



# Annual Report 2008

CROATIAN NATIONAL BANK

# 2

## Monetary Policy Instruments and International Reserves Management



## 2.1 Instruments of Monetary Policy in 2008

In response to new circumstances arising from inflationary pressures in the first half of 2008 and the constrained refinancing of private and government sector debt in the second half of 2008, numerous changes of monetary policy instruments of the Croatian National Bank were made as the financial crisis unfolded. In addition to efforts aimed at slowing down external debt growth so as to reduce the increase in bank placements and prevent a further widening of the current account deficit, the CNB strove to ensure sufficient funds for banks in an environment of the intensified global financial crisis, the direct outcome of which was substantially impeded access to foreign borrowing. By changing some instruments, the CNB freed both kuna and foreign currency liquidity, which facilitated bank operations and the funding of domestic sectors at the time of limited access to foreign capital. As a result of the global financial turmoil, downward pressures on the kuna emerged so that some measures were aimed at reducing kuna liquidity in periods of depreciation pressures.

In 2008, the central bank continued to use marginal reserve requirements, special reserve requirements and compulsory CNB bills, which directly raised the cost of banks' foreign funding sources and limited their credit multiplications. However, due to the spillover effect of the global financial crisis on real sector developments in Croatia, the CNB, particularly in the last quarter of 2008, pursued an active policy of containing banking system kuna and foreign currency liquidity within limits that would not fuel inflation and exchange rate depreciation. Moreover, in May 2008 the minimum required amount of foreign currency claims was reduced from 32% to 28.5% of foreign currency liabilities, which provided banks with foreign currency funds for government financing. Also, the marginal reserve requirement was abolished in October 2008 so as to increase the foreign currency liquidity of banks. The reserve requirement rate was lowered from 17% to 14% in December 2008, which freed a substantial amount of previously immobilised funds.

Open market operations were the main instrument of kuna liquidity creation throughout 2008, while larger volumes of Lombard loans were used in the last quarter. Banks had to use Lombard loans as a secondary source of liquidity to satisfy their liquidity needs since the CNB on several occasions strictly limited the amount of liquidity created at reverse repo auctions. To limit the possibility of liquidity creation on banks' own initiative, the CNB reduced the percentage of the nominal value of collateral used to secure Lombard loans and limited collateral acceptable for such loans to T-bills with an original maturity of up to one year.

In the last quarter of 2008, when demand for foreign exchange was pushed up by the financial needs of the government and private sectors as well as household deposit outflows, the CNB undertook a foreign exchange intervention in which it sold foreign currency to banks and thereby reduced kuna liquidity. Also, in efforts to preserve stability in the domestic money and foreign exchange markets and avoid inflationary pressures, the central bank excluded the banks' vault cash from the reserve requirement maintenance obligation by its late September decision. This means that the kuna component of reserve requirements is maintained only in settlement accounts and in the accounts for covering the negative balance within the National Clearing System (NCS).

Due to the considerably changed circumstances arising from the global financial crisis and CNB efforts simultaneously to maintain kuna and foreign currency liquidity at satisfactory levels and ease depreciation pressures, the last quarter of 2008 witnessed stronger volatility of overnight interest rates, which often crossed the boundaries of the interest rate corridor, as formed by interest rates on the standing facilities in the form of Lombard loans and overnight deposits.

## 2.1.1 Open Market Operations

The following types of open market operations are at disposal of the Croatian National Bank:

- regular operations,
- fine-tuning operations, and
- structural operations.

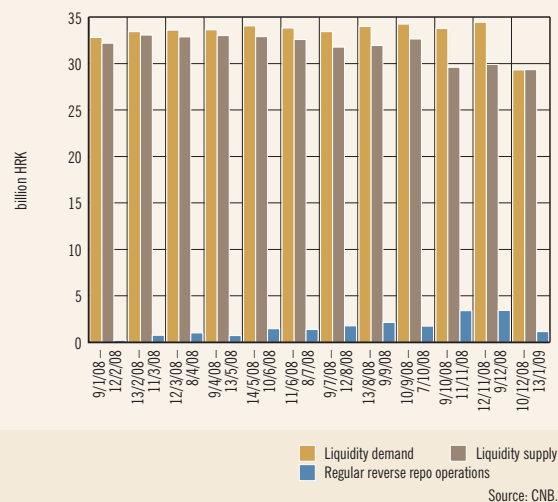
The volume of open market operations affects interest rate developments in the interbank market, where the major share of transactions involves overnight loans. However, interest rates are not the main factor considered by the CNB when deciding on the volume of open market operations.

Demand for reserves is determined by the total amount of the kuna component of reserve requirements and demand for surplus liquidity. Total average demand for reserves stood at HRK 33.5bn in 2008. Of that amount, the kuna component of reserve requirements averaged HRK 32.7bn, with the average surplus liquidity standing at HRK 0.8bn. The average balance of total demand for liquidity rose 5.1% in 2008, compared with 2007, largely due to the increase in the kuna component of reserve requirements. Average surplus liquidity ranged from HRK 0.3bn to HRK 1.4bn during the reserve maintenance periods in 2008. The highest maximum amount of average surplus liquidity of all the maintenance periods was recorded in December when average surplus liquidity is commonly higher.

The supply of reserves is determined by autonomous factors, i.e. CNB balance sheet items that affect banking system liquidity. The most significant autonomous fac-

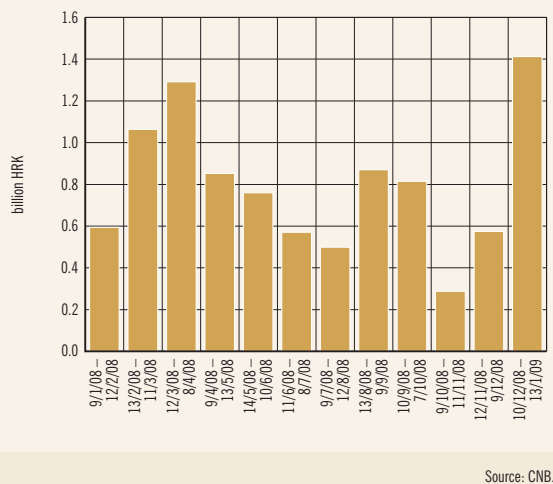
### 2.1 Liquidity Demand and Supply

average balance in reserve requirement maintenance periods

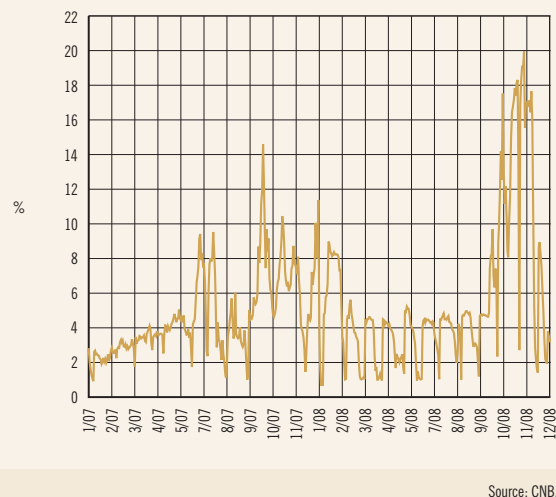


### 2.2 Average Liquidity Surplus in Reserve Requirement Maintenance Periods

by maintenance periods



### 2.3 Overnight Interest Rates



tors include net foreign assets, currency outside banks and government kuna deposits. Autonomous factors averaged HRK 31.8bn in 2008, up 11.8% over 2007. Of the autonomous factors, the average daily balance of government kuna deposits increased the most, by 69.9%. The average daily balance of currency outside banks and net foreign assets grew by 7.0% and 3.5% respectively in 2008 compared with the previous year.

