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Research Report

Price and foreign exchange rate in North Korea: Observations, trends, and analysis

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Dialogue on the North Korean Economy

October 2021



Price and Foreign Exchange Rate in North Korea: Observations, Trends, and Analysis

—

Ji Young Choi

Dialogue on the North Korean Economy

Price and Foreign Exchange Rate in North Korea: Observations, Trends, and Analysis

One of the most important variables in the study of the North Korean economy is market prices and foreign exchange rates. This is because of the assumption that the two variables immediately reflect the status and trends of the North Korean economy. In fact, many North Korean economic studies use observations on these variables as important analysis data. Despite such reality, however, market price and the foreign exchange rate are among the trickiest of all macroeconomic variables related to the economy. Researchers have yet to agree as to how the variables should be measured, what kind of methods should be used to analyze the measures, and how the outcomes should be interpreted.

In an attempt to find an answer to these questions, we invited Dr. Ji Young Choi, Research Fellow at the Korea Institute for National Unification (KINU). Dr. Choi has long studied prices and foreign exchange rates in North Korea. She is recognized as one of the most prominent experts in the area not only in Korea but also abroad.

Dialogue on the North Korea Economy



Date and Venue

The Global Knowledge Exchange and Development Center, June 26, 2020



Interviewer

Lee, Suk (Senior Fellow at KDI)

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Interviewee

Choi, Ji Young
(Research Fellow at KINU)

KDI's *Dialogue on the North Korean Economy* is a monthly series that features interviews with the foremost experts on North Korea. The first publication was released in March 2021 in connection with the *KDI Review of the North Korean Economy*. Each edition tackles a different facet of the North Korean economy, and offers valuable insight into prominent issues and aspects.

The views and opinions expressed by the contributors are their own, and do not reflect the official views and position of KDI.

— KDI Review of the North Korean Economy Board of Editors

The Concept of Price and Exchange Rate in North Korea

The KDI Office of North Korean Economic Studies publishes a series of articles under the title of *Dialogue* on diverse topics related to the North Korean economy. These articles are based on expert interviews. For this month, we have invited Dr. Choi, Ji Young, Research Fellow at the Korea Institute for National Unification.

Lee, Suk Q.

The variables that economists outside North Korea use most often when analyzing the North Korean economy are market prices and foreign exchange rates. They do so because the two variables well show the status of the North Korean economy and immediately reflect the changes in North Korean markets. Even if they do not cite the variables in their papers, they check them first when preparing their papers. However, there would be hardly anyone who could argue with confidence that they know what the terms-market prices and foreign exchange rates-really mean in North Korea.

At present, much of the data on the North Korean economy is produced by South Korean institutions. The Bank of Korea (BOK) releases its own estimates (e.g. gross national income) on economic growth of the North Korean economy every year; the Korea Trade Investment Promotion Agency (KOTRA) compiles trade statistics; and the Rural Development Administration releases data on agricultural production. Nevertheless, despite their importance and high applicability, official data on prices and foreign exchange rates in North Korea are not provided by any institution. Instead, we have only unofficial estimates. Due to these limitations, there are many ongoing discussions.

This is why we have chosen price and the foreign exchange rate as the topic of the third article of the *Dialogue*.



Before joining the KINU, Dr. Choi dealt with the same subject also at the Bank of Korea for a long time. I am happy to have her here today, and expect her to share her insights and knowledge.

Before delving into the topic, could you please briefly explain how the concepts of price, price level, and foreign exchange rate are understood in North Korea? It is my understanding that socialist economies have a price system called “official price” or “state-set price” where the prices of goods and services are determined by the planning authority, and tends to be maintained for a long time without changes. Are these all true in North Korea? Please give us an overall picture about what price system is used, and how the system is operated.

Choi, Ji Young

The North Korean price system was originally based on “planned pricing.” Since it is based on a socialist economy, the planned price is set based on a certain principle of Marx’s economic theory. In the North Korean economic dictionary published in 1985, there is a separate entry for “Price Planning.” The entry stipulates that governments of socialist states shall determine the prices of goods and services through planning in accordance with the law of the value of socialist states for the sake of the planned development of the people’s economy. This planning of prices is called “consistency in price determination” in North Korea. The underlying principle of the price system is that the economic value of a good is determined by the amount of socially necessary labor required to produce it. Under the system, the government has the authority to determine prices while enterprises and other commercial entities do not. Of course, there are exceptions. Price controls are more stringent for goods manufactured by state-owned enterprises, which

are mostly industrial products, but relatively flexible for products from cooperative farms, individual households, and so on.

In North Korea, there are different types of prices. For goods, there are wholesale, retail, and procurement prices, and for services, there are fees and charges. In principle, the price is set by the state, but the recent development of spontaneous system degeneration has not allowed all principles to be rigidly followed. In the case of wholesale prices, the prices of goods, especially industrial goods, are strictly set since it is relatively easy to calculate the cost of raw materials used and the input hours of labor. Retail prices are also determined by the state based on the valuation of essential and luxury goods. Essential goods are priced low through price subsidies while luxury goods are priced high. Prices are also affected by the form of ownership. Products from cooperative farms or other non-state production units are subject to more flexible pricing. On the other hand, the price of products produced by individuals from a side job or surplus farm products is set by supply and demand. Overall, North Korea was following the basic socialist price system in which price is determined according

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to the ownership type of production units and the necessity of the goods and services. However, this type of price system can hardly be maintained while the socialist economic system was in the process of degeneration. It is not clear when the dysfunction of the planning system became quite so conspicuous, but we can speculate that the situation has seriously deteriorated since 1990. It is known that South Korea began to collect data on North Korea's farmers' market starting in the mid-1990s, but if we track the institutional changes of the North, the change in the price system occurred much earlier. In 1992, price reform was implemented to raise wages and state-set prices, and in 1994, the method of calculating wholesale prices was modified. It is presumed that a change in the price system was necessary because the planned economic system did not work properly under the existing price system due to the economic shock from the collapse of the old socialist bloc. Despite these attempts to modify the planned price system, the North Korean economy has had a dual structure since the mid-1990s. In the formal sector, resources are distributed at the planned price, or the state-set price, while

in the informal sector, resources are distributed at the market price. Given that market transactions are partially permitted in the 2000s, it is fair to say that both planned prices and market prices legally coexist. Moreover, after Chairman Kim Jong-un came into power, there was an institutional change to partially legalize the price-setting authority of production units. The Enterprise Act revised in 2015 expanded the price-setting autonomy to production units. The revised law stipulates that enterprises shall follow "socialistic principles and methods of price-setting" but may "set price by themselves by considering buyers' demand and negotiated terms and then sell the goods at such a price." This change seems to have been introduced with the implicit intention of allowing a certain level of market function in the operation of the North Korean economy. Market transactions were expanded to enable enterprises to procure raw materials by themselves in a situation where it became difficult to provide raw materials for production units through the planning system. In a sense, the change was an act of institutionalizing the price-setting function of enterprises, which had

not been recognized by the formal mechanism until then.

The levels of state-set prices are maintained for a long period unless the price calculation method is modified. For example, wholesale prices, which consist of cost, profit, and profit income, may be revised when methods of cost calculation and profit distribution as well as the share of profit income change. Still, when compared to the changes in the market price based on supply and demand, the state-set price seems almost unchanging. Since the 1990s, the state-set price has twice gone through extensive changes. In 1992, there was a general increase in wages, procurement prices, and state-set prices, and in 2002, similar actions were taken. The latter, called the “July 1 Economic Management Improvement Measures” (or simply, the July 1 Measures), served as an opportunity to rationalize wages and state-set prices. The price of rice was adopted as a new criteria for price-setting, presumably because rice is one of the major items traded in the market and thus, its market price is a useful anchor for setting the price of other items. The change in the state-set prices, at that time, may be considered as a measure of price rationalization. If the gap between the planned and market prices widens, resources are diverted to the market for rent seeking. To prevent this, the authorities raised the planned price almost to the level of the market price. Given that North Korea took such a measure as early as 1992, it seems that supply shortages within the planned sector had already been chronic and widespread, and the gap between statutory and market prices was very significant.

