The CNB's foreign exchange reserve management and changes to it since 2017

By Marek Mora and Jan Schmidt[1]

Abstract

The foreign exchange reserves of the Czech National Bank (CNB) increased roughly three and a half times to EUR 124.6 billion while the exchange rate commitment was in place between November 2013 and April 2017. This unprecedented growth has led the CNB to review how the reserves are managed. This article explains the functions of the foreign exchange reserves, the way they are recorded in the central bank's accounts and the related impact on its net profit or loss. It also describes the CNB's reserve management principles and the changes it has adopted in this area since 2017.

JEL classification: E58, F31, G11, G32

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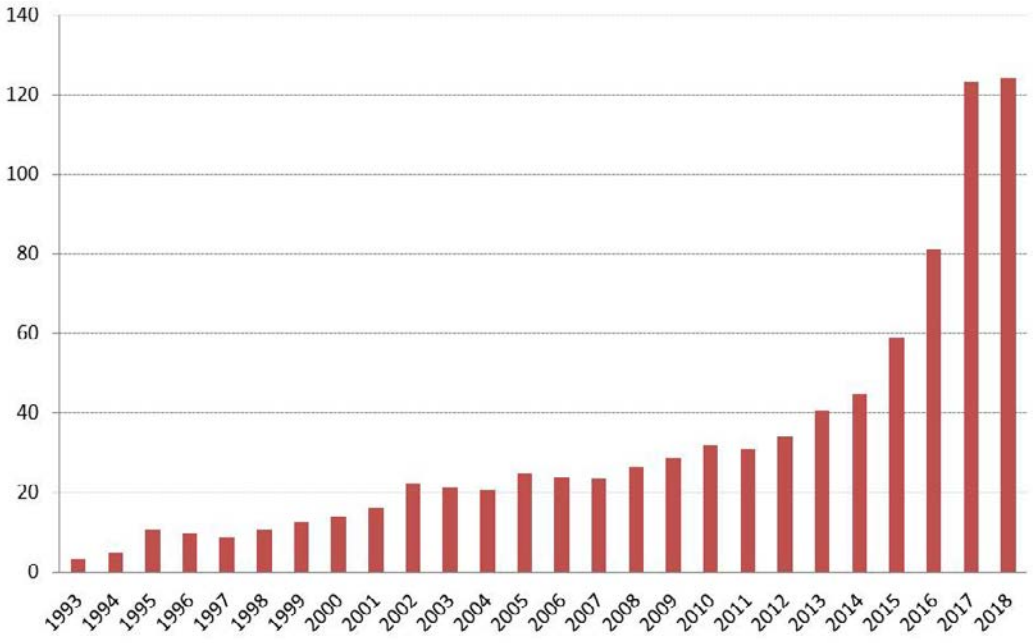
1. Introduction

Foreign exchange reserves are the foreign currency financial assets owned by the Czech National Bank (CNB). They can be either purchased (in which their liability-side counter-items are Czech koruna liabilities) or borrowed (in which their liability-side counter-items are foreign currency liabilities). Almost all of the CNB's reserves are purchased. The purchases take two main forms – purchases of foreign currency from clients having the right to trade with the CNB (mostly government institutions) and purchases from commercial banks during interventions to affect the koruna exchange rate. The CNB decides on intervention purchases, whereas client purchases are independent of the CNB. At the end of December 2018, the CNB owned reserves totalling EUR 124 billion (see Chart 1). The reserves have increased sharply in size several times since the independent Czech Republic was established in 1993. The biggest-ever increases relate to intervention purchases made in 2013 and 2015–2017 and to the privatisation of banks and state-owned enterprises around 2000 and in the mid-1990s. The inflow of euros from purchases from CNB clients, of which subsidies from EU funds are the most significant, is substantial and evenly spread over time. The FX reserves have been increasing by EUR 2 billion a year on average in this way.

The CNB's FX reserves (in EUR billions, end of period) Chart 1



Source: CNB

2. What are FX reserves used for?

FX reserves perform a range of important functions. They are used primarily to fulfil the monetary policy objective of price stability. They can be used to affect the exchange rate of domestic currency and thereby tighten or ease monetary conditions.

Examples include interventions whereby the central bank prevents the currency from weakening or strengthening. The second important role of the reserves is as a source of foreign currency liquidity for payments made by the central bank's clients. If, for example, a client possesses a sufficient amount of korunas, the CNB guarantees to make an equivalent foreign currency payment. No less important is the function of maintaining and supporting financial stability. During a financial crisis, Czech banks can hypothetically experience a shortage of foreign currency. The CNB is prepared to make up for this shortage by providing foreign currency loans against collateral. After the 2008 global financial crisis, the size of FX reserves started to be used as an input for assessing countries' creditworthiness. For example, a country with relatively low FX reserves may be identified as being prone to problems. As financial assets, reserves are also a source of revenue for the central bank.