The Decision on reserve requirements was amended in September 2008 to exclude the banks' vault cash from liquid kuna claims, average daily balances of which may be used to maintain the kuna component of reserve requirements. Hence, since 9 October 2008, the kuna component of reserve requirements has been maintained by the average daily balance in the settlement account and in the account for covering the negative balance in the clearing account within the NCS. Moreover, the balance in bank vaults ceased to be a part of demand for reserves and became a part of autonomous factors.

Although average surplus liquidity was higher than in the previous year, the average level and variability of overnight interest rates in the money market were greater in 2008 than in 2007. The overnight interest rate ranged from 0.66% to 19.95% in 2008, while it ranged from 0.92% to 14.59% in 2007. As a result, the variation coefficient stood at 79.38% in 2008 and was higher than in 2007 when it was 51.54%.

## Regular Operations

Regular operations provide the bulk of funding for the banking sector. They are used to manage the system's liquidity and are conducted at regular weekly reverse repo auctions (on Wednesdays), with a maturity of up to one week. Access to auctions is given to domestic banks and acceptable collateral includes kuna T-bills of the Ministry of Finance. Almost all auctions in 2008 were organised as auctions in which prices are freely determined. The exceptions were two fixed-price auctions held near the end of December. At the latter of the two, the CNB exercised its discretionary right to accept 100 percent of the bids received.

Reverse repo operations of the CNB were the main instrument of liquidity creation in 2008 and banks regularly participated at reverse repo auctions. The banks participated in all but one of the 47 reverse repo auctions held in 2008, while six scheduled auctions were not held.

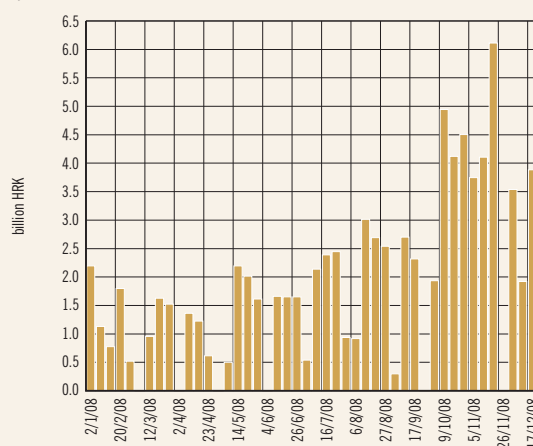
Liquidity creation at regular reverse repo auctions was particularly strong in the first part of each of the reserve maintenance periods, showing that the banks still tend to fulfil most of their reserve requirements somewhat earlier in the maintenance period.

The total amount of funds thus placed to the banks stood at HRK 86.8bn in 2008, nearly half less than in 2007. The amount of funds placed at 2008 auctions ranged from a mere HRK 0.3bn in September to HRK 6.1bn in November. The average daily balance of the funds created at reverse repo auctions during the same period was HRK 1.7bn. The largest average daily balance was HRK 4.3bn recorded in the maintenance period from 9 October to 11 November 2008. Individual amounts of the funds placed at the four auctions during that period ranged from HRK 3.7bn to HRK 4.9bn.

Banks offered various rates at auctions held in 2008 and participated in auctions with several bids. All bank offers were refused at six auctions, while at other auctions the percentage of bids accepted at the marginal repo rate was 100%. The exceptions were two November auctions where 75% and 50% of the bids were accepted. The ratio of bids accepted to total bids received ranged from 39% to 100%, excluding the auctions where all offers were refused. In 2008, five banks, on average, participated in each auction and the average number of bids per bidder was 1.8.

### 2.4 Regular Operations

by auction dates



Source: CNB.

## Fine-Tuning Operations

Unlike regular operations, which are used exclusively to improve the system's liquidity, fine-tuning operations are used to temporarily decrease or increase the system's liquidity. These operations are conducted on an ad hoc basis to manage the liquidity situation in the market and steer interest rates, in particular when it is necessary to smooth the effects of interest rate changes caused by unexpected market fluctuations. Fine-tuning operations may be executed as repo and reverse repo operations, and outright purchases and sales of securities and foreign currency. Frequency and maturity of fine-tuning operations are not standardised, which ensures a high level of flexibility and the possibility to respond quickly to any sudden market fluctuation. These operations are conducted at auctions through non-standardised bids or bilateral procedures with a limited number of participants. Acceptable collateral are kuna denominated T-bills of the Ministry of Finance.

## Structural Operations

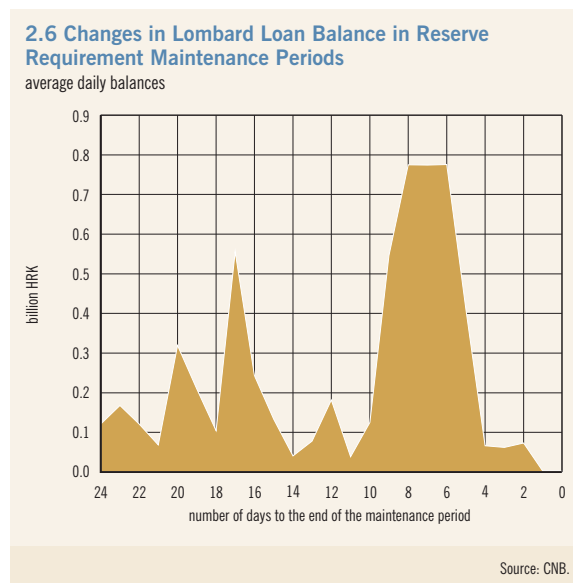
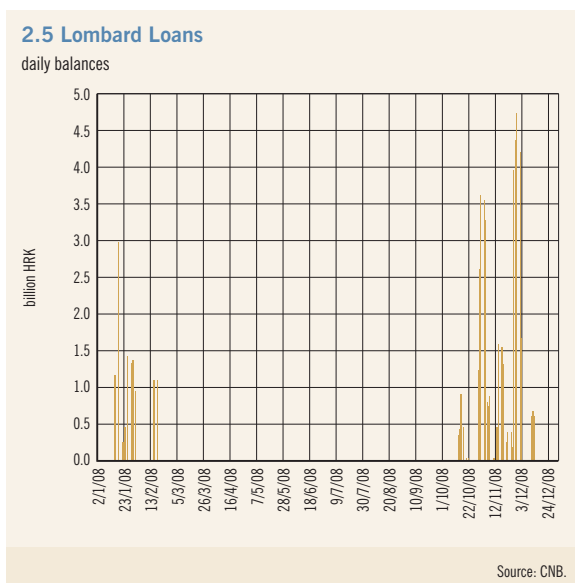
The third type of open market operations are structural operations, which are carried out when a longer-term liquidity structure adjustment is required. Conducted through outright securities purchase and sale transactions, and repo and reverse repo operations, they are used to increase or reduce the system's liquidity. Their maturity and frequency are not standardised and they are carried out at standard bid auctions in which banks participate. Eligible collateral for these types of operations includes all types of government securities. No structural operations took place in 2008.

### 2.1.2 Standing Facilities

Standing facilities are instruments available to banks on their own initiative for an unlimited number of days in a month to stabilise any unexpected changes in bank liquidity. Standing facilities have an overnight maturity and may take the form of a Lombard loan in case of liquidity shortage or a deposit facility in case of liquidity surplus. These facilities provide an interest rate corridor on the money market, with the interest rate on the Lombard facility setting a ceiling and the interest rate on the overnight deposit with the CNB setting a floor to that corridor.

## Lombard Loan

The Lombard rate provides a ceiling to the interest rate corridor on the money market. In 2008, it was set at 9.0%. The facility is granted against a pledge. Throughout most of 2008, it could be used on a daily basis up to the amount of 90% of the nominal value of the T-bills pledged. The Decision on the terms of granting short-term loans on the basis of pledged securities was amended on two occasions in December 2008. The first amendment, which entered into force on 10 December 2008, limited eligible collateral to kuna T-bills of the Ministry of Finance with an original



maturity of up to one year, since T-bills maturing in 728 days were issued towards the year end. In addition, with effect from 22 December 2008, the percentage of the nominal value of T-bills serving as collateral for Lombard loans was reduced from 90% to 50%, which limited the possibility of using these loans.

