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## Abstract

This paper analyses the evolution of financial euroisation in Croatia and examines the use of monetary and macroprudential measures amid the context of high euroisation. Croatia's experience suggests that high euroisation is difficult to diminish despite the country's long history of macroeconomic and exchange rate stability and credible monetary policy, which included regulatory measures for discouraging banking business in foreign currencies. The exit strategy for the elimination of currency risk arising from high euroisation, which complicates monetary policy implementation and maintenance of financial stability, may lie either in euro adoption or in the promotion of the use of the domestic currency. Both options ultimately require the fulfilment of the same preconditions – sound economic fundamentals, a credible economic policy and reduced macroeconomic imbalances.

Keywords:
euroisation, CNB, monetary policy, macroprudential measures

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E50, E52, E58

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# Contents

# 1 Introduction

Monetary policies of many post-transition economies are faced with challenges posed by high dollarisation or euroisation.[1] Euroisation is a persistent phenomenon, and is almost impossible to reverse once it becomes an inherent part of a financial system, as confirmed by numerous empirical studies (for instance, Rappaport, 2009, Winkelried and Castillo, 2010, Scheiber and Stern, 2016). Most often it is the result of macroeconomic mismanagement in the past that led to episodes of high inflation and devaluation of the domestic currency. Faced with the declining value of their financial assets, households and companies lose confidence in the domestic currency and start using a foreign currency as a means of payments and savings. The domination of a foreign currency in the liabilities of banks may influence their credit policies; in an attempt to hedge against currency risk, they grant loans indexed to a foreign currency, thus transferring the currency risk to loan users. This however, leads to increased credit risk due to the currency mismatch between borrowers' incomes and debts. Therefore, the risk to financial stability arising from euroisation and the strong relationship between the exchange rate and inflation (inflationary expectations) limit the manoeuvring space for monetary policy.

Croatia has one of the highest levels of deposit and credit euroisation of all Central and Eastern European countries, although its exchange rate policy in the past two decades has been based on exchange rate stability. In addition, with its macroprudential measures, the Croatian National Bank has been actively working on penalising the use of foreign currency in banking business and on strengthening bank capitalisation and monetary system's foreign currency liquidity. Nevertheless, deposit and credit euroisation have remained high, implying that past negative experiences with devaluations, depreciations, high inflation and hyperinflation still influence citizens' behaviour, resulting in the euro's continued dominance as the currency of choice for savings and very often as the measure of value (for example, real estate prices).

In such a highly euroised environment, policymakers may choose between so-called "de-euroisation" measures on the one hand and policies for minimising the materialisation of the exchange rate risk on the other, including the introduction of the euro as the official currency. As regards de-euroisation policies, experience demonstrates that the propensity for saving in a foreign currency is difficult to change and that it can be a slow process with an uncertain outcome and is easily reversible, even amid years-long monetary and financial

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1 The term dollarisation or euroisation implies the use of a foreign currency for different functions of money, such as the measure of value (price) or a means of saving (foreign currency deposits). The literature also uses the term "currency substitution", but this relates primarily to the use of foreign currency cash as a means of payment (Calvo and Végh, 1992). The term "dollarisation" was introduced in the studies about the use of the U.S. dollar in Latin America. With the adoption of the euro, the term "euroisation" was introduced to denote cases in which euro is used as the substitute currency. Since the substitute currency in Croatia is the euro, this survey will use the term "euroisation". Official euroisation is the use of a foreign currency as an official means of payment (as in the case of Montenegro), while unofficial euroisation is the use of a foreign currency for specific functions of money together with the domestic national currency (as in the case of Croatia).

stability, sound economic fundamentals and credible economic policy. Israel, Poland, Peru and Chile are singled out in the literature as rare successful examples of reduced euroisation (dollarisation), (e.g. Reinhart, Rogoff and Sevastano, 2003, Herrera and Valdes, 2004, García-Escribano, 2010 and Windischbauer, 2016). However, it should be noted that each of these cases is characterised by specific features not applicable to other countries, that the period of high euroisation (dollarisation) in these countries was shorter than in Croatia and that the maximum level of euroisation in these countries was much lower than that in Croatia. It is also noteworthy that these countries often de-euroised at the time when liberalization of capital flows was not an international norm or a requirement (whereas for Croatia as an EU member state it is) so they were able to use capital controls. On the other hand, as the policies for minimising the exchange rate risk limit the manoeuvring space for an independent monetary policy, one of the solutions may lie in the introduction of a foreign currency. Thus, membership in the euro area can be considered a specific form of official euroisation as the country replaces its currency by a common currency and follows the common monetary policy of the currency area.

The main objectives of this paper are to explore the reasons for the high euroisation in Croatia by analysing its developments and experiences with the monetary and macroprudential measures that the CNB has applied in the context of high euroisation. The paper should contribute to a better understanding of the issue of the persistence of euroisation in Croatia and to offer policy makers a starting point for an exit strategy for the resolution of the currency risk issue in the Croatian economy, especially in light of deciding on a euro adoption strategy, which Croatia has committed to as a member of the EU.

The paper is divided into five sections. Following introductory remarks, it analyses the developments in deposit and credit euroisation in Croatia and assesses the monetary environment in the context of euroisation. The fourth section describes in more detail the measures for penalising banking business in foreign currency and strengthening financial system resilience amidst high euroisation. The last section summarises the main conclusions and briefly comments on euro adoption as a potential strategy for eliminating the risks stemming from euroisation.

# 2 Euroisation in Croatia – magnitude and evolution

Euroisation is present in numerous Central and Eastern European (CEE) countries (Figure 1) with considerable differences in the degree of deposit euroisation and the cause of credit euroisation. In one group of countries (which includes Croatia, Bulgaria and to some extent, Romania), high deposit euroisation led to



