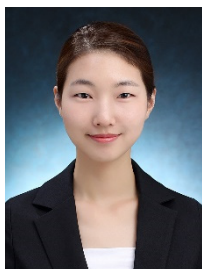


Evaluating the Second Half of the Kim Jong-Un Era: Evidence from Nighttime Light



Dawool Kim

Ph.D., Associate Research Fellow

International Cooperation for Korean Unification Team,
Korea Institute for International Economic Policy

Satellite data can sometimes provide valuable information on countries that lack the statistical ability or willingness to disclose information to the outer world. North Korea is one such country, and the satellite-produced nighttime light data allows us to infer growth engines of the North Korean economy and the impact of recent external shocks.

The North Korean economy in Kim Jong-Un's era can be categorized into two stages. The first half includes 2012-2016, when together with the conducive external environment and the new leader's ambitious aim for economic development, positive growth was achieved in several areas. The second half includes 2017-2021, when adverse external shocks – the UN sanctions and the COVID-19 – struck the North Korean economy hard.

In 2012-2016, the first half of the Kim Jong-Un regime, regions with large market sizes or near trade hubs had brighter lights at night. Noting that brighter light at night tends to represent higher income levels, this implies that market activities and trade have contributed to the higher income level

in these regions. In 2010-2011, with the increase in Chinese demand for mining products and high international mining product prices, North Korea's trade almost doubled within two years and maintained a high level afterward. The explosive growth of trade induced the development of domestic service industries associated with trade, such as logistics, distribution, etc. An increase in income expanded the market demand, and the expanded market generated additional economic opportunities, creating a virtuous cycle.

However, after 2017, North Korea has undergone severe external shocks – most notably the UN sanctions and the COVID-19 pandemic. In 2017, successive UN Security Council Resolutions were adopted against North Korea's nuclear tests. The UNSC resolutions prohibited the import of major North Korean export items and export of capital goods to North Korea, as well as joint ventures with North Korean entities. They also mandated the repatriation of North Korean nationals working abroad within 24 months. In 2020, the COVID-19 pandemic broke out, and North Korea responded with a border shutdown. Lacking the ability to contain the spread of the virus, North Korea is still blocking almost all international exchanges of goods and persons for almost 2 years now.

Due to these shocks, the growth effects of North Korea's markets and trade disappeared in 2017-2020. Bigger market size and better access to trade hubs did not induce brighter lights at night. UN sanctions and the border shutdown due to COVID-19 directly barred trade with North Korea, and trade plummeted by 87% in 2017-2020, according to Statistics Korea. Naturally, the accessibility to trade hubs lost its advantage. Drastic decrease in export caused market demand to shrink, and the border shutdown during the COVID-19 pandemic intensified the shortage of commodities, further contracting the market. The Bank of Korea estimated that the North Korean economy showed a negative annual growth of -4.5% on average in 2017-2020. However, considering the possibility of these estimates overlooking North Korea's informal market activities,¹ the economic downturn in the second half of the Kim Jong-Un's regime could have been much greater.

North Korea's strategy to tackle the situation was to engage in “self-reliance” measures and import substitution. This meant to concentrate its limited resources in the national strategical sectors – the metal and chemical industry – and leave other sectors to seek their own survival independently. For North Korea, this would have been an inevitable choice since its industries are highly vertically integrated, and the shutdown of a vital sector would sequentially spread to

¹ Lee, Seog-ki, M. Yang, S. Kim, Y. Lee, K. Lim and B. Cho. 2013. *Analysis of North Korea's Economic Issues*. Korea Institute for Industrial Economics and Trade. (in Korean)

the other sectors. However, the necessity does not guarantee success, and the strategy seems to have been futile. The Bank of Korea estimated that the growth rate of heavy industries was -6.7% in 2017-2020 on average, declining by a much higher rate than the other sectors. The plunge in intermediate goods and capital goods import has hampered the heavy industries the hardest, as these depend on imported goods the most.

At the 8th Party Congress in 2021, Chairman Kim Jong-Un extraordinarily admitted that the Five-Year Strategy for National Economic Development (2016-20) had fallen short of its goals. He came out with the Five-Year Plan for National Economic Development (2021-25). However, the essence has remained unaltered. As the UN sanctions continue and the COVID-19 situation is prolonged, the depletion of foreign currency and resources will occur at an increasing pace, bringing down productivity further, while the import of capital goods and investment from the outer world will remain unattainable. The market, which has operated as the mechanism to coordinate the economy and efficiently allocate resources in place of the public sector, would fail to function in a severe economic downturn. If North Korea adheres to the current strategy and refuses to open its borders, the outcome of the new plan may be self-evident. [KIEP](#)