A Lombard loan is used on a bank's request or is granted automatically in the event of default on an intraday loan, and exclusively at the end of a business day. It is repayable on the next business day. The CNB may at its discretion deny the banks, temporarily or permanently, the use of the Lombard facility.

The Lombard facility was used in the first and last quarters of 2008: it was used for 12 business days in January and February and was not used until October when its use again intensified. The amounts granted under the Lombard facility in 2008 ranged from HRK 36.0m to HRK 4.7bn, with the average daily amount standing at HRK 1.3bn. The maximum average amount of the Lombard loan during the days of its use was HRK 1.6bn in December 2008. The largest daily Lombard loan of HRK 4.7bn was granted in November, while its minimum average daily amount of HRK 1.0bn was recorded in February 2008. In 2008, this facility was used for a total of 46 days, of which as many as 34 days took place in the last three months of the year. The banks used the Lombard facility between three and 19 business days within a month, with the largest number of days of its use taking place in November 2008.

## Deposit Facility

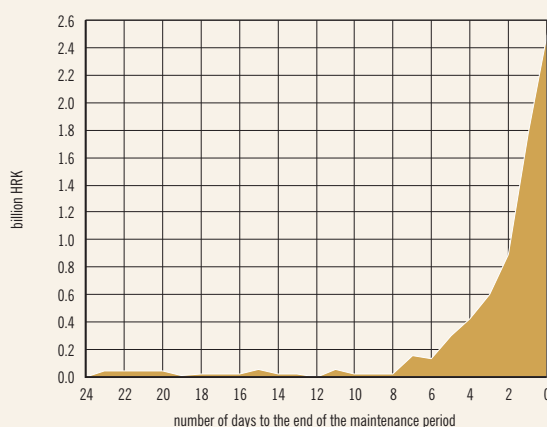
The banks may deposit any end-of-day liquidity surplus with the CNB. It is an overnight deposit that is repayable to the banks at the beginning of the next business day and that is remunerated by the CNB at 0.5% annually, an interest rate that is also the floor of the interest rate corridor on the money market. Funds deposited by banks in the form of overnight deposits with the CNB are not included in reserve requirement maintenance. The CNB may at its discretion deny the banks, either temporarily or permanently, the use of the deposit facility.

Throughout 2008, the banks made use of the overnight deposit facility with the CNB, particularly, in terms of the number of days, in the first half of 2008. Within a reserve maintenance period, the use of overnight deposits is commonly more frequent in the second part of the period, when the banks are more confident that they will meet the reserve requirement. Overnight deposits commonly increased immediately before a new maintenance period.

The average daily balance of the deposit facility was HRK 0.8bn in 2008. The largest daily amount of the overnight deposit was HRK 3.8bn, recorded in November 2008, which was also the maximum average amount of the facility during the days of its use in 2008. Overnight deposits were used for a total of 90 days in 2008, and the banks used this facility between one and 20 business days in a month. The minimum average amount during the days of use was HRK 0.3bn recorded in September 2008. The largest number of days of use of overnight deposits took place in January 2008 when the banks deposited their funds with the central bank for 20 days, with the average deposit standing at HRK 0.7bn.

### 2.7 Changes in Overnight Deposit Balance in Reserve Requirement Maintenance Periods

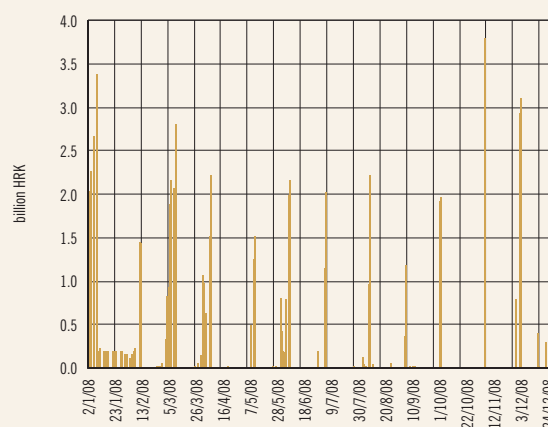
average daily balances



Source: CNB.

### 2.8 Overnight Deposits

daily balances



Source: CNB.

## 2.1.3 Reserve Requirements

In 2008, reserve requirements remained the main instrument of sterilising excess liquidity in the banking system. The reserve requirement rate throughout most of the year was 17%. However, starting from the reserve requirement calculation on 10 December 2008, this rate was cut from 17% to 14%. The base for the calculation of reserve requirements consists of the kuna and foreign currency components. Of the calculated foreign currency component of reserve requirements, 50% is included in the calculated kuna component of reserve requirements and is executed in kuna. The calculation period extends from the first to the last day of a calendar month, and the maintenance period begins on the second Wednesday in a month and ends on the day preceding the second Wednesday of the following month. The kuna and foreign currency reserve requirement allocation percentages are 70% and 60%, respectively, of the calculated reserve requirements. However, the foreign currency component of reserve requirements calculated on the basis of non-residents' foreign currency funds and foreign currency funds received from legal persons in a special relationship with a bank is set aside at the rate of 100%. The remaining part of reserve requirements may be maintained by average daily balances in the accounts of liquid claims. Also, under the October amendments to the Decision on reserve requirements, starting from the reserve requirement calculation on 9 October 2008, the banks' vault cash is excluded from liquid kuna claims that may be used to maintain the kuna component of reserve requirements.

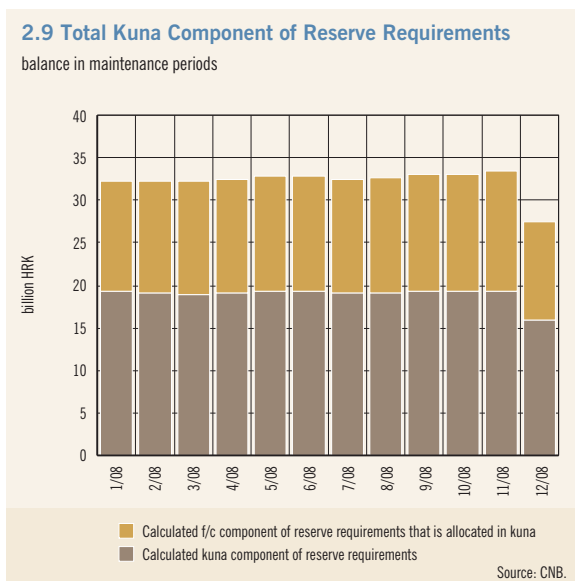
### Kuna and Foreign Currency Components of Reserve Requirements

The kuna component of the base fluctuated throughout 2008. It bottomed out at HRK 111.6bn in February and peaked at HRK 114.8bn in December. The growth of the kuna component of the base ranged from 0.2% to 1.3% per month in 2008. In the January-December period of 2008, the kuna component of the base grew by 1.9%.

The kuna component of reserve requirements also fluctuated over the whole of 2008 (except in December), ranging from HRK 32.2bn in the maintenance period that began in January to HRK 33.4bn in November. After the cut in the reserve requirement rate from 17% to 14%, the kuna component of reserve requirements plunged by 17.9% in December relative to November, to HRK 27.4bn, its lowest level in 2008. Thus, the kuna component of reserve requirements fell by 14.7% in the January-December period, primarily on account of the cut in the reserve requirement rate.

The foreign currency component of the base was HRK 154.8bn in January, which was its lowest level in 2008. It recorded steady growth throughout the year (with the exception of a fall in May and June and a slight decrease in November) and reached its annual high of HRK 169.6bn in December, growing annually by 9.5%. The foreign currency component of the base recorded the highest monthly increase of 2.9% in January, while the remaining part of 2008, overall, saw lower monthly growth.

