Monetary Policy Before And After The Financial Crisis: Risks, Economic And Legislative Impacts

Liběna Černohorská[1], Jana Janderová[2], Veronika Procházková[3]
University of Pardubice, Czech Republic

Abstract:

The article analyses monetary policy response to the world financial crisis and focuses more closely on the monetary policy of the Czech National Bank (CNB) at this time. Until 2007, the implementation of monetary policy in OECD countries was perceived very positively. However, the financial crisis has clearly shown that the world's financial markets are highly interconnected, and this can have a major impact on individual national economies. Therefore, the monetary policy strategy has changed from a policy based on the so-called flexible inflation targeting. Ensuring price stability is emphasised as part of the monetary policy role of the CNB in the provisions of Article 98 of the Constitution, in the Czech Republic. CNB is perceived as one of the most independent central banks, the contituional dimension of its independence being confirmed by case law of the Czech Constitutional Court. In response to the financial crisis, CNB was forced to pursue unconventional monetary policy in the form of foreign exchange interventions between 2013 and 2017. However, during the time period of these interventions, CNB policy did not lead to achievement of the inflation target. Following the completion of foreign exchange interventions, CNB returned to conventional monetary policy through interest rates.

Keywords: Czech national bank, financial crisis, financial stability, price stability, unconventional monetary policy

Introduction

World financial markets are more interconnected. This interconnection may affect individual national economies significantly. The financial crisis began on the US credit market, then hit Western European banks and later returned to the US. Finally, credit markets have been seriously disrupted around the world. Losses in credit markets have resulted in the worst global economic downturn since the Great Depression. Tensions in financial markets play an important role in the business cycle. When the financial system is exposed to shocks that increase information asymmetry, tensions in the financial markets are increasing, resulting in financial instability. The financial system is not able to subsequently provide funds for investments and thus the performance of the economy decreases. Prior to the global financial crisis, tensions in the financial markets were not much taken into account, and thus they were not included in models analyzing central bank policies previously. As Mishkin (2017) states, these facts are elements of what can be called a "new neoclassical synthesis". A monetary policy strategy based on a new neoclassical synthesis is referred to in the literature as "flexible inflation targeting" (Svensson, 1997). It includes a strong and credible commitment by the central bank to stabilize inflation in the long term, often at an explicit numerical level. At the same time, it also allows the central banks to influence the economic output around the potential product in the short term.

The aim of the paper is to analyze the monetary policy response to the world's financial crisis and to focus more closely on the monetary policy of the Czech National Bank at that time. The analysis and explanation methods are used in the article to explain the detected links between the financial crisis and the CNB's monetary policy (the impact of the crisis).

1 Implementation of monetary policy before and after the financial crisis

Until 2007, the monetary policy implemented by central banks was perceived very positively. There was a general consensus in assessing the implementation of monetary policy in OECD countries not only with low inflation but also with low inflation variability. The question remains, however, what changes in monetary policy implementation were caused by the financial crisis.

1.1 Basic principles of monetary policy before the financial crisis

Mishkin (2017) deals with the implementation of monetary policy before the financial crisis, when inflation is seen as a monetary phenomenon. Friedman (1974) sees inflation causes in expansive monetary policy, or in the excessive growth of money in the economy which needs to be combated. Furthermore, central banks have the possibility to influence inflation and should keep it at a low and stable level, as price stability brings them great benefits. The prerequisite for price stability is the Taylor principle (Taylor, 1993), which is based on the thesis that inflation will only be stable if monetary policy raises nominal interest rates by more than inflation, so that real interest rates rise in line with inflation. Numerous empirical studies (e.g. Sack, 2000; Clarida et al., 1999; Levine et al., 2005 or Smets and Wouters, 2003) have characterized the appropriate monetary policy before the financial crisis as one being in accordance with the Taylor rule.

Central bank independence helps central banks to break free from political pressure and allows them to pursue an expansive monetary policy. Empirical studies show (e.g. Bleaney, 1996; Alesina and Lawrence, 1993; Cecchettia and Krause, 2002) that, when greater central bank independence is guaranteed, the respective economies perform better. As we will discuss bellow, the Czech Constitutional Court confirmed the constitutional dimension of CNB's independence in its case law.

