# Reserves management and FX intervention

Bank of Korea

## Abstract

Korea's FX reserves have increased steadily since 2008, to a total of $404 billion as of the end of 2018. This has helped reduce private foreign currency funding costs and exchange rate volatility by contributing to a stable sovereign credit rating. In turn, this has helped to stabilise domestic financial and economic conditions.

Korea's FX authorities have consistently adhered to the principle that the exchange rate should be determined by market forces that reflect economic fundamentals and FX supply and demand. Measures to stabilise the market are carried out only in exceptional circumstances, when there are excessive fluctuations in the exchange rate over a short period of time. FX market intervention is believed to effectively reduce market volatility by calming market sentiment through the use of intervention tools customised to specific circumstances such as temporary herd behaviour. Details of interventions are not disclosed, as they might affect market participants' expectations. However, the authorities have recently decided to release the net dollar-won trading volumes, in order to increase transparency of FX policies in line with global standards.

The Bank of Korea (BOK) decides on the composition of the FX reserves based on its investment objectives, the neutral currency composition and market forecasts. The BOK also has worked to improve its risk management techniques for each type of risk factor and it has expanded its use of external managers to enhance the efficiency of its reserve management.

Keywords: Korea's FX reserves, FX reserves accumulation, FX market intervention, disclosures, FX reserves portfolio.

JEL classification: E58, F31, G11

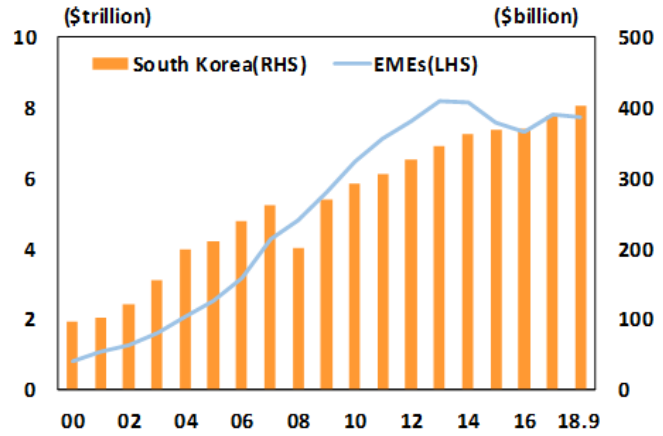
# 1. FX reserves

## 1.1 Factors behind the increase in FX reserves

Korea's FX reserves have increased steadily since 2008, amounting to $404 billion as of the end of 2018. This increase has been driven mainly by expansions in Korea's external trade and capital flows, in line with the growth in the Korean economy. The returns on FX reserve investment have also contributed to this increase.

Official foreign reserves in Korea and EMEs

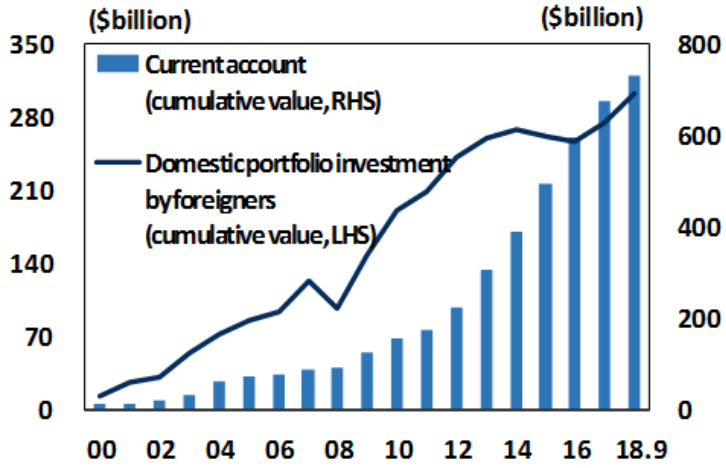
Figure 1




Sources: IMF; Bank of Korea.

Current account and foreign portfolio investment fund

Figure 2




[1] TableNote

Source: Bank of Korea.