The foreign currency component of reserve requirements fluctuated in 2008 in line with the changes in the foreign



currency component of the base, with the exception of the December maintenance period when the foreign currency component of reserve requirements decreased due to the cut in the reserve requirement rate. The foreign currency component of reserve requirements fell by 9.5%, from HRK 12.8bn in January to HRK 11.6bn in December.

In 2008, the remuneration paid for the allocated kuna component of reserve requirements was 0.75%, while that paid on the foreign currency component of reserve requirements set aside in euros was 50% of the ECB Minimum Bid Refinance Rate, and for funds set aside in US dollars, 50% of the US Federal Funds Target Rate.

## 2.1.4 Measures to Limit Placement and External Debt Growth

Marginal reserve requirements, special reserve requirements and subscription of compulsory CNB bills were the instruments used in 2008 to slow down external debt growth with a view to reducing the increase in bank placements and preventing a further widening of the balance of payments deficit. However, in response to the spillover effects of the global financial crisis, marginal reserve requirements were abolished in October 2008, which increased foreign currency liquidity of the banks.

### Marginal Reserve Requirements

The CNB adopted a decision to abolish the marginal reserve requirement in October 2008. Given the exacerbation of the financial market crisis in the second half of the year and the rising foreign currency liquidity needs of domestic banks, this instrument was abolished, which facilitated foreign currency operations of the banking system.

Marginal reserve requirements were calculated in the first three quarters of 2008 and the base for their calculation consisted of four components.

The first component of the base for the calculation of marginal reserve requirements (MRR I) was the positive difference between the average daily balance of sources of funds received from non-residents and legal persons in a special relationship with the bank in the calculation and initial calculation periods, with the initial calculation period being that from 1 to 30 June 2004.

The second component of the base for the calculation of marginal reserve requirements (MRR II) was calculated in the same way as the first component, with the exception that the initial calculation period was that from 1 to 30 November 2005.

The third component of the base for the calculation of marginal reserve requirements (MRR III) was the positive difference between the average daily balance of funds collected from persons engaged in financial leasing and individual off-balance sheet items comprising guarantees and warranties for the account of non-residents in kuna and foreign currency and serving as a basis for foreign borrowing of domestic natural and legal persons in the calculation and initial calculation periods, with the initial calculation period being that from 1 to 30 November 2005.

And finally, the fourth component of the base for the calculation of marginal reserve requirements (MRR IV) was the positive difference between the average daily balance of funds received from non-residents and legal persons in a special relationship with the bank, which were used for financing domestic legal and natural persons in the form of syndicated loans or for domestic banks' placements to domestic legal and natural persons in the name and for the account of the mandator (mandated operations), with the initial calculation period being that from 1 to 31 May 2006.

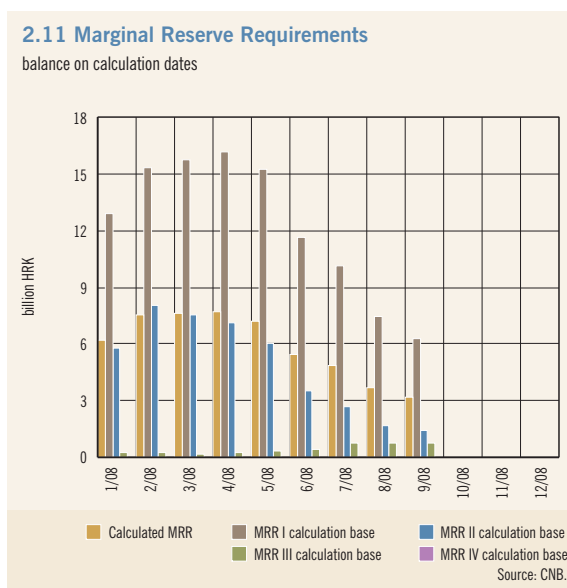
The rates of marginal reserve requirements applied to the MRR I base and the MRR II base were 40% and 15%, respectively, while a 55% rate was applied to both the MRR III and MRR IV base. Marginal reserve requirements were in their entirety set aside in foreign currency to foreign currency accounts with the CNB and were not remunerated by the central bank.

Total calculated marginal reserve requirements fell from HRK 6.2bn in January 2008 to HRK 3.2bn in September 2008, which is a decrease of 48.5%. This trend indicated the efficiency of this measure in limiting foreign borrowing by the banks. In terms of monthly values, marginal reserve requirements grew from HRK 6.2bn in January to the

annual high of HRK 7.7bn in April 2008. Marginal reserve requirements decreased steadily in subsequent calculation periods, falling to an annual low of HRK 3.2bn in the last calculation period in September.

Trends in the base for the calculation of marginal reserve requirements were similar to those in the calculated marginal reserve requirements. Since the most significant input to the base came from the sources of funds of non-residents and legal persons in a special relationship with the bank, their dynamics was the most important factor affecting the dynamics of the calculated marginal reserve requirements.

In January 2008, total sources of funds from non-residents and legal persons in a special relationship with the bank were HRK 68.0bn. They grew steadily until April when they reached HRK 71.0bn. Non-residents' funds steadily decreased in subsequent calculation periods and bottomed out in the last calculation period in September when they stood at HRK 59.1bn, 13.0% less than at the beginning of the year. The base for the calculation of marginal reserve requirements fell from HRK 12.9bn to HRK 6.3bn, simultaneously with the fall in the relevant sources of funds.



The sources of funds received from legal persons engaged in financial leasing decreased from HRK 219.0m in January to HRK 148.5m in September, while guarantees and warranties for the account of non-residents used for foreign borrowing of domestic legal persons increased from HRK 4.1bn to HRK 4.3bn. This caused an increase in the base for the calculation of marginal reserve requirements from HRK 214.9m in January to HRK 783.5m in September.

The funds received from non-residents and legal persons in a special relationship with the bank for financing domestic persons in the form of syndicated loans and mandator funds (mandated operations) for placements to domestic persons totalled HRK 1.6bn in January and fell to HRK 1.5bn in September. The relevant base for the calculation of marginal reserve requirements decreased from HRK 101.8m to HRK 88.3m during the same period.

### Special Reserve Requirements

The Decision on the special reserve requirement on banks' liabilities arising from issued securities remained in force in 2008. The special reserve requirement instrument was used as a measure to slow down foreign borrowing by banks based on issued debt securities.

The base for the calculation of special reserve requirements is the positive difference between the average daily balance of issued debt securities in a certain calculation period and the average daily balance of issued debt securities in the initial calculation period, with the initial calculation period being that from 1 to 31 January 2006. The base is calculated separately for securities issued in kuna and for those issued in foreign currency. The balance of issued securities that is included in the calculation of the average daily balance of the sources of funds used for calculating the marginal reserve requirement base is not included in the calculation of special reserve requirements. Special reserve requirements are calculated every second Wednesday in a month, by applying a 55% rate to the prescribed base. The full amount of special reserve requirements is set aside to the accounts with the CNB: the kuna component is set aside to the special reserve requirement account with the central bank and the foreign currency component is set aside in EUR and USD to CNB's foreign currency accounts. The CNB pays no remuneration on special reserve requirements set aside.

Special reserve requirements stood at HRK 31.9m in January 2008 and steadily decreased until May. They held steady at HRK 29.3m from May to September 2008 and then began to decrease rapidly. According to the November calculation, they stood at HRK 9.5m in December 2008.

## Subscription of Compulsory CNB Bills

This instrument was introduced with a view to directly limiting banks' credit growth, which was to indirectly curb the rise in banks' external debt and stabilise the current account deficit.