The two rounds of price rationalization in 1992 and 2002 are considered as failures. In order to reduce the price gap between the market and planning sectors, supply in the planning sector should have been restored, but this failed. Still, the North

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According to the Food and Agriculture Organization (FAO) reports, the price of foods traded in state-operated stores is marked in state-set prices.

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Korean government had difficulties doing so. Since the adoption of the July 1 Measures in 2002, the authorities never attempted to raise the state-set price overall. While implementing a currency reform in 2009 that demanded people to exchange their existing notes with new ones at a ratio of 100:1, the North Korean government left the state-set price intact. This is partly because the existing price rationalization measures failed to achieve the intended purpose of restoring the planned economy, and on the other hand, it is also because the role of the state-set price has been reduced. As mentioned earlier, as enterprises sold some of their products in the market, prices similar to market prices were applied, even to the state-owned production units. It is not possible to estimate exactly what percentage of the state-set price is being applied throughout the North Korean economy. According to the Food and Agriculture Organization (FAO) reports, the price of foods traded in state-operated stores is marked in state-set prices. For instance, the price of rice stood at KPW 44-46 per kilogram, maintaining the level since the July 1, 2002 Measures even after the currency reform. Some people may have been subject to use the state-set price, but it is difficult to accurately

know the extent to which resources are allocated according to state-set prices.

Your explanation gave me an overall picture of the price system in North Korea. As a socialist state, North Korea draws plans to set and control prices according to the labor theory of value as advocated by Karl Marx. Price is classified into wholesale, retail, and procurement prices for goods, and fees and charges for services. The labor theory of value is best applied to wholesale price, particularly for those of industrial goods, which are easy to calculate. Therefore, state-set prices are well observed in the production of industrial goods. Procurement prices seem to be flexible in implementation since their main users are farmers, cooperatives and individuals. You also said the price system seems to have been effective to some extent with some flexibility. When looking at the first price rationalization measure in 1992, the North Korean government seems to have recognized the incompetency of state-set price in distributing resources. The measure was followed by significant chaos in the North Korean economy. In addition, the government once again introduced a similar measure, the so-called, July 1 Measures in 2002. Since then, state-set prices have become nominal in resource allocation, and market prices filled the void. Nevertheless, you said state-set prices still seem useful for the allocation of foods and other essential goods. Now, let's turn to the foreign exchange rate. I wonder what official foreign exchange rates mean in North Korea and how they are set. I was told that in addition to the official exchange rate, there are sometimes state-set exchange rates, fair exchange rates, and foreign trade exchange rates. Please tell us how they are different from each other. Also, I especially wonder if the official exchange rate do still exists and function these days in North Korea.

In a socialist economy, the government has monopolistic control of foreign currency, and North Korea is not an exception. As there are state-set prices, there are also official exchange rates. In North Korea, exchange rates are referred to as the exchange rate quotation. There are multiple types of such exchange rates, such as fixed exchange rate quotation, exchange rate quotation for settlement, and exchange rate quotation for cash. The revised Foreign Exchange Control Act in 2004 stipulates that the Ministry of Finance, the central agency with fiscal management authority, sets the fixed exchange rate quotation as the benchmark for the cash buying/selling rates (exchange rate quotation for cash), and telegraphic transfer buying/selling rates (exchange rate quotation for settlement) set by the Foreign Trade Bank of North Korea. In 2015, the authority to set the "benchmark exchange rate" was added to the Central Bank by the Central Bank Act revised during the



same year. The intention of this seems to have been to transfer the authority to determine and stabilize exchange rates from the Ministry of Finance to the Central Bank.

The Foreign Exchange Control Act has not been revised since then. It is thus uncertain whether additional changes have been made to the institutions related to foreign currency management. Still, the existence of a benchmark exchange rate demonstrates that an “official exchange rate” does exist. According to the Fiscal and Financial Dictionary of North Korea, the official exchange rate is determined by considering the values of local and foreign currencies, international market prices of goods of trade, and so on. There have been sharp fluctuations in the international market price of goods of trade and the value of the North Korean won. However, except during times of significant institutional changes, such as price rationalization and currency reform, the official exchange rate has shown little changes. This suggests that the official exchange rate is also determined in an arbitrary manner.

Before the July 1 Measures, both the official exchange rate and foreign trade exchange rate had been in

use. However, after the measures, the latter was merged with the former. Data on North Korea’s official exchange rate trends have been released by the Statistics Korea and the Bank of Korea on an annual basis, and by Germany’s Bundesbank on a monthly basis. According to the Exchange Report of Bundesbank, the official exchange rate of the North Korean won to US dollar skyrocketed from 2.2 won at the time the July 1 Measures were implemented to over 150 won. The significant devaluation was intended to rationalize the official exchange rate in a way to properly reflect the value of the North Korean won given the wide gap between the official and market exchange rates.

Little changed until the currency reform in 2009 when the value of the North Korean won appreciated to around 100 won to 1 US dollar. The appreciation in 2009 came without any adjustment of the level of state-set prices. No specific studies have been available on the background of the appreciation. Presumably, the North Korean government seems to have been determined to confiscate currency assets while maintaining state-set prices because the state-set price was not as meaningful as they had been before, and previous attempts to adjust the state-set price and wages only caused confusion. In fact, there was no need to rationalize exchange rates because the measures in 2009 were not to rationalize prices. On the other hand, the appreciation of the local currency seems to have the effect of buying in foreign currencies from foreign tourists with less domestic currency.

The existence of an official exchange rate was confirmed by the fact that exchange rates different from the market exchange rate were applied for foreign tourists visiting North Korea. Accordingly, the exact figures of the official exchange rate can be checked from the rates applied to foreigners. For example, 1 US dollar would buy you 8,000 won in the market but

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only 100 won if you are a foreigner. This means that the market exchange rate was 80-times higher than the official exchange rate. Since the 2009 currency reform, the difference has been maintained without considerable modifications

How Market Prices and Exchange Rates Have Evolved in North Korea

Like prices, you said the exchange rate is also determined by the government. The central agency with fiscal management authority sets the fixed exchange rate as a benchmark for the exchange rate quotation, which is set by the Foreign Trade Bank of North Korea. The revision of the Central Bank Act in 2015 gave the Central Bank the authority to set the benchmark exchange rate. This could possibly indicate a transfer of authority. In the meantime, the market KPW/USD exchange rate is 8,000 won, but the official exchange rate is 100 won. This is a huge gap. Likewise, the gap between the actual price of

rice and the official public distribution price seems to be very wide.

Taking all these into consideration, it is more reasonable to observe the market price rather than the official sectors to understand the true status of the North Korean economy. In this regard, I would like to review the concept of market first. In any market, prices are prone to the influence of illegal activities and informal factors. What about in North Korea? Please tell us what market price means in North Korea, and if it is what we generally perceive it as in a normal market economy. Also, could you tell us how market prices are established in North Korea.

Specific details about market price formation in North Korea are unknown. In some aspects, pricing is similar to that of a general market economy. In other aspects, it is not, but the similarities are growing as time goes by. In the early 2000s, North Korea expanded the range of goods allowed to be traded in the markets. Until then, only surplus agricultural produce had been allowed in the farmers markets.



However, people were now allowed to trade consumer goods in “general markets,” producer goods in “socialist exchange markets,” and import goods in “import goods exchange markets”

North Korea has long permitted prices to be based on the supply and demand of goods produced by individuals. As mentioned earlier, in North Korea, prices are classified into wholesale, retail, and procurement prices for goods, and fees and charges for services. In addition, retail price, which included negotiated prices and farmers market prices basically reflected the supply-demand law. Before the July 1 Measures, these types of retail prices were only permitted for surplus agricultural produce officially. However, unofficially, market prices were expanded. Since the measures, the range of goods subject to market prices was expanded officially.

