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Irina Korgun, Liudmila Zakharova

**Rational vs. Behavioural approach
to DPRK's sanctions problem**

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И.А. Коргун, Л.В. Захарова

**Бихевиоральный подход в дискуссии
о санкциях против КНДР**

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В настоящем исследовании представлен обзор санкций против КНДР, анализируются их экономические последствия, обсуждается, почему санкции против Северной Кореи не достигли поставленной цели. С использованием отдельных элементов бихевиорального подхода авторы дают объяснение реакции Северной Кореи на санкции и отказу идти на уступки. Данная работа раскрывает ограничения санкций как инструмента давления и ставит вопрос о необходимости диалога с КНДР вместо жесткого соблюдения санкций.

Ключевые слова: международные санкции, КНДР, бихевиоральный подход, социально-экономическое положение КНДР.

Классификация JEL: F51, F53

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This research presents an overview of sanctions against the DPRK, analyses their economic effects, discusses why sanctions against North Korea did not achieve its intended goal, and how behavioural science can contribute to our understanding of North Korea's response to sanctions. Effectively, this study shows the necessity of a different approach in dealing with the DPRK rather than firmly adhering to sanctions.

This study has several implications. First, it identifies the limitations of sanctions. Second, the findings suggest that a change in attitude towards North Korea and other instruments beyond sanctions needs to be employed. Third, the research findings can contribute to the design of negotiation strategies for dealing with the DPRK.

Key words: international sanctions, DPRK, behavioural approach, DPRK's socio-economic development

Classification JEL: F51, F53

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I. Introduction¹

The rational agent approach has been influential in shaping research on North Korea. The rational agent assumption, borrowed from economics, suggests that an agent's behaviour (individual, firm or state) is guided by the principles of utility and profit maximisation in parallel with the minimisation of losses. Its application in research regarding sanctions against the Democratic People's Republic of Korea (DPRK) promoted the idea that economic losses incurred by this autarkic state, driven by restrictions on trade and financial activity, would prompt the country's leadership to abandon its nuclear and missile programmes.

However, North Korea has not only pursued the programme, but has also made rapid progress. The recent launch of the mid-range rocket Hwasong-12 ended a period of inactivity in missile tests² and demonstrated an increased capability in military production, with the missile reaching a maximum altitude of 2,000 km with a capacity to cover a distance of 4,000 km, meaning it can reach Japan and the US territory of Guam.³ The national economic system also showed greater than expected resilience. Although trade restrictions and self-imposed border closures in the wake of the Covid-19 pandemic created economic difficulties, it did not result in an ultimate collapse.

The difference between the assumed effect of sanctions and the fact that the DPRK does not show signs of compromise and becomes more assertive in negotiations with the West, prompted researchers to look

¹ This publication has been supported by the Korea Foundation 2021 Grant "Impact of international sanctions on DPRK: lessons and prospects".

² CNBC. (2022). *North Korea caps month of tests with longest-range missile since 2017*. [online] Available at: <https://www.cnbc.com/amp/2022/01/30/north-korea-caps-month-of-tests-with-longest-range-missile-since-2017.html> [Accessed 02 Feb. 2022].

³ North Korea missile tests: Photos from space released. (2022). *BBC News*. [online] 31 Jan. Available at: <https://www.bbc.com/news/world-asia-60193714> [Accessed: 02 Feb. 2022].

beyond the rational agent approach for explaining North Korea's behaviour. Their work was based on previous behavioural research in the fields of international law, international relations and deterrence (Broude, 2015; Berejikian, 2002; Poulsen, 2013; Rathbun, 2011; Sitaraman and Zions, 2015; Tingley, 2017).

Several studies (Solingen, 2012, 2019; Harrington, 2019) have used findings from behavioural economics to demonstrate the limits of the rational agent assumption in predicting a response to sanctions by the DPRK. In particular, the behavioural approach provides a framework that allows for the discussion of misjudgements in decision-making owing to the presence of heuristic (or non-optimal) elements. In addition, it draws attention to the impact of psychological factors on behaviour that make agents behave differently from their initial assumptions. Scholars have pointed out that psychological factors such as loss aversion and endowment effect can make sanctions counterproductive in achieving the ultimate (declared) goal of non-proliferation. These factors prompted North Korea to reject the economic benefits offered to the country in exchange for rejections of its nuclear programme despite economic suffering from the 'maximum pressure' campaign.

Since the sanctions were introduced for the first time, Russian experts have expressed views that coincide in many ways with findings obtained through a behavioural approach. Specifically, these views focused on the limited effectiveness of coercive measures in stopping North Korea's nuclear and military programme.

This research presents an overview of sanctions against the DPRK, analyses their economic effects, discusses why sanctions against North Korea did not achieve its intended goal, and how behavioural science can contribute to our understanding of North Korea's response to sanctions. Effectively, this study shows the necessity of a different approach in dealing with the DPRK rather than firmly adhering to sanctions.

This study has several implications. First, it identifies the limitations of sanctions. Second, the findings suggest that a change in attitude towards North Korea and other instruments beyond sanctions needs to be employed. Third, the research findings can contribute to the design of negotiation strategies for dealing with the DPRK.

II. Rational agent vs. loss aversion

Neoclassical *homoeconomicus*, or rational agent, has been influential in shaping research on sanctions and, therefore works with respect to North Korea. A. Harrington even calls rationality ‘a foundational premise in many schools of economics and nuclear strategy’ (Harrington and Knopf, 2019). The list of studies includes research by Drezner (2000), Drury (2015), Hufbauer (2007), Hufbauer and Jung (2020), Escrib-Folch and Wright (2010), Blanchard and Ripsman (2013), and Cortright and Lopez (2018) but are not limited to them.

Several key assumptions define rational agents. The first assumption concerns unbounded rationality. According to this, an agent, be it an individual, a firm or a state, recognises its goals and employs the best available solutions to achieve them. The second assumption relates to the choice that rational agents make to achieve their goals. A choice of solutions to realise goals is made under full information about the agent’s preferences, possibilities and alternatives.

The third assumption suggests that, in pursuit of his goals, an agent is guided by the principles of utility maximisation and loss minimisation (Moravcsik, 1997). Finally, the fourth assumption suggests that the agent’s reaction to stimuli is predictable because their preferences are stable and consistent. If an agent prefers A to B and B to C, he or she will prefer A, but not C.⁴

⁴ Experiments by Khaneman and Tversky showed that when faced with a similar choice in real life, individuals may prefer C over A (Tversky, Kahneman, 1974).

In accordance with these assumptions, it is believed that sanctions can help change agents' behaviour because restrictions limit the resources with which a sanctioned state can achieve its own goals and maximise utility from its course of action. Therefore, sanctions are viewed as useful tools for coercion. In this context, the broadening of coordinated international sanctions is believed to be more effective since it amplifies the resource limitations for the target state in achieving its goals.

Since the rational agent theory suggests that an agent's actions are guided by complete information, the reaction of the target state can be predicted. Faced with the wider pressure of additional restrictions, the target state is more likely to negotiate to minimise losses incurred through restrictions. Some specialists call this situation a 'zone of potential agreement'.

However, in their famous experiment, pioneers of behavioural science, Khaneman and Tversky (1974), showed that individual choices are not consistent and, consequently, expectations regarding these choices may be wrong. Agents do not always act in accordance with utility maximisation, which is especially true for high-risk situations.

