NATIONAL BANK OF THE REPUBLIC OF MACEDONIA

Report
on the management of the foreign reserves
in 2007

March, 2008

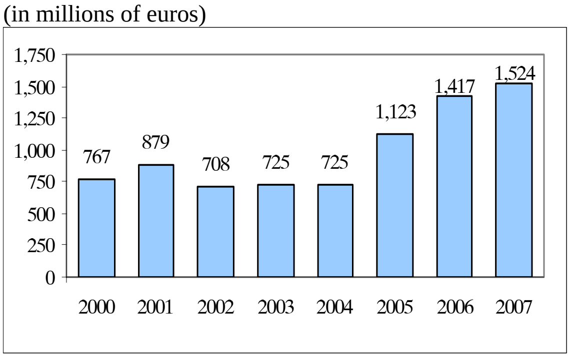
Content

1. General aspects of foreign reserves management

In 2007 the foreign reserves of the Republic of Macedonia reached the level of Euro 1,524 million and relative to 2006 it represents increase of Euro 107 million. Considering that the level of the foreign reserves increased twofold since 2000, the significance of selecting the adequate framework for management of the foreign reserves was even more emphasized (figure 1).

In that direction, the National Bank in the last few years is working on development and application of modern guidelines and standards in the area of foreign reserves management. In accordance with the accepted practices of the central banks for tranching of the foreign reserves and the recommendation of the Bank for international settlements, the foreign reserves are divided in three portfolios: gold, liquidity portfolio and investment portfolio.

Figure 1
Foreign reserves in the period 2000-2007
(in millions of euros)



In that regard, the National Bank is maintaining traditionally certain stable level of gold in the foreign reserves, in form of long-term time deposits, as strategic mean of investment.

The size of the liquidity portfolio was determined by the need for ensuring foreign exchange in its most liquid form, for foreign exchange market interventions, for foreign payments and ensuring current liquidity for servicing the Government external debt. The basic principles, in order of significance, which are applicable in the management of the liquidity portfolio are: safety, liquidity and profitability. The investment portfolio is placed on long term for realization of stable and higher income in function of maintaining the value of the foreign reserves. In that regard, in addition to the safety of the investments, the basic aim in the process of management of the investment portfolio is maximization of the investment return, looking after the liquidity of the investments at the same time.

Also in 2007, the National Bank maintained the current framework of types of instruments in which the foreign reserves are placed, starting with the bank deposits, Government debt securities, debt securities issued by international financial institutions, as well as other fixed income instruments, including repo and money market instruments.

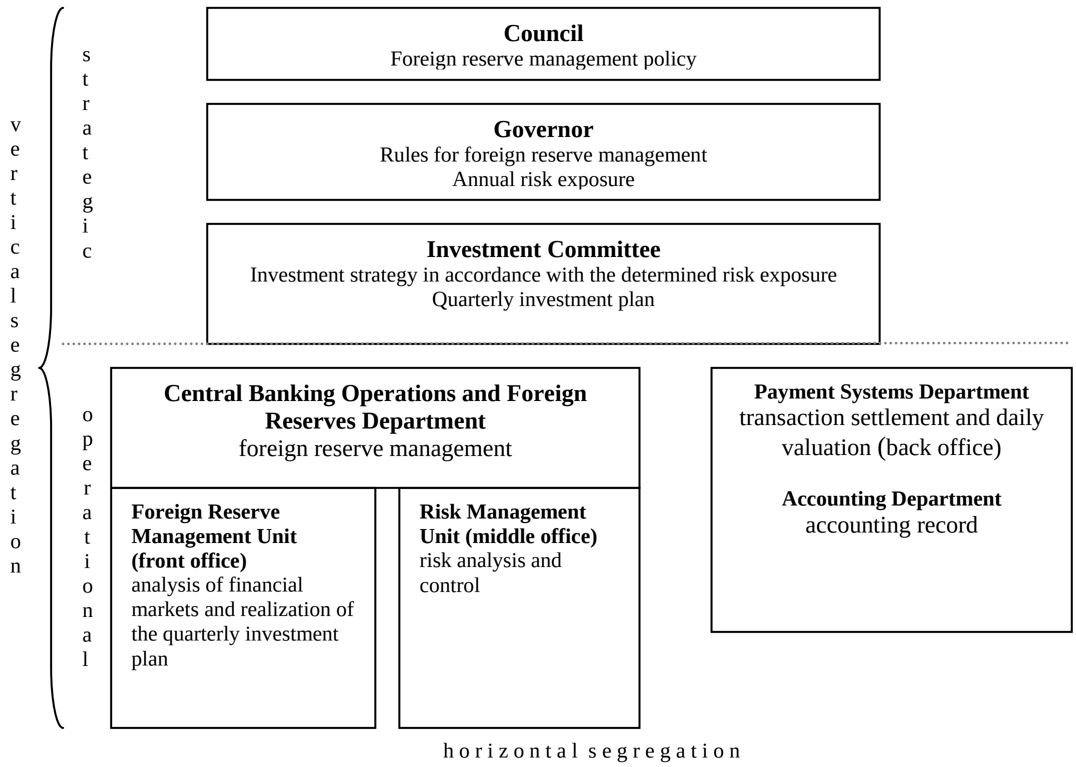
In accordance with the international trends of foreign reserves management, in 2007 the National Bank continued with the commenced investment portfolio diversification by increasing the investments in securities. The basic goal of the growth in the investments in securities was to decrease the foreign reserve exposure to bank deposits, and consequently, to credit risk. This determination of the National Bank for instrument diversification was realized gradually, through further creation of test portfolio[1] within the investment portfolio. Considering that there is no unique "recipe" for realizing a successful diversification, the test portfolio enabled establishment of procedures for i) determining acceptable risk level relative to the expected return, ii) monitoring and evaluating the results of the portfolio of securities, iii) testing the operating rules, as well as iv) application of technical know-how and information infrastructure. The results of the test portfolios indicated preparedness of the National Bank for applying the strategy over the entire investment portfolio.