Specific details of this transition are not known. After the 1990s, data on North Korea’s black market prices have been obtained through defectors, but only in parts. Market prices were obtained regularly in the late 2000s, and market prices in some areas of North Korea were obtained relatively regularly through Chinese merchants or North Korean defectors, and announced through the media. The data, however, is mostly limited to the market price of food, which is

a consumer good as the market prices of producer goods are scarce. This also means that household consumption in North Korea is highly dependent on market transactions

North Korea’s consumer goods market price system is similar to that of an ordinary market economy, although there are some differences. Overall, price fluctuations are relatively well explained by supply and demand. For example, the price of grain rises in the second and third quarters when the stock grain gradually depletes until harvest time. Another example is, if the supply of refined oil is reduced because of the tightening of sanctions against North Korea, its price rises immediately. Additionally, for trade goods, it does not diverge far from the trend of international prices

Just looking at the market price of consumer goods, we can confirm that North Korea experienced rampant inflation in the early to mid-2000s. It is believed to have been widespread due to a combination of factors. The economies of socialist countries have a dual structure consisting of the formal economy and informal economy. As mentioned earlier, transactions in the black market, which belongs to the informal economy, is in itself illegal hence a markup in price is reflected as the risks are high. So, when there is vigorous competition, there is a difference in pricing. Also, although there is little demand for hard currency in a socialist economy due to resource allocation (via planning), as the economic structure is dualized, inflation occurs when hoarded money flows into the market.

There are two types of inflation that may occur in socialist economies: hidden inflation and repressed inflation. Hidden inflation occurs when only formal price is observed and market price is not observed. Repressed inflation occurs when dormant money, which had no outlet for use in the past, suddenly is allowed into the market, thereby increasing liquidity.

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The inflation in the 2000s seems to be of the latter type. Trade of consumer goods had been prohibited by law throughout the 1990s until the July 1 Measures in 2002 when general markets, or consumer markets, began to appear. However, with the trade of consumer goods in the markets approved, idle money seems to have flowed into the market. Another plausible hypothesis is that increased wages would have raised liquidity as wage was paid in cash, which caused inflation. In other words, the chaos created by the permission of market trade may have contributed to the inflation in the 2000s. Market prices remained highly volatile for a decade following the approval of consumer goods trade in the markets. Still, since the inauguration of Kim Jong-un, prices have remained stable without notable fluctuations.

Despite such similarities, North Korea's market price mechanism shows differences from that of market economies. In North Korea, resources are allocated through two channels: planning and market. The resources assigned to the first channel are often appropriated to the second. With resource allocation by planning not working well, resources are channeled into the market by an arbitrage process that seeks profit from the gap between planned and market prices.

Another interesting point observed in North Korean markets is that there is no time lag in price fluctuations across regions, but there are regional differences in the price level. The representative cities for the study of regional price comparisons are Pyongyang,

Sinuiju, and Hyesan. Existing studies reveal that the average price level is highest in Hyesan and lowest in Pyongyang. This is because resources are most abundant in Pyongyang, and rations from the public distribution system are larger than those in any other region. Also, in regions like Sinuiju, where large-scale wholesale markets exist or resource allocation works relatively well, the average price level tends to remain stable. In contrast, in the border city, Hyesan, the supply of resources through public distribution networks seems unstable, thereby driving up the price level. A study of North Korean markets focusing on the scale of markets shows that there are only small markets in Hyesan. Therefore, surplus resources from Pyongyang or imports from China have to be transported through multiple stages in wholesale markets, which primarily exist in large cities like Sinuiju. If there is a well functioning nationwide market network, there should be no big difference in the price level across the country. However, in North Korea, price levels vary depending on the region or the level of transportation and communication development. This demonstrates that markets in North Korea have not yet reached a high level of maturity.

On the other hand, the trade of production goods in the market was partially permitted in the 2000s. However, information on price is rarely available except for those on some agricultural materials. This scarcity of information limits efforts to understand the changes North Korean enterprises and industries have undergone thus far.

You have made an important point. Market prices in a socialist state seem to differ from unofficial black-market prices that we are all familiar with, or typical market prices in market economies. Still, the market prices in North Korea appear to be becoming similar to the market price that we know. You also pointed out that the regional differentiation of price levels originated from the nature of a socialist economy. For example, in Pyongyang where the planning system functions relatively well and resources are relatively abundant, markets can operate smoothly through well-established networks. However, in Hyesan where conditions are the opposite, price levels tend to be higher. Although market principles increasingly affect the price-setting mechanism in North Korea, we should take a somewhat different perspective from what we have been used to because North Korean systems are still based on socialism. What about the exchange rate?

The market exchange rate formation mechanism is basically similar to the market price formation mechanism. In principle, the state has monopolistic control over foreign currency management, and individuals have to exchange their foreign currencies for “foreign exchange certificates” in order to use them. This regulation is known to have become ineffective in the wake of the growing circulation of hard currencies inside of North Korea since late 1990s. This would automatically entail a greater reliance on market-determined exchange rates.

The most prominent change is the steady expansion in the use of foreign currency due to rampant inflation from 2002 to 2012. In the early and mid-2000s, foreign currency was used as an “asset substitution.” However, immediately after the currency reform in 2009, prices rose at a rate comparable to “hyperinflation,” and “currency substitution” also began to take place. In other words, foreign currency

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was held as a means to store value, but later, it was used as a medium of exchange. The 2009 currency reform, which marked a turning point in North Korea, was almost confiscatory in nature. Although people had to exchange existing notes to new ones at a ratio of 100:1, respectively, state-set prices were left unchanged. As a result, old notes in excess of the exchange limit became worthless. This undermined confidence in the domestic currency, thereby causing a near hyperinflation. This is how the use of foreign currency in North Korea moved beyond the stage of asset substitution to currency substitution. The rapid increase in the use of foreign currency had been accompanied by a depreciation of the domestic currency until the inauguration of Kim Jong-un. Since then, along with market prices, the exchange rate has remained relatively stable. The KPW/USD exchange rate stood at around 8,000 won without sharp fluctuations until the imposition of tougher UN sanctions.

The value of the North Korean won sometimes weakens when geopolitical risks or other factors that affect the exchange rate grow, showing patterns similar to international trends. When the arbitrage rate of exchange for key currencies is calculated using recently collected market information on the KPW/USD and KPW/CNY exchange rates, it seems relatively similar to international prices and also, reflects the volatility shown in the international market rates.

For example, when China depreciates its currency, the KPW/CNY exchange rate falls in markets across North Korea. This shows that the process of market exchange rate formation in North Korea does not completely diverge from those of market economies, and the North Korean economy is actually connected to the global economy.

Nevertheless, like market prices, market exchange rates display regional differences. A significant difference in the exchange rates between regions is another indication of the immaturity of North Korean markets.

Observations on North Korea's Market Prices and Research Method

Thank you for the detailed explanation about the market price and exchange rate in North Korea. It seems that the exchange rate is not like the black-market exchange rate or the exchange rate typical of market economies. They are determined in a way quite similar to that of the market exchange rates in South Korea.

Now, I understand the basic concepts of price and the exchange rate in North Korea. Although the official price and exchange rate are still in use, the market price and exchange rate seem to have become the standard mechanism for resource allocation today. Let's take a step further into the topic. I want to know how we can observe market prices in North Korea, and how you can generate data for research. Also, who produces such data?



Regarding market prices in North Korea, since the 1990s, data on black market prices have been intermittently collected through North Korean defectors, but it was only partial data. It was from the 2000s that market price information began to be collected on a regular basis. In the early 2000s, data was accumulated by academic studies based on interviews with North Korean defectors. Mainly, quarterly data on the price of rice or the KPW/USD exchange rate have been continuously compiled. From the late 2000s (around 2009), media reports based on a network of North Korean defectors also contributed to data accumulation. Since 2013, the prices of food and agricultural materials have been released by the Korea Rural Economic Institute in its quarterly magazine *Agricultural Trends in North Korea*. Most data are on food, but data on refined oil and the exchange rate are collected on a relatively regular basis.

The collection of data on North Korea's market prices began through academic research, but in time, demand for such data grew as market prices became increasingly used as an indicator for North Korea's economic trends. To meet the demand, news outlets, through the network of North Korean defectors, have attempted to generate more information. Recently, Daily NK and Asia Press have begun to release data on the prices of rice, corn, pork, gasoline, and diesel in North Korean markets as well as the KPW/USD and KPW/CNY exchange rates once or twice a month.

