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The Impact of the Russia-Ukraine War on the Major Transformation Trends of the Global Economy

Az orosz–ukrán háború hatása a világgazdaság fő átalakulási folyamataira

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Summary: The Ukraine war and the implications of the sanctions on Russia have amplified the need for more resilient and transparent supply chains, which is expected to give extra impetus to the adoption of digital technologies both in supply chain management and in manufacturing. The crisis has the potential to catalyse the development of central bank digital currencies around the world, especially in countries that are seeking alternatives to the dollar-based international financial system. Russia and China have been actively working on the de-dollarisation of their bilateral trade flows, which could be accelerated by the current sanctions. Cutting off the dependency on Russian fossil fuels will altogether speed up the use of clean energy in the EU; however, this may generate imbalances in the green transition. The current crisis has only amplified the challenges that the global electric vehicle supply chain was already facing. The Ukraine war has further boosted the price increase of critical raw materials of EVs, which could hamper the broader adoption of the technology.

Keywords: Russia, Ukraine, digital economy, sustainability, electromobility

Összefoglalás: *Az ukrajnai háború és az Oroszországra kivetett szankciók következményei tovább növelték a rugalmas és átlátható ellátási láncok iránti igényt, ami várhatóan plusz lendületet ad a digitális technológiák elterjedésének az ellátási lánc menedzsment és a gyártás terén. A válság potenciálisan gyorsíthatja a digitális jegybankpénz elterjedését világszerte, különösen azokban az országokban, amelyek alternatívát keresnek a dolláralapú nemzetközi pénzügyi rendszerrel szemben. Oroszország és Kína aktívan együttműködnek kétoldalú kereskedelmük dollármentesítésében, a jelenlegi válság és a szankciók pedig felgyorsíthatják ezt a folyamatot. Az orosz energiahordozóktól való függőség megszüntetése összeségében várhatóan gyorsítani fogja a tiszta energiára való áttérést az EU-ban, ugyanakkor ez egyensúlytalanságokat is fog eredményezni. Az ukrajnai válság felerősítette azokat a kihívásokat, amelyekkel az elektromos járművek ellátási láncai küzdöttek. A háború miatt tovább emelkedtek egyes kritikus nyersanyagok árai, ami lassíthatja az elektromos gépjárművek szélesebb körű elterjedését.*

Kulcsszavak: *Oroszország, Ukrajna, digitális gazdaság, fenntarthatóság, elektromobilitás*

INTRODUCTION

The global economy was already preparing for a new era before the outbreak of the COVID-19 pandemic in 2020. The ongoing transformation was mainly driven by the evolution of digital technologies and the emerging imperative

of sustainability. The COVID-19 crisis has accelerated this transformation by increasing the dependency on IT solutions in doing business, as well as reinforcing the need for a more sustainable and crisis-proof energy sector and supply chains. It has become evident that those economies will emerge stronger from the current crisis that speed up the adoption of digital technologies and reshape their operations along sustainability at the same time.

In February 2022, Russia's invasion of Ukraine not only started a geopolitical and humanitarian crisis, it also generated the largest risk to the economic recovery worldwide, particularly so in Europe. The armed conflict and the Western sanctions against Russia have extended the supply chain disruptions that had been prevailing since the COVID-19 outbreak and have put global logistics to the test again. In addition, the war has had some implications that are in close connection with the ongoing transformation of the global economy along digitalisation and sustainability. This policy brief explores how the armed conflict in Ukraine and its consequences will possibly affect these two megatrends.

UNSTOPPABLE DIGITAL TRANSFORMATION, BUT POTENTIALLY MORE FRAGMENTATION AHEAD

The COVID-19 crisis underlined the need to increase the resilience of supply chains, and it is worth evaluating how the conflict in Ukraine influences this trend. At first glance, Ukraine and Russia do not play a critical role in global supply chains like China; nevertheless, the picture is rather different when looking beyond the Tier 1 level. According to data from Dun & Bradstreet, at least 374,000 businesses rely on Russian suppliers worldwide. At the same time, Deloitte's recent annual survey of chief procurement officers reveals that while 70% believe they have good visibility into risks regarding their Tier 1 suppliers, only 15% have the same confidence about Tier 2 and beyond. The survey of chief procurement officers also indicates that only 26% of the companies feel that they can predict risks in their Tier 1 supplier base, let alone anticipate problems in their upstream suppliers. All this suggests that the Ukraine war and Western sanctions on Russia have most probably disrupted the supply chains of a huge number of companies worldwide and created unpredicted risks to their business operations. In other words, the Russian invasion of Ukraine only reinforces the imperative to improve end-to-end transparency for supply chain operators, which means that every member of the supply network would have access to all data. Real-time insights can be enabled through digitising processes and applying cloud platforms, for example 'control towers' that focus on providing end-to-end supply chain