Figure 1 Deposit and credit euroisation in countries of Central and Eastern Europe
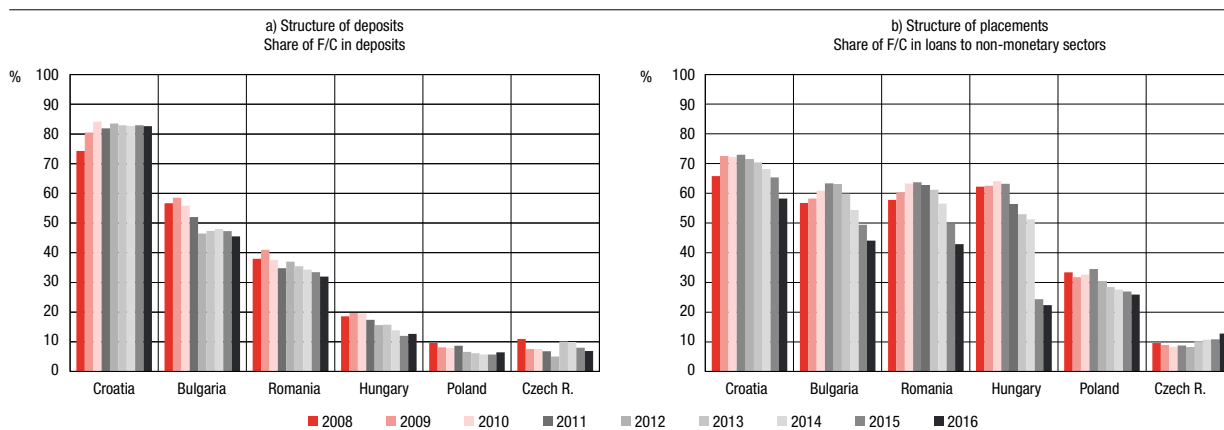
Note: The figure on the right shows the structure of loans for the Czech Republic and Hungary and the structure of placements for other countries.
Source: National central banks.

Figure 2 Highest annual inflation rates and euroisation levels in transition countries

deposit euroisation (%), 2016, for non-euro area countries or the last year prior to entry into the euro area

highest annual inflation rate during transition (%)

Sources: Belhocine et al. (2016) and national central banks.
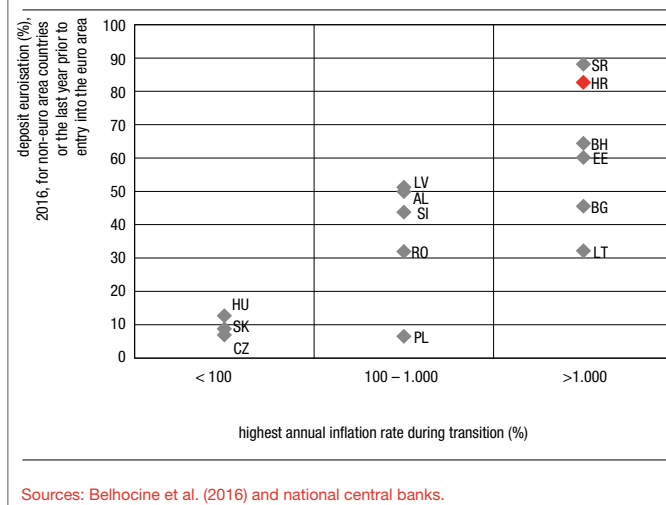
credit euroisation, as banks hedged against the exchange rate risk. In the other group of countries (Hungary and Poland), credit euroisation is the result of banks' policies to finance domestic lending from cheap foreign sources (the carry trade). As a result, the latter group has a much lower level of deposit euroisation. Croatia has the highest level of both deposit and credit euroisation among all CEE[2] EU member states (Figure 1) and ranks among the highest in the world.

Experiences with high inflation have proved to be the primary reason for the loss of confidence in the domestic currency and the persistence of euroisation in many countries. The countries of Central, Eastern and South-eastern Europe with the highest annual inflation rates during the transition had on average higher levels of deposit euroisation in the banking system in the post-transition period (Figure 2).
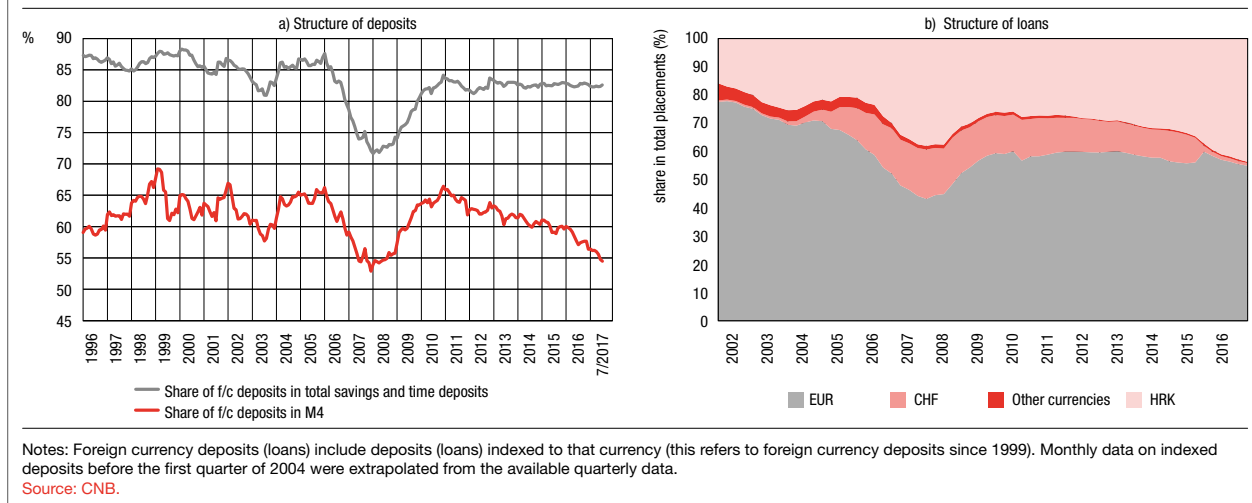
The root of the problem of euroisation in Croatia goes back to the 1960s, the process of euroisation picking up momentum in the 1970s (Faulend, 2014). The episodes of a sharp devaluation of the domestic currency accompanied by hyperinflation had a big impact on the behaviour of domestic savers who, in an effort to preserve the value of their financial assets, converted those assets into foreign currency, most commonly the German mark. The rising share of foreign currency was additionally fuelled by economic policy, which allowed citizens to keep financial assets in foreign currency, particularly in the light of the permitted temporary work abroad and inflows from work remittances (Faulend, 2014). In addition, inflows of foreign currency from tourism were increasingly becoming an important factor. Such developments also marked the 1980s, and similar trends persisted after Croatia gained independence, until the implementation of the 1993 stabilisation programme that brought monetary stability. Despite the achievement of low inflation and exchange rate stability, other euroisation-promoting factors gained momentum, such as ample inflows of remittances and tourist receipts, and the deepening of the financial system following the entry of foreign, predominantly European, banks[3]. As a result, since the introduction of the kuna in 1994, the share of foreign currency in total time and savings deposits broadly ranged between 80% and 90%.