Further behavioural studies have consistently shown that human rationality is bounded. Individuals systematically deviate from the line of behaviour of rational agents. There is a wide spectrum of various psychological factors, such as biases and noises (Tversky and Kahneman, 1974), which cause reality to deviate from predictions. For example, when estimating the probability of a certain event (such as a change in actions after sanctions have been imposed), people, even experts, are guided by common sense and even stereotypes (quite subjective) rather than exact calculations of mathematical probabilities. Tetlock (2005) showed this in his work on the forecasting capabilities of foreign-policy experts. The presence of bias leads to overestimation of one type of event and underestimation of other types of events. The most exemplary illustration of such an overestimation is an article published by The New

York Times in 1997⁵ that predicted the collapse of the North Korean regime within five years.

Experts' personal views can also become an issue. Solingen points out that studies on sanctions are often influenced by narratives that an author believes in, and information in such studies is built into pre-constructed narratives (Solingen, 2012). Huffbauer implicitly suggests the presence of an individual judgement in discussions on the effectiveness of sanctions. In his work, he wrote that we must rely on our own judgement to estimate sanction coefficients (Hufbauer, 2007, p.101). This creates a path for an individual's perception to play a larger role in research on sanctions and their effects. The problem with perceptions is that they may be biased. Bias in a perception 'can fundamentally change the strategic setting or generate outcomes that are radically different from models rooted in the expectation of fully rational behaviour' (Kertzer and McGraw, 2012).

The contextual value of things that are negotiated between the sanctioning country (West) and the sanction target state (DPRK) is often missed in debates regarding sanctions. Benefits, another important element in rational agent theory, refer to different things for different agents. Benefits in the West are often linked to material and economic gains, whereas in the East, it can mean something very different. DPRK is a collective society with a deep Confucian tradition that places a major emphasis on 'not owning' things; therefore, material benefits are perceived differently. When making decisions regarding responses to sanctions, the DPRK will balance between material and nonmaterial factors embedded in their culture rather than adhering to a mere calculation of costs and benefits. Jervis' observation that North Korea can hardly be considered a 'rational agent' (Jervis, 1994, pp. 23–40) is relevant here.

⁵ Mazzetti, M. 2006. In '97, U.S. Panel Said North Korea Could Collapse in 5 Years. *The New York Times*, October 26. URL: <https://www.nytimes.com/2006/10/27/world/asia/27intel.html> [Accessed: 15 Dec. 2021).

When dealing with DPRK, it is necessary to pay attention to psychological factors such as *loss aversion* (Thaler, 1980) which tends to intensify under high-risk circumstances, and *the endowment effect* (Kahneman, Knetsch, and Thaler 1991) which makes people adhere to what they already have rather than to choose a potential benefit in the future. Such factors may affect political behaviour by raising levels of uncertainty, ‘impeding actors ability to reliably signal and interpret signals of intentions and introducing more [unpredictable] or even purely random elements into strategic interactions’ (Kertzer and McGraw, 2012).

It must be acknowledged that insights from behavioural economics have certain limitations. Experts point out the difficulty of transferring results from behavioural studies to political research, which deals mostly with aggregated levels of states where judgement and decision-making have a different nature. Nevertheless, behavioural studies offer useful insights in several respects. They acknowledge that rational agent theories cannot offer a full explanation of the sanction effect; they help to account for the influence of psychological and behavioural factors in response to sanctions, and they show that the sanctions approach needs reconsideration, allowing for analysis of what the context to interpret those sanction rhetoric is expected to be.

III. Overview of sanctions against the DPRK

Sanctions are generally understood as restrictions imposed by governments with respect to economic relations with a particular country/countries or their representatives to achieve certain foreign policy goals (Frank, 2006, p. 7). Sanctions can be international or unilateral. According to Article 41 of the UN Charter, the Security Council (UNSC) is the only legitimate source of sanctions which become compulsory for all UN member-states.

Since its first nuclear test in 2006, the DPRK has been subject to UNSC sanctions. In the initial stages, international restrictions were ‘tailored’ to limit North Korea’s access to items and materials that could contribute to the development of nuclear weapons, as well as the supply of arms and luxury goods to the country’s elite (Resolution 1718; Resolution 1874). The resolutions also included a list of designated North Korean individuals and entities subject to a travel ban and/or freeze of assets, funds and economic resources for their involvement in sanctioned activities.

The UNSC sanctions were expanded to the financial sphere in 2013 (Resolution 2087; Resolution 2094) and became comprehensive in 2016–2017 targeting North Korea’s foreign trade, as well as other ways to earn foreign currency and develop international cooperation in science and education (Resolution 2270; Resolution 2321; Resolution 2371; Resolution 2375; Resolution 2397). The primary goal of the restrictions was to coerce the DPRK leadership to abandon the development of nuclear and missile programmes. However, the comprehensive measures imposed by the UNSC in 2016–2017 did not explicitly distinguish between military and civilian targets (Smith, 2020, 183). In 2016, UN Secretary-General Ban Ki-Moon stated that sanctions on North Korea were the toughest ever imposed by the Security Council. Consequently, by 2018, the DPRK was effectively cut off from the international banking system, since banks in other countries were prohibited from maintaining correspondent relationships with DPRK banks and could not open banking accounts for North Korean financial organisations. The only exceptions were the bank accounts of diplomatic missions, as well as the channels necessary for the activities of international humanitarian organisations in the reclusive country. Joint ventures or cooperative entities with North Koreans were also prohibited with the exception of non-commercial projects in housing and communal services previously approved by the UN, existing China–DPRK projects for the creation of hydropower infrastructure and the Hasan–Rajin project jointly operated by Russia and North Korea.

Export restrictions of the UNSC resolutions covered up to 90% of the country's export goods, including coal, iron and iron ore, gold, copper, zinc and other types of mineral resources, textiles, seafood, machinery and agricultural products. DPRK nationals were also prohibited from working and receiving income in foreign countries after 22 December 2019.

Import sanctions covered approximately 30% of all North Korean imports and included a ban on the supply of all industrial machinery, transportation vehicles, iron, steel and other metals, with the exception of spare parts for civilian passenger aircraft for air safety reasons. The UNSC prohibited the supply of aviation fuel to North Korea (with the exception of refuelling civilian aircraft outside the DPRK) and luxury goods believed to be consumed by the elite. These included luxury cars, various types of sports equipment, snowmobiles, crystal, etc.

Severe restrictions were imposed on the import of oil and oil products. Resolution 2397 (paragraph 4) set a specific ceiling for the supply of crude oil to the DPRK at 4,000,000 barrels or 525,000 tons per year, and the supply of all refined petroleum products was limited to 500,000 barrels per year (paragraph 5). Considering that North Korea imported approximately 4,500,000 million barrels of petroleum products in 2016 (US Mission to the UN, 2017), the restrictions should have become very sensitive for the country's economy.

Under the goal of non-proliferation, the UNSC urges all member-states to prevent 'the direct or indirect supply, sale or transfer to the DPRK' of 'any item if the State determines that it could contribute to the DPRK's nuclear or ballistic missile programs, other weapons of mass destruction programs or other activities prohibited by the resolutions'⁶. Therefore, any cargo going into or from North Korea faced the risk of being detained by any UN member-state.

⁶ Security Council Committee established pursuant to resolution 1718 (2006) | United Nations Security Council. [online] Available at: <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N06/572/07/PDF/N0657207.pdf?OpenElement> [Accessed: 14 Dec. 2021].

