Evolution of the Czech National Bank's holdings of foreign exchange reserves

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Abstract

A central bank may decide to conduct foreign exchange interventions when it concludes that the exchange rate level without such interventions would be insufficiently strong. A by-product of such interventions will then be a build-up of official foreign exchange (FX) reserves. A case in point is the evolution, since the late 1990s, of the official FX reserves held by the Czech National Bank (CNB). In this paper, we take a closer look at this particular case, focusing specifically on the interventions that the CNB conducted in late 2013. We also examine some less traditional ways in which the CNB's activities have directly or indirectly affected the Czech koruna exchange market over the past dozen years.

Keywords: Appreciation, economic convergence, foreign exchange intervention, international reserves, privatisation

JEL classification: E52, F31, F41, O24

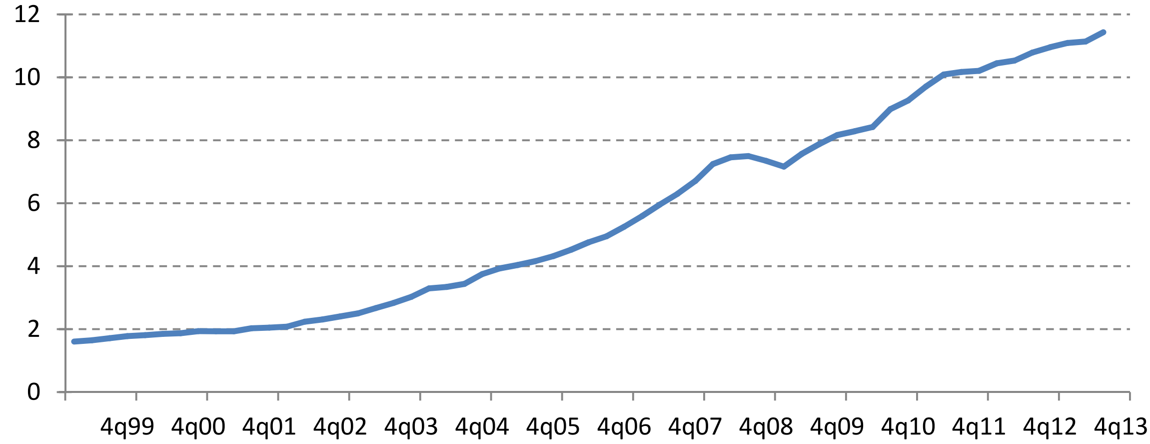
1 Czech National Bank.

One of the most striking stylised facts of the past one and a half decades is the rapid rise in the volume of official FX reserves, as illustrated in Graph 1.

Rise in worldwide holdings of official FX reserves since 1999

In trillions of US dollars

Graph 1



Source: IMF, Currency Composition of Official Foreign Exchange Reserves (COFER) database.

Table 1 shows that the geographical distribution of this rise has been very uneven. While official FX holdings worldwide have risen about seven times, for advanced economies this ratio is less than 4:1, and for emerging and developing economies it is more than 12:1.

Rise in holdings of official FX reserves since 1999, by type of economy

In billions of US dollars

Table 1

	Q1 1999	Q4 2013	Ratio
	1	2	2:1
World economy	1606	11434	7:1
Advanced economies	993	3764	3:8
Emerging and developing economies	613	7671	12:5
Czech Republic	12	56	4:7

Sources: IMF, COFER database; CNB; authors' calculations.

Given that much of this increase has taken place in Southeast Asian countries recovering from the Asian exchange rate crisis, a major explanation of the rise in official FX reserves seems to be that it represents an effort to build a high target level of FX reserves as a buffer against devaluation pressures in future exchange rate crises (IMF (2011)).

However, in at least some countries where official FX reserves have increased, the rise may be partly or even fully a product of foreign exchange interventions aimed, rather, at slowing or stopping appreciation of the currency (De Gregorio (2011)). Central banks usually undertake such interventions in cases where the observed appreciation is deemed excessive or, more generally, the exchange rate level without the interventions is considered insufficiently strong.