1.2 The impact of the financial crisis on monetary policy

According to Mishkin (2017), new directions can be seen in the strategy and approach to monetary policy after the financial crisis, as the development of the financial sector has a much greater impact on economic activity than previously thought. The financial crisis of 2007-2009 and the subsequent economic recession have clearly demonstrated the need for financial macroeconomic analysis, which should be included in macroeconomic models. These models should no longer be neglected in central banks' forecasts and the analysis of monetary policy effectiveness.

Zero interest rates appear to be a serious monetary policy problem, as conventional expansionary monetary policy becomes ineffective, if the economy is hit by a negative shock. Therefore, low or even negative interest rates are needed to recover the economy. In this situation, central banks resort to unconventional (different from traditional) monetary policy measures, such as quantitative easing consisting of asset purchases or

foreign exchange interventions, in order to revive the economy (for example, William, 2014; Černohorská and Flosová, 2014 or Zamrazilová, 2014). According to Revenda (2016), quantitative easing was supposed to support the banks' health initially, but banks' lending activity was also gradually supported, which was to have a positive impact on economic development and avert the threat of deflation. A study by Reifschneider and Williams (2000) or by Coenen et al. (2004) published before the financial crisis concludes that if the inflation target is set around 2%, then zero interest rates in economies are seldom and only in the short term. The fact that they are based on linear models is considered to be a drawback of these studies. However, the global financial crisis has clearly shown that economies will develop non-linearly in the future (see Mishkin, 2011). At the same time, low interest rates have become a more important monetary policy instrument for central banks than before the financial crisis. Before the global financial crisis, many economists believed that low interest rates would be effective when combined with other unconventional monetary policy instruments, as they would provide sufficient impetus for economic recovery (e.g. Svensson, 2015). Williams (2014) demonstrates that unconventional monetary policy stimulates economic growth, while it is true that central banks around the world have sought to return individual economies to full employment or to reach the set inflation target of 2%.

Stable inflation and economic output do not guarantee financial stability. However, prior to the recent financial crisis, it was believed commonly, both by academics and in central banks, that achieving stable prices and economic output promotes financial stability. This was supported by research by Bernanke et al. (1999) and Bernanke and Gertler (2001), suggesting that monetary policy supporting stable inflation and output is likely to stabilize asset prices as well. This prevents the creation of asset bubbles that are less likely to occur. Until 2007, the economic environment did not sufficiently protect the economy from financial instability, or it could have even deepened instability. The low volatility of inflation and the output of the economy can cause market participants to believe that there is less risk in the economic system than there actually is. Credit margins have fallen to a very low level and lending standards have decreased significantly. Some recent theoretical studies (e.g. Gambacorta, 2009 or Gambacorta and Shin, 2016) even suggest that a stable economic environment may lead to excessive risk-taking, which may negatively affect the stability of the financial system. Although ensuring price stability and economic growth is certainly positive, the recent crisis has

clearly shown that a policy aimed solely at these objectives does not necessarily be sufficient to achieve satisfactory economic results.

New developments in monetary policy after the financial crisis do not mean rejecting the facts set out in section 1.1. Mishkin (2017) points out that monetary policy should not deviate completely from the experience gained before the financial crisis. Most of the steps taken in the implementation of monetary policy are currently the same as they were in the implementation of monetary policy before the financial crisis. However, the financial crisis provides a clear lesson that the development of financial markets can have a greater impact on economic activity in individual countries than central bankers have previously realized. Mishkin (2017) lists monetary policy areas that should preferably be reconsidered in monetary policy implementation. They are the following principles of the new neoclassical synthesis:

1. *Flexible inflation targeting*

   The experience with zero interest rates raises question of whether the level of the long-term inflation target should be raised from its normal value of around 2%.

2. *Monetary policy responses to asset price bubbles*

   The theory of optimal monetary policy requires monetary policy to respond to asset prices in order to achieve optimum results in terms of inflation and economic output. Regulation on credit markets is pursued by macroprudential policy the instruments of which can be used to reduce the interaction between asset price bubbles and lending.

3. *Dichotomy between monetary policy and financial stability*

   One of the main causes of business cycle volatility can be seen in the dichotomy between monetary policy and financial stability policy, when these two policies were implemented separately. The benefit of coordination of monetary policy with macroprudential policy is another reason why central banks should assume the role of the system regulator.