Deposit euroisation reached its peak at the height of the banking crisis in early 2000 and held steady for almost the six following years. The return to banks of foreign currency savings previously held in cash (i.e. currency held under the mattress) or in accounts abroad also contributed to the maintenance of high euroisation. The inflow of foreign currency deposits into the banking system was particularly strong towards the end of 2001 and in early 2002 due to the conversion of national currencies into the euro, which was put into circulation in 2002 (Šošić, 2012).

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2   As regards the countries of Southeastern Europe, Serbia has a similar level of euroisation while Bosnia and Herzegovina and Macedonia have slightly lower levels of euroisation.

3   For a more detailed historical overview of the euroisation issue in Croatia, see Faulend (2014). For a more detailed analysis of euroisation in Croatia in the 1990s and in the first half of the 2000s, see Kraft (2003) and Kraft and Šošić (2006).

Figure 3 Euroisation dynamics in Croatia

a) Structure of deposits

b) Structure of loans

Share of f/c deposits in total savings and time deposits
Share of f/c deposits in M4

EUR          CHF          Other currencies          HRK

Notes: Foreign currency deposits (loans) include deposits (loans) indexed to that currency (this refers to foreign currency deposits since 1999). Monthly data on indexed deposits before the first quarter of 2004 were extrapolated from the available quarterly data.
Source: CNB.

The period from 2006 to 2008 was the only time in the past quarter of a century when Croatia recorded a pronounced fall in both deposit and credit euroisation. The share of foreign currency deposits (including kuna deposits indexed to a foreign currency) in total time and savings deposits fell from almost 88% to 72% in January 2008, the lowest recorded level since Croatia's independence. Banking placements euroisation was also reduced in 2007 and 2008. This was mostly due to the kuna appreciation associated with abundant capital inflows and favourable macroeconomic developments, which lowered the fear of depreciation (Figure 8). It was also fuelled by the CNB's monetary and macroprudential policy measures, described in more detailed in section three and particularly section four.

The outbreak of the global financial crisis in September 2008 halted the de-euroisation process as the shaken confidence in banks reinstated the deep-rooted fear of depreciation. This led to a considerable withdrawal of deposits from the banks and a sudden conversion of kuna into euro deposits. Prompt action by the CNB[4] and the Croatian Government[5], coupled with stronger foreign borrowing by banks, soon put an end to deposit outflows. In the following period, depositors returned their savings to the banks, but the majority chose foreign currency deposits. As a result, the share of foreign currency deposits in time and savings deposits rose again from approximately 73% at the end of August 2008 to 84% at the end of 2010 and held steady at similar elevated levels throughout the following several years.

Interestingly, at the peak of the euro crisis (from mid-2011 to mid-2012), when the future of the euro was at risk, some depositors temporarily turned away from the euro to other major global currencies, some of which had never been popular as a means of savings in Croatia. As a result, deposits denominated in currencies perceived as safe havens (U.S., Canadian and Australian dollars, Swiss franc, Norwegian krone) rose by almost 30% over a period of only a few months and their share in total deposits rose from 8% to 10%. However, this was just a one-off event which came to an end once the situation on the international financial markets stabilised, and the euro again resumed its dominant currency position in the structure of deposits of the Croatian banking system.

The growth in foreign currency deposits decelerated in the past several years and became negative in 2016 and 2017. This trend was primarily due to a steady fall in deposit interest rates, which prompted depositors to substitute time and savings deposits (typically denominated in a foreign currency) by more liquid financial assets, such as demand deposits (i.e. funds in current and giro accounts, exclusively denominated in kuna)[6]. Consequently, the share of foreign currency in this broadest monetary aggregate (M4) fell by 10

4    This relates in particular to the revocation of marginal reserve requirements described in section four.

5    During a short-lived bank run, the amount of deposits insured was raised from HRK 100 000 to HRK 400 000. Later on, in the process of EU accession, the amount insured was set at EUR 100 000.
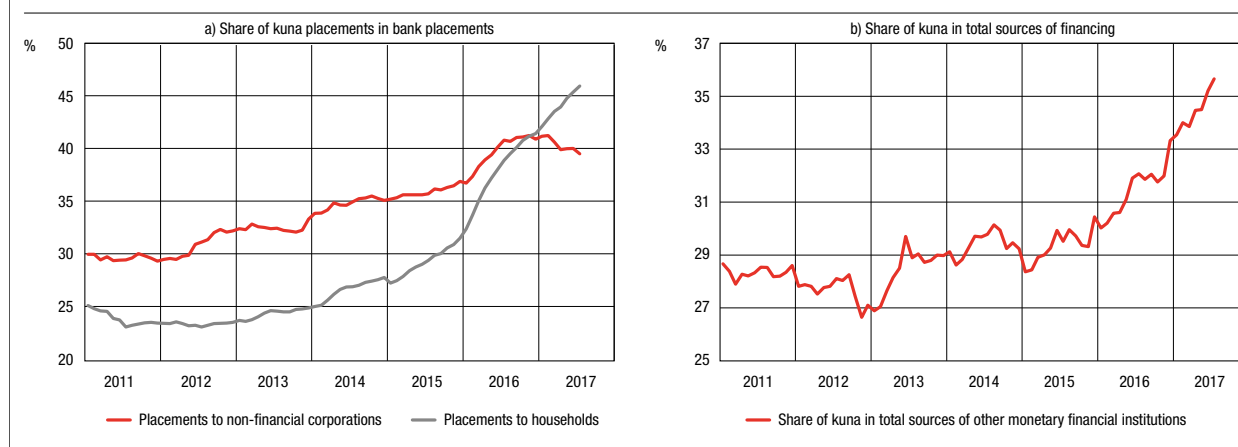
6    The introduction of the tax on interest payments in 2015 also caused a slowdown in deposits growth.

percentage points in the past six years, from 66.5% at the end of 2010 to 56.4% at the end of 2016. Nevertheless, the preference for foreign currency as a means of longer term savings did not change, with the share of foreign currency deposits in total time and savings deposits holding steady in the range between 81% and 84% (Figure 3.a).