## 1.2. Cost and benefits of FX Reserves

Korea's FX reserves have helped reduce foreign currency funding costs and exchange rate volatility by contributing to a stable sovereign credit rating. This has helped to stabilise domestic financial and economic conditions. Although an opportunity cost arises due to the low returns from holding liquid assets, this is viewed as inevitable given the nature of FX reserves. Meanwhile, the losses due to the difference between the Monetary Stabilization Bond issuance costs incurred in the process of sterilisation and the returns on FX reserves investment have fallen significantly, due to the relative decline in domestic interest rates.

## 1.3 Assessment of the adequacy of FX reserves

International organisations and academic circles have undertaken various studies[1] on the adequate size of FX reserves. The Bank of Korea refers to these studies, taking into consideration the strengths and weaknesses of each study. Since Korea is an open economy, its general indicators related to external transaction such as trade volumes and capital flows are important in calculating the size of FX reserves adequate to Korea. However, it is also necessary to also take into account its unique characteristics, including the geopolitical risks on the Korean Peninsula.

## 1.4 Alternatives to FX reserves accumulation

In addition to FX reserves, Korea also places great importance on swap agreements with major central banks. As of December 2018, Korea holds bilateral currency swap agreements with seven countries, and is a member of one multilateral (Chiang Mai Initiative Multilateralisation) swap arrangement. During the global financial crisis in 2008, a currency swap agreement with the US Federal Reserve is assessed to have helped greatly to ease the FX market instability. Strengthening global financial safety nets such as IMF lending facilities as well as regional financial cooperation can help reduce the need for the accumulation of FX reserves.

## 1.5 Impact of FX reserves accumulation

In managing the FX reserves, the first considerations must be safety and liquidity. The resulting lower returns are thus regarded as inevitable. Meanwhile, it is difficult to quantitatively evaluate the impact of accumulating FX reserves on the domestic economy and financial markets, because the real economy and the financial markets are affected through various channels.

[1] Including those of Greenspan, A (1999): "Currency Reserves and Debt", remarks before World Bank Conference on Recent Trends in Reserve Management, Washington DC, April; Wijnholds, J and A Kapteyn (2001): "Reserve adequacy in emerging market economies", IMF Working Papers, no WP/01/143; and International Monetary Fund (2015): "Assessing reserve adequacy-specific proposals", IMF Policy Papers, April.

# 2. FX market intervention

## 2.1 Purpose and principle of market intervention

Korea's FX authorities have consistently adhered to the principle that the exchange rate should be determined by market forces which reflect economic fundamentals and FX supply and demand. Measures to stabilise the market are carried out only in exceptional circumstances, when there are excessive fluctuations in the exchange rate over a short period of time. The authorities are especially prepared for the possible situation of a dollar liquidity crunch due to sudden capital outflows during periods of global financial market volatility.

## 2.2 Intervention method and information disclosures

The Korean FX authorities consider various factors when conducting market interventions, including the nature of the market shock concerned, and the up- and downside pressure on the exchange rate. Market interventions are conducted in the following ways:

1. Market stabilisation measures are carried out to help restore market functioning when volatility increases due to temporary supply and demand imbalances.
2. Transactions are made at bid/ask prices in the market, without designating any specific trading counterparty.
3. Decisions to intervene in the market are made at the FX authorities' own discretion, rather than based on rules.
4. The details of the authorities' FX trading are not disclosed, as they might affect market participants' expectations.

However, the authorities have recently decided (in May 2018) to release the net dollar-won trading volumes, with a view to increasing the transparency of FX policy, in line with global standards. Information for the second half of 2018 and the first half of 2019 is scheduled to be disclosed in March and September 2019, respectively. From then on, quarterly disclosures will be made three months after the end of each quarter.

## 2.3 Changes in the approach towards market intervention

Korea has consistently maintained the stance that, in principle, the exchange rate should be left to market forces, and has strengthened market-friendly intervention tools based on FX supply and demand.