4. *International monetary policy coordination*

   The lesson from the financial crisis in this area is that monetary policy coordination in the event of a threat to the financial markets is necessary.

5. *Forward guidance*

   Forward guidance is a new trend in central banking that indicates future monetary policy through a central bank's communication strategy.

The global financial crisis has led both economists and central bankers to take a different approach to monetary policy implementation. It is important to realize that some areas need to be reconsidered, focusing on inflation and the monetary policy response when asset price bubbles appear. It is also necessary to focus on the dichotomy between monetary policy and financial stability policy. Last but not least, there should be greater international monetary policy coordination in order to cope better with financial market tensions.

2 Monetary policy in the Czech Republic before and after the financial crisis

Since 1998, the CNB has been trying to achieve the set target using the chosen monetary policy regime - inflation targeting. The CNB used simultaneously the exchange rate fixation and money supply targeting regime, in previous years. With the changing nature of the Czech economy, which has become a more open economy, the CNB is the first of the post-communist countries to start targeting inflation. The transition to the new monetary policy regime of the CNB has not changed of its role. It only changed the way in which this role was fulfilled (CNB, 2008).

2.1 Independence of the Czech National Bank as a prerequisite for effective monetary policy

Independent central banks gradually began to emerge in the second half of the 19th century and subsequently mainly in the 20th century. The purpose of their independence was to prevent the strengthening of government power through currency manipulations. “The classic example of overcoming government financial difficulties through inflationary money issues has many other variants in modern history. The response to these experiences is to separate monetary policy decision-making processes from the executive, and to counteract monetary manipulations by the executive. ” (Sládeček et al., 2016)

The role of the Czech National Bank (hereinafter the “CNB” only) is grounded in the provisions of Article 98 of the Constitution of the Czech Republic and in more detail also in Sec. 2 of Act No. 6/1993 Sb., on the Czech National Bank, as amended (hereinafter the “Act” only). According to the Constitution CNB is the central bank of the state. The main aim of its activity is to safeguard price stability. Its activities can only be interfered

with by ways grounded in a statutory law. The status, powers and other details shall be determined by a statutory law. Article 98 of the Constitution initially provided that the main objective of the CNB's activities is safeguarding stability of the currency. The change of the Art. 98 occurred in 2001 in connection with the accession of the Czech Republic to the EU. The CNB is part of the European System of Central Banks under the Treaty on the Functioning of the European Union and participates in the fulfillment of the objectives and tasks of the European System of Central Banks (see in particular Articles 127-133 TFEU "Monetary Policy"). The change to safeguarding price stability complied better with the requirements of the TFEU.

The Constitution does not explicitly provide that the CNB is independent. Nevertheless, in the judgment Pl. US 59/2000 the Constitutional Court deduced the constitutional dimension of the CNB's independence when it is acting as the central bank of the state. Article 98 (1) of the Constitution stipulates that interventions into CNB's affairs shall be permissible only on the basis of statute. According to the Constitutional Court, such statutory law must not conflict with the CNB's primary objective. The law could not bring about a solution that would interfere with the independence of the bank in the performance of its constitutional function (Sládeček et al., 2016). The Constitutional Court states in this judgment: "Although the Constitution does not explicitly mention the independence of the CNB, nevertheless through historical interpretation of the circumstances of the adoption of the Constitution (…), teleological interpretation of the term "care for currency stability" and through systematic interpretation of head six of the Constitution which contains the legal regulation of the CNB separately from other heads containing the legislative and executive powers; it can be concluded that the purpose of embedding the central bank of the state in the Constitution in general and in the special head of the Constitution was to create a constitutional framework for its functioning independently of the legislative and executive powers. The Constitutional Court recognizes aspects of independence in the personal and organizational sense and economic or financial independence. (Sládeček et al., 2016) At the same time, the Constitutional Court argued in 2000, i.e. before the Czech Republic joined the EU, that according to Article 130 TFEU no central bank of any Member State, any member of its decision-making bodies may request or receive instructions from any Member State government or any other body. Further, according to the Constitutional Court, Article 101 TEC (now 123 TFEU) contains a "legal definition

of central bank independence" by prohibiting central banks from providing bank overdraft facilities or any other type of credit to Union institutions, bodies or agencies, central governments, regional or local authorities or other public authorities, other public bodies or public undertakings of the Member States, and the direct purchase of their debt instruments is also prohibited.