The credibility of such data is in question however as most deal with food. The price of food varies greatly depending on the weight and/or quality. However, the data seems to show trends in prices, at least to a certain degree. For instance, some trends may be explained by considering the grain supply, seasonal factors, export suspension, and so on. These trends are useful in understanding the current status of the

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North Korean economy as well as the reliability of the data themselves

As you pointed out, the precision and reliability of the monthly or quarterly data may be called into question. When we deal with market prices in North Korea, we often use the prices of certain items, including rice and diesel. I wonder if data on the prices of these items are sufficient enough to be called prices in the sense that we generally mean.

When we discuss prices in North Korea, we often mention the price of rice. However, could we express the term using consumer prices, producer prices, and fluctuation in import prices and further, if there is indeed a concept for price in North Korea? At present, we can estimate the prices of only a few major items. What about other items? Is it possible to calculate North Korea's price index?

It is difficult to establish a consumer price index (CPI) based on the available data. It could be possible to create a CPI for food at best by using the data on food prices published in *Agricultural Trends in North Korea*. Because most of the data is limited to food, it would be difficult to create a general CPI that includes industrial products and services.

To create a CPI that encompasses all items, we need, among others, data on the share of items in the expenditure of North Korean households. Further, we should assign proper weights to each item that account for a larger share of the expenditure. That would be an enormous job and hard to carry out in reality due to certain constraints. For example, we could conduct a survey on North Korean defectors to ask about the share of food in their expenditure before they came to the South. However, we may not be able to get an accurate response because they tend not to consider education, health, and other services provided by the state as expenditure. The dual structure of the North Korean economy is another constraint because we can only measure sectors where market prices are used.

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To create a general CPI, we need to know the share of items in the expenditure of North Korean households, and obtain data on the prices of food and durable consumer goods as well as education, health, and leisure services. It is also important to differentiate such items because some are provided by the government through planning. The question boils down to whether the index can be seen as comprehensive when the dependence of households on market transactions varies greatly. Nevertheless, as the share of markets grows in the North Korean economy, it is necessary to create a CPI in the future to study the living standards of North Korean people and the status of the North Korean economy.

Characteristics of Market Prices and Prices in North Korea

Despite various efforts, you've mentioned there are many difficulties in creating an index based on a concept for price. Nevertheless, it seems very important to establish a concept and index to understand the North Korean economy. I would like to discuss more about the characteristics of market prices and the overall price levels in North Korea. Since the late 2000s, there must have been some accumulated data on market prices, and also, there must have been some noticeable features, such as regional differences in price, seasonal fluctuations, instability, and links between commodity prices. Could you please elaborate?

Also, I would like to know if the price levels are in any way tied to China. I've heard there is a price ceiling for official prices. Does this also apply to other prices? Furthermore, prices fluctuate incessantly, so what is going to be the representative price that can correctly reflect North Korea's changing market

situation? I would like to learn more about the difference between the official price and the price set by the regime through policy.

As I explained earlier, the time lag in price fluctuations across regions is minimal, but changes in price levels and exchange rates are being constantly observed. Although Hyesan is located in the border area, the price and exchange rate levels are higher than in Pyongyang or Sinuiju. It seems that the farther from the border and from Pyongyang or other large cities the region is, the higher the price levels. However, data on prices or the exchange rate are not available for many regions, especially Hwanghae and Gangwon Provinces

In general, a CPI is composed of prices measured in urban areas. Prices in Pyongyang, Sinuiju, and Hyesan are observed because they are all cities. A CPI may be less meaningful in rural areas, particularly in North Korea, because the urbanization rate is fairly low, and residents are able to obtain food by other means than through markets. Thus, it is quite difficult to figure out how widely currency is used in rural areas.

While official prices have remained steady for some time, market prices have been highly volatile. Prices of major commodities in North Korea such as grain and energy are linked to and thus affected by international prices. When North Korea's market prices are converted to dollar-denominated prices and compared, there is clearly a trend that follows international prices. For example, when international grain prices surged in 2007-2008, grain prices also surged in North Korea. Although North Korea is not a country that is highly dependent on foreign grains, it is a food-scarce country, and some grains are imported commercially through China, hence it appears to be affected by international prices. In

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A CPI may be less meaningful in rural areas, particularly in North Korea, because the urbanization rate is fairly low, and residents are able to obtain food by other means than through markets.

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the case of energy, since North Korea relies totally on foreign energy, it is affected by international changes and the impact is more striking when there are certain shocks. For example, it has been confirmed that gasoline prices in North Korea have risen since the tightening of sanctions, and with the recent fall in international oil prices, gasoline prices in the North have also shown a downward trend. As mentioned earlier, the exchange rate also follows international trends. If the arbitrated KPW/CNY rate is calculated using the KPW/USD and KPW/USD exchange rate, it appears that North Korea's exchange rate follows international trends. Even if the price gap between the North Korean and international markets temporarily widened, it did not last for more than two quarters before sanctions. Since their imposition, however, conditions seem to have somewhat changed. According to the Daily NK data, the yuan has become relatively stronger in the North Korean market since the tightening of sanctions. However, according to the Asia Press data, the arbitrated USD/CNY rate showed a similar



flow to international prices. The discrepancy in data from the two major sources on the exchange rate of North Korea needs to be checked further.

You asked about government intervention and its influence. Although the North Korean government officially approves resource allocation by means of market prices, according to media reports, it intervenes in the price system when market prices rise too quickly. That is, when rice prices soar, the regime sets a price ceiling, for example, 8,000 won per kilogram. This ceiling is called the price limit. And while it is unknown how effective the price limit is, in early February when the borders to China were closed, rice prices in North Korea soared before turning downward in late February. The turnaround seems attributable in part to the price ceiling control. This control, introduced when market transactions were legalized, seems to have been useless when resource shortages were severe in the market or the value of the North Korean won plunged, for example, immediately after the currency reform. In early February 2020, prices in North Korea began to

fall after rising sharply. The shift may have been due to the mitigation of COVID-19 concerns, and the price limit control that took some effect thanks to an eased shortage of resources.

Seasonal factors play a vital role in the price of grain. Volatility in the weather is especially high in the second and third quarters, just before the harvest when grain supply runs low. Accordingly, prices rise from the previous quarter during this period, and then falls as the harvest begins in the fourth quarter. This represents a typical pattern in the trend of grain prices in North Korea. This pattern is more pronounced in those years when grain supply and demand deteriorates. Even in the years of good supply and demand balance, with relatively low volatility, the seasonality effect can still be observed. The relative price between commodities is well explained by corn and rice. Comparing the two, the volatility in the price of corn is higher than that of rice. This means, when supply conditions deteriorate, the relative price of corn goes up faster than that of rice. A comparison shows that the price volatility

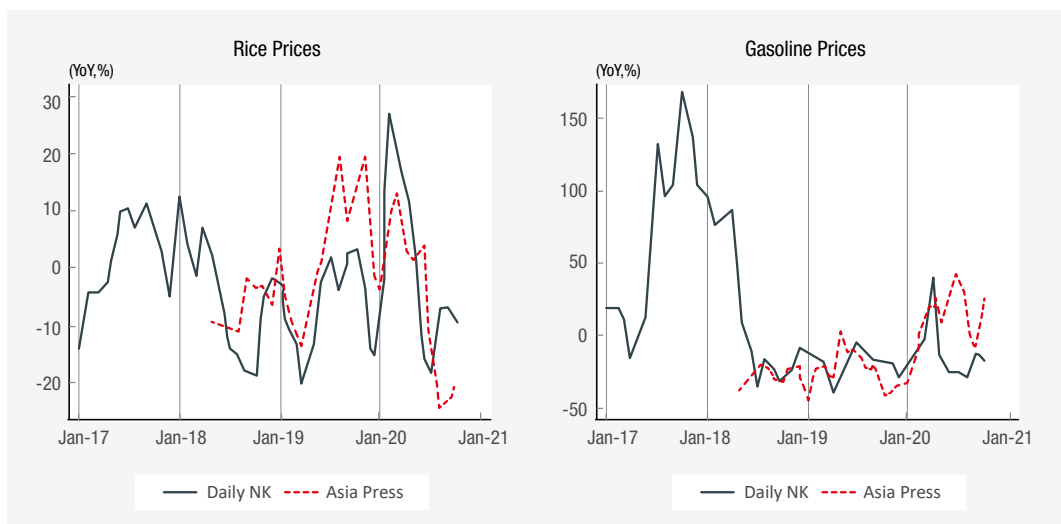
of corn sometimes exceeds that of rice. Such high price volatility indicates that the price elasticity of corn demand is fairly low among North Korean people who depend less on food distribution. There may be certain groups of people who have to buy corn due to their income levels. For them, corn may be a necessity, which is why the price elasticity of corn demand is very low. Relative prices and price-related properties of grain differ from one another depending on their nature.