The system of monitoring how these resolutions are implemented consists of national reviews (in the form of national reports by UN member-states) and international monitoring bodies (the 1718 Committee and the Panel of Experts). This mechanism implies that UN member-states share information on suspected attempts by the DPRK to violate sanctions, with the 1718 Committee and the Panel of Experts documenting these attempts and violations. Ultimately, the will and capacity of UN member-states to ensure strict implementation of international sanctions is a key element in the functionality of any sanctions regime. A great volume of research has focused on how China's lenient approach to restricting trade with North Korea can undermine the effectiveness of international sanctions (see for example, Haggard and Noland, 2017; Kim, 2020).

North Korea has also been subject to additional unilateral sanctions imposed by the US, Japan, the Republic of Korea, among other countries. These restrictions brought North Korea's economic relations with the 'senders' to an end. Moreover, the US employed secondary sanctions on third country entities dealing with the DPRK. By expanding the range of sanctions, Washington was attempting to use the 'secondary boycott' mechanism, that is, to extend the sanctions to non-American organisations and citizens who have financial ties with blacklisted North Korean entities. As a result of the global proliferation of US national restrictions, foreign companies, banks, or individuals with ties to the DPRK ran the risk of losing access to the US market, the US financial system, and business opportunities with US citizens and organisations. Accordingly, Washington exerted psychological pressure on foreign banks and businesses, driving them away from doing business with North Korea. For example, in March 2013, the US imposed sanctions on the Foreign Trade Bank of the DPRK, the main channel for foreign transactions. These actions were clearly directed not so much against North Korea's nuclear missile programme but against its foreign economic relations in general. Shortly after the American financial sanctions were imposed, the German hotel chain Kempinski cancelled

its investment plans in the DPRK (they were considering participation in the management of the famous Ryugyong hotel in Pyongyang).

In March 2016, US President Barack Obama imposed extensive sanctions in connection with the DPRK nuclear programme and allowed US authorities to blacklist companies and citizens cooperating with the largest sectors of the North Korean economy⁷. US President Donald Trump reinforced the meaning of sanctions in his 2017 ‘maximum pressure’ campaign against North Korea⁸. The President’s Executive Order 13810 of 20 September 2017 imposed additional restrictions with respect to North Korea. Moreover, the US Congress passed a number of laws containing sanctions against the DPRK (i.e. North Korea Sanctions and Policy Enhancement Act of 2016; Countering America’s Adversaries Through Sanctions Act of 2017; and Asia Reassurance Initiative Act of 2018), which made it almost impossible to relieve sanctions even if the US President wanted to do so.

Consequently, the unilateral US sanctions regime against the DPRK is more stringent than the UNSC sanctions regime. In particular, US sanctions prohibit any financial and trade transactions with the DPRK, freeze the assets of persons and entities associated with the regime, prohibit the issuance of entry visas to them, outlaw development assistance to the DPRK, order inspection of vehicles engaged in trade with the DPRK, restrict sponsorship of international organisations spending money in the DPRK, oppose the participation of the DPRK in international financial institutions such as the International Monetary

⁷ North Korea Sanctions Program. Office of Foreign Assets Control U.S. Department of the Treasury. Updated November 2, 2016. [online] Available at: <https://home.treasury.gov/system/files/126/nkorea.pdf> [Accessed: 22 Jan. 2022].

⁸ AP NEWS. (2021). Trump strategy on N Korea: “Maximum pressure and engagement.” [online] Available at: <https://apnews.com/article/china-ap-top-news-north-korea-asia-pacific-pyongyang-86626d21ea2b45c79457a873a747c452> [Accessed: 11 Feb. 2022].

Fund and the World Bank, ban the reduction of trade duties on North Korean goods and restrain ships that have entered the ports of the DPRK within 180 days from entering the territorial waters or ports of the US.

US secondary sanctions target dozens of Chinese companies and individuals as well as several Russian companies doing business with North Korea. For example, in 2017, the Russian Independent Oil and Gas Company and its subsidiary NNK-Primorsknefteprodukt, as well as Ardis-Bearings LLC (Ardis-Podshipnik LLC), were included in the US sanctions list on charges of selling oil to the DPRK. Such cases are meant to serve as a warning for those who could consider cooperation with the DPRK and work as a kind of whip, not only in those areas that are officially limited by the UNSC for cooperation with the DPRK, but in other areas as well.

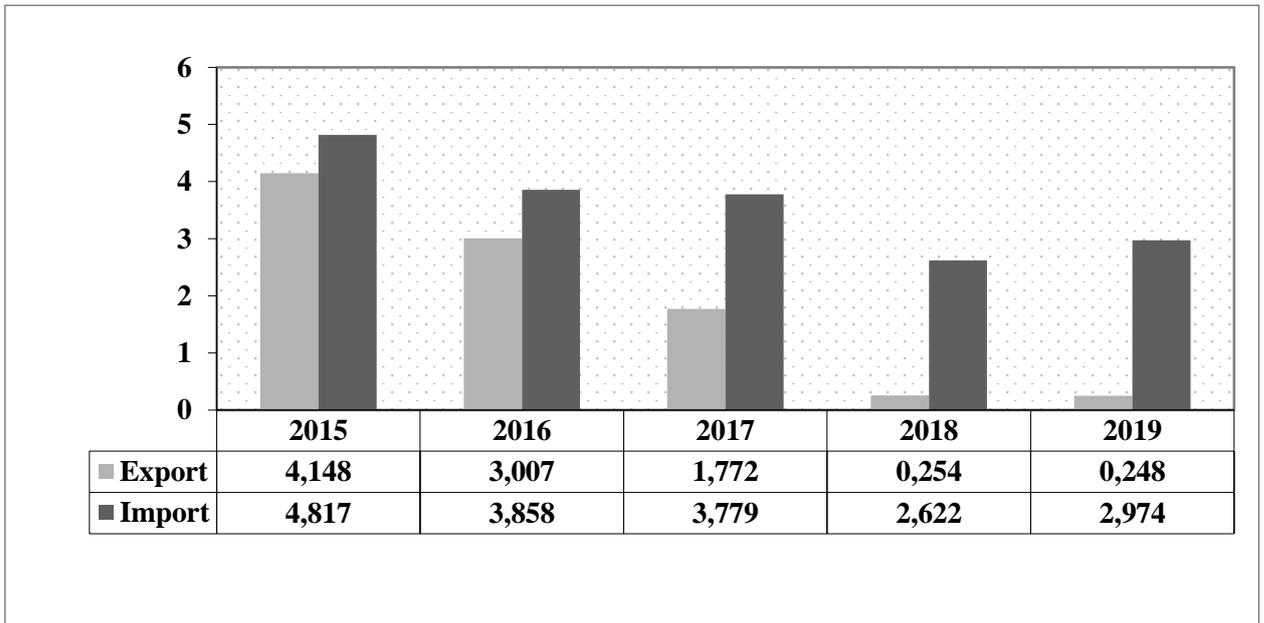
IV. Effects of Sanctions

The effects of sanctions against the DPRK have been studied from several perspectives, and can be categorised into direct and indirect effects. The main *direct impacts* include a slump in North Korea's foreign trade in goods and services, a drop in foreign investment and fewer opportunities for scientific and educational cooperation.

The DPRK does not publish its foreign trade statistics, but there are South Korean estimates based on mirror statistics of North Korea's trade partners. We use KOTRA reports ('Trends in North Korea's foreign trade in 2016' and 'Trends in North Korea's foreign trade in 2019') and the data on inter-Korean trade by the South Korea's Ministry of Unification to evaluate the impact of sanctions on DPRK's foreign trade.