visibility and control. Such solutions are mostly powered by artificial intelligence, machine learning, and advanced analytics, all of which are associated with the era of digital manufacturing and Supply Chain 4.0.

The conflict and sanctions on Russia have induced an upward spiral in the prices of energy and raw materials. The enhanced use of digital technologies in manufacturing could be a medium-term response to this challenge, as such technologies have the potential to optimise business processes and reduce the material input of fossil fuels and other raw materials, which could cut the import dependency on Russia. Digital technologies can reduce production costs, thus making possible the relocation of manufacturing in the case of some product parts. This could reduce the exposure to the future supply chain turbulences caused by geopolitical conflicts.

While the global IT industry has shown relative resilience to the effects of the COVID-19 crisis, it seems that a country's technology sector could keep developing even in the case of a large-scale military conflict. Prior to Russia's invasion, Ukraine had a tech industry of USD 6.8 billion, according to the IT Ukraine Association, and its total headcount was estimated to be around 200,000 employees. The vibrant tech ecosystem has become a key player in the country's defence efforts, and through relocating to cities in Western Ukraine most companies have been able to maintain operations or even develop their business. Interestingly, the war has not only had an impact on the Ukrainian and Russian IT sectors, it has also proven to be a milestone for global Big Tech. As Russia invaded Ukraine, the myth that large technological companies are apolitical providers of services has collapsed spectacularly. YouTube, Facebook, and Twitter have all decided to restrict or block the activity of state-affiliated Russian media outlets in some way. Apple has suspended all product sales in Russia, and Qualcomm, Intel, Microsoft, IBM, and other tech behemoths have also introduced similar punitive measures. Taking sides in an armed conflict and getting engaged in a 'digital fight' is *terra incognita* for global Big Tech, and it could easily have far-reaching consequences for the future development of the global digital economy.

The conflict in Ukraine could also influence the evolution trajectory of another segment of the digital economy. According to the CEO of BlackRock, the world's largest asset management corporation, the Russia-Ukraine war could end up accelerating digital currencies as a tool to settle international transactions. The conflict is labelled by some as the world's first crypto war, with both sides contributing to gaining the title. Since the start of the invasion, Ukrainian officials have been calling for donations in cryptocurrency, and the Ukrainian government has declared that it had received almost USD 67 million by late March. In this regard the country is gaining valuable experience, building on which Ukraine aims to become a global frontrunner in the use of cryptocurrencies when the war ends. The government also hopes that developing a legal market for virtual assets today will help the country's economic recovery after the war. On the other hand, there are fears that Russia could also take advantage of crypto assets

in bypassing sanctions, as the head of the European Central Bank has warned. She also noted that global transfers of rubles into cryptocurrency has been rising sharply in volume. These concerns have been fuelled by an announcement from Russian officials that the country would accept cryptocurrencies from 'ally' states in the trade of energy resources. However, as the US-based Center for Strategic and International Studies (CSIS) points out, the daily volume of crypto being purchased using rubles is still negligible compared to the daily trade volume of the country. This suggests that the increasing demand for cryptos is not a state-driven effort, but ordinary Russians trying to get rid of their rubles. As Visa, PayPal, and MasterCard all suspended operations in Russia, crypto has emerged as an alternative tool for Russian people to manage everyday life. Moreover, the CSIS analysis underlines that generally those countries have been the most permissive of crypto that are leading the sanctions on Russia. Many countries that could be potential partners for Russia in circumventing the sanctions have implicitly or explicitly banned crypto, including China.