Thank you for the detailed explanation. Diverse factors seem to affect market prices in North Korea. In a broad sense, they follow international trends, but they are also affected by domestic factors such as seasonality. Price levels appear to be different from one region to another. In addition, government intervention in certain circumstances indicates that policies also affect prices. The fact that various

factors affect prices means that by analyzing the latter, we can understand the former, and obtain information on them.

To me, the way we approach North Korea's prices seems similar to the way we approach its exchange rate. When it comes to goods, you said, the prices of food, rice, energy, and other consumer goods are regularly released. As for the exchange rate, the KPW/USD and KPW/CNY exchange rates are published on a regular basis. I have one related question on data representation. I want to know how representative is the data released by Daily NK and Asia Press. What is your take on the possible gap between the prices inferred from the data and the actual prices? Daily NK is the primary source for North Korea's exchange rate and rice prices, but is the data totally reliable or unreliable unless other factors are also considered?

Figure 1 | Market Prices in North Korea



Note: 1) Daily NK data on the YoY rate of change in the average monthly price of rice and gasoline in Pyongyang, Sinuiju, and Hyesan.

2) Asia Press data on the YoY rate of change in the monthly price of rice and gasoline.

Source: Daily NK and Asia Press.

Daily NK's data on prices and the exchange rate in the North Korean market is often used because it has the longest time-series. However, there are limitations in terms of reliability and accuracy since it is not officially published by statistical authorities. As mentioned before, the per-kilogram market prices of rice may vary depending on quality, and it is difficult to confirm whether the standard and quality of all rice compared are the same. Hence, it is necessary to interpret studies on the North Korean market only after taking these limitations into consideration. In addition, although the share of resource allocation based on the market mechanism is growing, prices may appear distorted in some regions because North Korea is not a market-based economy. Given this, it may be too risky to draw a conclusion on the overall North Korean economy based only on temporary price volatility.

In order to supplement this data limitation, I believe that a cross-checking process through various channels is necessary. Recently, I've noticed inexplicable movements in the market exchange rate in North Korea so I took a closer look at the data from Daily NK and Asia Press. The price movements of rice, corn, and refined oil were similar, but the exchange rate moved quite differently. After the imposition of sanctions against the North, the yuan strengthened sharply as announced by Daily NK. However, the data from Asia Press shows similar patterns to the current international market price. Such a discrepancy may be simply due to the difference in the surveyed area. In any case, for now, it would be best to cross-check the two sets of data to confirm credibility.

In a market economy, markets and brokers exist, and the exchange rate is traded centrally, meaning there is direct cross-checking, and rates are established through competition. However, in North Korea,

there are no such markets. All transactions are conducted by individual money changers. They do not gather to determine the "daily exchange rate," and each has his/her own exchange rate, and hence, discrepancies are inevitable. I believe, by nature, the exchange rate cannot be fixed at a certain rate so, to say, "this is the exchange rate from this time to that," is unreliable and should not be trusted. As you've mentioned, prices of goods are universal, but the exchange rate is not. The exact exchange rate cannot be determined and announced, and moreover, it cannot be applied in the same way. Also, it seems Asia Press is based in Japan. When did it start to release such data?

Asia Press began to report data on North Korea's prices and exchange rate from April 2017. Compared



to data from Daily NK, the data has a shorter time-series, and different locations were surveyed. While Daily NK conducts most surveys in Pyongyang, Sinuiju, and Hyesan, Asia Press uses North Hamgyong Province and Ryanggang Province. Data from Daily NK shows that prices and the exchange rate are higher in Hyesan than in Pyongyang or Sinuiju. The price level and exchange rate shown in Asia Press' data are generally higher than those shown in data from Daily NK. This is presumably because the survey locations chosen by Asia Press are limited to border regions. The average KPW/USD exchange rate for March-April, last year was around 8,000 won according to Daily NK. However, the exchange rate reported by Asia Press exceeded 9,000 won. It is not certain whether this gap was caused by the difference in the surveyed areas and/or timing. Anyway, for now, it is best to cross-check the data, and assure that they show similar trends before attempting to identify the reasons behind the differences

these problems can be resolved in the market, in North Korea, markets are not widespread, and thus prices went up precipitously. Moreover, the North Korean government, fully aware of the reason, had to rely on seigniorage after 2009 because it had been losing sources of fiscal revenue. As a result, prices kept soaring, and the exchange rate went out of control.

This explanation was convincing, but at some point, the price stopped rising and it seems to have reached a long-term plateau. Such long-term stability has not been found in other underdeveloped countries. The prolonged stability in North Korea's prices has thus spurred heated debates. I know it is difficult to fully explain this phenomenon, but could you tell us how we should view the stability and what caused it? Do you think something has really changed in North Korea? If so, please elaborate more because it may be related to another phenomenon, dollarization.

Stability in Market Prices and the Exchange Rate in the Kim Jong-un Era

Your explanation was quite interesting. I think we have dealt with the basics of market prices and the exchange rate in North Korea enough. Let's move on to some difficult issues. First, how can we understand the uncommon phenomenon of the North Korean economy that is the stability in market prices and exchange rate that emerged around the mid-2012 to early 2013 in the Kim Jong-un era? Prior to 2013, the North Korean economy saw a rapid rise in prices and a sharp depreciation in the exchange rate, which seemed natural. As the cause, some cited the constant monetary overhang, a phenomenon common to all socialist economies, while others cited the constant shortage of resources on the supply side. Although

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After surging once in 2012, immediately following the inauguration of Kim Jong-un, prices and the exchange rate continued to be relatively stable before the imposition of tougher UN sanctions.

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After surging once in 2012, immediately following the inauguration of Kim Jong-un, prices and the exchange rate continued to be relatively stable before the imposition of tougher UN sanctions. It is certain that the price of rice, a representative item of the North Korean market, continued on a stable trend. Inflation is caused by multiple factors on both the supply side and demand side. However, inflation in the North Korean market cannot be explained by the causality of each factor. For example, to explain the relation between increased liquidity and inflation, we need data on North Korea's monetary aggregates, which we do not have. Therefore, inflation in North Korea is explained by the probability of increased liquidity due to institutional changes. Nowadays, we try to explain price changes in North Korea by finding dominant factors that could have contributed to the changes. This is to identify the most influential factors during a specific time period. Of course, there could be other factors that could have contributed to the change. For example, the rampant inflation in the 2000s could have been caused not only by real-economy factors but by currency-related factors, as well. Inflation, at that time, was too severe to be explained only by the former. From this, we assumed that currency-related factors could have come into play, and then, suggested the possibility of increased money supply. Still owing to the lack of data on money supply, this hypothesis cannot be verified.

As mentioned previously, in the Kim Jong-un era, prices have been stable after rising once in 2012. The rise seems attributable to the June 28 Measures, the first reform measures that the North Korean government implemented in the Kim Jong-un era. At that time, all eyes were on the similarities between the June 28 Measures and the July 1 Measures. The July 1 Measures (2002) included price reform, which led to inflation and caused North Koreans long suffering. Accordingly, we can assume that there may have been inflationary expectations in the

North Korean market, and this may have been the cause of the inflation in 2012. Nevertheless, prices and the exchange rate began to stabilize from 2013, a condition that presumably contributed to the stability of the Kim Jong-un regime in its early years.

There are various factors behind the stabilization of prices and the exchange rate in North Korea. Firstly, there is the monetary factor. Stabilization of prices means that there is no excess liquidity, which implies that the money supply has not increased. Then, we have to consider what caused the liquidity not to increase. Since the gap between state-set prices and market prices has widened so much, even with the issuance of currency, the North Korean authorities were unable to procure much materials at market prices.