First, North Korea's foreign trade declined three-fold between 2015 and 2019, if we take into account its trade with South Korea (it was the second largest trade partner for the DPRK).

Figure 1. Exports and imports of the DPRK in 2015–2019 (including inter-Korean trade), in billion USD



Source: Compiled by the authors based on data from KOTRA and the Ministry of Unification of the Republic of Korea.

Figure 1 shows that a sharp decline in the overall volume of the DPRK's foreign trade began in 2016, with a decline of approximately 23% in 2016 (year-on-year), 19% in 2017 and 48% in 2018. Therefore, in 2015–2018, North Korea's total exports dropped by 93% (from \$4.1 billion to \$254 million), while imports declined by 45% (from \$4.8 billion to \$2.6 billion). In 2019, export volumes stabilised at \$248 million (-2%), while imports rose by 13% to \$2.974 billion. Accordingly, the DPRK's annual trade deficit exceeded \$2 billion in 2017–2019. Such a significant deficit generated speculations regarding how it had been financed, from violating sanctions (export of coal and labour, for example) to earning foreign currency by fraud with crypto currencies and hacker attacks on financial institutions (Toloraya, Korgun et al., 2020).

Second, the product structure of North Korea's foreign trade changed significantly. After South Korea closed the Kaesong Industrial Complex in 2016, the DPRK stopped importing raw materials and intermediate goods from South Korea and could no longer export finished products to

the South Korea (Zakharova, 2019). Outside of Kaesong in 2016, North Korea's exports mostly consisted of minerals and textiles. The structure of imports was more diversified and included both raw materials and industrial goods as well as various consumer products (Tables 1 and 2 clearly demonstrate this).

Table 1. The share of the 5 largest export categories of the DPRK in 2016–2019 (according to KOTRA)

% of total exports (excluding inter-Korean trade)

| Main export categories | 2016 | 2017 | 2018 | 2019 |
|---|-------------|-------------|-------------|-------------|
| Mineral products | 51.67% | 36% | 20% | 12% |
| Textiles | 26.67% | 33% | 1.3 | 1.7% |
| Products of animal origin | 6.97% | 9% | 0.2% | 0.3% |
| Vegetable products | 2.5% | 6% | 5% | 0.8% |
| Non-precious metals, and articles thereof | 5.09% | 5% | 16% | 14.5% |
| Machinery, equipment and mechanisms | 2.57% | 3% | 5% | 6.1% |
| Watches, optical, medical instruments and devices, etc. | 0.5% | 1% | 19% | 25% |
| Shoes and hats | 0.2% | 1% | 12% | 15% |
| Chemical products | 1.2% | 1.4% | 6% | 8% |

Sources: Compiled by the authors based on KOTRA, 2017; KOTRA, 2020.

Following the UNSC sanctions, North Korean exports of mineral products, textiles and agricultural products sharply decreased, as most of them were banned for exports. Under these new circumstances, the DPRK tried to increase non-banned exports, such as watches, wigs, medical instruments, footwear and hats produced from imported raw materials. However, the volume of those exports in 2019 amounted to approximately 10% of the DPRK's overall exports in 2015.

Table 2. The share of the 5 largest import categories of the DPRK in 2016–2019 (according to KOTRA)

% of total imports (excluding inter-Korean trade)

| Main import categories | 2016 | 2017 | 2018 | 2019 |
|---|-------------|-------------|-------------|-------------|
| Textiles | 20% | 21% | 21% | 22% |
| Machinery, equipment and mechanisms | 16% | 16% | 0.6% | 0.2% |
| Mineral products | 12% | 11% | 14% | 12% |
| Plastics and rubber | 8% | 8% | 11% | 11% |
| Non-precious metals, and articles thereof | 7% | 5.9% | 0.2% | 0.1% |
| Transportation vehicles | 7% | 5.5% | 0.1% | 0% |
| Fats and oils | 5.6% | 8% | 15% | 14% |
| Vegetable products | 4.8% | 4.3% | 8.5% | 10% |
| Chemical products | 5% | 5% | 10% | 9% |

Sources: Compiled by the authors based on KOTRA, 2017; KOTRA, 2020.

North Korea's imports have driven less dramatic but critical changes in the country's economy. The DPRK virtually stopped buying various types of industrial equipment, transportation vehicles and certain metals. However, official statistics on North Korea's trading partners may not reflect the full picture of the country's foreign supplies.

Third, the circle of DPRK's key trade partners narrowed significantly because of sanctions. If in 2015, China accounted for about 64% of North Korea's total trade (\$ 5.71 billion), and South Korea for 30% (\$ 2.71 billion). then in 2016, China accounted for 88% (6.06 billion dollars), and the Republic of Korea for less than 5% (0.3 billion dollars). In 2019, China's share was already more than 95% (\$3.1 billion), while South Korea's trade with the North had stopped.

In 2015, the top ten trade partners of the DPRK with a share of more than 1%, according to KOTRA, included Russia (1.35%) and India

(1.22%), and those with a share of less than 1% included Thailand (0.8%), Ukraine (0.57%), Taiwan, Singapore, Philippines, Pakistan and Hong Kong. In 2019, Russia remained in the second place, after China with 1.5%, followed by Vietnam (0.86%), India (0.36%), Brazil (0.33%), Bangladesh (0.1%), Switzerland, Pakistan, South Africa and Nigeria. Therefore, in 2019, North Korea’s foreign trade was overwhelmingly dominated by China, with a statistically marginal share from other partners. Simultaneously, even before the sanctions were tightened in 2016–2017, the China had often played the role of a ‘loophole’ through which Pyongyang could buy/sell various non-Chinese goods. After new tough restrictions were imposed, there were reports of possible re-exports of North Korean goods to Europe and other regions of the world, as well as supplies of prohibited luxury goods to the DPRK through Chinese customs warehouses (Fromer, 2020).

Fourth, international sanctions led to a drop in foreign direct investment into the DPRK since 2017 (see UNSTAD estimates in Table 3). Before the UNSC restrictions were passed, North Korean mineral resources attracted great interest from foreign companies; however, after 2016, many of the discussed projects turned out to be unfeasible (such as the Russian Pobeda project⁹).

Table 3. Inflow of foreign direct investment into the DPRK, 2011–2020, million dollars (according to UN estimates)

| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|------------|------|------|------|------|------|------|------|------|------|------|
| FDI inflow | 119 | 228 | 119 | 79 | 78 | 89 | -13 | 2 | 30 | 6 |