In addition to deposit euroisation, one also has to take into account foreign cash held by citizens "under the mattresses" in order to understand the extent of the share of the euro in the Croatian economy. There are no official statistics on foreign currency cash held by citizens, but a regular survey on the role of the euro in savings habits, cash holdings and household borrowing in Central, Eastern and South-eastern Europe[7] conducted by the Austrian central bank shows that from 2007 to 2012 between 15% and 22% of respondents in Croatia held cash in euros. In addition, over 15% of the total cash in Croatia in 2015 was accounted by cash in euro. Šošić (2012) estimates that the share of foreign currency in total cash in Croatia is much higher, with the amount of foreign cash in Croatia exceeding EUR 2bn as of the end of 2010, approximately equivalent to one half of the total kuna cash at the time.

The high and persistent level of euroisation on the liabilities side of banks' balance sheets is reflected in the currency structure of bank assets (Figure 3.b). After the banks sustained massive losses in the 1980s and early 1990s due to currency mismatches between their assets (mainly in the domestic currency) and liabilities (mainly in foreign currency), and after the banking sector privatisation at the end of the 1990s, credit euroisation in Croatia gained momentum. From the early 2000s, credit euroisation was also fuelled by fast growth in credit activity, supported by a large inflow of (foreign currency) capital from abroad. The share of loans denominated in and indexed to a foreign currency in total bank loans held steady at above 75% until end-2006 (Figure 3.b). The following period was marked by a fall in credit euroisation that continued until the beginning of the global financial crisis[8] and resulted in a fall in the share of foreign currency loans in total loans to 62% by December 2008. The downward trend reversed with the onset of the crisis and the level of credit euroisation had jumped again to over 70% by early 2009 and held steady around that level in the following five years.



Figure 4 Recent growth in kuna lending and kuna sources of financing

a) Share of kuna placements in bank placements

b) Share of kuna in total sources of financing

— Placements to non-financial corporations    — Placements to households

— Share of kuna in total sources of other monetary financial institutions

Note: Sources of financing include savings and time deposits and banks' foreign liabilities.
Source: CNB.

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7   OeNB Euro Survey.

8   The credit boom in the middle of the 2000s was accompanied by a strong rise in the share of loans in Swiss francs, fuelled by a number of domestic and foreign factors (CNB, 2016). The historically stable exchange rate of the Swiss franc against the euro and consequently of the kuna against the Swiss franc, and lower interest rates on loans in Swiss francs led debtors to believe that these loans were more favourable and at the same time not riskier than euro loans. In addition, the lower interest rate enabled debtors to take on larger loans. The rise in Swiss franc loans was also fuelled by competition among banks and their appetites for greater market shares, and the fact that the banking groups that owned Croatian banks were already familiar with Swiss franc loans. The optimism in the real estate market and expectations of rising income also contributed to the trend. With the onset of the global financial crisis in 2008, the monthly instalments of loans in Swiss francs started rising, first as a result of rising variable interest rates but later also as a result of the strengthening of the Swiss franc against the euro (and thus against the kuna). Following the implementation of the act on the conversion of loans in Swiss francs into the euro, which entered into force in late 2015, the share of Swiss franc placements in total bank placements fell from almost 18% in early 2008 to 2% at the end of 2016. It should be noted that, in contrast with euro-indexed loans that accompanied deposit euroisation, the granting of loans in Swiss francs was fuelled by interest rate differentials, i.e. more favourable interest rates on banks' foreign borrowing in Swiss francs.

Credit euroisation dynamics started changing gradually in the past few years in favour of kuna lending (Figure 4.a). This was mainly due to domestic sectors' deleveraging (as repaid loans were predominantly linked to a foreign currency), increased household demand for kuna loans (which may be attributed to negative experiences with the sharp appreciation of the Swiss franc), and an increased share of the domestic currency in bank funding due to a rise in demand deposits amid historically low bank interest rates on time deposits (Figure 4.b). Therefore, as suggested by Ljubaj and Petrović (2016), the key precondition for a continued growth in the share of kuna loans lies in the further growth of kuna deposits, including through a strong rise of demand deposits. Should this trend discontinue, or should credit growth accelerate strongly, the room for granting new loans in domestic currency could be limited.

# 3 Monetary environment underlying high euroisation

Amidst the high euroisation of the Croatian banking system, the monetary policy of the CNB focusses on maintaining a stable exchange rate in order to achieve the central bank's main objective – price stability (Figure 5). The stability of the EUR/HRK exchange rate is also key for maintaining financial stability in view of the high foreign currency indebtedness of all the domestic sectors. Almost three quarters of the total debt of all sectors is in foreign currency (amounting to around HRK 500bn or 150% of GDP at the end of 2016), thus clearly implying the extent to which exchange rate stability protects debtors from currency risk. Although there is no pre-determined target level or a range of exchange rate fluctuation, in the past fifteen years or so the EUR/HRK exchange rate fluctuated within a narrow range of +/−5% around the average. In the meantime, the annual inflation between 2001 and 2016 averaged at 2% and never reached double-digit values.

In addition to successfully maintaining price stability, the CNB acted in a countercyclical manner in view of the high system exposure to currency risk as the result of euroisation (Figure 6)[9]. In the pre-crisis period, the general objective of the monetary policy was to limit the build-up of excessive imbalances and to slow down credit expansion. More precisely, the monetary and macroprudential policy of the CNB was marked by the systemic implementation of measures aimed at discouraging foreign borrowing by banks used to finance domestic credit activity, at ensuring foreign currency liquidity and at creating appropriate buffers against capital outflows. Such an approach by the central bank contributed to the growth in foreign currency liquidity in the