A case in point is the evolution, over the past dozen years, of the official FX reserves held by the Czech National Bank (CNB). The experience with traditional exchange rate interventions has been analysed extensively, both in general (Sarno and Taylor (2001), Cavusoglu (2011), and Fatum and Yamamoto (2012)) and in connection with the CNB's interventions in the early 2000s (Disyatat and Galati (2005), Geršl and Holub (2006), Égert and Komárek (2006) and Lízal and Schwarz (2013)). This being the case, we provide some details on the interventions that the CNB launched in late 2013 and also on some less traditional ways in which the CNB's activities have directly or indirectly affected the Czech koruna exchange market over the past decade.

1. Sizeable increase in the CNB's FX reserves since 1999

As Table 1 shows, the CNB's official FX reserves, expressed in US dollars, are now 4.7 times higher than in the first quarter of 1999. This ratio is far below that of emerging and developing economies, but not too far below that of the world as a whole and somewhat higher than that of advanced countries. These figures show that the CNB, while not having been a major contributor, clearly has participated in the recent wave of reserves building.

As regards the CNB, there are four major factors that have affected the evolution of the volume of FX reserves held:

(a) capital and interest rate income on the instruments in which the reserves are invested;

(b) changes in the cross-exchange rates of the reporting currency vis-à-vis the other currencies in which the FX reserves are invested (eg the value expressed in euros of the CNB reserves held in euros, US dollars and other currencies may change because of shifts in the exchange rates of the euro vis-à-vis those other currencies);

(c) traditional interventions;

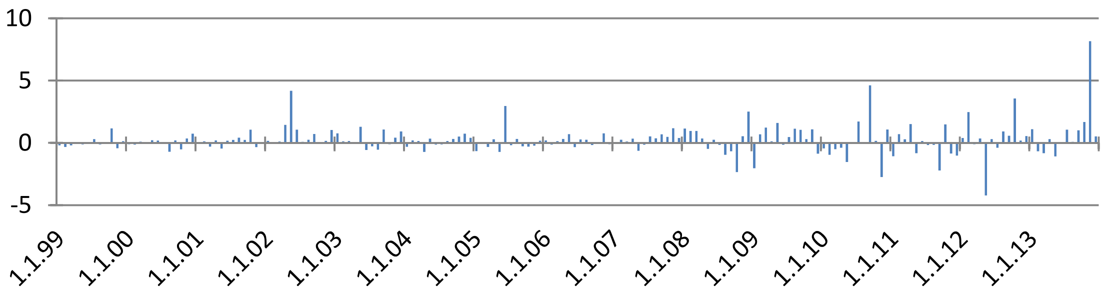
(d) quasi-interventions, that is, FX transactions where the CNB is one of the two parties, but its decision to conduct that transaction is not made in the traditional, entirely discretionary way. As we will describe in greater detail below, two such factors have co-determined the evolution of the CNB's FX reserves. One is the conduct of "client operations" in the sense of off-market FX transactions with the government based on a long-term master agreement. The other factor is a regular sale of part of the capital and interest rate income generated by the FX reserves.

The total monthly changes in the CNB's FX reserves owing to all four factors listed above are shown in Graph 2. Given that factors (a) and (b) are purely technical, however, in what follows we will focus on factors (c) and (d), that is, FX interventions, whether of the traditional or "quasi" character.

Monthly changes in the CNB's holdings of FX reserves

In millions of US dollars

Graph 2



Sources: CNB; authors' calculations.