## 2.4 Effects of market intervention

FX market intervention is believed to effectively reduce market volatility, by calming market sentiments through the use of intervention tools customised to specific circumstances such as temporary herd behaviour. In times of severe fluctuations in the exchange rate, market pressures tend to be asymmetrical. Especially when market sentiment is weak, a careful approach to the timing, size and tools of intervention is required to ensure that intervention is effective.

## 2.5 Impact of market intervention on monetary policy

The effectiveness of monetary policy is rarely undermined by FX market interventions, now that the changes in the money supply resulting from intervention are sterilised through the issuance and redemption of Monetary Stabilization Bonds.

# 3. Reserves management

## 3.1 Determinants of foreign reserves portfolio

The composition of the foreign reserves is decided based on the Bank of Korea's investment objectives, the neutral currency composition and market forecasts. The Bank of Korea sets its investment objectives and neutral currency composition as the constraints that the strategic asset allocation results should satisfy, and the quantitative market forecasts based on econometric models and qualitative judgment are used as input variables (expected return and covariance) in determining asset allocation.

The Bank of Korea's investment objectives for its foreign reserve management are set with the aim of increasing profitability while securing safety and liquidity. Although profitability is an important factor in deciding the asset allocation, safety and liquidity are prioritised.

The neutral currency composition is determined based on the currency composition of Korea's current payments, Korea's external debt, the global fixed income market and global foreign reserves.

The Bank of Korea maintains a short-term liquidity tranche that is separate from its investment tranche to manage routine capital flows. The investment tranche also consists of highly liquid and safe assets, which if necessary can be transferred to the short-term liquidity tranche.

## 3.2 Major changes in the portfolio over the past decade

The major change in the portfolio over the past decade is the continuous increase in the share of equities since 2007, the first year of equities investment. This is part of the effort to increase the rate of return through stock investment, while also achieving a more stable rate of return by taking advantage of the low correlation with bonds.

BOK foreign asset composition[1] Table 1

%

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| <By purpose> | | | | | | | | | | | |
| Short-term liquidity tranche | 3.9 | 5.8 | 1.9 | 3.2 | 4.5 | 3.9 | 3.1 | 4.3 | 4.5 | 4.7 | 3.2 |
| Investment tranche | | | | | | | | | | | |
| Internally managed | 84.5 | 76.1 | 84.0 | 82.5 | 79.7 | 79.4 | 81.6 | 80.5 | 80.0 | 77.3 | 77.7 |
| Externally managed | 11.6 | 18.1 | 14.1 | 14.3 | 15.8 | 16.7 | 15.3 | 15.2 | 15.5 | 18.0 | 19.1 |
| <By currency> | | | | | | | | | | | |
| US dollars | 64.6 | 64.5 | 63.1 | 63.7 | 60.5 | 57.3 | 58.3 | 62.5 | 66.6 | 70.3 | 68.1 |
| Others | 35.4 | 35.5 | 36.9 | 36.3 | 39.5 | 42.7 | 41.7 | 37.5 | 33.4 | 29.7 | 31.9 |
| <By asset class> | | | | | | | | | | | |
| Deposits | 7.4 | 8.4 | 4.0 | 6.0 | 6.6 | 4.8 | 4.4 | 3.8 | 5.9 | 6.5 | 6.8 |
| Securities | | | | | | | | | | | |
| Government bonds | 35.5 | 31.8 | 38.1 | 35.8 | 36.8 | 38.0 | 36.8 | 37.1 | 35.7 | 36.9 | 37.5 |
| Agency bonds | 28.8 | 22.4 | 22.3 | 21.8 | 20.1 | 21.5 | 22.0 | 22.5 | 22.7 | 21.0 | 19.2 |
| Corporate bonds | 15.4 | 16.9 | 15.1 | 16.5 | 14.1 | 12.9 | 15.9 | 17.5 | 16.4 | 14.8 | 14.7 |
| ABS | 11.6 | 17.0 | 17.4 | 16.1 | 17.0 | 17.1 | 14.8 | 13.0 | 13.1 | 13.1 | 13.2 |
| Equity | 1.3 | 3.5 | 3.1 | 3.8 | 5.4 | 5.7 | 6.1 | 6.2 | 6.3 | 7.7 | 8.6 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

[1] First disclosed in 2007 Annual Report (published in March 2008); year-end basis.