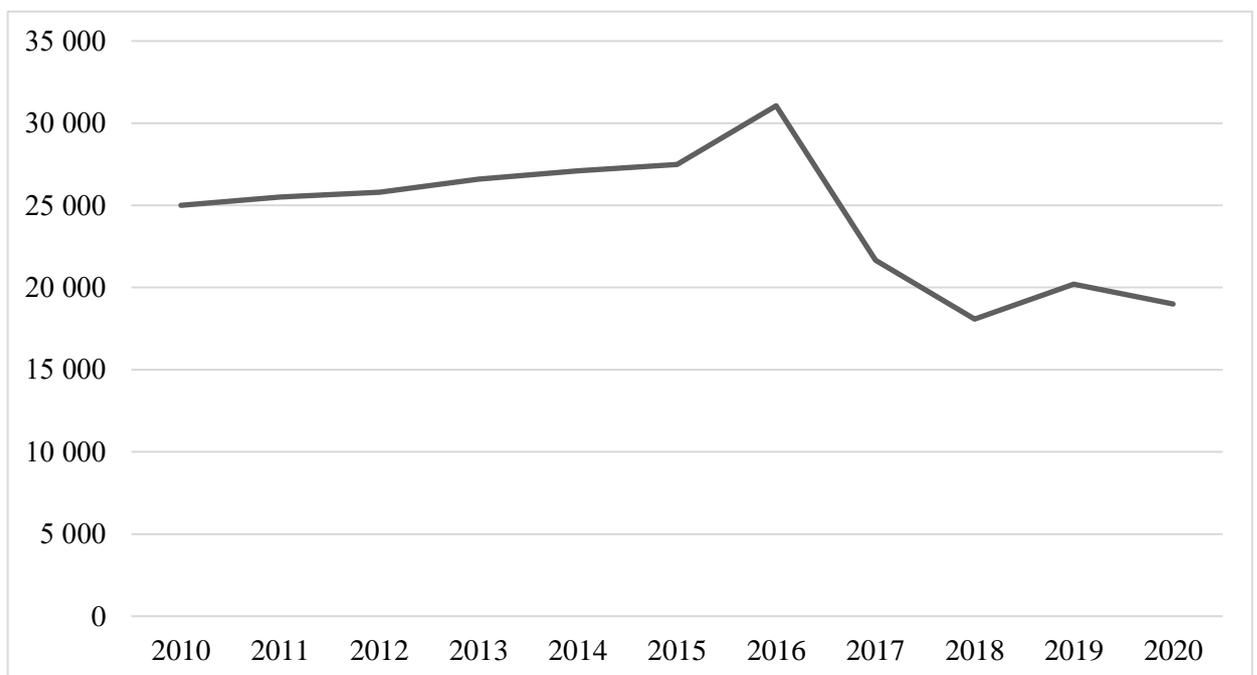
Sources: UNCTAD. (2017). World Investment Report, 2017, p. 223, UNCTAD. (2021). World Investment Report, 2021, p. 249.

⁹ The project was launched in October 2014 and implied modernisation of transport infrastructure and mining industry in North Korea with the participation of Russian companies. According to Russian officials, expenses of Russian companies would be covered by access to the DPRK’s mineral resources including rare earth metals and coal.

Experts have indicated that negative developments in North Korea’s foreign trade as a result of sanctions do not always correlate with domestic industries (Choi, 2020, p. 376). However, certain negative *indirect effects* must also be considered. The most important aspect is the failure to achieve sustainable economic growth and improve the living conditions in the country.

Despite claims of self-sustainability and independence, the North Korean economy depends on foreign trade to procure raw materials, machinery, intermediate goods and consumer goods. According to South Korean estimates, sanctions were followed by a drop in GDP and a decline in production in almost all sectors of the DPRK's economy (Bank of Korea, 2021). For example, production of coal, presented in Figure 2, a major export commodity for the DPRK, fell from its peak in 2016 by 40% as of 2018 (KOSIS, 2022). Although it was restored marginally in subsequent years, volumes have remained substantially low.

Figure 2. Coal production by DPRK, 2010–2020, thousand tons



Source: KOSIS, 2021.

UNSC restrictions meant a reduction in the inflow of foreign currency into North Korea, narrowing the country's import and investment opportunities (Babson, 2016, p. 154, 159). In her study of ripple effects on the North Korean economy from a trade shock, Choi (2020, p. 376) shows that a decline in investment can be attributed to a decrease in imports of capital goods prohibited by sanctions. Moreover, severe restrictions on international scientific and technical cooperation, as well as training of DPRK nationals in foreign countries, pose serious problems for the country's economic modernisation.

Trends in the exchange rate of North Korean won to USD can also be considered as a marker of the economic situation. Contrary to general logic that national currencies depreciate against USD during economic slumps, the North Korean won strengthened 15% in 2020 and 25% in 2021 (Figure 3), reaching an all-time high of 4,723 in August 2021 (Kim, 2021).

Figure 3. Fluctuations of North Korean currency Won to USD, Jan. 2015 – Jan. 2022



Source: Created by the authors using data from Daily NK. (n.d.). *North Korean Market Trends*. [online] Available at: <https://www.dailynk.com/english/market-trends/> [Accessed: 2 Feb. 2022].

This can be attributed to a sharp decline in demand for foreign currency triggered by contracting imports as a result of sanctions and the border closure due to Covid-19. Insiders point out that in Pyongyang markets, traders stopped accepting foreign currencies and demanded payments only in won, which increased the demand for the local currency. The appreciation of won reflects a reduction in imports and shrinking availability of goods in local markets rather than positive market trends associated with currency appreciation. In the long run, such currency fluctuations can hurt the economy even more, particularly in disadvantaged groups.

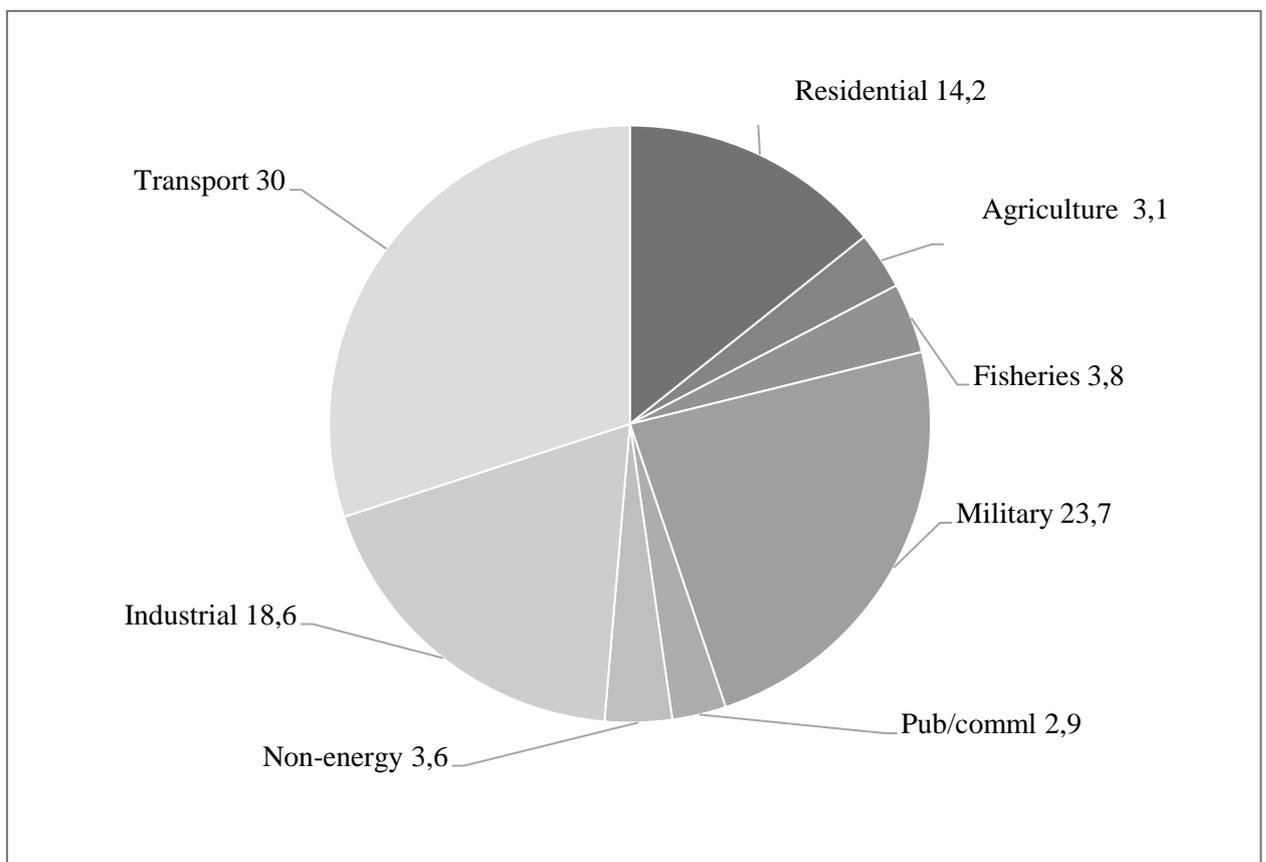
In addition to the direct and indirect effects, sanctions have also created so-called *unintended consequences* (Smith, 2020). Unintended consequences explain the deterioration of the humanitarian situation in the DPRK. UNSC resolutions emphasise that their implementation should not impact the legitimate economic activities of North Korea or have adverse humanitarian consequences for the civilian population in the DPRK. However, many experts recognise that despite efforts to maintain humanitarian exemptions, sanctions have made aid deliveries much more difficult (Zadeh-Cummings and Harris, 2020) with the lack of a stable banking channel becoming a separate problem (Pollack and Dalnoki-Veress, 2021, pp. 29–30). As a consequence, the volume of foreign humanitarian assistance to North Korea declined by 2.7 times between 2012 and 2020¹⁰.