Adopted in December 2007, a new Decision on the purchase of compulsory CNB bills redefined all the key elements of this Decision for 2008. As in 2007, the maximum permissible annual growth in placements was set at 12%, while on- and off-balance sheet items were calculated separately. However, the conditions for the purchase of compulsory CNB bills were tightened for banks whose placement growth was in excess of the permissible limit: the rate of purchase of compulsory CNB bills was raised, while the interest paid on the purchased bills was reduced. The initial date for the calculation of compulsory CNB bills was set at 31 December 2007 and the beginning of each calculation period was 1 January 2008. The permissible growth rate of placements was set at 1% in the first calculation period from 1 to 31 January 2008 and at additional 1 percentage point for each subsequent calculation period. Compulsory CNB bills were purchased at the rate of 75% of the base and issued at the interest rate of 0.25% a year. Compulsory CNB bills were purchased on the 20th day in a month and matured in 360 days.

An amendment to the Decision on the purchase of compulsory CNB bills was made in March 2008 to include in the balance-sheet component of the calculation base loans and credits granted to residents by legal persons. These loans were formerly a separate part of the base.

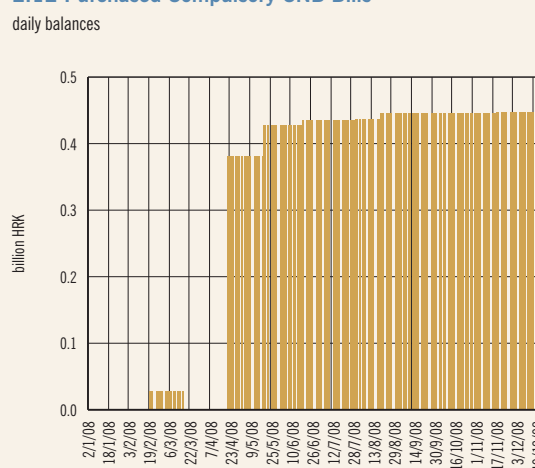
In consequence of this amendment, HRK 27.8m of compulsory CNB bills that were purchased in February came due. Under the new calculation base, which stood at HRK 0.4m, HRK 0.3m worth of compulsory CNB bills was purchased on 20 March 2008. The cumulative purchase of compulsory CNB bills grew steadily afterwards, to HRK 445.8m in August. As no compulsory CNB bills were purchased in September and October, the said amount stayed the same in the months that followed. The cumulative amount of purchased compulsory CNB bills started to grow again in November and stood at HRK 460.6m at end-December 2008. Over the entire observed period, the calculation base was at its maximum of HRK 511.1m in March, while there was no base for the purchase of compulsory CNB bills in September and October 2008.

### 2.1.5 Other Instruments

#### Minimum Required Foreign Currency Claims

Minimum required foreign currency claims are an instrument used to maintain foreign currency liquidity of banks. In the first four months of the year, the minimum required amount of foreign currency claims was set at 32% of foreign currency liabilities. Under the new decision of May 2008, this percentage was cut to 28.5%. The banks are obliged to meet the prescribed maintenance percentage on a daily basis, with liquid foreign currency claims being those (with the exception of loan-related claims) maturing in less than three months.

2.12 Purchased Compulsory CNB Bills



Source: CNB.

2.13 Minimum Foreign Currency Liquidity



Source: CNB.

The coverage of foreign currency liabilities by foreign currency claims in 2008 was at its annual maximum of 34.40% on 31 January and at its minimum of 30.41% on 28 November. This ratio stood at 30.76% at the end of the year.

### Croatian National Bank Bills in Kuna

Dematerialised negotiable 35-day kuna CNB bills are sold at auctions at a discount and with the same day settlement. The CNB sets auction dates and access to the primary market is open to domestic banks, foreign bank branches and the CBRD. The Central Depository Agency serves as a depository for CNB bills. Though constituting a part of the operating monetary policy framework, CNB bills were not issued in 2008.

### Short-Term Liquidity Loans

Although there was no need for their use in 2008, the terms of granting short-term liquidity loans were changed in late November 2008 to provide efficient, flexible and rapid central bank support to solvent institutions with liquidity problems. Granted against financial collateral, short-term liquidity loans take the form of repo transactions (repo loans) or collateralised loans, which greatly simplifies the loan approval procedure. Furthermore, eligible collateral for these loans is now more broadly defined and includes CNB bills, securities issued by the MoF, bonds for whose amortisation the Republic of Croatia has taken legal responsibility or which are guaranteed by the Republic of Croatia, and other collateral debt instruments recognised as eligible by the CNB.

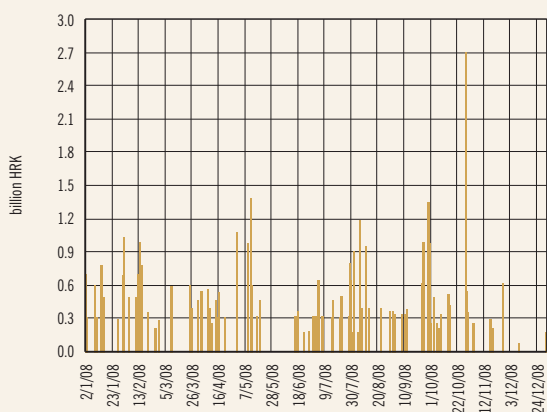
Loans may be used for a period of up to twelve months. The interest rate on this type of loan is equal to the rate charged on a Lombard loan increased by 0.5 percentage points if the loan is used for a period of up to three months, or increased by 1 percentage point if the loan is used for a period of over three months.

### Intraday Loans

Intraday loans are payment system instruments which serve to improve the flow of payment transactions during business hours. The banks may use intraday loans on a daily basis in the form of a settlement account limit, with the limit being the permissible negative settlement account balance. These collateralised loans could be used up to 90% of the nominal value of pledged T-bills throughout most of 2008. However, the Decision on the terms of granting intraday loans on the basis of pledged securities was changed late in the year. Under the amended decision with effect from 10 December 2008, eligible collateral for such loans was limited to T-bills in kuna with an original maturity of up to one year. Also, the percentage of the nominal value of T-bills used to secure intraday loans was reduced from 90% to 50% with effect from 22 December 2008.

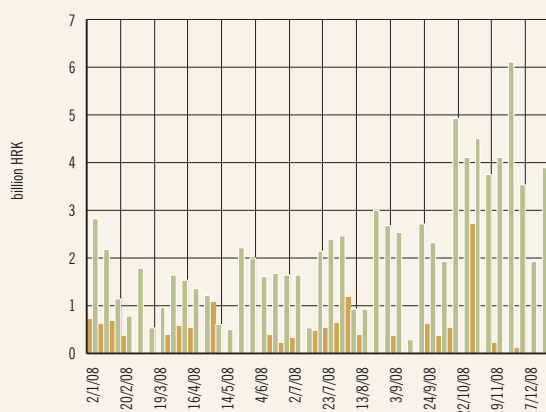
Any unpaid intraday loan at the end of a business day is automatically considered an application for a Lombard loan

2.14 Use of Intraday Loans



Source: CNB.

2.15 Use of Regular Operations



Intraday loans Balance of reverse repo operations on maturity dates

Source: CNB.

to the amount of a negative balance in a bank's settlement account. Denied granting of such loans, or restrictions on the amounts of Lombard loans granted, automatically implies identical restrictions on the use of intraday loans. The CNB charges no interest on intraday loans.

In 2008, intraday loans were used for 93 days and their average amount was HRK 0.5bn, with individual daily amounts granted ranging from HRK 90.0m to HRK 2.7bn. The maximum average amount of intraday loans during the days of their use was HRK 0.8bn in May and the minimum average amount was HRK 0.1bn in December 2008. The largest number of days of use of such loans took place in July 2008 when the banks used this facility for 14 days, with the average loan amount standing at HRK 0.5bn.

As regards the use of intraday loans on the days of regular operations, of the total of 47 reverse repo auctions held, the loan was used at 23 of them, or at 48.9% of all regular auctions in 2008. Intraday loans on these days averaged HRK 0.6bn, with the individual daily amounts granted ranging from HRK 90.0m to HRK 2.7bn.