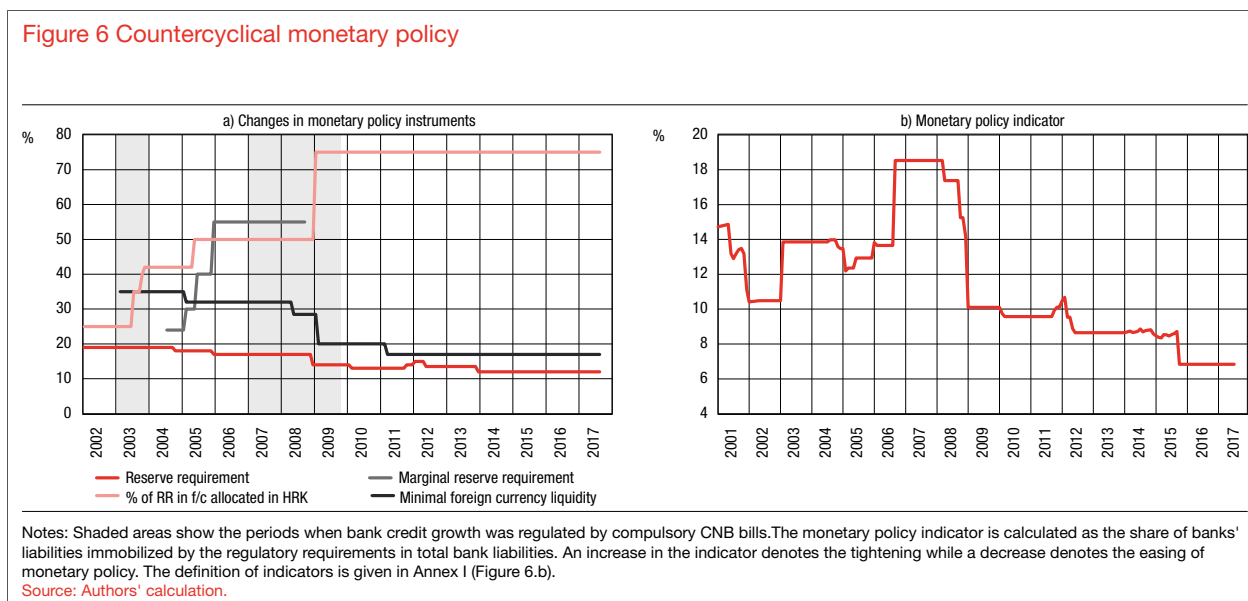Figure 5 Inflation and exchange rate, 2001 – 2017
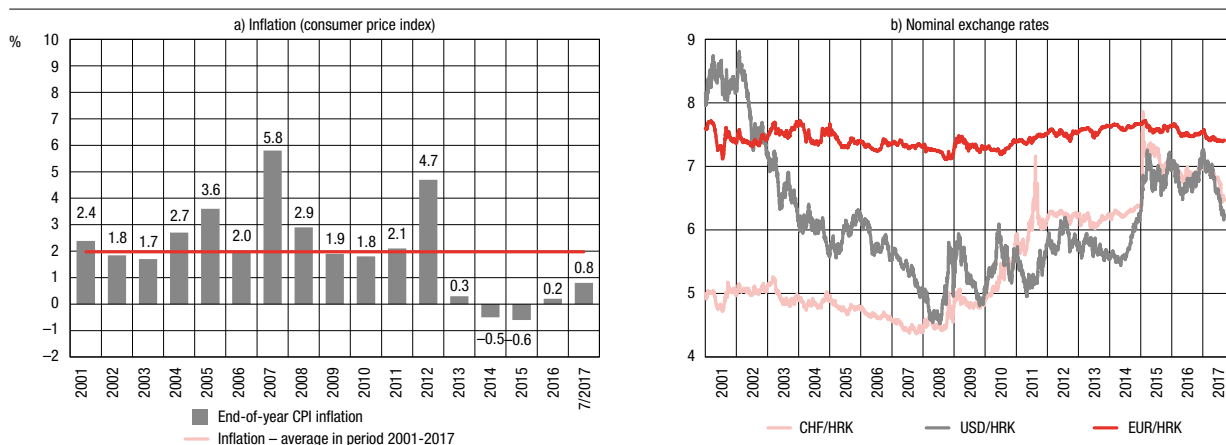
Sources: Croatian Bureau of Statistics and CNB.

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9    CNB measures are described in detail in the following section.

monetary system while additional capital requirements (particularly those associated with currency induced credit risk) increased bank capitalisation, which all led to improved banking system resilience. The reserves built enabled the CNB to act countercyclically during the crisis. By relaxing monetary policy measures during the crisis, the CNB practically halved the share of banks' liabilities immobilized by the regulatory requirements (Figure 6.b) and released liquidity in the amount of approximately 14% of GDP. A significant part of that amount was related to the release of the previously accumulated foreign currency funds, which played an important role in preserving the stability of the exchange rate, international reserves and the country's external liquidity (Rohatinski, 2010). Thanks to such a policy, the banking system during and after the crisis remained stable, secure and highly capitalised.

**Figure 6 Countercyclical monetary policy**



a) Changes in monetary policy instruments

b) Monetary policy indicator

Reserve requirement
Marginal reserve requirement
% of RR in f/c allocated in HRK
Minimal foreign currency liquidity

Notes: Shaded areas show the periods when bank credit growth was regulated by compulsory CNB bills. The monetary policy indicator is calculated as the share of banks' liabilities immobilized by the regulatory requirements in total bank liabilities. An increase in the indicator denotes the tightening while a decrease denotes the easing of monetary policy. The definition of indicators is given in Annex I (Figure 6.b).
Source: Authors' calculation.

The dynamics of deposit interest rates, just like the exchange rate and the price and banking system stability, also tended not to work in favour of high deposit euroisation. The relative scarcity of sources of financing in the kuna, coupled with ample capital inflows from abroad, resulted in an interest rate differential on the liabilities side that was continuously positive in favour of kuna deposits. In addition, the high regulatory costs for foreign currency sources prompted banks to offer more attractive interest rates on kuna deposits to attract kuna sources (Figure 7.b). As a result, the interest rates on kuna deposits were continuously higher than the

**Figure 7 Interest rates on deposits and costs of regulation by currency**



a) Interest rates on time and savings deposits

b) Cost of regulation

Kuna deposits
F/C deposits

Total cost of regulation
Cost of regulation – HRK
Cost of regulation – FX

Note: The cost of regulation is estimated as the marginal cost or as the weighted difference between the lowest required return on placements and the nominal cost of bank financing sources, with the amount of bank assets immobilised due to regulatory requirements being factored in.
Source: CNB.

Figure 8 Consumer expectations of changes in the exchange rate of the kuna against the euro



Notes: The net weighted expectation has been calculated as the sum of responses in which a significant expectation of a change in the exchange rate was weighted by 1 and a slight expectation of a change in the exchange rate was weighted by 0.5. Data are a 4-quarter moving average of net expectations regarding the direction of the exchange rate in the following 12 months.
Source: Consumer Confidence Survey, CNB.

interest rates on foreign currency deposits, with the difference between the two since 2000 ranging on average between 0.5 and 1 percentage points and being even wider in late 1990s (Figure 7.a). However, this was not a sufficient incentive to boost savings in kuna, and particularly long-term savings in which foreign currencies always prevailed.