Also, there is the policy factor. It has been confirmed that during the Kim Jong-un era, the North Korean government implemented several fiscal and financial reform measures: the role of commercial banks was strengthened; the use of electronic payment cards was expanded and; savings in foreign currency were permitted. These were all intended to absorb excess liquidity into the official financial system. Although it is difficult to confirm how effective these measures were in absorbing domestic and foreign currencies into the official financial system, they may have, at least, contributed to stabilizing prices. In addition, there were no major institutional changes since Kim Jong-un took office that would greatly increase inflationary expectations. There has been no attempts to implement a price or currency reform or conservative policies such as closing down markets. If markets were closed down, the uncertainty of transactions would have risen, encouraging merchants to further markup. To sum up, the reduced policy uncertainty seems to have contributed to the stabilization of prices in North Korea.

In terms of the real factors, considering that most of the observable data is related to food, we are able to discern that the supply and demand conditions of food have improved considerably under Kim Jong-un, which may have played a positive role. The improvement can be confirmed by checking the estimates for food production. Data shows that food supply conditions in North Korea have not worsened to any significant degree, which seems to have contributed to the stabilization of food prices

Last but not least, the expansion of the state-owned business sector should be closely watched. Since Kim Jong-un came into power, there has been a movement to revitalize state-owned businesses, but thus far, it has been to little avail. Looking at the system changes since Kim Jong-un took office, the North Korean government started to categorizes its planned indicators into “Central,” “Local,” and “Enterprise.” Under the enterprise indicator, businesses were given the authority to set prices as well as sell their manufactured goods. Additionally, the number of large state-run retail stores has increased, and goods are sold not based on the state-set price, but rather, prices that are close to the market price.

On the other hand, the production of light industrial goods has expanded since the government put emphasis on the local manufacturing of light industrial goods. This, too, may have played a positive role in the stabilization of prices. Although owned by the state, production units were given the authority to sell goods at a price equivalent to the market price. The constant expansion of distribution networks for consumer goods such as general markets has also played a contributing role. In all, several institutional changes combined with the improvement in the real economy seem to have worked together to stabilize inflation until the imposition of tougher UN

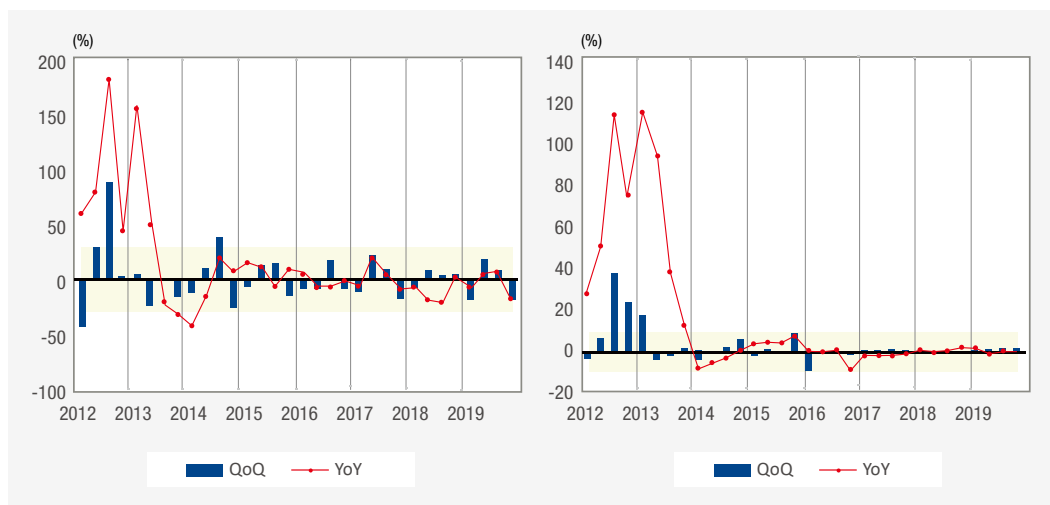
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sanctions

You pointed to four factors that have kept prices from climbing during the Kim Jong-un era. First, on the monetary side, the money supply was reduced. Although data is limited, given the expanded role of commercial banks, the introduction of the electronic payment method, and changes in the banking sector, currency seems to have been absorbed into the official financial system. The amount of money absorbed seems to have been greater than the amount of money newly printed. Second, policy uncertainty eased substantially, which helped to lower inflationary expectations. Third, on the side of real economy, supply conditions of food production seem to have improved. Lastly, with the number of state-owned enterprises growing, distribution

Figure 2 | Trends in North Korea's Rice Prices (left) and KPW/USD Exchange Rate (right)

Note: Data shows the QoQ/YoY rate of change in the average quarterly price of rice and the North Korean won in Pyongyang, Sinuiju, and Hyesan.

Source: Daily NK.

networks seem to have expanded, possibly spurring a certain degree of competition in the commercial sector. All of these factors have come into play in the stabilization of prices and the exchange rate. In other words, you could believe that the current stabilization of North Korea's prices and exchange rate are the accumulated results of the minor economic reforms and changes that have taken place in the Kim Jong-un era.

I would like to add one more important point. We deal with limited data, and so should not rule out other possibilities. For example, it would be too early to conclude that the overall price of goods and services purchased by North Koreans have stabilized, citing the stability in food prices only. There is still the possibility that the Engel's coefficient has fallen owing to the overall rise in household income levels as well as the growing share of durable goods and expensive electronic appliances in household spending. Then, inflation would have gone unnoticed.

A sharp rise in the price of goods and services that account for a large share of household expenditure may not have been fully observed while food prices remain stable. It is thus difficult to conclude that there is no inflation in North Korea based on the available data only. Developing countries tend to show high inflation rates. If the North Korean economy continued on a recovery trajectory since the inauguration of Kim Jong-un, then price levels would have possibly increased owing to the growing purchasing power of households. Because we only deal with limited data, we should stay open to various other possibilities.

You've made a very important point. Most of the data available are on the prices of rice and other foodstuff, and they have been quite stable thus far. The changes in income levels, and the resultant changes in the expenditure structure of North Korean households may have possibly affected

household demand. Further, if we assume that the change in demand was mainly a rise in demand for non-food products, rather than food, we cannot consider the stability in food prices as a sign of stability in the overall price level in North Korea. We do not know what actually happened, but, as you said, looking at the current data, we cannot rule out such possibilities. Looking at the recent policies of the regime, there appears to have been extreme concerns over inflation, particularly about the instability of commodity prices and exchange rates. Data from Daily NK also show that it is highly alert to the fluctuations in the exchange rate. From the start of the Kim Jong-un era, a series of reform measures seem to have effectively stabilized food prices, at least. Do you think the stability is just an unexpected windfall or the outcome of meticulous planning by a government that is determined to curb inflation and exchange rate fluctuations?

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Looking at the recent policies of the regime, there appears to have been extreme concerns over inflation, particularly about the instability of commodity prices and exchange rates.

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I believe it is the outcome of meticulous planning. When Kim Jong-un took office, he declared that he would build an economic powerhouse. In the early days, he strived to stimulate the economy by expanding anthracite exports to China to earn more foreign currency. He also pursued large-scale construction projects, which is a major economic stimulus policy. These efforts seem to have been aimed at securing the stability of the government through economic performance in the early days of his administration.

If he perceives that economic accomplishments are a key element of the regime's stability, it is unlikely that confiscatory policies like that of 2009 would be implemented. Although successful in confiscating cash, the 2009 currency reform was a failure as it resulted in a significant loss of confidence in the domestic currency. Kim Jong-un would try to avoid the same mistake. Under the new regime, the North Korean government has brought diverse institutional changes, including expanding the role of commercial banks, approving foreign currency savings, and introducing debit cards from the Central Bank. These changes seem all intended to control liquidity.

What kind of connection do these changes have with other changes in the North Korean economy, such as dollarization? It is reported that dollarization has already reached a significant level. Some argue that dollarization played a sizable role in stabilizing prices while also preventing the regime from seeking seigniorage or profit by issuing more currency. As it stands now, North Korea does not need nor can it absorb newly issued currency. When dollarization is widespread, the value of goods is displayed both in the North Korean won and US dollar. If there are significant changes in the value of the won while that of the US dollar remains stable, the public will



certainly favor the latter. In the end, prices marked in the won will not be used, which would pose a serious threat to the North Korean economy. I would like to ask you about the relation between dollarization and prices in North Korea. Some say, once dollarization reaches an even higher level, domestic prices are likely to be linked to international prices. What is your take on this and other related issues?