Table 1 shows the returns on the CNB's FX reserves over the past 10 years, calculated as volume-weighted averages of the returns on the individual currency portfolios. They are not the koruna returns that enter the CNB's net profit or loss and are hence affected by the koruna's exchange rate against the reserve currencies (appreciation of the koruna generates accounting losses). The downward trend in the total return after 2012 is related to a drop in interest rates abroad.

Total returns on FX reserves in % (net of valuation changes) Table 1

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Return	5.72	7.17	3.72	2.48	1.94	2.96	2.04	1.69	1.1	1.01	1.13	-0.40

3. Investment rules and risks

FX reserves are invested on foreign markets. Given the two-sided nature of the trading relationship with foreign counterparties, the CNB does not disclose information on specific transactions. Investments can be characterised using parameters that define the return and risk profiles of the reserves. The main risks include: (i) exchange rate risk, where the value of an investment changes due to changes in exchange rates; (ii) interest rate risk, where the value of an investment changes due to changes in interest rates; (iii) credit risk, where the value of an investment changes due to changes in the debtor's creditworthiness; and (vi) market risk, i.e. the risk of changes in share and gold prices. In addition to these main risks, liquidity risk, settlement risk and operational risk are monitored.

The CNB invests its FX reserves in accordance with strategic asset allocation (SAA). SAA consists of a set of instructions and rules. It primarily involves setting limits on each type of risk. For exchange rate risk, SAA defines the reserve currencies in which the reserves are invested and their representation in the total reserve volume. In the case of interest rate risk, the maximum duration is set. This is a coefficient determining the change in the price of a bond given a particular change in market interest rates. For credit risk, a minimum debtor rating and other restrictions regarding the risk of the counterparty to the transaction going bankrupt are set. The restrictions include, for example, an obligation for each creditor position to be backed by financial collateral.

It is crucial that SAA is not used for speculating on future market conditions. The aim of SAA is not to predict the future, but to build up a portfolio of currencies and financial instruments with stable returns and resilience to risks at the long-term investment horizon. When formulating SAA, there is therefore no room for considerations such as "the dollar will weaken, the euro will strengthen, share prices will rise and bond prices will fall". The only exception is the treatment of credit risk. Whereas SAA defines a minimum acceptable rating (an assessment of debtors' ability to meet their obligations), the future outlook is taken into account when setting limits for specific debtors. For example, if there is a risk of a debtor's rating being downgraded, the limit for that debtor is lowered commensurately in good time.

There is one more important fact linked with SAA. Regardless of any stimulus SAA might respond to, such as changes in the function or size of FX reserves or changes in monetary policy, the CNB always invests the reserves with professional care. This is its statutory duty when handling its assets, which include FX reserves. Professional care means that the central bank always acts so as to prevent damage and loss while simultaneously managing its financial assets in a manner that generates an adequate return. Return is always connected with risk. An adequate return can only be achieved if non-zero risk is accepted. The bank therefore proceeds in such a way as to be capable of performing its core functions regardless of the situation on financial markets and to minimise the risk of irreversible loss from trading in financial markets, even at the cost of a lower return. This means that some financial market investments may temporarily lose value in the course of their lifetime. A typical example is a fall in bond prices. The CNB seeks to minimise the risk of any investments being written off forever, while a temporary decline in bond prices due to a rise in interest rates is an acceptable risk.

The FX reserves are used to form independent portfolios denominated in the euro, the US dollar, the Canadian dollar, the Australian dollar, the Swedish krona, the British pound and the Japanese yen. The choice of these reserve currencies is derived from their fundamental properties. These include the credibility of the country, free convertibility of the currency, the size and liquidity of the government bond market, free access to the market, barrier-free repatriation of earnings and a functioning infrastructure such as securities safekeeping, banking services and enforceability of secured creditor protection in the event of insolvency. The Swiss franc and the Danish krone are also used to take advantage of short-term market opportunities to generate higher interest income.