### 2.1.6 Croatian National Bank Interest Rates and Remuneration

Interest rates on standing facilities form the corridor which should limit the range of fluctuations in overnight money market rates. The ceiling of the corridor is the interest rate on the Lombard loan (9.0% a year, with effect from 1 January 2008) and the floor is the interest rate on overnight deposits with the CNB (0.5% a year). The interest rate corridor and its ceiling and floor values remained unchanged throughout 2008.

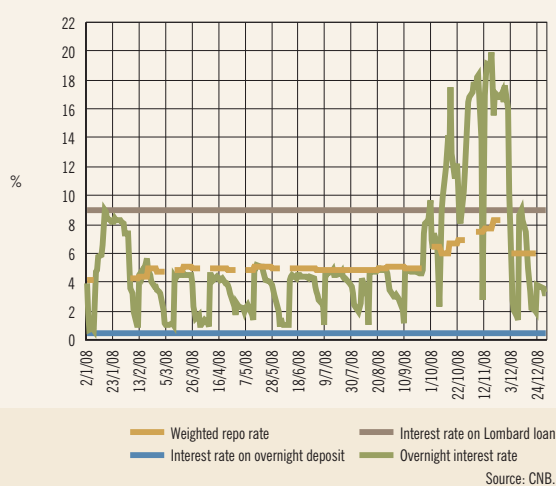
The more active role taken by the central bank in liquidity management in 2008 prompted some banks to participate in reverse repo auctions with several bids and different interest rates, thus causing a more pronounced diversification of the bid repo rates and of the weighted repo rate. The number of bid interest rates at these auctions ranged from one to thirteen in 2008, averaging 3.7 interest rates per auction. The minimum bid repo rate ranged from 3.50% to 7.75% during the observed period and the maximum bid repo rate ranged from 3.50% to 9.15%. Over the year, the weighted repo rate moved between 3.50% and 8.35%. The marginal repo rate ranged from 4.10% in January to 7.75% in November 2008, while the fixed repo rate of 6.00% was applied at the last two auctions held in 2008.

Remuneration paid on the kuna component of reserve requirements was 0.75%, while that paid on the foreign currency component of reserve requirements set aside in US dollars amounted to 50% of the US Federal Funds Target Rate, and for funds set aside in euros, 50% of the ECB Minimum Bid Refinance Rate.

## 2.2 International Reserves Management

The Croatian National Bank manages the international reserves of the Republic of Croatia, which, under the Act on the Croatian National Bank, constitute a part of the balance sheet of the central bank. The way in which the international reserves are managed is consistent with the established monetary and foreign exchange policies. Management of the international reserves is governed primarily by the principles of liquidity and safety. The international reserves of the Republic of Croatia comprise all claims and banknotes in a convertible foreign currency as well as special drawing rights.

2.16 Interest Rate Spread, Repo Rates and Overnight Interest Rates in 2008



## 2.2.1 Institutional and Organisational Framework, Principles of Management, Risks and Manner of International Reserves Management

### Institutional and Organisational Framework of International Reserves Management

The Council of the CNB formulates the strategy and policy for international reserves management and sets out the risk management framework. The International Reserves Commission is the body responsible for the development of strategies for international reserves investment in accordance with the objectives set by the Council of the CNB and for the adoption of tactical decisions on international reserves management, while taking into account market conditions. The International Reserves and Foreign Exchange Liquidity Department is responsible for the day-to-day investment of the international reserves, liquidity maintenance, risk management and the preparation of reports for the Commission and the Council.

### Principles of and Risks in International Reserves Management

Managing the international reserves of the Republic of Croatia, the central bank is guided by the principles of security of investment and liquidity (Article 19 of the Act on the Croatian National Bank). In this context, it maintains high liquidity of reserves and appropriate risk exposure and, with the given restrictions, attempts to ensure favourable rates of return on its investments.

Risks present in international reserves management are primarily financial risks such as credit, interest rate and currency risks, though other risks such as liquidity and operational risks also play a role. The CNB limits exposure to credit risk by investing in highly rated government bonds, collateralised deposits and non-collateralised deposits in banks with the highest credit rating. Interest rate risk, or the risk of a fall in the value of the international reserves portfolio due to unfavourable interest rate changes, can be controlled by means of benchmark portfolios. Currency risk arises from currency fluctuations between the kuna and the euro and the kuna and the US dollar. The currency composition of CNB international reserves is determined in accordance with the currency structure of foreign liabilities of the Republic of Croatia and the currency structure of goods and services imports. Liquidity risk can be controlled by investing reserves into easily marketable bonds and partly into short-term deposit instruments. Operational risk can be controlled by strict separation of functions and responsibilities, precisely defined methodologies and procedures, and regular internal and external audits.

### Manner of International Reserves Management

Under the Decision on international reserves management, the Croatian National Bank manages international reserves in two ways: 1) actively – in accordance with its own guidelines and 2) passively – in accordance with foreign currency liabilities assumed.

The CNB actively manages that part of international reserves that is formed through outright purchase of foreign currency from the banks and the MoF at foreign exchange interventions of the CNB, in accordance with the set benchmark portfolios, thus achieving an adequate risk-return profile. The other part of the reserves, formed on the basis of allocated foreign currency reserve requirements of banks, deposits of the MoF, repo transactions and special drawing rights (SDR), is managed passively by the CNB, depending on foreign currency liabilities, and with the aim of ensuring protection against currency and interest rate risks.

The terminology of reporting on international reserves of the CNB includes the terms of gross and net reserves. Gross reserves imply total international reserves. Net reserves imply the share of reserves actively managed by the CNB, and SDRs and foreign cash.

## 2.2.2 International Reserves in 2008

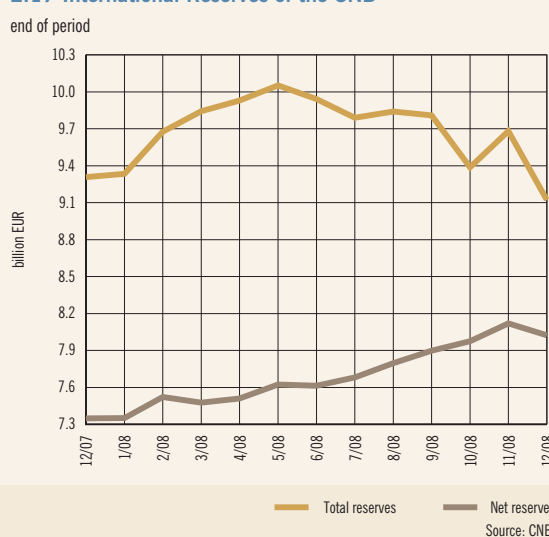
The past year was marked by the worst economic crisis since the 1930s. Stock exchanges around the world plummeted and many of the world's economies entered recession. As investors fled into safer assets, prices of US and euro

**Table 2.1 Monthly Changes in Total and Net CNB International Reserves**

end of period, in million EUR

Month	Total reserves	Net reserves
December 2007	9,307.21	7,348.07
January 2008	9,332.62	7,350.00
February 2008	9,676.72	7,522.16
March 2008	9,841.51	7,474.92
April 2008	9,928.35	7,509.93
May 2008	10,051.06	7,623.55
June 2008	9,941.03	7,612.38
July 2008	9,788.65	7,679.58
August 2008	9,839.65	7,796.41
September 2008	9,808.56	7,896.77
October 2008	9,387.27	7,975.61
November 2008	9,681.71	8,120.16
December 2008	9,120.74	8,022.26
<b>Change Dec. 2008 – Dec. 2007</b>	<b>-186.47</b>	<b>674.19</b>

Source: CNB.

**2.17 International Reserves of the CNB**


government bonds grew strongly, which reflected positively on the return on the CNB's foreign currency portfolios.