Expressed in euros – the currency in which the CNB holds most of its reserves – the two biggest quarterly increases by far in the CNB's reserves since the start of 1999 occurred in Q2 2002 (almost EUR 5.6 billion) and Q4 2013 (almost EUR 7 billion (see Graph 2)). Indeed, the spring of 2002 and November 2013 are the only two periods since the 1998 launch of inflation targeting in the Czech Republic when the CNB conducted traditional FX interventions. But as we will see, the quasi-interventions have also had a sizeable impact on the CNB's FX holdings, even if it has been spread out over time.

2. FX interventions conducted by the CNB prior to 2013

During most of the 1990s and 2000s, the Czech transition economy went through a fairly standard process of real and nominal convergence with its western European peers (for a discussion of such "convergence shocks", see Hampl and Skořepa (2011)).[2] In 1997, the CNB decided to switch from a hybrid exchange rate/monetary targeting regime to inflation targeting. Ever since then, the macroeconomic consensus in the Czech Republic has been that the medium-term equilibrium real exchange rate appreciation implied by convergence should take the form of nominal exchange rate appreciation, while the inflation differential vis-à-vis the economy's main trading partners should be gradually brought to zero and then kept close to that level.

Needless to say, the actual pace of nominal appreciation has on many occasions deviated from what the CNB viewed as appropriate at a given stage. At times, when the deviation was deemed excessive and verbal interventions did not have the desired effect, the CNB decided to conduct actual FX interventions. Prior to 2013, these interventions took place in the following periods: February 1998–July 1998, October 1999–March 2000 and October 2001–September 2002.

[2] This convergence process was interrupted by the recent global financial and economic crisis, but the CNB expects it to resume at least to a limited extent.

According to analyses conducted by the CNB during those periods, a major cause of the repeated instances of excessive appreciation was a foreign capital inflow higher than what would have been justified by the relevant fundamentals. As a result, on the one hand, policy interest rate cuts were often considered to be only a supporting measure; on the other hand, other measures apart from standard FX interventions were used to fight the appreciation – namely, better policy coordination, as will be described below. Details on the FX interventions conducted by the CNB prior to 2013, their macroeconomic justification and assessments of their effectiveness are provided eg in Geršl and Holub (2006) and Lízal and Schwarz (2013).

3. FX interventions conducted by the CNB in 2013

During 2012 the Czech economy saw domestic inflation fall gradually, for both external and domestic macroeconomic reasons, from above the target level of 2% annually to below it. Towards the end of the year, the CNB's forecasts for the next several quarters started to signal that, in order to keep inflation from falling below 1%, that is, from leaving the 1 percentage point target band around the target level, the monetary policy stance should be eased enough to bring market interest rates just a few tenths of a percentage point above zero. Given the fairly constant spread of roughly 0.4 percentage points between the three-month market interest rate and the two-week policy rate, the required easing would technically mean reducing the policy rate below the zero lower bound. The Bank Board decided to reduce the policy rate to zero and to commit to keeping the rate at that level for an extended period. On top of that, however, official CNB communication flagged – for the first time in a decade – the possibility of implementing the rest of the needed monetary policy easing "by influencing the exchange rate of the koruna" (CNB (2012)).[3]

During 2013, new forecasts indicated that inflation would most likely fall even lower than had been expected, reaching zero or even a slightly negative level for a short time at the beginning of 2014. The probability of several quarters of negative inflation ceased to be negligible, implying the threat of a subsequent deflation spiral not unlike the one observed some 10 years earlier in Japan.

Throughout 2013, the Bank Board kept emphasising the possibility of FX interventions, but the impact of these verbal initiatives seemed to wane gradually. Under those circumstances, on 7 November 2013, the Bank Board decided to initiate actual FX interventions immediately, with the publicly announced objective of weakening the exchange rate so that it would not fall below EUR 1 = CZK 27. Formally, then, these interventions were in the "Swiss" style: fully transparent, without a pre-specified time horizon, and asymmetrical in the sense of aiming to keep the domestic currency's exchange rate vis-à-vis the euro from strengthening below a certain floor.