Despite a long-term stability of the exchange rate and the credible monetary policy of the CNB, the lack of confidence in the domestic currency is persistent and deep rooted, even in the periods of appreciation pressures (from 2006 to 2008). Consumer expectations regarding the future exchange rate changes taken from the Consumer Confidence Survey from early 2000 until today show that the number of persons expecting a depreciation has always been bigger than the number of persons with the opposite expectations (Figure 8). To sum up, despite a continuously low inflation, the stable exchange rate of the kuna against the euro, positive interest rate differential in favour of kuna deposits and banking system stability, deposit euroisation has stood on average at approximately 80% over the past 20 years, moving within a narrow range of +/–8%, thus confirming its assumed persistence based on a deeply-rooted lack of saver confidence in the stability of the domestic currency.

# 4 Measures directly or indirectly associated with a high degree of euroisation

Exposure to the exchange rate risk and narrow room for monetary policy actions prompted the CNB to take a number of non-standard measures to manage risks and growing imbalances (Table 1). In 2003 the CNB started introducing measures the main purpose of which was to reduce systemic risks arising from excessive credit growth and growing external imbalances. Banking system resilience to potential shocks was strengthened by requiring from banks capital buffers and higher system liquidity reserves (particularly foreign currency liquidity, since the CNB's ability to create foreign currency liquidity was limited by the size of international reserves). The CNB used these measures to limit euroisation indirectly by increasing the costs of bank operations with foreign currency (i.e. collection of foreign currency deposits and granting of foreign currency loans). Recent CNB measures are focussed more on informing bank clients about potential currency risks and choices available to them when deciding on taking kuna or foreign currency loans and on ensuring prudent management of those risks in banks by determining special procedures, thus contributing to the reduction of credit euroisation.

Table 1 Chronological list of key monetary and macroprudential measures in Croatia implemented since 2003 directly or indirectly related to euroisation and the associated risks

| | |
|---|---|
| 2003 | Ceiling on credit growth – 16% annually |
| 2003 | Minimum required foreign currency claims |
| 2004 | Marginal reserve requirement |
| 2006 | Special reserve requirement |
| 2006 | Guidelines for managing currency induced credit risk |
| 2006 | Guidelines for managing credit risk arising from placements to households |
| 2006, 2008 | Higher risk weights for currency induced credit risk |
| 2007 | Ceiling on credit growth – 12% annually |
| 2009 | Decision on risk management |
| 2010 | Decision on the classification of placements and off-balance sheet liabilities of credit institutions |
| 2011 | Report on the internal capital adequacy assessment process |
| 2013 | Decision on the content of and the form in which consumers are provided information prior to contracting banking services |
| 2015 | Amendment to the Decision on the content of and the form in which consumers are provided information prior to contracting banking services |

Note: For more details, see CNB annual reports from 2000 to 2016.
Sources: www.hnb.hr and authors' compilation.

## Measures aimed at improving management of the currency induced credit risk

In order to improve banks' management of currency induced credit risk, the CNB has introduced guidelines and decisions promoting the development of banks' internal policies associated with that type of risk. In May 2006, the CNB published *Currency Induced Credit Risk Management Guidelines*, directly encouraging the banks to formulate their own policies and procedures for identifying, measuring, monitoring and controlling this part of credit risk and for enabling regular reporting on unhedged clients on the basis of those policies. Ultimately, the aim was to force the banks to set aside additional capital for placements to unhedged clients, which, in addition to other regulatory costs, actually increased the cost of foreign currency lending. In October of the same year, the CNB issued *Guidelines for Managing Credit Risk Arising from Placements to Households (Natural Persons),* aimed at improving policies and procedures that prescribe the ascertainment of the creditworthiness of natural persons loans are being granted to.

In addition, since 2009 "currency induced credit risk" has been defined by the *Decision on risk management* as the risk borne by a credit institution granting foreign currency placements or placements indexed to a foreign currency, which arises from a debtor's currency risk exposure. This Decision thus defines the general requirements for the management of currency induced credit risk. The March 2010 *Decision on the classification of placements and off-balance sheet liabilities of credit institutions* also deals with a debtor's creditworthiness. It lists the criteria for its assessment, such as the debtor's asset strength, debtor's liquidity and profitability (for legal persons), debtor's cash flows in the previous period, the expected future cash flows relative to his/her liabilities, and debtor's exposure to currency risk arising from placements denominated in or indexed to a foreign currency, including off-balance sheet liabilities denominated in or indexed to a foreign currency.

To increase bank resilience to currency induced credit risk and the price of that type of loan, the CNB imposed *very high risk weights* on foreign currency loans and loans with a currency clause granted to clients with incomes predominantly in the local currency. The banks were also obligated to monitor mismatches of their debtors' foreign currency positions and to oversee whether debtors could adjust their cash flows to potential changes in their debt level. The 2006 and 2008 increases in risk weights reduced the banks' capital adequacy by approximately three percentage points. Due to alignment with the Capital Requirements Directive, in March 2010 the higher risk weights for positions exposed to currency induced risk had to be replaced by the slightly lower Basel II risk weights, so the CNB raised the minimum capital adequacy ratio from 10% to 12%.

## Credit growth limit

Administrative taxation of excessive credit growth was introduced to slow down growth in credit activity

in general. However, since the majority of newly-granted loans at the time of introduction were linked to a foreign currency, this restriction actually slowed down lending in foreign currency. The measure was first introduced in 2003 and it obligated banks exceeding the annual loan growth rate of 16% to subscribe low-yielding CNB bills in twice the amount of the excess lending. This measure was in force until end-2003. A similar measure was introduced in 2007 when the "untaxed" annual loan growth was limited to 12% (distributed across monthly limits). The banks that exceeded the monthly limit were obligated to subscribe low yielding CNB bills in the amount of 50% of the excess lending. With the aim of diminishing the possibility of its circumvention, the measure was tightened several times through widening the coverage of assets involved. The measure was repealed in November 2009 as credit activity slowed down considerably following the crisis.

## Reserve requirements

A very efficient measure for ensuring the system's foreign currency liquidity was the marginal reserve requirement (MRR), introduced in August 2004. Its primary objective was to contain growth in banks' foreign debt by raising sharply the price of foreign borrowing. This type of reserve obligated the banks to deposit a considerable portion of their new foreign borrowing with the CNB in the form of interest-free deposits, thus indirectly discouraging credit growth financed from abroad. The basis for the calculation of MRR was the cumulative increase in a bank's foreign liabilities relative to the stock of its foreign liabilities in the initial period (June 2004). The MRR rate applied to that basis was initially set at 24% and later raised several times, reaching 55% in November 2005. The basis for calculation also underwent several adjustments. The marginal reserve requirement was revoked in October 2008.