Total international reserves of the CNB stood at EUR 9.1bn on 31 December 2008, a decrease of EUR 186.5m (2.0%) compared with the end of 2007, when they stood at EUR 9.3bn. This fall in total international reserves was mostly due to the decisions to abolish marginal reserve requirements and cut the reserve requirement rate from 17% to 14%.

In contrast, net international reserves, which do not include foreign currency reserve requirements, marginal reserve requirements and funds of the MoF, grew by EUR 674.2m in 2008, from EUR 7.3bn at end-2007 to EUR 8.0bn.

The main factors leading to changes in the level of total international reserves in 2008 on the inflow side were:

- EUR 456.7m in income from international reserves investment;
  - EUR 409.1m purchased from the banks through foreign exchange interventions of the CNB;
  - EUR 270.9m purchased from the Ministry of Finance; and
  - EUR 46.9m derived from exchange rate gains arising from the strengthening of the US dollar against the euro at the end of 2008 compared with the end of 2007;
- and on the outflow side:
- a fall of EUR 852.4m in total foreign currency reserve requirements set aside (with marginal reserve requirements falling by EUR 685.5m and foreign currency reserve requirements falling by EUR 166.9m);
  - EUR 420.6m sold to the banks through foreign exchange interventions of the CNB; and
  - EUR 85m sold to the Ministry of Finance.

### Total CNB Turnover in the Foreign Exchange Market in 2008

In 2008, the central bank engaged in foreign currency purchase and sale transactions with domestic banks, the Ministry of Finance and foreign banks. These transactions led to a net increase in the international reserves of the CNB of EUR 174.4m and an issue of HRK 1.2bn in 2008.

**Table 2.2 Total CNB Turnover in the Foreign Exchange Market, 1 January – 31 December 2008**

at the exchange rate applicable on the value date, in million

	Purchase (1)		Sale (2)		Net (1 – 2)	
	EUR	HRK	EUR	HRK	EUR	HRK
Domestic banks	409.10	2,936.08	420.60	3,026.68	-11.50	-90.60
Ministry of Finance	270.89	1,938.71	84.98	622.25	185.91	1,316.46
Foreign banks	0.00	0.00	0.01	0.07	-0.01	-0.07
<b>Total</b>	<b>679.99</b>	<b>4,874.79</b>	<b>505.59</b>	<b>3,648.99</b>	<b>174.40</b>	<b>1,225.80</b>

Source: CNB.

**Table 2.3 CNB Foreign Exchange Interventions with Domestic Banks, 1 January – 31 December 2008**

at the exchange rate applicable on the intervention date, in million

Month (number of interventions)	Purchase (1)		Sale (2)		Net (1 – 2)	
	EUR	HRK	EUR	HRK	EUR	HRK
January	0.00	0.00	0.00	0.00	0.00	0.00
February (1)	189.10	1,370.19	0.00	0.00	189.10	1,370.19
March	0.00	0.00	0.00	0.00	0.00	0.00
April	0.00	0.00	0.00	0.00	0.00	0.00
May	0.00	0.00	0.00	0.00	0.00	0.00
June	0.00	0.00	0.00	0.00	0.00	0.00
July	0.00	0.00	0.00	0.00	0.00	0.00
August	0.00	0.00	0.00	0.00	0.00	0.00
September	0.00	0.00	0.00	0.00	0.00	0.00
October (1)	0.00	0.00	270.60	1,955.55	-270.60	-1,955.55
November (2)	220.00	1,565.89	0.00	0.00	220.00	1,565.89
December (1)	0.00	0.00	150.00	1,071.13	-150.00	-1,071.13
<b>Total</b>	<b>409.10</b>	<b>2,936.08</b>	<b>420.60</b>	<b>3,026.68</b>	<b>-11.50</b>	<b>-90.60</b>

Source: CNB.

In three foreign exchange transactions and one swap transaction with domestic banks, the CNB sold a total of EUR 420.6m in 2008, while it purchased EUR 409.1m from the banks. EUR 150m was purchased under a swap contract in November, while the same amount was sold in December. In 2008, the CNB sold to the banks a total of EUR 11.5m (net), thus sterilising HRK 90.6m.

The CNB sold EUR 85m to the Ministry of Finance and purchased from it EUR 270.9m in 2008. The CNB thus purchased EUR 185.9m (net) in its transactions with the MoF and issued HRK 1.3bn.

### Risks in International Reserves Management and Structure of International Reserves Investment in 2008

#### Credit Risk in International Reserves Management

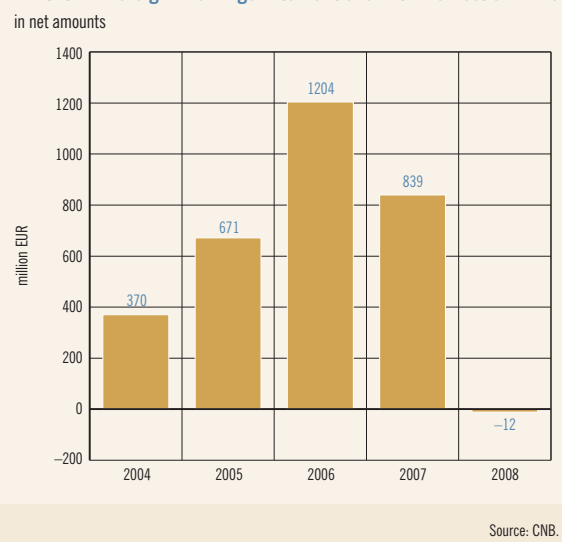
Credit risk is the risk that a counterparty will not settle an obligation in full, either when due or at any time thereafter.

The CNB provides for three levels of protection against credit risk:

- the CNB invests international reserves only in financial institutions and countries with the highest credit rating. When evaluating creditworthiness, special attention is paid to ratings published by internationally recognised rating agencies;
- investments in individual financial institutions and countries are restricted by limits and quotas, which ensures credit risk diversification; and
- a part of reserves invested in reverse repo agreements is collateralised – the CNB requires that security be provided in the form of government bonds of the same or greater market value than the value of the funds placed with an individual financial institution.

Decisions of the International Reserves Commissions tightened credit risk management guidelines in 2008. International reserves invested in non-collateralised deposits were almost entirely redirected to safer forms of assets, such as government bonds and instruments issued by the Bank for International Settlements (BIS) and central banks.

**2.18 CNB Foreign Exchange Interventions with Domestic Banks**



**Table 2.4 Structure of International Reserves Investment According to Credit Risk as at 31 December 2008**

at market value, in million EUR

Investment	Net reserves	Reserve requirements	Marginal reserve requirements	Ministry of Finance	Total reserves	31/12/2008	31/12/2008
						As % of net reserves	As % of total reserves
Government bonds <sup>a</sup>	6,491.91	1,086.60	–	–	7,578.51	80.92	83.09
International financial institutions	613.84	7.00	–	–	620.84	7.65	6.81
Central banks	812.40	–	–	0.03	812.43	10.13	8.91
Covered bonds	–	–	–	–	–	–	–
Banks	104.11	–	–	4.86	108.96	1.30	1.19
<b>Total</b>	<b>8,022.26</b>	<b>1,093.60</b>	<b>–</b>	<b>4.88</b>	<b>9,120.74</b>	<b>100.00</b>	<b>100.00</b>

<sup>a</sup> Also included are reverse repo agreements which are collateralised by government bonds.

Source: CNB.

According to the degree of credit risk exposure, total international reserves are divided into funds invested in government bonds, covered bonds, and instruments issued by international financial institutions, central banks and commercial banks. The share of total international reserves invested in government bonds went up from 55.32% at end-2007 to as much as 83.09% in 2008, standing at EUR 7.6bn as at 31 December 2008. At the same time, investments in commercial banks were reduced so that time deposits with banks stood at only EUR 109m at the end of 2008, accounting for 1.19% of total international reserves. The changes in the structure of international reserves investment were due to the said decisions of the International Reserves Commission, which aimed at reducing credit risk exposure in light of the global financial crisis. The share of total international reserves invested in international financial institutions and central banks stood at 6.81% and 8.91% respectively at the end of 2008.