Because I am not an expert on dollarization, I cannot provide deep insight but as far as I understand it, dollarization in North Korea is analogous to what some other developing countries have experienced in that they all saw the rise in the use of foreign currency in the domestic economy owing to the unstable value of their own currency. Still, North Korea is different from “dollarized economies” that have institutionalized “currency boards” to peg their currencies to the US dollar. That is, its currency was substituted by a foreign currency as domestic prices surged in the wake of the currency reform. Favorable conditions for currency substitution were also created as the inflow of foreign currencies grew thanks to the growing North Korea-China trade. In

addition, dollarization has ceased to progress since 2013, and the value of the North Korean won has stabilized.

Another problem is the inability to measure the degree of dollarization in the form of objective indicators such as foreign currency savings. The market price of goods reported by the media are mostly marked in the North Korean won, making it difficult to guess the role of foreign currency as a means of transaction. Expensive goods may be traded in foreign currency, but products such as food, for which the prices are lower and the goods change hands on a daily basis, may be traded in the domestic currency. In short, it is not clear to what extent foreign currency transactions account for the total. However, given the continuing stability of the North Korean won, it seems that dollarization has ceased, and a certain balance has been reached between the domestic currency and foreign currency in the North Korean economy.

The issue of dollarization in North Korea seems still controversial. The phenomenon observed in North Korea is not quite the same as those observed in other developing countries, nor the virtual economy that has existed in former Soviet economies or in Eastern Europe, South America, and Africa. Your view is that a certain balanced coexistence between the domestic and foreign currencies within the North Korean economy has been reached. I hope to have another opportunity to discuss this in more detail in the future.

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A closer look shows that prices began to rise even before the effects of the sanctions were realized, for example, in the trade with China.

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Sanctions, Market Prices, and the Exchange Rate in North Korea

Now, I would like to discuss the impacts of sanctions on North Korea's market prices and exchange rate, especially since the high-powered sanctions were implemented in 2016. In addition to the stability of market prices and exchange rate under the Kim Jong-un regime another important issue is sanctions. International sanctions have taken a great toll on the North Korean economy, especially in 2020. Still, the exchange rate and price of rice have remained almost the same. This then raises questions over the effectiveness of the sanctions, among others.

Since the issue is critical, I would like to ask you a few questions related to this. Firstly, there is a common perception that North Korea's price and exchange rate have remained virtually unchanged despite sanctions. Is this true? The reason I ask this is because I believe you are closely observing the situations in North Korea.

It would be untrue to say that the observed prices have not changed at all. The prices of rice and

refined oil soared in 2017 when sanctions were toughened. Indeed, refined oil was a major item subject to import restrictions. Although the import ceiling was lowered at the end of 2017, the price of refined oil began soaring from mid-2017 when restrictions were yet to be imposed. The price hike eventually turned downward after continuing well into the first half of 2018. A closer look shows that prices began to rise even before the effects of the sanctions were realized, for example, in the trade with China. This seems attributable to the demand from within the North that had already accumulated in case of sanctions were strengthened. Nevertheless, the price hike in North Korea from 2017 to 2H 2018 was caused by the sanctions. However, prices remained relatively stable thereafter until 2019.

So, what you are saying is that while sanctions did have some effect on prices and the exchange rate, it was not significant or enduring. Then, what factors do you think was the reason? In general, when sanctions are imposed, prices and the exchange rate are the first to react. The usual sequence is that both the exchange rate and import prices soar, and anxiety

over the sanctions builds which, in turn, affects the real economy. However, in North Korea, this seems to be in reverse order meaning that the real economy changed first and then the price variables

One possibility is that prices have been rising but were just unobserved. This is similar to the possible ongoing inflation, which has continued to go unnoticed in the Kim Jong-un era. Even after the imposition of sanctions, the import of consumer goods has remained at almost the same level. However, the import of certain items, including electronic goods from China, were directly targeted by the sanctions, and as such, the supply has decreased, driving up prices. Still, we may have been unable to notice owing to the lack of data.

Most of the observable data is on foodstuffs which is primarily obtained domestically, and North Korea is not highly dependent on foreign grains. For instance, even if the overall yearly food demand is 5 million tons, it is possible that just 300,000 tons of grain is imported from China at maximum. So, it is difficult to say that the North is dependent on the import of grain and other food. Rather, a slight increase in food imports was observed after the imposition of tougher sanctions. In short, food prices are unlikely to rise because North Korea's dependence on import foods is low, and also, food products are not a direct target of sanctions. There may be some items for

which imports have been suspended or reduced due to the sanctions, but the prices of these items have not been observed. Hence, this must be taken into consideration.

That is an important point. Some questions are likely to be based on incomplete observations that are susceptible to distortion. Some items are subject to sanctions while others are not. Rice and other items, of which the prices are available for observation, are classified as general trade goods. These are out of the scope of sanctions, and thus, their prices appear stable. The prices of items that fall under sanctions, such as energy, rose in part, but we cannot be sure about that because we cannot monitor them directly. I have a hypothetical question. If we were allowed to observe all items, sanctioned or not, and if there was no impact on prices in North Korea, how should we interpret this? Although it is just a hypothetical, I wonder if you would be able to present a plausible explanation.

In that case, we should consider several factors, including North Korea's dependence on foreign trade, channels to bypass sanctions, and changes in household income. North Korea's dependence on foreign trade may be lower for the supply of consumer goods, which is related to the expenditure

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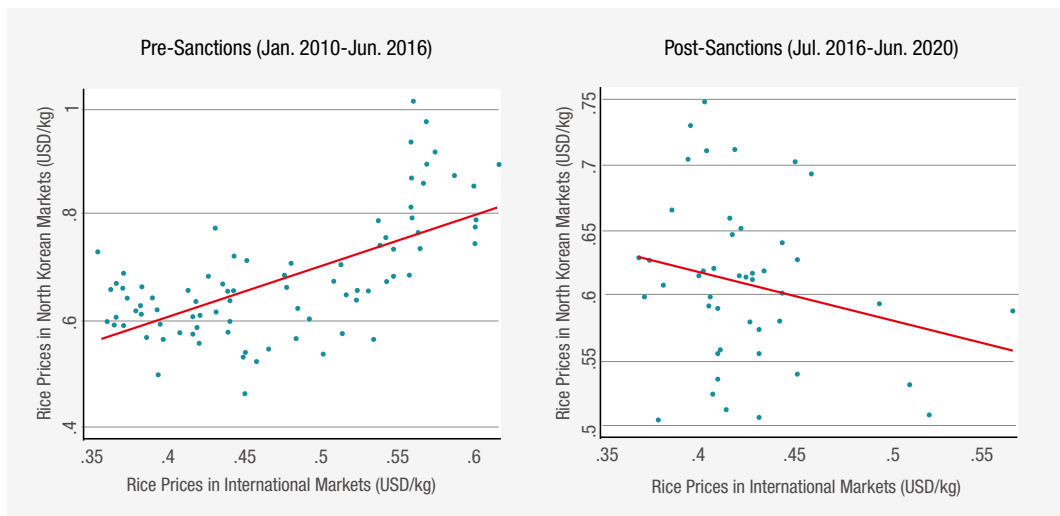
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of North Korean households. The fact that Kim Jong-un has emphasized local production in light industries may also have had a certain effect. The price stability of refined oil and other items on the sanction list may be explained in part by smuggling. Lastly, we should also consider the possibility that the purchasing power of the North Korean people has weakened. The sanctions on North Korea are primarily focused on cutting the flow of foreign currencies to the regime. A reduction in North Korea's exports of anthracite and other minerals will have an immediate impact in this regard. As time passes, the reduction would also lower household income. In the meantime, government intervention in the market may contribute to price stabilization. As I explained earlier, grain prices in the North Korean market showed a positive (+) correlation with international grain prices before the sanctions. However, under sanctions, this positive correlation is weakening, which means that the gap between domestic and international grain prices has diverged,

and this is probably due to government intervention in the allocation of these products. Data shows that, in 2019, North Korea's grain import from China increased, although it is uncertain whether it was in the form of commercial trade or aid. If it was aid, the North Korean authorities may have increased food rations, which then could have helped stabilize food prices. In other words, the regime's intervention in the markets in preparation for may have been a causal factor in the stabilization of market prices.