Given the doubts that quite a few market participants initially had about the CNB's resolve to achieve the stated aim, it took several hours before the exchange

[3] Actually, the rate was reduced only to 0.05%. The main reason for not setting it at 0% is that, under Czech law, the policy rate serves as a basis for the calculation of penalty premia in business transactions.

rate actually reached the EUR 1 = CZK 27 level.[4] Within about three days, the volume of the Czech currency that the CNB had to sell in the market to keep the exchange rate from falling below EUR 1 = CZK 27 dropped to almost zero. The resulting rise in the CNB's holdings of FX reserves between end-September and December 2013 was about 20% (almost EUR 7 billion), by far the highest quarterly increase in FX reserves in the CNB's two-decade history.

To conclude this discussion of interventions as one source of the growth of FX reserves, it may be pointed out that the 2013 interventions differ from the previous ones conducted by the CNB in two important respects. First, the 2013 interventions were initiated even though the CNB did not perceive the exchange rate as drifting too far from a level consistent with the current inflation differential and the equilibrium real exchange rate vis-à-vis the Czech Republic's main trading partners; instead, the interventions were used as a supplementary tool to meet the monetary policy target after the basic tool – the policy interest rate – could no longer be used. Such a temporary use of the exchange rate to escape a deflationary trap and to achieve the inflation target once the interest rate has hit the zero lower bound is fully consistent with the recommendations based on the theory of inflation targeting (Svensson (2001, 2003)).

Second, unlike previous interventions, the CNB's action in late 2013 was followed by an intense public backlash. While partly fuelled by some market analysts who complained that the intervention's effects would be negligible or even contractionary (that is, opposite to those that the CNB intended), the public also reacted negatively, fearing a rise in the prices of both imported and domestic goods and services. This was an indirect indication that a deflation-plus-appreciation mindset had actually started to become widespread in the Czech economy, and that some type of policy action – such as forceful FX intervention – was called for in order to push general inflationary expectations back towards the 2% inflation target.

4. FX agreements with the government

As noted above, the FX interventions conducted by the CNB prior to 2013, namely, in the late 1990s and early 2000s, were meant to fight the recurring and fundamentally unjustified appreciation of the koruna. However, while this tendency towards excessive exchange rate appreciation was not supported by macroeconomic fundamentals, it seemed clearly, even if perhaps not exclusively, related to another factor: the government's privatisation programme (involving primarily banks and utility companies). The bouts of appreciation seemed to be fanned by the actual implementation of this programme, as well as by its expected continuation.

For this reason, the CNB and the government repeatedly negotiated ways to reduce the impact of the privatisation programme on the exchange market. In essence, the two institutions were looking for a policy mix that would result in very

4 At that time, the day-on-day depreciation of the euro exchange rate was about 4.5%, the largest change in the Czech koruna/euro exchange rate since the euro's introduction in 1999.

specific kinds of FX interventions – those targeted at eliminating or at least reducing the exchange rate impact of certain fiscal operations.

4.1 The agreement of 2000

These negotiations started in 1999. The first result was a document titled *Monetary policy strategy in a period of foreign capital inflow*, approved by the CNB in October 1999 and by the government in January 2000 (CNB (1999)). The key measure in this agreement, as well as in its later incarnations, was the government's commitment to keep its privatisation receipts off the market – specifically, to keep them in foreign exchange accounts. From there the receipts would be released in such a way as not to cause excessive appreciation or to arouse overly high expectations of appreciation.