Smith (2020, 184) points that the outcome of restrictions in the import of energy resources was ‘a precipitous fall in agricultural production in 2018’, such that in 2019, North Korea could not adequately feed about 30% of its population. The situation worsened in 2020–2021 due to poor weather conditions that affected rice production, while energy shortages created additional pressure on agriculture. According to Von Hippel and

¹⁰ North Korea in the World. (2016). Humanitarian Aid. [online] Available at: <https://www.northkoreaintheworld.org/humanitarian/humanitarian-aid> [Accessed: 11 Feb. 2022].

Hayes (2019), as of 2017, over 70% of imported fuel was used in the three major sectors — military, transport and industry — with military usage accounting for an estimated 23.7% (Figure 4), while residential usage was 14.2% and agriculture 3.1%. The prioritised position of the military sector means that fuel for civilian usage, including agriculture, were reduced in the first place, hurting the energy and food security of a vast proportion of the population.

Figure 4. Energy consumption by sector in DPRK (%)



Source: Adopted from VonHippel, Hayes (2017).

To compensate for these shortages, cutting timber reportedly became widespread. If this issue is unaddressed, the ecological consequences of sanctions can add up to humanitarian consequences. With sanctions against the DPRK in place, it will be difficult to see any progress in the UN's sustainable development goals.

The overall economic damage caused by sanctions is difficult to estimate. Official statistics by the Bank of Korea in Seoul report that in 2018, only the GDP contracted by (-)4.1%; some Western analytics estimate the damage in a double digit range (Revere; North Korea's economy). This could be closer to the truth because restrictions only on the use of North Korean labour may cost the country \$4,6–8,2 million. This approximated sum of transfers is calculated from the estimated labour cost of North Korean workers multiplied by the estimated number of North Korean workers abroad.¹¹

In 2020, the country's leader, Kim Jong-un, recognised the difficulties¹² associated with sanctions and renewed emphasis on domestic production. In 2021, North Korea re-emphasised the need to ensure its economy's dependence on domestic materials and science. In his speech at the 8th Party Congress in January 2021, Kim Jong-un declared that the main task in foreign economic activity is 'additional improvement and strengthening of the foundation and potential of an independent economy'.¹³ At the 7th Party Congress in 2016, the tasks were completely different, that is, to improve the foreign trade structure by increasing the share of export products, trade in technologies and services, and organising joint production to introduce advanced technologies and stimulate economic development. This effective U-turn in external economic strategy reflects North Korea's desire to reduce its dependence on foreign states in terms of the supply of raw materials and other basic products.

¹¹According to some reports, there were 30,000 North Korean workers in Russia; up to 94,000 in China; 15,000 in the Middle East; 15,000 workers in Southeast Asia; 5,000 workers in Eastern and Southern Europe, their minimum wage would be around 400–700 USD split between the worker (around 100–200 USD) and the state (the rest). The average amount they would earn in a month would be 100 USD but often more (Gale, 2016, Lankov, 2020, The Borgen Project, 2019).

¹² 8th Congress of WPK to be Convened, KCNA, 20.08.2020.

¹³ Great Programme for Struggle Leading Korean-style Socialist Construction to Fresh Victory on Report Made by Supreme Leader Kim Jong-un at the Eighth Congress of WPK, Rodong Sinmun, 10.01.2021.

V. Heuristics and North Korea sanctions paradox

Following the rational agent principles, economic losses coupled with severe humanitarian damages should have forced the North Korean leadership to reconsider its military programme and sit at the negotiation table, as in the case of Iran in 2015. However, the results were contrary to such expectations: North Korea showed considerably less willingness to make any concessions, increased its demands to the West in terms of guaranteeing security and invested even more in its military programmes. This response conflicts with the principles of unbounded rationality and profit maximisation. However, in the first place, expectation that comprehensive sanctions would coerce North Korea into the type of behaviour expected by the sanctioning side was not realistic. The concept of heuristics from behavioural science offers an explanation for this.

Heuristics (Tversky and Kahneman, 1974) represent shortcut methods that are not necessarily optimal or objective; nevertheless, they are used to make decisions and may lead to substantial over- and underestimation of probabilities. Psychological science identifies several types of heuristics, at least two of which can be found in the case of decisions regarding sanctions against the DPRK: familiarity heuristic and representative heuristic.

Familiarity heuristic is observed in cases where there is an assumption that circumstances that underline past behaviour hold true in the current circumstance. There has been no rational evidence to assume that under maximum pressure, economic losses would make North Korea more compliant and agree to demands for denuclearisation or that it would be pushed towards a deal like a Joint Comprehensive Plan of Action, similar to the situation in Iran in 2015.

North Korea differs from Iran in several important aspects. North Korea has been an isolated society for a much longer period than Iran, and is

more accustomed to living under restrictions. Owing to limited and state-controlled interactions with the West, North Korean elites had fewer opportunities to communicate with Western elites; thus, the potential impact of Western values was limited in the case of North Korea. Noland (2019) referred to another important aspect in this regard. He says that the North Korean regime is aware of the potentially destabilising political implications of cross-border economic interactions and has created ways to minimise its transformative impact.

There is an issue with Western luxury goods that are reportedly enjoyed by North Korean elites. Disruptions in their supply were expected to increase pressure on the elites and bend towards negotiations. However, those goods have never been readily available in North Korea and were accessible to members of the favored elites only (Haggard and Noland make a detailed discussion in 2017 research). With scarcity increasing due to the sanctions, the North Korean regime will continue to use its unique capacity to distribute various benefits, including access to luxury goods, to buy loyalty to the elites.

It is not easy to circumvent the power of the regime in North Korea that, through the years, has learned various tactics to buy loyalty. Sanctions on their own provided the North Korean state with more opportunities to do so by revamping how news is presented in the country's media.