You stress that, when assessing the effects of sanctions, it is important to consider not only the disruption on the supply side but also, the resultant changes in income levels on the demand side. What do you think of the status of the North Korean economy in 2020? Some say, compared to before, economic conditions have been particularly harsh this year. Please share your thoughts on North Korea's prices and exchange rate for this year.

Figure 3 | Rice Prices in North Korean and International Markets



Note: 1) The Daily NK data shows the average monthly price in Pyongyang, Sinuiju, and Hyesan.

2) For international prices refer to the price of Thai A.1.

Source: Daily NK and World Bank.

The volatility in prices and the exchange rate seems to have grown during the first half of 2020. Both rose sharply in February and April before turning downward. In February, the rise could have been caused by the growing anxiety among North Korean households, given that prices surged after the North Korea-China borders were suddenly closed in early February. Similar situations were also observed in other countries where concerns over the spread of the coronavirus prompted hoarding. In North Korea, with its chronic food shortages, the growing social anxiety seems to have exacerbated the hoarding of goods, driving up their prices sharply. As was the case in 2017, when prices surged immediately after sanctions were imposed and then fell shortly thereafter, price hikes driven by psychological factors are quickly relieved. This is presumably because the hikes are not caused by real constraints on the supply of goods. Meanwhile, media reports pointed to the price ceiling imposed by the North Korean government to control the market price immediately following the surge. This, too, may have affected the downturn in prices.

There was another sharp increase in market prices in April. This time, it seems to have been caused by multiple policy changes. Reportedly, a directive was issued to curb the import of goods unless they were essential items. If the regime was initiating policy changes in preparation for prolonged sanctions or the pandemic, this may have caused prices to rise. As observed in February, the uptrend shortly turned downward in April. Still, the prices of corn and pork turned to an upward trend year-on-year. Supply disruptions seem to have aggravated conditions, driving up food prices, especially as the spring food shortage set in. In sum, prices in North Korea seem to have been affected by some temporary events in early February and late April. What we are sure of is that temporary factors, whether they be COVID-19 or policy changes, increased the volatility in prices.

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The volatility in prices and the exchange rate seems to have grown during the first half of 2020.

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The movements in the exchange rate are even more confusing as data from the two aforementioned sources show different trends. According to Daily NK, the value of the North Korean won against the US dollar slipped in late April to reach 7,000 won before turning upward. In contrast, Asia Press data shows the value began to rise slowly in February to reach 9,000 won before slightly losing momentum in late April. The direction and timing of these fluctuations according to the two media sources do not coincide. Daily NK reported that the North Korean government implemented a policy to sell public bonds and import quotas in foreign currency after April. This type of policy is an attempt to absorb foreign currency from the market, which can worsen the supply and demand conditions of foreign currency, leading to an appreciation of the exchange rate. At present, the anticipated effects of policy do not coincide with the actual movements. Since these two sources have taken a different stance, we must look into future trends more comprehensively before making any judgements. Meanwhile, the reason for the fall in the exchange rate after end-April could be because of the fluctuations in international prices. Data from the two media sources show fairly similar trends for the KPW/CNY exchange rate which rate dropped after China depreciated the yuan in



late May. Following the adjustments in the KPW/CNY rate, the KPW/USD rate also fell, following the international trend.

Then, how should we understand the relationship between the official price and official exchange rate, and the relationship between the market price and market exchange rate? Although it is very uncertain, could you briefly explain where the official price and exchange rate and the market price and exchange rate stand in North Korea's macroeconomic, trade, and economic cycles, and how they are interrelated?

North Korea's macroeconomic system consists of a dual economy (planned and market), so resources are allocated based on the planned price and market price. Households earn income through both formal and informal activities. Formal activities provide them with an income, although small, as well as public services such as education, healthcare, and

housing, and these are all tied to their place of work. Households also receive rations from the formal sector in varying amounts depending on their class. Informal activities can be regarded as side jobs that generate extra income. One of the major sources of this form of income is the sale of goods and services at *jangmadangs* (markets), which is shown in the survey of North Korean defectors. With the public distribution network not functioning properly, household income and expenditure depend, in part, on the resource allocation through the market.

Since the mid-1990s, with market activities sprouting from the bottom, North Korea's dual economic system has also been expanding and deepening. It can be said that, some of the profits made by enterprises are gained through the sales in the market. Although there are clearly state-controlled resources, it is also clear that resource allocation based on the market price is expanding. It seems enterprises are procuring raw materials at market price and further, production goods are also being trade in the markets. The production indicators of

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enterprises set by the state are divided into indicators measured by the planned price and those measured by the prices set by enterprises

Of course, planned indicators regulated by the state still exist. Although the degree may vary depending on the kinds of goods manufactured, the share of planning is likely to be higher in key industries, including defense and heavy and chemical manufacturing. After meeting the state-controlled planned targets, enterprises pay a portion of the profits as corporate tax, which is called the “State Enterprise Profit Income.” Sometimes, enterprises procure raw materials directly and sell them in the market to generate a profit. The revenue gained by enterprises is self-distributed as living expenses, which includes wages, or used to procure raw materials or invest in expanding production.

Government revenue is based on the turnover tax, state enterprise income tax, and others. The existence of planned indicators suggests that the government earns income through its control over certain resources. The regime's means of revenue generation includes the export of anthracite and procurement from cooperative farms. Because market prices are far

higher than state-set prices, households that buy rice at market price pay more tax than those that receive it from the distribution system. This is because the difference between the market price and state-set procurement price is ultimately absorbed by the government.

In all, the current North Korean economy is an economy in which the income and expenditure of households, enterprises, and the government are intertwined and within this dual structure, payment is also divided into the won and foreign currencies. In all, the current North Korean economy is an economy in which the income and expenditure of households, enterprises, and regime are intertwined, and within this dual structure, payment is also divided into the won and foreign currencies. Imported goods, expensive goods, and homes are bought and sold in foreign currency while food and other affordable goods are bartered or traded in the won. The most vulnerable sector of the overall economic structure is the financial sector, especially the underdeveloped financial intermediary function. Despite government efforts to restore the commercial banking sector, the financial mechanism, through which enterprises take out loans from the savings of ordinary people to expand production and investment, works within a very limited scope because the financial system is so fragile and underdeveloped.

The dependence of North Koreans on public rations seems to vary greatly by class and region. According to the survey results of North Korean defectors, their dependence on public rations was not high. However, given that most of the respondents came from border regions, this result cannot be applied uniformly. To sum up, in North Korea's dual economic system, the planned economy and market economy are intertwined, and it seems to have remained relatively stable from the time Kim Jong-un took office until sanctions were imposed.

You've explained that in North Korea, households, enterprises, and the government operate within a dual system that is composed of formal and informal sectors where planned and market prices coexist in the same economy. What do you think should be done to further promote research on the prices and exchange rate in North Korea? Also, before wrapping up this interview, do you have any comments for other researchers in this field?

Despite these many obstacles, previous studies have contributed to expanding our understanding of the North Korean economy. And, while it is not fair to argue that we have an accurate, detailed portrait, at least we have a broad picture that shows the overall trends. There will be more trials and errors, but we cannot stop there.



First of all, even though these two aspects are the most basic forms of data used to explain the national economy, the shortage of data and their low reliability have posed significant limitations to the study of the North Korean economy. Such problems cannot be resolved in the short-term, and hence, cannot be overcome easily. For now, it would be best to cross-check the collected data as much as possible and compare it with international trends. In addition, it is important to always keep in mind that the current observable data is not the only cause to the phenomenon, and that there are other unobservable influences at play.

Moreover, we should strike a balance between universality and specificity. While some economic phenomena that occur in North Korea can be explained with theories that universally apply to other low-income developing countries, socialist states, and countries with food shortages, there are those that cannot be explained. North Korea has an economy that has degenerated since achieving a certain level of industrialization. It has been seeking economic self-sufficiency to an extreme degree, and its economic policies have elements of inefficiency that go far beyond the scope of general economic principles. To fully understand North Korea's economic policies and the results, you not only have to consider general economic principles but the unique qualities of North Korea.

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