 2022 the US-Taiwan cybersecurity forum was organised focusing on the technology for the finance services sector (American Institute in Taiwan, n.d.). Later the same month the Industry Forum on US-Taiwan Cooperation on Global Semiconductor Supply Chain Resilience took place in Taipei. In opening remarks, the Director of the American Institute in Taiwan – Sandra Oudkirk expressed the conviction that cooperation exemplified by Taiwanese--American companies and partnerships of education institutions, as well as investments in the key areas of 5G technology, electric automobiles industry, cybersecurity, sustainable energy and semiconductors is a way to stabilize global supply chains and foster their technological leadership (American Institute in Taiwan, 2022).

6. Assessment of the outcomes of TTIC framework

As the American friend-shoring efforts are progressing, the outcomes might be twofold. Taiwan's advancement and the global market's reliance on its semiconductor industry are also referred to as a 'silicon shield' protecting the island from hostile actions and Chinese intervention. Strengthening ties between Washington and Taipei might be another factor reasserting the Taiwanese position, and the US renewed defense pledges might further deter China from any aggressive moves. At the same time, however, helping the US reinforce its market position might affect the Taiwanese status and weaken its 'silicon shield'. What is more, China – under less influence of the United States – might feel chal-

lenged by American involvement and less constrained, thus increasing its military provocations and sparking new tensions.

Another negative effect of this friend-shoring strategy might be simply its economic costs. In the report of the European Bank for Reconstruction and Development (EBRD), the costs of friend-shoring are modelled with four alternative scenarios, showing that the costs of that strategy depending on the tools and geographical range of trade restrictions might even reach 4.6% of the global GDP (Smarzynska Javorcik et al., 2022, p. 1). When the countries divided into two blocks are all subject to the mutual restrictions modelled in the study as the additional 20% of the iceberg trade costs, the losses are general and the highest (from 0.1% to 4.6% of the GDP), affecting the most economies integrated with both blocks. If the modelled costs are due 20% rise in tariffs, losses are again universal but significantly lower with a 2.3% maximum. Finally, if the 20% additional iceberg trade costs exist only between one country and the opposite block of countries (in the paper sanctioned Russia or China under the zero-Covid policy), the biggest losses are experienced by the country that is isolated (in the model respectively about 3% GDP loss for Russia and 1.5% GDP loss for China), then countries from the opposite block dependent on the trade with the isolated economy. In those scenarios, countries capable of exporting substitute products may experience some small gains (up to 0.4% according to the model) (Smarzynska Javorcik et al., 2022, pp. 15-19).

As mentioned the research shows an important relationship between GDP losses and trade restrictions, but it has some flaws. First of all, the friend-shoring policy is modelled as an additional trade cost in all industries, whereas this seems a rather too extreme approach, regarding that generally friend-shoring discussions are applied more to critical supply chains. Another issue is the 'two blocks' model based on the United Nations voting for condemnation of the Russian invasion of Ukraine. All countries against condemning, abstaining and absent were in the given model considered a second block (Smarzynska Javorcik et al., 2022, p. 3), while some of them abstained on purpose to maintain normalized relations and trade with both Ukraine and Russia supporters. Moreover, that simplified division between friends and foes made the first block consist mostly of the developed economies, hence the comparative advantage of trade and labour costs differences between them would be significantly reduced (Smarzynska Javorcik et al., p. 16).

Finally, friend-shoring the production previously located in China mitigates the risk connected to the American dependency on Chinese supplies. On the

other hand, it reduces the economic linkages and thus leverages the United States over the People's Republic of China. The importance of growing economic ties should not be underestimated as it was a significant factor in accommodating the two former enemies – Japan and West Germany into the Western World in the twentieth century (Ikenberry, 2008).

7. Conclusions

COVID-19 influence on the global economy is a significant source of interesting insights in the globalization processes, for example, the renewed role of the state in the economy. Disruptions caused by it to production, trade, demand and consumption affecting the GVCs, raised some important questions about what will be the direction and pace of the globalization process. Many were advocating reshoring strategies in regards to the key industries based on GVCs that proved to be exposed to disruptions like semiconductors (Chips and Science Act, the EU Chips Act), while others supported more moderate precaution – the friend--shoring.

Some call it a step backward, but it might be seen as a way of repairing ill-balanced supply chains or protecting from future disruptions. The Technology, Trade and Investment Collaboration framework is one of the examples that pulling out key production from one country does not necessarily mean the total loss of the comparative advantage benefits of the international division of labour. Current events, especially the war in Ukraine, show that reliance on one supplier who additionally does not share its partner's values is a threat to security, and friend-shoring projects such as the Baltic Pipe are well grounded (if not caused by the external factors), and the price paid for being dependent might be much higher than the one paid for friend-shoring key sectors. What is more, friend-shoring does not have to be seen as a negative means restricting trade with countries whose geopolitical interests do not align with ours. On the contrary, it can be perceived as a positive process and a new channel for fostering cooperation with 'like-minded' partners.

As the friend-shoring trend grows with new initiatives such as the recently signed Memorandum of Understanding creating the US – India Semiconductor Supply Chain and Innovation Partnership (U.S. Department of Commerce, 2023), developed countries' policymakers should remember that being a tool to recreate the responsible balance in trade relations – friend-shoring should not become a reason for the new imbalances and isolation, and the constructive en-

gagement is probably the best way for the United States to navigate the competition with China – as John Ikenberry said: "The United States cannot thwart China's rise, but it can help ensure that China's power is exercised within the rules and institutions that the United States and its partners have crafted over the last century, rules and institutions that can protect the interests of all states in the more crowded world of the future" (Ikenberry, 2008).

More in-depth studies on this topic are still required to enable a better understanding of the possible outcomes and costs and allow weighing advantages over drawbacks of applying friend-shoring policies in real life. The following years will provide also more empirical data to measure the effectiveness of such policies and their twofold influence on the economies' performance and the shifts of trade volumes, as an effect of the changes that are already taking place.

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