The CNB should also support government economic policy leading to sustainable economic growth, however, only if such support does not affect its main goal, i.e. to safeguard the price stability. In addition to the central bank of the state, the CNB plays the role of an administrative authority when it supervises the financial market. Furthermore, it also acts as a business entity, pursuing economic activities like other banks, albeit with significant restrictions set by the Act. Pursuant to Section 47 (1) of the Act, the CNB shall spend money according to a budget which needs to be structured in such a way as to make it clear what expenditures were oriented at the acquisition of assets and what expenditures concerned the operation of CNB. It pays the necessary costs of its activities from its revenues, uses the generated profit to replenish the reserve fund and other funds created from profit and for other uses in the budgeted amount. The remaining profit is transferred to the state budget.

Article 34 (1) of the Act provides for the independence of the CNB in all its activities, not only when it plays the role of the central bank of the state (as the Constitution does). However, nowhere does the law define what constitutes price stability (nor does Article 127 TFEU). However, it lists the activities that CNB carries out in accordance with its objective. These include in particular monetary policy-making; issue of banknotes and coins; management of cash circulation, payment and settlement bank system; supervision of persons operating on the financial market; recognizing the monitoring and assessment of risks to the stability of the financial system and, in order to prevent or reduce such risks, contribute through its powers to the resilience of the financial system and the maintenance of financial stability, thus creating a macro-prudential policy; it shall cooperate, as appropriate, in the development of the macro-prudential policy with the authorities of the State whose powers are also concerned by this policy.

The CNB chooses the level of the main instrument, i.e. interest rates, which will keep inflation at a low and stable level without unnecessarily slowing down or accelerating the economic growth. Another objective of the CNB is the care for financial stability and the safe functioning of the financial system in the Czech Republic. To this end, the CNB

implements a macro-prudential policy to identify stability of the financial system risks and thus contributes to its resilience. (CNB, 2003-2017d) A similar role is played by central banks in most democratic countries with market economies. Ensuring stable prices in the economy is a manifestation of the responsibility of all central banks for sustainable economic development.

2.2 Objectives of the Czech National Bank in response to the financial crisis

At that time, there has already been an evident shift from monetary targeting to monetary policy in the world. Central banks focused on inflation targeting, which was first introduced by the Reserve Bank of New Zealand in 1990. Currently, many central banks around the world are using the inflation targeting regime, including the European Central Bank. The Federal Reserve System (FED) has also been using this regime since 2012.

In achieving financial stability, the central bank determines a degree of stability in the provision of financial services over the business cycle that supports the economy in achieving maximum sustainable economic growth. The CNB refers to financial stability when the financial system performs its functions without serious disturbances and adverse consequences for the current and future development of the economy as a whole, while showing a high degree of resilience to shocks (Frait and Komárková, 2011). In order to maintain and safeguard financial stability, the CNB conducts a macro-prudential policy that focuses on the stability of the financial system as a whole. The aim of macro-prudential policy is to minimize the systemic risk in the financial system, which may lead to financial crises potentially resulting in large losses in individual economies, including a decline in GDP. (CNB, 2003-2017d) Individual financial institutions can be assessed by the central bank as sound, although they can cause systemic instability through joint behavior and mutual links.