Currencies themselves are not investments. Investment instruments, the selection of which is closely tied to credit risk, can be regarded as investments. Credit risk is managed on three levels. The first level is the choice of the general class of assets, such as government bonds, agency bonds, bank bonds, corporate bonds, supranational bonds, shares and commodities (gold is the only commodity in the CNB's FX reserves).[2] The second level is the treatment of the credit risk of specific issuers – bonds issued by Germany and the United States, for example, are selected. The third level is credit policy towards counterparties to transactions. Counterparties – mostly banks entering into transactions with the CNB – are obliged to meet various

[2] At the end of December 2018, the CNB held 8.8 tonnes of gold which was 0.3 % of the reserves. With respect to currently high FX reserves (see Chart 1), the CNB assessed during 2018 the possibility of increasing its gold holdings in the reserves. Due to high volatility of gold prices and the limited role of gold for diversification purposes, the CNB decided to keep its gold holdings at the current level. Slight decreases in CNB's gold holdings are due to the production of commemorative coins.

financial obligations arising from these transactions, such as supplying cash or securities and pledging collateral. Consequently, these counterparties may also cause the CNB to incur a loss if they go bankrupt. At the central bank, all these levels are addressed by limits assigned to both debtors (securities issuers) and counterparties. The CNB does not disclose the specific limits. However, there are minimum requirements expressed in terms of ratings.

Persons authorised to trade on the financial market (portfolio managers) implement SAA by buying specific financial products, such as bonds, shares and derivatives, on the market. If, under SAA, the maximum portfolio duration is limited, say, to five years and the permitted products are government bonds in a given currency, it is up to the portfolio manager to form a portfolio from the dozens to hundreds of government bonds with an average duration of five years available on the market. Such a portfolio mostly contains bonds (a few dozen of them, depending on the size of the portfolio and the size of the market) with maturities of between one and 30 years in volumes that ensure compliance with the limit on interest rate risk, i.e. duration in this case. The portfolio managers are allowed to deviate from SAA within permitted limits. This is known as tactical asset allocation. The managers use slight deviations to at least partly incorporate their own speculation on future market developments into the investments. Unlike strategic allocation, tactical asset allocation involves elements such as predictions of future prices, expectations of short-term market changes and the use of market dysfunction.

4. Changes in FX reserve management since 2017

On 6 April 2017, the CNB discontinued the exchange rate commitment it had introduced in November 2013 as an additional instrument for easing monetary policy in a situation where the Czech economy had been in danger of slipping into deflation. The reserves had recorded extraordinary growth as a result of the FX interventions undertaken to defend the exchange rate commitment. Since the exit from the commitment, the central bank has had far more money than it needs for FX reserves to perform their functions and for it to meet its potential obligations. The logical consequence is for it to extend the investment horizon in order to increase the expected investment return. Moreover, the CNB's reserves are now so high that excessive concentration on individual asset classes is becoming an important factor in addition to the return. The CNB does not specialise in specific investment opportunities but seeks to build a diversified portfolio of financial instruments. High concentration is a risk, so the central bank applies maximum exposure limits in individual financial market segments so it does not become a dominant investor on any given market. The size of the reserves and the need to diversify them led the CNB to adopt several important changes in the management of its FX reserves in 2017.

The first change is an extension of the investment horizon. A longer investment horizon is generally linked with a higher expected return, lower investment liquidity and higher risk, reflected, in turn, in greater volatility in the short-term return. For the reserves to continue to perform their function, they had to be divided into two parts – a liquidity tranche and an investment tranche. The liquidity tranche is used for the potential immediate mobilisation of FX funds for monetary policy purposes, while the investment tranche is used for long-term investment. The IMF reserve adequacy measure (IMF 2011, 2013, 2015, 2016) was used to estimate the appropriate size of

the reserves in the liquidity tranche. The CNB put all its euro and US dollar investments maturing in less than one year into the liquidity tranche. The other investments form part of the investment tranche.

Further changes have ensued from the extension of the investment horizon and the division of the reserves into tranches, specifically an increase in interest rate risk and the introduction of new asset classes. The higher interest rate risk is connected with purchases of bonds with longer maturities. This is due to the positive slope of the yield curve; the longer bond maturity and, hence, the higher interest rate risk, is balanced by a higher expected return. The new asset classes contain covered bonds in the European Union and agency-guaranteed mortgage-backed securities (MBSs) in the United States. They were included in the investment tranche for two reasons. First, the CNB regards them as a safe investment and, second, they yield higher returns. However, their liquidity is lower than that of government bonds.

The final change in FX reserve management since 2017 is an increase in the share of US dollars. As interventions and client transactions are both conducted solely in euros, the shares of other currencies are shrinking significantly. The US dollar is meanwhile regarded as the most commonly used reserve currency, and the market for dollar assets is simultaneously the largest and most liquid. Despite the greater volatility of the USD/EUR exchange rate and, hence, the greater volatility in the valuation changes affecting the CNB's net profit or loss, diversifying into the US dollar and reducing concentration on the euro is a necessary change for the pursuit of independent monetary policy from a long-term perspective. The arguments in favour of this change in management also include the current ambiguity regarding the Czech Republic's compliance with the commitment to adopt the euro and the traditionally higher nominal interest rates in the United States.