Surveys conducted in 2020 by South Korean researchers show that there has been an increased sense of loyalty towards Kim Jong-un among the younger generations of North Koreans. For example, recent research by Corrado (2021), based on pre-pandemic surveys, showed that the young leader invested in improving the quality of content provided by the country's media resources, and thus managed to preserve a significant amount of pride in North Korea's younger generation. If previously reporting on natural disasters, bad crops and other negative events was a taboo, today, the North Korean media devotes more attention to issues

that affect the livelihood of common people. In a recent address to the Party Congress, the North Korean leader stated the need to improve harvests through a better disaster prevention system and introduce measures to increase crop productivity.¹⁴ Such attention to the problems of the common people instills more trust in the North Korean state media. Accordingly, the impact of Western media, reachable through unofficial methods, only reduces.

Commercial elites often pressure state bureaucracies to bend them towards certain decisions. It is likely that there was a similar calculation when sanctions against North Korea were introduced considering that in the Western expert community a possibility of regime corrosion due to ‘encouraging scepticism about collective ideologies, and providing networks and material that can be used for opposition to the state’ was contemplated (Dukalskis, 2016). Commercial elites are a fairly recent phenomenon in the DPRK. They evolved when markets started to develop after a series of ‘state measures’ in the early 2000s (Yang, 2020) and became important outlets for connection with the outer world. Furthermore, the class of ‘nouveau riche’, or ‘donju’ as they are called in North Korea, became a source of finance for the elites that patronised their activities and received rents in return (Corrado, 2017, Kim, Koh, 2011, Beyond Parallel, 2018). Sanction-induced shortages of imported goods should have created pressure on commercial elites, and by the chain reaction reaching the upper echelons of the North Korean elites, who would see their rents shrink. This might have emboldened them to put pressure on their leadership. Conversely, Kim Jong-un used

¹⁴ 38 North. (2022). *The North Korean Economy in 2021 and 2022: Muddling Through With Few Options - 38 North: Informed Analysis of North Korea*. [online] Available at: https://www.38north.org/2022/01/the-north-korean-economy-in-2021-and-2022-muddling-through-with-few-options/?__cf_chl_f_tk=MDxI.dVXQakPyP0KRG5J9E9UtMzBn4XDCEagVDCo5.A-1642538294-0-gaNycGzNBxE [Accessed: 8 Feb. 2022]; Kim Jong-un: North Korea to focus on economy in 2022. (2022). *BBC News*. [online] 1 Jan. Available at: <https://www.bbc.com/news/world-asia-59845636> [Accessed: 8 Feb. 2022].

sanctions to assert more control over markets, arguably for the very reason of the fragility and ‘unreliability’ (38 North, 2021). Sanctions were used to redirect scarce resources and concentrate them on loyal circles.

North Korea has a very high determination to realise its nuclear programme and the collective commitment of society towards this goal. The country’s constitution has a specific clause on the DPRK’s nuclear status, thus making its nuclear ambition an existential issue. The population generally supports the country’s military programme. Even those who considered excessive military expenditures as unjustified, expressed pride in the nuclear programme and its progress (Corrado, 2021).

The other type of heuristic is the representativeness heuristic, that is, making judgements about the probability of an event under uncertainty. Here, by uncertainty, we mean both uncertainty in the international environment arising from the development of technology that opens North Korean leadership new opportunities for self-financing, loopholes in the global system that allow illicit trade, and geopolitical turbulence like the US–China confrontation.

Let us first consider international uncertainty.

Technological disruption in the form of the digitisation of finance and the development of Internet banking can improve ways to trace operations and enforce compliance with international rules. However, despite continuous work to explain the caveat of discovering transactions involving North Korea to multiple actors in the international financial industry, the DPRK finds new opportunities to engage in illegal activities and obtain finances through fraudulent practices. The UN Panel of Experts identified numerous cases in which North Korean intelligence services hacked the SWIFT system and gained access to private accounts. This is not to speak of traditional money-making methods.

A report by the Panel of Experts established by the UNSC Resolution 1874 (2009) released in 2021¹⁵ provides a detailed account of the DPRK's involvement with illegal global networks that include a wide range of activities, from ship brokerage to arms dealing and drug trafficking. The report notes that the DPRK violates sanctions by illegally importing oil and refined products in excess of the established limits, continues to purchase luxury goods and other items subject to sanctions, including luxury cars, alcoholic beverages and industrial robots, and illegally exporting commodities such as coal and sand by sea. Over time, the tactics have become more sophisticated so that they can use not only ships for illegal trade but also loopholes in 'international activity governing other actors' (Davis, 2022). Weapons and drug trafficking are among the areas of engagement in North Korea.

Widespread and growing illicit activity by the DPRK is not compatible with the perception of the country as an old-fashioned regime that adheres to the outlived principles of self-reliance ideology. In contrast, the country showed its adaptive capacity and ability to learn how to circumvent expanding restrictions. Western experts go as far as talking about North Korea as 'increasingly skilled to exploit non-financial actors' (Erskine, 2022). In order to be able to grow this capacity, the state has to monitor ongoing changes in many spheres concerning global trade, finance, digital technology and even the gambling industry and update its own resources and tactics. One of the things that Kim Jong-un did after coming to power was to invest in R&D in computer science which helped produce experts in digital technology.¹⁶ The country is now able to use its expert knowledge to procure finances (Corrado, 2017)

¹⁵ The midterm report of the Panel of Experts established pursuant to Security Council resolution 1874 (2009) S/2021/777. United Nations Security Council. 2021. [online] Available at: https://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/S_2021_777_E.pdf [Accessed: 13 Dec. 2021].

¹⁶ On the use of technology in North Korea see: Bruce (2012). Examples of North Korea's cyber attack are described by Wee (2014).

as described above. It can be said that inadvertent sanctions increased survival risks for the DPRK and, in doing so, triggered those types of behaviours that are associated with such risks causing trouble for the international community.

The confrontation between the US and China represents another type of global uncertainty unaccounted for by sanctions. The success of international sanctions depends on all countries observing restrictions, especially China, which has a significant influence on the DPRK. Gray and Lee (2021) noted that geostrategic rivalry between the US and China increases the chances of higher resistance by the DPRK. Jones points at the existence of interests for China at different levels in dealing with DPRK and those interests in relation to North Korea do not disappear after the approval of sanctions. In Chinese provinces bordering with DPRK, there will always be those who engage in cross-border trade with North Korea, ‘especially small- or medium-sized businesses or those operating as a front for a sanctioned North Korean entity’ (Jones, 2015).

Such turbulent global geopolitics triggers a response from North Korea, best described as the endowment effect (Thaler, 1980) and loss aversion. Loss aversion makes North Korea hold on to nuclear weapons and develop them further to ensure its survival as a state rather than renounce it for unclear gains in the future. The endowment effect makes the country attach a higher value to something that it already has, which is represented by its nuclear and missile programme. Recent launches of missiles by North Koreans have shown the increased capacity of North Korea’s military production. A mid-range rocket Hwasong-12 fired on 30 January 2022¹⁷ reached a maximum altitude of 2,000 km with a capacity to cover a distance of up to 4,000 km and landing in Japan and the US territory of Guam.

¹⁷ Jones, C. (2022). North Korea caps month of tests with longest-range missile since 2017. [online] Available at: <https://www.cnbc.com/amp/2022/01/30/north-korea-caps-month-of-tests-with-longest-range-missile-since-2017.html> [Accessed: 02 Feb. 2022].