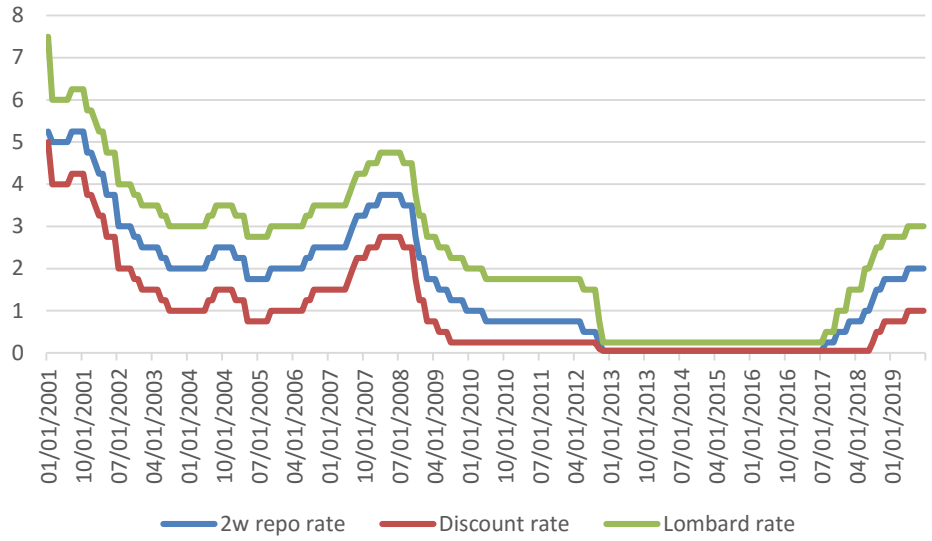
Macro-prudential and monetary policy interact, but both have different objectives and instruments. At the same time, monetary policy should be completely separated from macro-prudential policy, i.e. financial stability (Svensson, 2015). Macroprudential policy instruments reduce vulnerability and increase the resilience of the financial system by establishing capital and liquidity buffers that prevent the procyclicality of the financial system. However, as Munzi (2017) states, there is an institutional mismatch in the Czech

Republic in setting the coordination between monetary and macroprudential policy in comparison with other developed countries, where the Ministries of Finance play the leading role together with the central banks.

2.3 Unconventional monetary policy of the CNB in response to the financial crisis

The CNB was one of the first central banks in the world to ease monetary policy in response to the bursting financial crisis. The CNB started to gradually lowered its interest rates already in August 2008 from original 3.5% to 1% in December 2009. At the end of 2012, the basic interest rate (2W repo rate) stopped at 0.05%, which applied till 3rd August 2017. The CNB had already exhausted the standard monetary policy instruments, ie interest rates, by that time. Therefore, to reach the inflation target it was forced to proceed with an unconventional monetary policy which was implemented in the form of foreign exchange interventions. These interventions lasted from 2013 to 2017. After the interventions were ceased, the CNB again started using interest rates as its monetary instrument and subsequently has begun raising them (Figure 1).

Figure 1 Interest rates of the Czech National Bank in 2001 - 2019 (%)



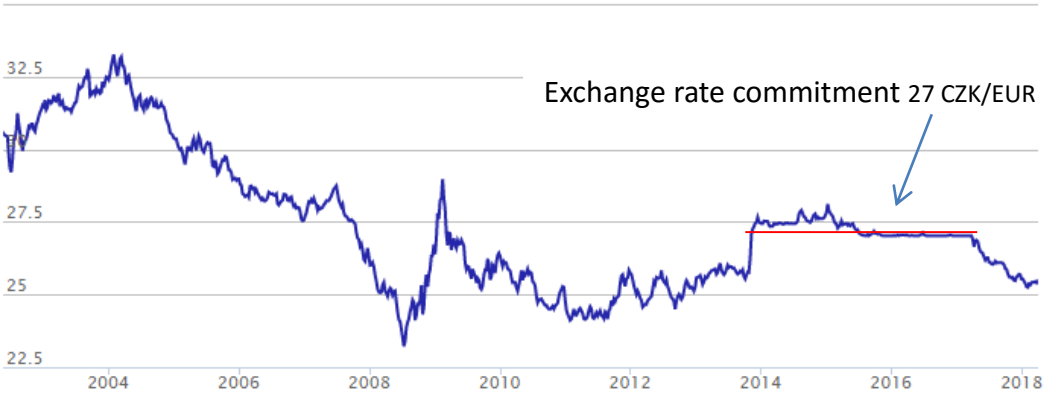
Source: Czech National Bank (2003-2017b)

Unconventional monetary policy was also adopted by some other central banks, which already had zero or negative interest rates, in order to minimize the effects of the financial crisis or avert the risk of deflation. The FED, the ECB and the Bank of England carried out quantitative easing, while the Swiss National Bank, like the CNB, proceeded with foreign exchange interventions. For more details on this issue see eg. Zamrazilová (2014), William (2014), Černohorská (2018), Wu and Xia (2016).