4.2 The agreement of January 2002

Towards the end of 2001 the government declared that, in the following year, the volume of assets to be privatised and transferred into foreign hands would be particularly large. Based on this, and on the suspicion that the government had and still would have a hard time abstaining from using the proceeds, the market again started to anticipate a period of strong appreciation. The result was sharp actual appreciation even before the end of 2001. On the policy mix side, apart from the FX interventions mentioned earlier, the CNB responded by inducing the government to adopt, in January 2002, a new, strengthened agreement titled *Strategy for dealing with the exchange rate effects of capital inflows from privatisation of state property and from other foreign exchange revenues of the state* (CNB (2002a, 2002b)).[5]

The strategy listed a number of commitments of varying specificity, ie: the government should not issue FX bonds in 2002; it should make all the ministries and state agencies cover as much as possible of their various FX expenditures with the proceeds from privatisation; it should ensure that part of the price in any future privatisation deals would be paid in korunas, using koruna credits; if the government needed to convert any of the remaining privatisation and other FX revenues kept in the foreign exchange account at the CNB, it should sell them off-market, directly to the CNB.

To prevent the CNB's losses from sterilising these direct conversions, or to mitigate their effects, the strategy provided that part of the government's FX account at the CNB would be non-interest-bearing and that, in addition, the CNB would charge the government an agreed fee for the direct conversions.

4.3 The agreement of April 2008

After a few years of relative calm, characterised by the koruna's gradual nominal and real appreciation, excessive appreciation pressures seemed to have returned during 2007 and especially in the first quarter of 2008, when on some days the market saw

5 A revision of the agreement announced in May 2002 (CNB (2002c)) was largely of a technical nature.

month-on-month changes of up to almost 4%. Also, certain large-scale privatisation projects were expected to take place later in 2008. For this reason, the CNB and the government returned to the table to negotiate an update to the 2002 agreement that would suit the conditions at that time.

The result, summarised in CNB (2008a) and explained in detail in CNB (2008b), was an agreement which, while similar in spirit to the previous one, nonetheless contained a few new elements. First, in the light of the Czech Republic's entry into the European Union (EU) in 2004, the agreement tackled the new issue of inflows of funds from various EU sources. Here, both parties to the agreement confirmed their mutual understanding that the flows should, as far as possible, be converted by the CNB off the FX market, and that all ministries and state agencies should avoid any speculative operations affecting that market.

The new agreement also foresaw the possibility of a change in the conditions under which the CNB provided certain services to the government. If such changes were to be considered, they would have to avoid being unilaterally disadvantageous to the CNB and to pose no significant additional risks to the CNB beyond those to which it was already exposed in connection with the agreed currency conversions.

In addition, the agreement allowed the government to draw upon its privatisation revenues solely via foreign exchange swaps that could potentially be rolled over for any period of time, ideally until the Czech Republic's adoption of the euro. Another novelty was the government's pledge that, if it were to issue FX bonds, these would be hedged against exchange rate risk in such a way as not to affect the exchange rate.

4.4 Implementation of the agreements

Provided that the government's FX revenues really were the dominant force behind the excessive appreciation of the koruna, all of the agreements, to the extent that they were credible, had the potential to send strong signals and to manage expectations. Their ex ante credibility was, however, far from perfect: after all, the essence of these agreements was the politically difficult promise on the government's part to refrain from, or at least to postpone, using some of the fiscal revenues.

The available data are too inconclusive to enable a determination of the extent to which the government actually did honour the agreements. For example, proceeds from the privatisation of two major Czech utility companies in 2002–03 (gas, over EUR 4 billion) and 2005–2007 (telecommunications, almost EUR 2.8 billion) were exchanged in full with the CNB. For other transactions, also involving billions of euros, which took place around the mid-2000s, there is some uncertainty in the data as to whether all of the proceeds were treated in accordance with the agreements.

All in all, from 2000 up to now, the amount of the CNB's FX reserves that is due to off-market conversions with the government is around EUR 10 billion. While precise data are not available, indirect estimates by CNB experts indicate that, in spite of the anti-appreciation agreements, several billion additional euros were converted in the market by successive governments. Similarly, the information available indicates that the commitment to fully hedge newly issued FX bonds has been observed for some issues only.

