

# Reserve management and motivations for FX interventions

Monetary Authority of Singapore

## Abstract

Unlike most central banks which target interest rates, Singapore runs an exchange rate-centred monetary policy framework, in which the Singapore Dollar Nominal Effective Exchange Rate (S\$NEER) is the intermediate target of monetary policy. The S\$NEER fluctuates within a policy band that is calibrated to ensure medium-term price stability. The Monetary Authority of Singapore (MAS) undertakes foreign exchange intervention operations to ensure that the S\$NEER stays within the policy band. In the process of monetary policy implementation, the central bank accumulates or expends official foreign reserves, leading to changes in the size of its balance sheet. As with other central banks, the MAS' main objective of holding reserves is to meet balance of payment needs, which underpin the effective implementation of monetary policy.

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## 1. Introduction

Unlike most central banks that target interest rates, the Monetary Authority of Singapore (MAS) uses the nominal exchange rate as the intermediate target of monetary policy. This is because in a small and open economy such as Singapore, where gross exports and imports of goods and services are more than 300 percent of GDP and almost 40 cents of every dollar spent domestically is on imports, the exchange rate has a much stronger influence on inflation than the interest rates.

The operating framework of such a monetary policy rate policy is centred on managing the Singapore dollar against a basket of currencies along a typically appreciating path or crawl within a policy band. This framework is often referred to as the basket, band and crawl (BBC) system. In effect, the intermediate target of monetary policy is the Singapore Dollar Nominal Effective Exchange Rate (S\$NEER), which is a trade-weighted basket of currencies as it has a stable and predictable relationship with inflation.

The MAS focusses on the S\$NEER rather than a bilateral exchange rate between the Singapore dollar and any particular foreign currency, as the trade-weighted exchange rate better reflects Singapore's diverse trading patterns. From a monetary policy implementation perspective, the S\$NEER also tends to be more stable than bilateral exchange rates, as it is not unduly affected by idiosyncratic factors in any one particular economy.

### 1.1 Implementation of Singapore's monetary policy

Monetary policy implementation in Singapore means ensuring that the S\$NEER, which is the MAS' intermediate target of monetary policy, is kept within the boundaries of the policy band and remains aligned with domestic price stability. The primary tool to do so is intervention operations in the spot foreign exchange (FX) market, involving the sale or purchase of US dollars against Singapore dollars as this is by far the most liquid Singapore dollar currency pair traded.

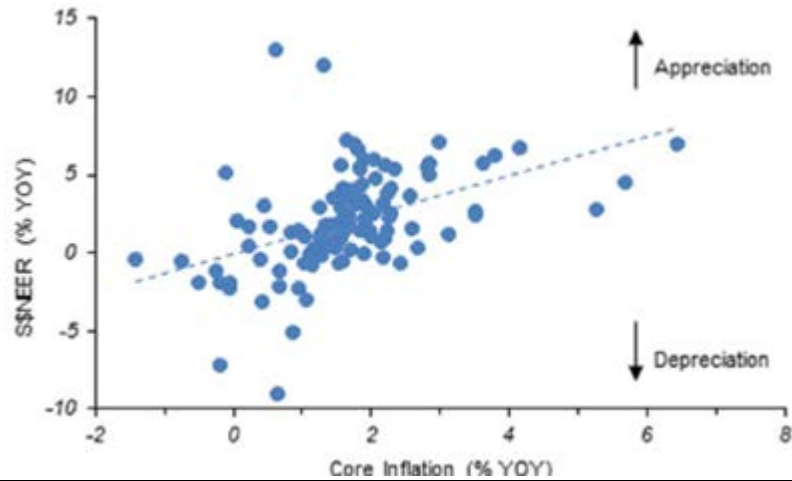
In the process of monetary policy implementation, the MAS accumulates or expends official foreign reserves (OFRs) leading to changes in the size of the balance sheet. For example, the selling of US dollars to strengthen the S\$NEER will have the effect of reducing OFRs on the asset side of the MAS' balance sheet, which is matched by a reduction in banks' cash balances with the MAS on the liabilities side. Such intervention operations are thus akin to interest rate-targeting central banks' monetary policy operations. Instead of using money market operations (via purchase or sale of domestic assets) to achieve a targeted policy rate, the MAS uses FX intervention operations to ensure that the S\$NEER stays within the policy band and is aligned with domestic price stability.

The chart below, which plots the year-on-year change in the S\$NEER against the MAS Core Inflation, shows that the S\$NEER has generally fluctuated in line with underlying economic conditions. This tight relationship has been due both to the appropriateness of the MAS' monetary policy settings as well as the implementation of monetary policy through FX intervention operations. Typically, when forces acting on the S\$NEER are orderly and largely self-equilibrating, the MAS allows the market to determine the level of the S\$NEER within the policy band. The MAS also generally does not need to conduct significant FX intervention to implement the monetary

policy stance after the policy announcement. This reflects the MAS' credibility in formulating monetary policy that is congruent with the prevailing outlook for the economy and the objective of maintaining medium-term price stability.