The financial crisis has led to an increased emphasis on linking the CNB's monetary policy with the issues of the financial stability of the Czech economy. After the exhaustion of the interest rate channel, the CNB decided to prescribe a medication in view of a weak development of economy threatened by a steady decline in prices, wages, salaries and pensions. It has started to use the exchange rate as another instrument of easing monetary policy and has prevented price volatility in the form of deflation. On 7th November 2013, the CNB launched an intervention on the foreign exchange market in the form of a depreciation of the Czech koruna, which it achieved by selling the koruna on the foreign exchange market and setting an exchange rate commitment above 27 CZK/EUR (Figure 2). In doing so, CNB used a parallel monetary policy tool to help get higher inflation. CNB has also used forward guidance Since March 2013. The interest rates were to be kept at their level at the time (i.e. “technical zero”) in the longer term,

until there would be a significant rise in inflationary pressures.

Figure 2 EUR / CZK exchange rate in 2004 – 2018



Source: Czech National Bank (2003-2017a)

The CNB spent more than CZK 2 trillion during foreign exchange interventions and thus the CNB's total foreign exchange reserves exceeded CZK 3 trillion. It was clear that the Czech economy was growing and prices were rising already at the end of 2016. There was no significant appreciation of the koruna after foreign exchange interventions, compared to, for example, the Swiss franc, which strengthened by 15% after the completion of foreign exchange interventions by the Swiss Central Bank.

3 Discussion of the findings

On the basis of the newly acquired knowledge of monetary policy after the financial crisis, the CNB was forced to extend its target (price stability) to include financial stability. The CNB seeks to achieve financial stability through a macro-prudential policy that can be used to reduce the interaction between asset price bubbles and lending. The CNB's position as a systemic regulator in the Czech Republic is certainly beneficial for cooperation between monetary and macroprudential policies whereas, in a time of globalization and great liberalization of financial markets, great attention must also be paid to financial stability. The CNB is also taking advantage of the new trend of central banks, i.e. the use of forward guidance, which makes it easier for the public to better understand the CNB's monetary policy and consequently leads to the right future expectations of economic agents.

The CNB became almost the first central bank in the world to adopt a loose monetary

policy in response to the bursting financial crisis. Technically zero interest rates and economic developments, which required further eased monetary policy, became the decisive moment for the use of foreign exchange interventions, which the CNB had used in the controlled floating exchange rate regime only rarely since 1997.

If we take a closer look at monetary policy at the time of foreign exchange interventions, we find that during them the CNB's monetary policy did not initially lead to the required objectives, i.e. the achievement of the inflation target. In November 2013, the Bank Board decided to use the exchange rate as an additional instrument for easing monetary conditions and committed itself to keep the koruna-euro exchange rate close to CZK 27 / EUR. However, the Bank Board decided to terminate the exchange rate commitment only in April 2017. The CNB follows its decisions in the time delay of approximately 12-18 months. Given the time lag between the monetary policy measure and its impact on the real economy, the CNB is guided not by the current situation but by the forecast of future developments.

Conclusion

The remaining question is what the monetary policy can learn from the global financial crisis. Some scientists (e.g. Krugman, 2009 or Cochrane, 2011) argue that the financial crisis has revealed major shortcomings in monetary policies that have been implemented over the past forty years, and therefore they need to be changed fundamentally. In response, Mishkin (2017) identifies key monetary policy areas that need to be revised - flexible inflation targeting, monetary policy responses to asset price bubbles, the separation of monetary and macroprudential policy, and coordination of international monetary policy at a greater degree. At the same time, the crisis showed the need to focus more on systemic risk and integrate the financial sector into macroeconomic models. The shift in monetary policy towards macro-prudential policy is apparent in the area of regulation and supervision. The question is whether ensuring price stability is a sufficient criterion for assessing the effectiveness of monetary policy. Ensuring mere price stability has led to financial instability in some countries (Borio, 2011). In the future, central banks should aim to be more focused on macro-prudential policies, which should limit the occurrence of potential financial instability.

The central bank's independence is a necessary prerequisite for the conduct of monetary policy, leading to price stability. The CNB has had a high degree of

independence from political structures in performing its statutory functions since its inception in January 1993. The Constitutional Court deduced by systematic and teleological interpretation of the Constitution the establishment of this independence for the activities of the CNB in which it acts as the central bank of the state at the constitutional level. This is despite the fact that the Constitution explicitly states in Article 98 only that interventions into its affairs shall be permissible only on the basis of statutory law. The independence of the CNB is at statutory law level enshrined in Sec. 34 par. 1 of the Act and it concerns all its activities.