In terms of credit rating, a high 85.64% of total CNB international reserves was invested in securities of countries and banks with the highest Aaa rating (according to Moody's rating agency) at the end of 2008. Investments in securities of countries and banks rated Aa1 and Aa2 accounted for 5.44% and a mere 2.50% respectively of international reserves. The remaining share (6.42%) of total international reserves was invested in the IMF and the BIS.

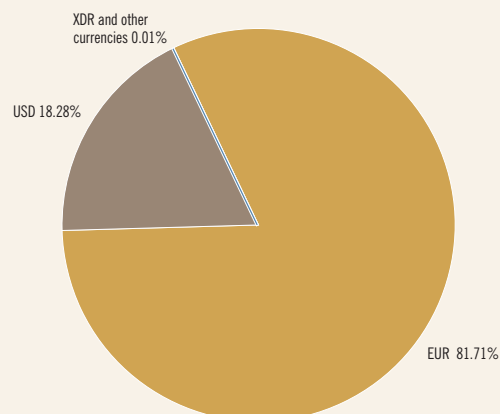
### Currency Structure of International Reserves

In its Decision on international reserves management, the CNB Council has precisely defined the principles for the calculation of the currency structure of CNB net international reserves as well as the currency structure of the part of reserves passively managed by the CNB.

The currency structure of net international reserves is adjusted twice a year to reflect the currency structure of the projected external debt service payments (principal and interest) of the Republic of Croatia for the following year and the currency structure of goods and services imports in the past year. The CNB's management of currency risk in international reserves thus has to be observed in a broader context as the currency structure of international reserves of the CNB is used to reduce exposure to currency risk arising from foreign liabilities of the Republic of Croatia.

As at 31 December 2008, euro-denominated reserves accounted for 81.71%, while US-dollar denominated reserves accounted for 18.28% of net international reserves.

A part of the reserves arising from allocated foreign currency reserve requirements and marginal reserve requirements, funds of the MoF, repo transactions and SDR holdings is managed passively by the central bank, depending on the currency structure of assumed foreign currency liabilities.

**2.19 Currency Structure of Net International Reserves as at 31 December 2008**

Note: XDR is the international three-letter currency code for special drawing rights.  
Source: CNB.

## Interest Rate Risk in International Reserves Management

Interest rate risk is the risk of a fall in the prices of bonds or the value of foreign currency portfolios of CNB international reserves due to unfavourable interest-rate changes in fixed income markets. Interest rate risk of CNB international reserves is controlled by means of precisely defined benchmark portfolios. Benchmark portfolios meet the required risk-return profile, thus reflecting the long-term investment strategy of the reserves.

## Results and Analysis of CNB's Foreign Currency Portfolio Management in 2008

In 2008, the yield on the CNB's net euro portfolio was the highest ever, standing at 5.68%,<sup>1</sup> while the yield on the CNB's net US dollar portfolio during the same period was 4.57%. The average size of the CNB's euro portfolio that was actively managed by the CNB in 2008 stood at EUR 6.3bn and the average size of the US dollar portfolio was USD 2.0bn.

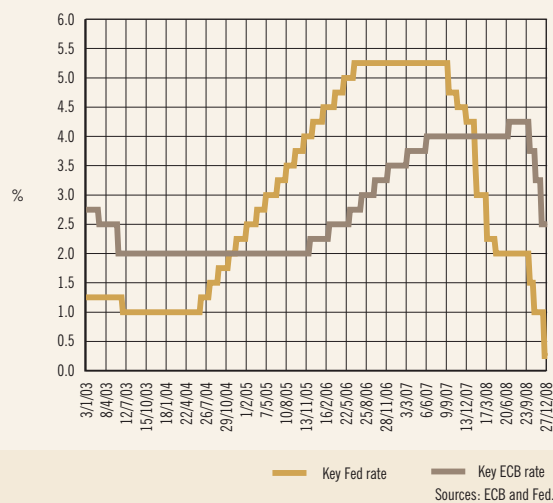
**Table 2.5 Realised Income in 2008 and Average Yields on CNB Foreign Currency Portfolios**

at market value, in million EUR and USD and %

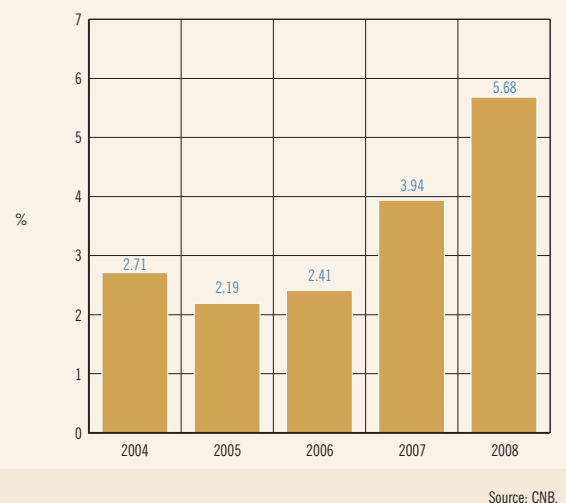
Portfolio	Realised income	Average amount invested	Annual yield rate					
	2008	2008	2003	2004	2005	2006	2007	2008
EUR	350.47	6,295.19	2.61	2.71	2.19	2.41	3.94	5.68
USD	88.03	2,021.09	1.38	1.29	2.78	4.67	6.23	4.57

Source: CNB.

### 2.20 Changes in Key ECB and Fed Rates



### 2.21 Yields on the CNB Euro Portfolio



The actively managed euro portfolio generated an income of EUR 350.5m in 2008, while income from the US dollar portfolio was USD 88.0m (around EUR 61.4m).

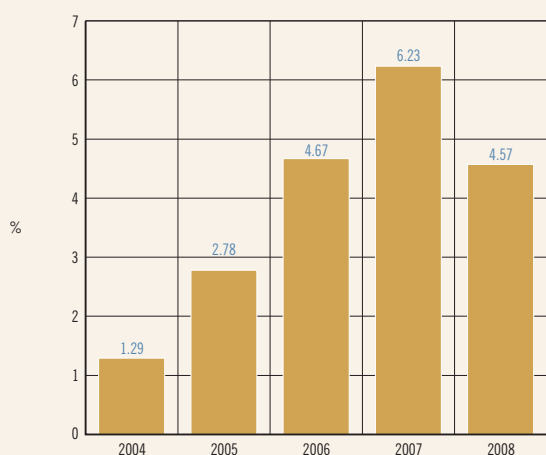
The European Central Bank raised its benchmark repo rate from 4.00% to 4.25% in July 2008. However, in the face of the deepening financial crisis, the ECB cut this rate on three occasions in the period from September to the year-end. By the end of 2008, the ECB's benchmark rate was reduced to 2.50%.

The Fed cut its benchmark rate on seven occasions in 2008. This rate was thus reduced in 2008 from 4.25% to a record low of 0.25%.

The relatively high yields on the CNB's euro and US dollar portfolios in 2008 were largely due to a sharp fall in the yields on long-term euro- and US dollar-denominated government bonds and a steep rise in their prices. Price growth

<sup>1</sup> Annual yields were calculated in accordance with Global Investment Performance Standards (GIPS).

### 2.22 Yields on the CNB Dollar Portfolio



Source: CNB.

was driven by the large demand for safer investments, which was spurred by the global financial crisis that unfolded in 2008.

The second reason for such relatively high yields is that a share of bonds in the CNB's net portfolio, which was relatively large, grew even larger in 2008. Under the decisions of the International Reserves Commission, the share of non-collateralised deposits was reduced and the share of government bonds was increased, which enhanced the safety and liquidity of international reserves.