Year-on-year change in the S\$NEER against core inflation

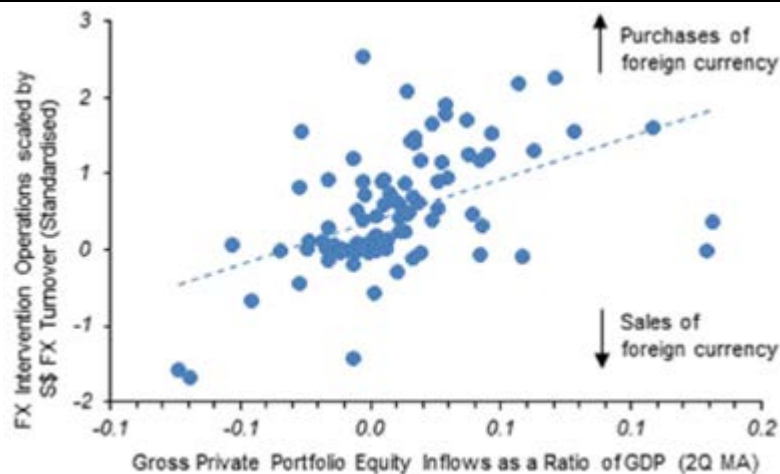
Graph 1



Nevertheless, FX intervention operations are sometimes necessary to lean against exchange market pressure, which may drive the S\$NEER away from a level consistent with domestic price stability. For example, given Singapore's role as a global financial centre, the Singapore dollar is sometimes subjected to significant gross capital flows, driven by external factors such as global liquidity, risk aversion and regional contagion. These domestic and external factors cause exchange rate pressures that are often unrelated to Singapore's domestic inflation trends.

Intervention operations against gross private equity portfolio inflows

Graph 2



The chart above plots a standardised measure of MAS intervention operations against gross private equity portfolio inflows as a percentage of nominal GDP. It shows that MAS' FX intervention operations "lean against the wind" and thereby help ensure that the S\$NEER is in line with underlying economic conditions. The MAS sells Singapore dollars and buys US dollars when there is a surge in capital inflows, moderating the excessive appreciation pressure; and buys Singapore dollars and sells

US dollars when foreign capital flows out, tempering the undue weakening of the exchange rate.

In late 2006 and 2007, for example, Singapore experienced a sharp increase in gross capital inflows, or a 'surge' episode. This was followed by a sharp capital outflow, or 'stop' episode, during the peak of the Global Financial Crisis in 2008–09. The MAS undertook FX intervention operations to lean against the wind during this entire period, even as the S\$NEER was allowed to appreciate over 2006–07 when inflation was rising, and then ease when inflation fell in 2009.

## 1.2 Reserve management

As with other central banks, the MAS' main objective of holding FX reserves is to meet balance of payments needs. This is particularly important given Singapore's exchange rate-centred monetary policy framework, where reserves are essentially used to back the effective implementation of monetary policy. Holding a sufficient buffer of reserves sends a strong signal that the MAS can and will defend any attacks on the Singapore dollar, thus deterring potential speculators and maintaining confidence in our regime. FX reserves are also needed to meet the MAS' various commitments with other central banks, such as currency swap arrangements.

Reserve adequacy measures and metrics provide a starting point for assessing the balance of costs and benefits in holding reserves. However, these should not be applied mechanically to assess reserve adequacy needs without considering the unique circumstances facing each country. For example, the cost-benefit model in Jeanne and Ranciere (2006)<sup>1</sup> for assessing reserve adequacy in a small open economy may be further adapted by adjusting model parameters according to country-specific circumstances. For instance, in Singapore's case, it would be inappropriate to assess the adequacy of reserves simply on the coverage of short-term external debt, which is invariably very high given our role as an international financial centre. Instead, this can be supplemented by bottom-up analysis of the specific components of debt and broad money, based on assumptions made on the probability of deleveraging or flight of such capital to calibrate the size of sudden stop or capital flight in the cost-benefit model.

The MAS invests OFRs prudently in a well-diversified portfolio of cash, bonds and equities, ensuring sufficient liquidity to support the conduct of monetary policy and keeping within risk tolerance levels, while seeking to achieve good long-term returns. About three quarters of OFRs are denominated in the G4 currencies ie USD, EUR, JPY and GBP. Within the G4 currencies, the USD forms the bulk.

The MAS' strategic allocation is approved by the MAS Board and reviewed on a regular basis to ensure that the investment objectives continue to be met. The OFR portfolio is managed both internally and through external fund managers. The Risk Committee, chaired by an independent Board Director, assists the Board in providing oversight and guidance over the management of risks assumed by the MAS.

The MAS monitors the investment risks of the OFR closely. Risk controls and limits are established to manage financial risks, including market, credit and liquidity risks. The MAS conducts regular stress tests to assess if the portfolio can weather the

<sup>1</sup> Jeanne, O, and Ranciere, R (2006), "The Optimal Level of International Reserves for Emerging Market Countries: Formulas and Applications", *IMF Working Paper WP/06/229*

impact of potential tail risk events over the medium term, and considers appropriate responses when needed. The risk management framework is reviewed on a regular basis to ensure it remains adequate and appropriate in addressing the investment risks of the OFR portfolio.

Information on the MAS' OFRs is publicly disclosed on a monthly basis, including on- and off-balance sheet items in accordance with the International Monetary Fund's Data Template on International Reserves and Foreign Currency Liquidity of the Special Data Dissemination Standards (SDDS), which the MAS has subscribed to since its establishment in 1996. This aims to provide a comprehensive account of foreign currency asset and drains on such resources arising from various foreign currency liabilities and commitments. Further information on the MAS' OFRs is reported in the financial statements in the MAS' Annual Reports. Foreign reserves assets are accounted for on a lower of cost and market valuation basis in the MAS' financial statements.