Most of the progress in diversification into financial products qualified for foreign reserves was made in the years up to 2011, when Korea's foreign reserves surpassed USD 300 billion. Thereafter, the focus has come to be on adjusting the shares of investment in the existing products rather than investing in new ones. The Bank of Korea makes minor adjustments in the composition of assets based on forecasts for macro-financial conditions and the global financial market, as well as the Bank's risk preference in terms of market, credit and liquidity risks.

## 3.3 Major changes related to risk management and externally managed asset

As the quantitative risk management framework assuming normal conditions has become less effective since the global financial crisis, the Bank of Korea has worked to improve its risk management techniques for each type of risk factor. Rather than depending solely on credit rating agencies to assess credit risk, the Bank of Korea has strengthened its analysis of market indicators such as CDS premiums, and of the credit of individual issuers, as well as concentration risk management. It has meanwhile also established a framework for legal risk management. The Bank of Korea has also improved its market risk assessment models so as to strengthen its tail risk management, and introduced Bloomberg LQA (Liquidity Assessment) to closely manage liquidity risks such as the time and costs required for the liquidation of its asset holdings.

The Bank of Korea has expanded its use of external managers to enhance the efficiency of its reserve management. To enhance profitability, it actively utilises global asset management companies and the Korea Investment Corporation for new investments that require high levels of expertise, such as stocks and EME-related assets. The Bank is also working to diversify its sources of excess returns by reorganising its externally managed funds based on their aims and functions.

Meanwhile, the compensation system for the Bank of Korea staff responsible for reserves management has not been changed. The Bank of Korea staff in the Reserve Management Group are subject to the same evaluation criteria and compensation system as those for other employees. It is judged that this compensation system has helped to ease the procyclical investment behaviour that can arise in times of market unrest.

## 3.4 Major changes in information disclosure over the past decade

The Bank of Korea has continued to expand the scope of its disclosure of information about its reserves management in an effort to strengthen its transparency and accountability for reserve management. In 2008, it began to disclose in its Annual Report the foreign asset composition by purpose, currency and asset class, as well as the factors behind any changes in the composition. Since 2014, additional information has been disclosed on the management process and framework, covering the annual investment planning process, the risk management framework, and the selection process for trading partners and external managers.

The Bank of Korea's efforts to expand the scope of its information disclosure has had both positive and negative effects. When issues or criticisms arise related to its foreign reserve management, the Bank of Korea can provide objective explanations or take proactive measures on the basis of this public information. On the other hand, unnecessary controversy can take place when those lacking in expertise make arbitrary interpretations of the disclosed information or cite it inaccurately.

Despite such trade-offs resulting from its disclosure of information on its foreign reserves management, the Bank of Korea is continuing its efforts to expand the scope of its information disclosure, in order to satisfy the public's right to know and to enhance the transparency of its foreign reserve management.

## 3.5 Major political economy consideration related to FX reserves

It is true that, in managing its foreign reserves, the Bank of Korea has been constrained to some extent by political economic risk, including the risk of reputational damage due to losses on the reserves. Nevertheless, the Bank of Korea adheres to the principle of pursuing profitability while placing the highest priority on safety and liquidity in its FX reserves management. In order to mitigate the political economic risk, the Bank of Korea continuously communicates this principle to the general public, through channels such as our annual reports and the audits of the Bank by the National Assembly.

The Bank of Korea uses the historical cost accounting method and has in place an arrangement with the government for the replenishment of losses. The Bank of Korea believes that this system has helped manage the political economic risks related to its FX reserve management. The historical cost approach helps to ease the volatility of net income, which will tend to fluctuate as price variables such as interest

rates and stock prices change. The Bank of Korea retains the earnings generated from its foreign reserves management. The Bank of Korea resorts first to its accumulated earnings to replenish any loss, but if these are not sufficient to cover the loss, the government can reimburse the loss pursuant to the relevant laws.