Until the outbreak of the financial crisis, the CNB conducted conventional monetary policy by changing interest rates. However, already during the financial crisis, it became apparent that not only the CNB, but also the ECB, the FED and the Bank of England will be forced to use unconventional monetary policy instruments, as conventional instruments have failed to meet their inflation target. If we take a closer look at unconventional monetary policy at the time of foreign exchange interventions between 2013 and 2017, we find that during them the CNB's monetary policy did not initially lead to the required objectives, i.e. the achievement of the inflation target. As the foreign exchange interventions lasted almost four years, we can state that the unconventional monetary policy of the CNB did not lead to the required impact on the price level, i.e. meeting the inflation target at the CNB's estimated time horizon. The unconventional monetary policy was not fully effective. Despite the above conclusions, it is necessary to state that monetary policy in the Czech Republic contributes, as part of the state's economic policy, to the positive and stable development of the Czech economy.

Acknowledgments

The paper has been created with the financial support of The Czech Science Foundation (project GACR No. 18-05244S - Innovative Approaches to Credit Risk Management) and University of Pardubice (project SGS_2019_018 - Dynamika ekonomických aspektů veřejných politik v kontextu efektivnosti a udržitelnosti).

References

Alesina, A. & Summers, L. H. (1993). Central bank independence and macroeconomic performance: some comparative evidence. Journal of Money, Credit and Banking, 25(2), 151-162.

Bernanke, B. S. & Gertler, M. (2001). ERTLER, Mark. Should central banks respond to movements in asset prices? *The American Economic Review*, 91(2), 253-257.doi: 10.1257/aer.91.2.253

Bernanke, B. S., Gertler, M. & Gilchrist, S. (1999). The financial accelerator in a quantitative business cycle framework. *Handbook of macroeconomics*, 1(Part C), 1341-1393. doi: 10.1016/S1574-0048(99)10034-X

Bleaney, M. (1996). Central Bank Independence, Wage Bargaining Structure and Macroeconomic Performance in OECD Countries. *Oxford Economic Papers*, 48(1), 20-28.doi: 10.1093/oxfordjournals.oep.a028559

Borio, C.E.V. (2011). Rediscovering the macroeconomic roots of financial stability policy: Journey, challenges, and a way forward. *Annual Review of Financial Economics*, 3(1), 87-117.doi:10.1146/annurev-financial-102710-144819

Cecchetti, S. G., Krause, S. (2002). Central bank structure, policy efficiency, and macroeconomic performance: exploring empirical relationships. *Review-Federal Reserve Bank of Saint Louis*, 2002, 84, (4), 47-60. Retrieved July 10, 2019 from Federal Reserve Bank of St. Louis

Clarida, R., Gali, J. & Gertler, M. (1999). The science of monetary policy: a new Keynesian perspective. *National bureau of economic research Working Paper N. 7141*.doi: 10.3386/w7147

Coenen, G., Orphanides, A. & Wieland, V. (2004). Price stability and monetary policy effectiveness when nominal interest rates are bounded at zero. *Advances in Macroeconomics*, 4(1), 1-26.doi: 10.2202/1534-6013.1187

Cochrane, J. H. (2011). How did Paul Krugman get it so Wrong?. *Economic Affairs*, , 31(2), 36-40.doi: 10.1111/j.1468-0270.2011.02077.x/full

Czech National Bank. (2019). Monetary base . Retrieved from https://www.cnb.cz/cnb/STAT.ARADY_PKG.STROM_DRILL?p_strid=AAACB&p_lang=EN

Czech National Bank. (2019). *Official CNB's interest rates (monthly average) (%)*. Retrieved from https://www.cnb.cz/cnb/STAT.ARADY_PKG.STROM_SESTAVY?p_strid=AEAA&p_sestuid=&p_lang=EN

Černohorská, L. (2018). The Impact of Monetary Policy on CPI and GDP in the Czech Republic and Switzerland for the Period 2000 – 2016. *Hradec Economic Days*, 8(1),

144-150.