Continuous investment in nuclear and military programmes indicates that North Korea has a substantial capacity to mobilise, redirect and make use of scarce resources in spheres closely linked to their survival. In some sense, sanctions further intensified the endowment effect and induced the DPRK to work on military progress. In the advent of the tenth anniversary of his ruling, Kim Jong-un was eager to showcase military progress as one of the achievements of his reign.

VI. Lessons learnt and implications

The sanctions against North Korea offer some important lessons. One of the lessons is that even the ‘toughest-ever’ sanctions may not be an effective tool to change the behaviour of a target state. Moreover, in a recent assessment of the maximum pressure campaign by UN specialists, it was found that their overall impact was ineffective (see Table 3).

Table 3. Effectiveness of sanctions against DPRK

| Epi- sode | Time period | Effectiveness | | | |
|--------------|------------------------------|---------------|-------------|------------|-------------|
| | | Coercion | Constraint | Signalling | Overall |
| 1 | Oct. 14, 2006–April 13, 2009 | Ineffective | Ineffective | Mixed | Mixed |
| 2 | April 13, 2009–March 7, 2013 | Ineffective | Mixed | Mixed | Mixed |
| 3 | Mar. 7, 2013– March 2, 2016 | Ineffective | Ineffective | Effective | Mixed |
| 4 | March 2, 2016–Nov. 30, 2016 | Ineffective | Ineffective | Effective | Mixed |
| 5 | Nov. 30, 2016–Aug. 5, 2017 | Ineffective | Ineffective | Effective | Mixed |
| 6 | Aug. 5, 2017–Sept. 11, 2017 | Ineffective | Ineffective | Effective | Mixed |
| 7 | Sept. 11, 2017–Dec. 22, 2017 | Ineffective | Mixed | Effective | Mixed |
| 8 | Dec. 22, 2017–present | Ineffective | Ineffective | Mixed | Ineffective |

Source: Adopted from unsanctionsapp.com. (n.d.). *Democratic People’s Republic of Korea*. [online] Available at: <https://unsanctionsapp.com/cases/democratic-people-s-republic-of-Korea> [Accessed: 3 Feb. 2022].

Sanctions could not coerce and constrain the behaviour of North Korea, and in this respect we can agree with Frank (2018), who says that ‘sanctions are the wrong way to achieve the wrong goal’. The country resumed its activities at nuclear test sites (Yongbyon and Punggye-ri) and increased its ballistic missile launches.¹⁸ With the Covid-19 pandemic presenting a serious threat to the weak healthcare systems, the DPRK closed its borders, drastically reducing opportunities for engagement.

The second lesson is that the ineffectiveness of sanctions partially rests on the rational agent thinking embedded in their design. The rationalist approach allows one to view a target state in a certain manner and expect a certain type of behaviour. This reductionist tendency considerably limits our understanding of the broader forces and considerations that impact the behaviour of the state. Issues of survival and the associated types of behaviour are important factors that determine how a state responds to restrictions.

The third lesson is that if a state lives under sanctions for a prolonged period, it develops the capacity to overcome imposed restrictions. This capacity develops over time and has become more sophisticated.

The fourth lesson is that the unpredictable nature of evolution and development leaves space for uncontrolled forces to influence the outcome of decisions. The rapid development of financial and Internet technologies offers as many opportunities to overcome restrictions to states like North Korea as they do to facilitate everyday operations for millions of users around the world.

Sanctions alone are unlikely to resolve the issues facing North Korean nuclear programme. North Korea will not give it up, as its nuclear status

¹⁸ For more discussion on sanctions episodes with regard to North Korea and their effectiveness, see (Biersteker et al., 2018).

is declared in the country's Constitution. Moreover, as Lankov (2021) points out, decision-makers in the DPRK 'see denuclearisation as tantamount to collective suicide'. In private conversations, North Koreans say that they can consider nuclear disarmament only when all other nuclear powers do the same. Therefore, nuclear status is not only an effective deterrence for Pyongyang, but also an important part of the DPRK's national idea.

Economic benefits rationalised by the current sanctions approach are not considered a sufficient stimulus to negotiate the denuclearisation of the Korean peninsula without security guarantees and sizable concessions from the US. The US continues to reiterate that it will not accept nuclear North Korea. The situation is close to the prisoner's dilemma, in which both sides end up with losses.

In this situation, some experts suggest taking a realistic approach and reframing de facto North Korea disarmament talks into arms control negotiations to resume dialogue and prevent military escalations in the region. However, as Zhebin (2021) points out, the concept of arms control implies that mutual deterrence becomes necessary to reduce the threat of war, and arms control negotiations require more or less normalised relations between the parties. Neither condition has been met in North Korea – US relations, delaying productive dialogue on regional security.

If sanctions are ineffective and we have to live with North Korea, which possesses nuclear weapons, how can we minimise risks and engage the DPRK as a responsible member of the international community? An answer will not come easily, as there will be opponents to the engagement policy that consider it ineffective. To reach an international agreement on possible ways to interact with North Korea seems to be an even more difficult task (it is reflected in a failed attempt at Six Party Talks) than coming to a consensus about restrictions. Effectively, a situation like this reveals the inability of the current system of

international relations to find solutions for situations like North Korea. This could be attributed to the manifestation of an ongoing crisis in structures of the international world order that needs to be particularly effective and organised to address the uncertain and unpredictable nature of the current period in world development.

VII. Concluding remarks

The unresolved nuclear problem of the Korean Peninsula is a result of the crisis in the post-Cold War World order. The development of nuclear weapons as a means of ensuring security and national sovereignty became the only choice to survive as an independent state in the eyes of North Koreans facing military threat and having limited material resources. The attempt of the world community, led by the US, to press the DPRK and force it to abandon its nuclear weapons by imposing the most stringent sanctions regime in the UNSC history did not lead to the expected result. The rational calculation that the economic crisis in the DPRK would aggravate and the regime would make concessions has not paid off. The price for abandoning existing nuclear deterrence is too high for Pyongyang in today's turbulent conditions. No promises of future economic prosperity after denuclearisation appeal to pragmatic North Korean leaders who have learned proper lessons from the modern history of Libya, Iraq and Iran.

The growing decoupling between the key world powers at various levels, supplemented by a broad range of methods to circumvent sanctions mastered by the DPRK, creates even more favourable conditions for Pyongyang. The 'sanctions coalition' within the UNSC has lost its unity as it diverges on a number of key positions. Russia and China are increasingly pushing for sanctions relief on humanitarian grounds, while the US insists on continued sanctions against North Korea. However, in the context of a nearly full trade embargo imposed by the DPRK triggered by the pandemic, discussions about the need to tighten sanctions and increase their effectiveness are quickly losing their

relevance. By prioritising self-sufficiency and limiting external contacts, the DPRK reduces opportunities for engagement with the outside world, probably losing trust in such engagement because of its long-term stability. This cannot be a positive development, as the task of building trust by expanding economic and social exchanges on the Korean Peninsula is unlikely to lose its relevance in the future. Implementing this task and turning relations with the DPRK towards cooperation might turn out to be more difficult than agreeing on sanctions.

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Тел.: 8 (495) 668-12-30, 8 (499) 182-01-58
E-mail: sales@dashkov.ru — отдел продаж;
office@dashkov.ru — офис; <http://www.dashkov.ru>

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Тел.: 8 (499) 322-38-30