Nevertheless, this does not mean that sanctions on Russia would not accelerate the development of central bank digital currencies around the world, especially in countries that are seeking alternatives to the dollar-based international financial system. Undoubtedly China is the most prominent among such states, as it has launched a number of initiatives to enhance the relevance of its currency in cross-border economic interactions and reduce its exposure to the US-dominated international payment and settlement system. Recent efforts of Beijing to launch its central bank digital currency have been widely seen as a major step towards achieving this strategic goal. Moreover, Russia and China have been actively working on the de-dollarisation of their bilateral trade flows, which could be accelerated by the current sanctions, particularly by the disconnection of some Russian banks from SWIFT (Society for Worldwide Interbank Financial Telecommunication). This latter measure can also be seen as a warning to the Chinese leaders, as US officials already threatened in 2017 to cut off the country's access to the international dollar system. However, such a measure would further accelerate the emergence of an alternative financial settlement system and the international adoption of the Chinese digital yuan, which is considered by US scholars and officials a threat to the ability of the US to use economic sanctions worldwide.

ONGOING GREEN TRANSITION WITH NEW CHALLENGES AND IMBALANCES

Beside digital transition, another megatrend shaping today's global economy is the sustainability imperative. The COVID-19 crisis has not only enhanced the adoption of digital technologies but also increased demand for a 'green

recovery' and accelerated the energy transition and the shift to electromobility in the automotive industry. According to fDi Intelligence, in 2021 the renewable energy industry was the largest recipient sector of FDI for the third year in a row, while the oil and gas industry dropped from the top 10 recipient sectors of FDI for the first time on record. Data from foreign investment monitor fDi Markets confirms that foreign direct investments into renewables held strong in the first quarter of 2022 despite the turbulences in the energy market caused by the Ukraine war. Expanding the use of renewables is a key pillar of the EU's strategic plan, which aims to completely cut itself off Russian energy by 2030 and spend EUR 113 billion on renewables and new hydrogen infrastructure. All this may suggest that energy transition is on the right track and that the Ukraine crisis is accelerating decarbonization. However, the International Energy Agency has warned that regional imbalances and the rising commodity prices caused by the Russia-Ukraine war are reasons for concern. Europe's breakup with Russian energy could hold back the green energy transition on other continents, mainly in developing countries. If Europe successfully secures a larger share of the limited amount of LNG that is available in the global market, emerging economies, particularly in Asia could turn back to an enhanced consumption of coal and other fossil fuels. With limited possibilities for cross-border cooperation and foreign investments in the coming years, Russia, a major source of emission itself, is also unlikely to go on with its clean energy transition in the short run. Besides, the EU plans to spend billions of euros on near-term investment in fossil fuels in order to reduce its exposure to Russian energy as soon as possible. As governments around the world are looking for immediate solutions to replace Russian energy, large oil and gas companies have a unique opportunity to reposition themselves and strengthen their influence on political decision makers. FDI decisions in 2022 will be meaningful in that regard, and a rebound in FDI inflow to the oil and gas industry could lock many countries in higher emissions for the coming years.

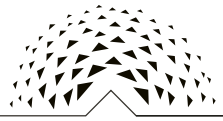
The ongoing shift to electromobility is also a key dimension of energy transition and the 'green recovery', therefore it makes sense to explore the possible impact of the Ukraine war on the evolution of the electric vehicle (EV) industry. The crisis has added another layer of uncertainty for the automotive industry in general and disrupted the supply chains of several car makers. Manufacturing activity halted at sites in war-torn territories, and several OEMs have had to start looking for alternative sources of vital parts made in Ukraine. This has also triggered a wave of relocation of automotive suppliers from Ukraine, as reported by the Polish investment promotion agency. Due to these turbulences and the collapse of the Russian and Ukrainian market, LMC Automotive has cut its forecast of light vehicle sales in Europe by 2 million units a year over the next two years.

As for the EV transition, rising oil prices could boost the adoption of electric vehicle technology and widen its potential customer base worldwide. However, the war has an extending negative impact on the global economy, and as a result demand for cars, both for EVs and for internal combustion engine vehicles (ICE), may falter in general. As the Ukraine crisis escalated, the price of several minerals that are key to EV manufacturing has skyrocketed. According to S&P Global forecast, the average price of nickel, a key component in lithium-ion batteries, is to rise nearly 80% year-on-year in 2022, as Russia is major producer of class 1 nickel globally. Experts say that this jump in nickel prices could result in an increase of USD 1,000 to 2,000 in the cost of a battery pack for an electric car maker. At the same time, a 2021 study by OC&C Global Speedometer reveals that more than half of consumers are not ready to pay an extra upfront of USD 500 to buy an EV, despite lower operating costs. The situation is similar in the case of lithium and cobalt, the prices of which have shot up by 700% and 100% since January 2020. Analysts share the view that rising raw material prices have the potential to delay the erosion of cost differences between EVs and ICE vehicles, which could hamper the broader adoption of the technology and keep electric vehicles a privilege of luxury buyers.