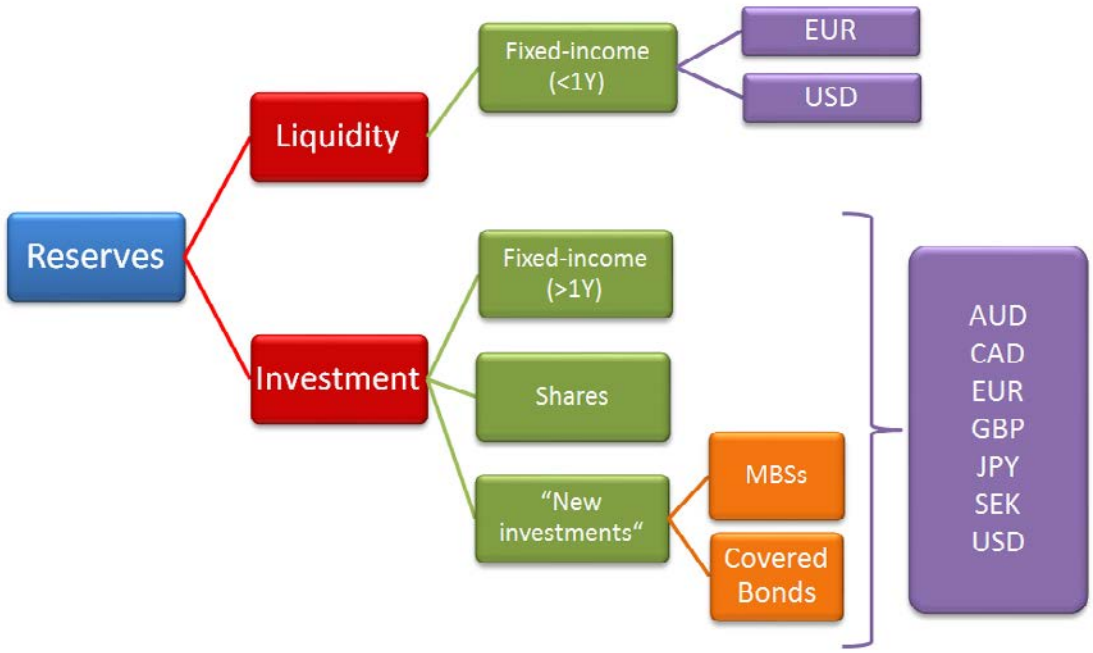
After the changes introduced in 2017, the CNB's FX reserves have the structure depicted in Chart 2. The changes should ensure a higher return in the longer term. For this reason, the total return may, for a short time, display greater volatility than that shown in Table 1. This is because the longer investment horizon is connected with higher short-term volatility of prices of the financial instruments used in reserve management. Short-term, one-off capital losses may occur in the period when the main central banks end their accommodative monetary policy regimes and interest rates go up. These losses will be gradually offset by higher interest income spread over time.

Exchange rate appreciation is reducing the koruna value of the foreign currency assets in the CNB's balance sheet. This cannot be prevented in any way. However, the koruna's pace of appreciation is likely to slow significantly in the future. In such case, the returns on the FX reserves can be expected not only to start reducing the initial accounting losses, but also to generate a profit over time. Despite this link between the koruna exchange rate and the FX management results, it is important to repeat that the purpose of the changes made to the structure of the FX reserves in 2017 was not to look for a way to reduce exchange rate losses. FX management is independent of both the current and expected exchange rate path and the domestic monetary conditions.

On top of the changes in the CNB's FX reserve management introduced in 2017, the CNB assessed in 2018 the possibility of using the Chinese renminbi as an additional reserve currency. Investments into Chinese assets have several advantages, such as a scope for diversification and higher returns. The advantages are corroborated by the continuing internationalisation of the renminbi. On the other

hand, investments into Chinese asset classes are specific as the market represents a different and so far little explored legal system. Based on this assessment, the CNB started exploratory and preparatory steps to make itself ready for potential future decisions to launch a portfolio denominated in renminbi.

Structure of the CNB's reserves after the changes adopted in 2017 Chart 2



5. Summary

The CNB's FX reserves, like those of other central banks, perform a number of important functions. They are used mainly to support the conduct of monetary policy, a function fulfilled by the liquidity tranche since 2017. The CNB manages the FX reserves with professional care. It regularly publishes its FX management results in its Annual Report. More detailed information is given in two other annual publications – the Financial Statements and the Financial Report. They can be found on the CNB website at www.cnb.cz/en/about_cnb/performance/.

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