In parallel with the MRR, from March 2006 to February 2009, a *special reserve requirement* (SRR) was also imposed, the effects of which were similar to the effects of the MRR, the only difference being that it was applied to banks' foreign liabilities arising from issued securities. The introduction of that measure was prompted by circumventions of the MRR measure through the issue in the domestic market of securities that would then be purchased by a foreign parent bank in the secondary market. The basis for the calculation of the SRR was the positive difference between the average daily stock of issued securities in a calculation period and the average daily stock of issued securities in the initial period (January 2006). The requirement rate amounted to 55% and the assets deposited with the CNB for compliance with the SRR were not remunerated.

In addition to these special forms of reserve requirements, in creating buffers to mitigate the exchange rate risk, the CNB also used standard reserve requirements, which were also the main instrument of sterilisation. Albeit the basis for the calculation of reserve requirements is divided into the kuna and the foreign currency components, the rate of the general reserve requirements has been the same for both Kuna and foreign currency funds since end-2000. The prescribed portion of the foreign currency reserve requirements has to be allocated in the domestic currency, and the amount of this portion was changed several times, mainly for the purpose of monetary system liquidity management and exchange rate stability maintenance (Figure 6.a).

## Short-term foreign currency liquidity requirement

Another measure that considerably raised the cost of foreign currency funds and foreign currency liquidity in the monetary system was *minimum required foreign currency claims* (MRFCC). This measure, introduced in February 2003, obligated the banks to cover on a daily basis the prescribed percentage of their total foreign currency liabilities with foreign currency claims[10]. The MRFCC thus imposed the obligation on the banks to maintain foreign currency liquidity in the form of very short-term securities in their foreign assets. In the light of high levels of banks' foreign liabilities, this measure had a penalising effect on banks' foreign currency operations and at the same time obligated the banks to set up their own buffers in the form of liquid foreign currency funds, given the limited capacity of the CNB to act as the lender of last resort. And finally, in the light of their special purpose and role as a tool for containing balance of payments pressures, the required liquid foreign currency claims may be considered as supplementary international reserves.

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10  This replaced a similar measure which until then obligated the banks to set aside a certain percentage of their short-term foreign currency liabilities (53%).

The MRFCC measure was amended several times to meet the liquidity needs of the banking system, i.e. to support the countercyclical character of the monetary policy. In February 2005, MRFCC was cut from 35% to 32% and in October 2006 the basis for the calculation of the MRFCC was broadened to include kuna deposits with a currency clause in banks' foreign currency liabilities. The reason for this change was the fact that up to that point the banks had been attracting kuna deposits with a currency clause to avoid the obligation of maintaining the minimum required foreign currency claims. The broadening of the base for the MRFCC helped attract "pure" kuna deposits and stimulated the granting of "pure" kuna loans (i.e. kuna loans without a currency clause). The MRFCC rate was cut from 32.0% to 28.5% in May 2008, and after the outbreak of the financial crisis, it was cut on several occasions to today's 17%. These reductions were crucial for ensuring foreign currency liquidity to the monetary system, and helped in preserving the exchange rate stability amid depreciation pressures during the crisis.

## Consumer protection measures

In addition to the mentioned activities aimed at reducing debtors' and credit institutions' currency and currency-induced risk, which focussed on the banks, the CNB also worked actively on improving debtors' awareness of potential risks arising from borrowing in a foreign currency. The CNB adopted a *Decision on the content of and the form in which consumers are provided information prior to contracting banking services*, which entered into force in 2013. This decision obligated credit institutions to inform their clients about interest rate changes and currency risks. Under this Decision, clients have to be informed about the risk associated with the currency in which a loan is denominated or to which it is indexed, while paying particular attention to the risk of exchange rate changes.

Amendments to the Consumer Credit Act that entered into force in January 2014 also addressed the risks associated with lending in a foreign currency, thus raising both counterparties' risk awareness in such financial arrangements. Since then, the banks have been obligated to inform their clients about the exchange rate and interest rate risks. Although this act does not explicitly encourage financial institutions to offer loans in the domestic currency, it does so implicitly. This regulation, together with the *Decision on the content of and the form in which consumers are provided information prior to contracting banking services*, influences the behaviour of financial institutions, and also heightens consumers' awareness of the risks associated with lending in foreign currencies and of the possibility of selection between kuna and foreign currency loans, thus potentially boosting demand for loans in the domestic currency.

The described set of instruments related to currency risk in the area of consumer information was additionally broadened in 2015 when the CNB amended the mentioned Decision by obligating the banks to present the quantitative effect of potential currency and interest rate shocks on monthly annuities or instalments. Following those amendments, the banks are obligated to show the effect of a possible one-off depreciation of the kuna of 10% (for the euro) and 35% (for all other currencies) on monthly loan instalments as well as the calculation of the combined effect of a simultaneous interest rate hike and a depreciation of the kuna on monthly loan instalments. When offering foreign currency indexed loans, the banks also have to offer a comparable loan in the domestic currency or refer the client to the information list of the banks offering such loans that is published on the CNB website.

The European Systemic Risk Board (ESRB) issued in 2011 a *Recommendation on lending in foreign currencies*, proposing a range of measures for the resolution of systemic risks associated with lending in foreign currencies. The recommended measures are aimed at improving the resilience of financial institutions offering that type of loan with a view to protecting the overall financial system from unwanted exchange rate developments. They also contribute to increased level of consumer protection. Croatia has been found to be fully compliant with that Recommendation (Table 2). However, the main deficiency of that Recommendation from Croatia's point of view is that it does not tackle the real cause of euroisation in Croatia – deposit euroisation.

To sum up, the CNB used a wide range of instruments, measures, regulations and recommendations to contain the exchange rate risks in the economy arising from the high level of deep-rooted euroisation. Given their diversity in terms of the purpose, subject, channels through which they act, complementarity and simultaneous use, it is impossible to make a quantitative assessment of the impact of each measure individually.