The price surge of nickel and cobalt may boost the adoption of an alternative type of battery, which uses iron phosphate in its cathodes. These so-called LFP batteries come with a lower price tag than lithium-ion cells, and they are already applied in cheaper EVs. However, LFP batteries are heavier per mile of range than their lithium-ion counterparts, therefore LFP cell is a less preferred choice for high-class models. As a result of government pressure to boost EV adoption, Chinese car makers have been using LFP technology in their lower-cost vehicles for a long time. Tesla seems to be switching to this type of technology in its standard-range vehicles, and because Tesla is the company that sets the standards in the EV industry, several other Western carmakers may follow its lead. As China already has substantial production capacities for LFP batteries, this shift in the global industry could cement the Asian country's dominant position in EV battery manufacturing.

CONCLUSION

The Ukraine war and the implications of the sanctions on Russia have amplified the need for more resilient and transparent supply chains, which had already been high on the agenda in corporate board rooms worldwide since the COVID-19 outbreak. It is expected that this will give extra impetus to the adoption of digital technologies both in supply chain management and in manufacturing. Several foreign companies have had to find alternatives



to replace their Ukrainian or Russian suppliers, and they are seizing every opportunity, even if their supply chain extends longer than before. VW and BMW are trying to find alternative sources of vital parts made in Ukraine from China and Mexico. Surging raw material prices, the semiconductor shortage, and the latest disruption caused by the Ukraine war seem to overwrite the near-sourcing trend of the COVID-19 era – at least in the short run.

The Russia–Ukraine war has clearly highlighted the dominance of the IT sector and its remarkable resilience even to the most disruptive events. The current crisis has also revealed that both local IT companies and global Big Tech can play a major role in a war situation and take active part in defensive efforts and sanctions. This can elevate the digital aspects of warfare to the next level in the future. It remains to be seen whether global Big Tech will reengage with Russia following the crisis, which surely depends on the outcome of the war and its impact on Russia's domestic political relations. Remaining outside Russia in the long run may increase the chance of a world that is divided into technology blocs based on geopolitics. The same applies to the juggernauts of the digital payment industry. If they refuse, or if they are inhibited to restart operations in Russia, that will boost the evolution of alternative or even competing international digital payment systems. The sanctions imposed on Russia clearly prove that the US is ready to weaponize the dollar and SWIFT, giving extra motivation for some countries to reduce their exposure to the dollar-based international financial system. This may give China a new opportunity to build a bloc of countries that share this goal and enhance the adoption of its digital yuan; however, the country is not in the position to offer a real alternative in the short run.

The Ukraine crisis has also dramatically pointed out the EU's exposure to Russian fossil energy, and this dependency has become a strong argument for accelerating the green transition of the continent. However, the overall picture is more complex, as Europe needs urgent solutions, which gives room for the oil and gas lobby to pursue its interests. Although cutting off the dependency on Russian fossil energy will altogether speed up the use of green energy in the EU, the question is how the top-down approach will result in an energy infrastructure that is sustainable in an economic sense as well. Moreover, a rapidly increasing demand for renewable energy equipment will put China, a global leader in the production, export, and installation of solar panels and wind turbines, in an even more dominant position in its trade relations.

Altogether, the current crisis has only amplified the challenges that the global EV supply chain had already been facing. Even before Russia invaded Ukraine, the price of nickel and other critical raw materials were rising, and it was quite obvious that the supply of some minerals cannot keep up with the growing production of EVs and that the current global supply chain is unsustainable. The Ukraine war may give the final push for several companies to restructure their supply chains, to build new partnerships (e.g. with mining

companies) for raw material supply, or to boost the innovation of new technologies that rely less on scarce minerals. All these dynamics may also have geopolitical relevance, as two superpowers are currently struggling to gain global tech supremacy, and electromobility is one of the key dimensions of this competition.