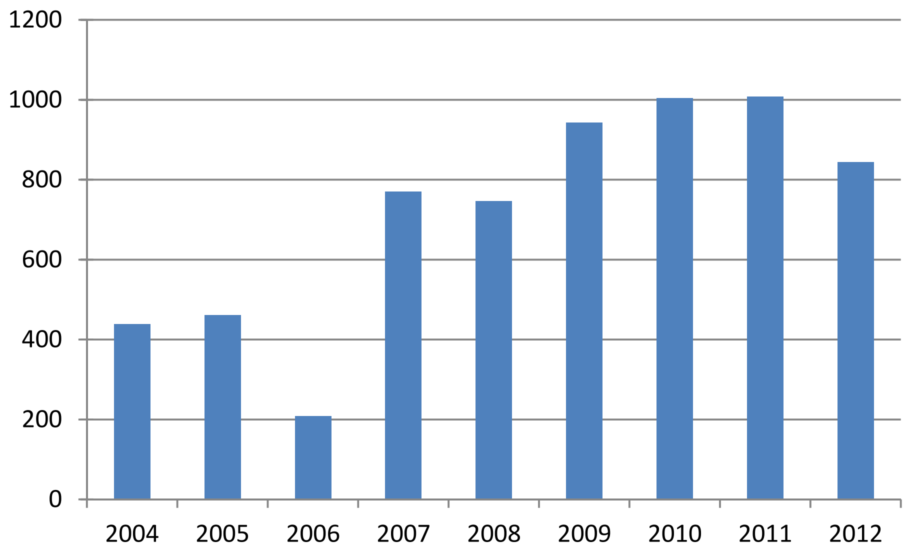
5. Regular sale of income from FX reserves

During 2003 and early 2004, the risk that the excessive appreciation pressures observed two years earlier would reoccur was rapidly fading. At the same time, the CNB was openly admitting that its holdings of FX reserves were higher than adequate and were growing further owing to the realisation of returns on them. Accordingly, the CNB decided in April 2004 to launch a programme of regular sell-offs of at least part of those returns.

At first, the volumes to be sold each day were determined – within certain longer-term ceilings – by the CNB's trading department based on the then-current situation in the market; since the summer of 2007, however, this regime has been replaced by a largely automatic sale of a fixed daily amount of reserves.

Yearly volumes of FX reserve returns sold by the CNB

In millions of euros — Graph 3



The programme was suspended in November 2012 when the CNB started to announce that, having reached the zero lower bound for the policy interest rates, it might have to use FX interventions in order to push inflation back up towards the 2% target. Continuation of the sale of returns from FX reserves would, even if only marginally, mitigate the impact of such interventions, and thus would send confusing signals and make the inflation target more difficult to achieve.

6. Conclusion

The volume of FX reserves held by the CNB has risen 4.7 times over the past 15 years. In this regard, the CNB has also participated in the worldwide trend towards increased official holdings of FX reserves during that period. The rise in the CNB's reserves has a single explanation: it has been a side effect of policy measures aimed at preventing inflation from straying too far from the inflation target, either when the exchange rate appreciated too quickly, or when the policy interest rate hit the zero lower bound while further easing of monetary conditions was still needed.

Besides traditional exchange rate interventions in the early 2000s and towards the end of 2013, the volume of FX reserves held by the CNB has also been influenced by two less traditional measures: first, a series of agreements with the Czech government on ways to limit the exchange rate impact of privatisation and some other fiscal operations, and second, a programme of regular sales of part of the returns from the reserve holdings. While having been honoured by successive governments only to some extent, the agreements can be deemed successful in helping to keep the exchange rate from excessive appreciation. The regular sales also seem to have achieved their aim of gradually reducing the volume of the CNB's FX holdings without fuelling undue appreciation pressures.

References

Cavusoglu, N (2011): "Exchange rates and the effectiveness of actual and oral official intervention: a survey on findings, issues and policy implications", *Global Economy Journal*, vol 10, no 4, January, pp 1–42.