Table 2 Assessment of compliance with ESRB recommendation on lending in foreign currencies

| State | Recommendations | | | | | | | Overall assessment |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E.1 | F | G | |
| Belgium | LC | LC | SE | SE | LC | FC | IE | LC |
| Bulgaria | PC | PC | SE | PC | LC | FC | SE | PC |
| Czech R. | SE | SE | FC | SE | SE | FC | SE | FC |
| Croatia | FC | LC | FC | FC | FC | FC | SE | FC |
| Denmark | SE | SE | SE | FC | FC | FC | IE | LC |
| Germany | LC | SE | FC | FC | SE | FC | SE | FC |
| Estonia | FC | SE | FC | LC | FC | SE | SE | FC |
| Ireland | SE | LC | FC | SE | SE | LC | SE | LC |
| Greece | FC | SE | SE | SE | SE | SE | FC | FC |
| Spain | LC | SE | SE | FC | FC | FC | SE | FC |
| France | IE | SE | FC | SE | SE | FC | SE | LC |
| Italy | LC | SE | SE | SE | SE | SE | FC | LC |
| Cyprus | SE | LC | FC | SE | LC | FC | SE | LC |
| Latvia | SE | LC | FC | LC | LC | FC | SE | LC |
| Lithuania | LC | LC | FC | FC | PC | LC | SE | LC |
| Luxembourg | FC | FC | FC | FC | FC | FC | SE | FC |
| Hungary | FC | FC | FC | FC | PC | FC | SE | LC |
| Malta | FC | FC | FC | FC | FC | FC | FC | FC |
| Netherlands | SE | SE | SE | SE | SE | SE | SE | LC |
| Austria | FC | FC | FC | FC | FC | FC | FC | FC |
| Poland | FC | FC | FC | FC | FC | FC | SE | FC |
| Portugal | FC | FC | SE | SE | SE | FC | SE | FC |
| Romania | LC | FC | FC | FC | FC | FC | FC | FC |
| Slovenia | LC | LC | SE | SE | SE | LC | SE | LC |
| Slovakia | FC | SE | SE | SE | SE | SE | SE | FC |
| Finland | SE | SE | SE | SE | SE | SE | SE | LC |
| Sweden | SE | LC | SE | FC | SE | SE | SE | LC |
| United Kingdom | SE | SE | SE | LC | SE | LC | LC | LC |

Notes: The abbreviations denote degrees of compliance with groups A to G of the ESRB Recommendation on lending in foreign currencies (FC = fully compliant, LC = largely compliant, SE = sufficiently explained, PC = partially compliant, IE = inaction insufficiently explained). For details on the specific measures recommended in each of the eight groups (i.e. from A to G), see ESRB Report (European Systemic Risk Board, 2015).
Source: European Systemic Risk Board, 2015.

However, it can be concluded that the wide range of monetary and macroprudential measures of the CNB, gradually introduced since 2003, was strongly countercyclical. Compared to other countries, Croatia was a frontrunner in the introduction of such measures (since 2003) which were also of higher intensity (Lim et al., 2011; Dumičić, 2017).

# 5 Conclusion and policy implications – euro adoption as a way forward?

Macroeconomic stabilisation, backed by a credible economic policy, including an independent monetary policy, should contribute to increased confidence in the domestic currency and thus to lowering euroisation. However, macroeconomic stability is a necessary, but not a sufficient precondition for de-euroisation. This

was also confirmed by the Croatian example, which shows that more than two decades of stable exchange rate and inflation were not sufficient to change the behaviour of consumers with regard to their savings currency preferences. The deep rooted deposit euroisation has remained unchanged despite a positive interest rate differential in the kuna's favour and despite all central bank efforts to ensure financial stability. CNB measures slowed down the accumulation of systemic risks and created system-level buffers against potential shocks, which enabled a countercyclical response by the CNB during the crisis and the maintenance of the exchange rate and financial stability.

On the basis of the Croatian experience, it can be concluded that high euroisation is difficult to diminish. The process may be lengthy and slow with an uncertain outcome, which can easily be reversed, even amidst long-term monetary and financial stability. Therefore, it is not very likely that the future, particularly that over a short term, will bring a considerable decrease in deposit euroisation in Croatia. Nevertheless, the efforts to increase the credibility of the domestic economic policy, combined with prudential and regulatory frameworks supporting the use of the domestic currency and the development of the domestic capital market, will continue to be welcome because of their indirect contribution to macroeconomic stability.

The deeply rooted euroisation in Croatia speaks in favour of a stronger orientation towards the euro adoption. However, this does not require abandoning the measures focused on the currency risk caused by euroisation that are already in place. On the contrary, this means that they should be maintained or even strengthened, to protect the financial system from currency risk materialisation during the adjustment process toward the introduction of the euro. And finally, to eliminate the problem of high euroisation by introducing the euro or encouraging the use of the domestic currency, the same preconditions have to be met – sound economic policy and reduction of macroeconomic imbalances, both of which are expected to improve the fundamentals of the economy.

# 6 Annex 1 Description of the monetary policy indicator

The monetary policy indicator (MP) is the share of total regulatory cost of monetary policy instruments in banks' total liabilities. It is calculated using the following formula:

$$MP_t = MP_{t-1} + \sum_{i=1}^{5}\left[(\Delta rs_{it}) \times \frac{RR_{it}}{\sum_{i=1}^{5} RR_{it}}\right], \text{ where } MP_0 = \frac{\sum_{i=1}^{5} RR_{i0}}{liabilities_0} \tag{1}$$

where $i$ denotes monetary policy instruments, $t$ denotes months, $rs_i$ denotes the prescribed regulatory rate for instrument $i$ and $RR_i$ denotes the amount of reserve requirements set aside for compliance with the regulatory requirement of the instrument $i$. The following monetary policy instruments are included: (1) reserve requirement for liabilities in the domestic currency, (2) reserve requirement for liabilities in foreign currencies, (3) marginal reserve requirement (4) minimum required foreign currency claims for foreign currency liabilities and (5) minimum required foreign currency claims for liabilities with a currency clause. *Liabilities*$_0$ and $RR_0$ denote total liabilities of banks and total reserve requirements in the initial period respectively (December 2001 is chosen arbitrarily). The increase in MP denotes a tightening and its decrease denotes an easing of monetary policy. The MP indicator is constructed in such a way that it reflects only regulatory changes in monetary policy instruments and it does not respond to a change in the size of the base for the calculation of these instruments. In addition, the formula for the MP takes into account the relative importance of each instrument by weighting the change in the instrument with the share of the liabilities set aside for compliance with the requirement in question in total liabilities set aside.

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