Černohorská, L. & FLOSOVÁ, H. (2014). Monetary Policy of Central Banks in the Times of Financial Crises. In: *SGEM 2014Conference on political sciences, law, finance, economics and tourism*, 495-502.doi: 10.5593/SGEMSOCIAL2014/B22/S6.0 63

Frait, J. & Komárková, Z. (2011). Finanční stabilita, systémové riziko a makroobezřetnostní politika. *Zpráva o finanční stabilitě 2010/2011*, 96-109. Retrieved June 25, 2019 from Czech National Bank

Friedman, M. et al. (1974). Friedman‘s monetary framework. A debate with his critics. Chicago: The University of Chicago Press.

Gambacorta, L. (2009). Monetary policy and the risk-taking channel. BIS Quarterly Review. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_ id=1519795

Gambacorta, L. & Shin, H.S. (2016). Why bank capital matters for monetary policy. *Journal of Financial* Intermediation, 35(part B), 17-29.doi: 10.1016/j.jfi.2016.09.005

Krugman, P. (2009). How did economists get it so wrong? *New York Times Magazine*, 2009, 2(9), 36-43.

Levin, A.T., et al. (2005). Monetary policy under uncertainty in micro-founded macroeconometric models. *NBER macroeconomics annual*, 20(1), 229-287.doi:10.1086/ma.20.3585423

Mishkin, F.S. (2017). Rethinking monetary policy after the crisis. *Journal of International Money and Finance*, 73 (part B), 252-274.doi:10.1016/j.jimonfin.2017.02.007

Mishkin, F.S. (2011). Monetary policy strategy: lessons from the crisis. *National Bureau of Economic Research Working Paper No. 16755*.doi:10.3386/ w16755

Munzi, T. (2017). Zdravý růst nezajistí nesystémové regulace, ale efektivní alokace kapitálu a nemanipulativní měnová politika. *Bankovnictví*, 24(6), 34-36.

Nalus. (2019). Decision of the Constitutional Court No. Pl. ÚS 59/2000. Retrieved from https://nalus.usoud.cz/Search/ResultDetail.aspx?id=37947&pos=1&cnt=1&typ =result

Reifscheider, D. & Williams, J.C. (2000). Three lessons for monetary policy in a low-

inflation era. *Journal of Money, Credit and Banking*, 2000, 32(9), 936-966. doi:10.2307/2601151

Revenda, Z. (2016). Peněžní a úvěrové multiplikátory ve vybraných ekonomikách. *Politická ekonomie*, 64(5), 5 05-523.doi:10.18267/j.polek.1085

Sack, B. (2000). Does the Fed act gradually? A VAR analysis. *Journal of Monetary Economics*, 46(1), 229-256.doi: 10.1016/S0304-3932(00)00019-2

Sládeček, V., Mikule, V., Suchánek, R. & Syllová, J. (2016). Ústava České republiky. Komentář. 2. vydání. Praha: C. H. Beck.

Smets, F., & Wouters, R. (2003). An estimated dynamic stochastic general equilibrium model of the euro area. *Journal of the European Economic Association*, 1(5), 1123-1175.doi:10.1162/154247603770383415

Svensson, L.E.O. (1997). Inflation forecast targeting: Implementing and monitoring inflation targets. *European economic review*, 41(6), 1111-1146.doi:10.1016/S0014-2921(96) 0005 5-4

Svensson, L.E.O. (2015). Monetary policy and macroprudential policy: different and separate. Canadian Journal of Economics. Retrieved January 25, 2018 from Reserve Bank of Boston's 59th annual konference

Taylor, J.B. (1993). Discretion versus policy rules in practice. In: *Carnegie-Rochester conference series on public policy*. North-Holland, 39, 195-214.doi:10.1016/0167-2231(93)90009-L

Williams, J.C. (2014). Monetary policy at the zero lower bound: Putting theory into practice. Hutchins Center Working Papers. Retrieved March 5, 2019 from Hutchins Center on Fiscal and Monetary Policy

Wu, J.C., & Xia, F.D. (2016). Measuring the macroeconomic impact of monetary policy at the zero lower bound. *Journal of Money, Credit and Banking*, 48(2-3), 253-291. doi:10.1111/jmcb.12300

Zamrazilová, E. (2014). Měnová politika: krátkodobá stabilizace versus dlouhodobá rizika. *Politická ekonomie*, 62(1), 3-31.doi:10. 18267 /j.polek.935