Czech National Bank (1999): Press release on the CNB Board Meeting of 7 October 1999, www.cnb.cz/en/public/media_service/press_releases_cnb/1999/184.html.

——— (2002a): "Strategy for dealing with the exchange rate effects of capital inflows from privatisation of state property and from other foreign exchange revenues of the state", *Inflation Report*, January 2002, annex, www.cnb.cz/en/monetary_policy/inflation_reports/2002/2002_january/boxes_annexes/zpinflace_02_january_a1.html.

——— (2002b): *Strategy for dealing with the exchange rate effects of capital inflows from privatisation of state property and from other foreign exchange revenues of the state*, selected parts of the document approved by the government at its session on 16 January 2002, www.cnb.cz/en/monetary_policy/strategic_documents/download/vlada_cnb_kurz_en.pdf.

——— (2002c): *Revision of the strategy for dealing with the exchange rate effects of the foreign exchange revenues of the state*, selected parts of the document approved by the government at its session on 22 May 2002, www.cnb.cz/en/monetary_policy/strategic_documents/download/cnb_vlada_kurz_zpresneni_en.pdf.

——— (2008a): Joint agreement between the Czech Government and the Czech National Bank, www.cnb.cz/en/monetary_policy/strategic_documents/download/20080409_dohoda_vlady_a_CNB_en.pdf.

——— (2008b): *Updated strategy for dealing with the exchange rate effects of foreign exchange revenues of the state*, www.cnb.cz/en/monetary_policy/strategic_documents/download/20080409_strategie_reseni_kurzovych_dopadu_en.pdf.

——— (2012): Minutes of the Bank Board Meeting on 19 December 2012, www.cnb.cz/en/monetary_policy/bank_board_minutes/2012/amom_121219.html.

De Gregorio, J (2011): "International reserve hoarding in emerging economies", Central Bank of Chile, *Economic Policy Papers*, no 40, January.

Disyatat, P and G Galati (2007): "The effectiveness of foreign exchange intervention in emerging market countries: evidence from the Czech koruna", *Journal of International Money and Finance*, vol 26, no 3, April, pp 383–402.

Égert, B and L Komárek (2006): "Foreign exchange interventions and interest rate policy in the Czech Republic: hand in glove?", *Economic Systems*, vol 30, no 2, June, pp 121–140.

Fatum, R and Y Yamamoto (2012): "Does foreign exchange intervention volume matter?", Federal Reserve Bank of Dallas, *Globalization and Monetary Policy Institute Working Papers*, no 115, May.

Geršl, A and T Holub (2006): "Foreign exchange interventions under inflation targeting: the Czech experience", *Contemporary Economic Policy*, vol 24, no 4, October, pp 475–491.

Hampl, M and M Skořepa (2011): "Long-run equilibrium exchange rate notions in monetary policy strategies: the case of the Czech National Bank", *BIS Papers*, no 57, September.

International Monetary Fund (2011): "Assessing reserve adequacy", policy paper prepared by the Monetary and Capital Markets, Research, and Strategy, Policy, and Review Departments in consultation with other departments, *IMF Policy Papers*, 14 February.

Lízal, L and J Schwarz (2013): "Foreign exchange interventions as an (un)conventional monetary policy tool", *BIS Papers*, no 73, October.

Sarno, L and M P Taylor (2001): "Official intervention in the foreign exchange market: is it effective and, if so, how does it work?", *Journal of Economic Literature*, vol 39, no 3, September, pp 839–68.

Svensson, L E O (2001): "The zero bound in an open economy: a foolproof way of escaping from a liquidity trap", Bank of Japan, *Monetary and Economic Studies*, vol 19, no S-1, February, pp 277–312.

——— (2003): "Escaping from a liquidity trap and deflation: the foolproof way and others", *Journal of Economic Perspectives*, vol 17, no 4, fall, pp 145–166.