[1] Since the second quarter of 2006, the National Bank started creating portfolio of securities, in form of test-portfolio, as part of the total investment portfolio of the foreign reserves.

The National Bank has defined a formal process of adopting decisions in the process of foreign reserve management and there is a clear defined division of responsibilities at the strategic and operational level of decision making. The strategic level of decision making includes defining criteria and framework in the investment process, whereas the operational level is acting towards transformation of the strategic decisions into operational. This ensures adoption of adequate decisions at appropriate organizational level, or vertical management. Simultaneously, at operational level there is a horizontal segregation of responsibilities which prevents conflicts of interests, and on the other hand it enables independent and objective reporting to the management. Thus, the management of the foreign reserve portfolios and all the transactions are realized in the organizational unit responsible for trading (front office) and are separated from the other functions. The other functions include settlements and market pricing (marked-to-market) of the instruments in which the foreign reserves are invested, which are performed in the back office. Foreign reserves performance measurement and risk control and exposure are performed by the risk management unit (middle office), which is also responsible for reporting to the management.

In that regard, the process of trading is separated from settlement and recording of transactions, designed to ensure double control of individual transactions. On the other hand, the risk exposure and the performance results are monitored by the Governor and the Investment Committee, through regular reporting.

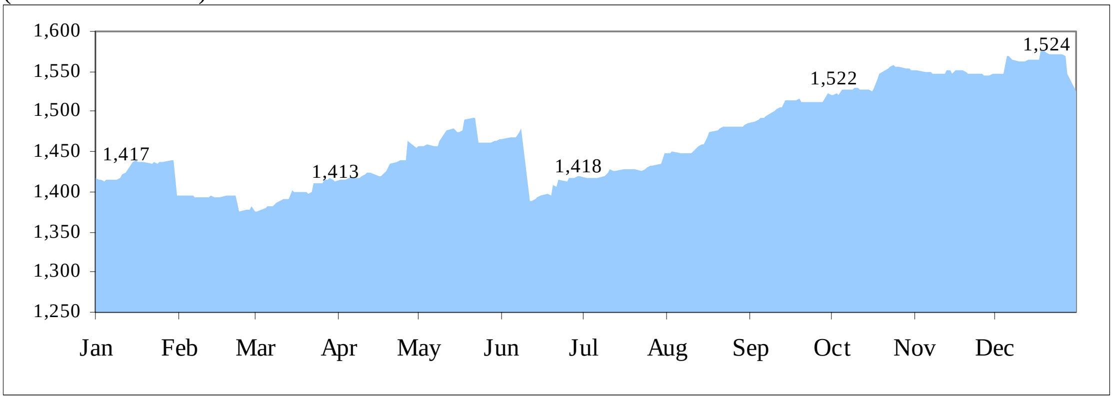
Chart 1
Organizational structure of the process of adopting decisions in foreign reserves management



2. Stock and factors which contributed to the level of foreign reserves

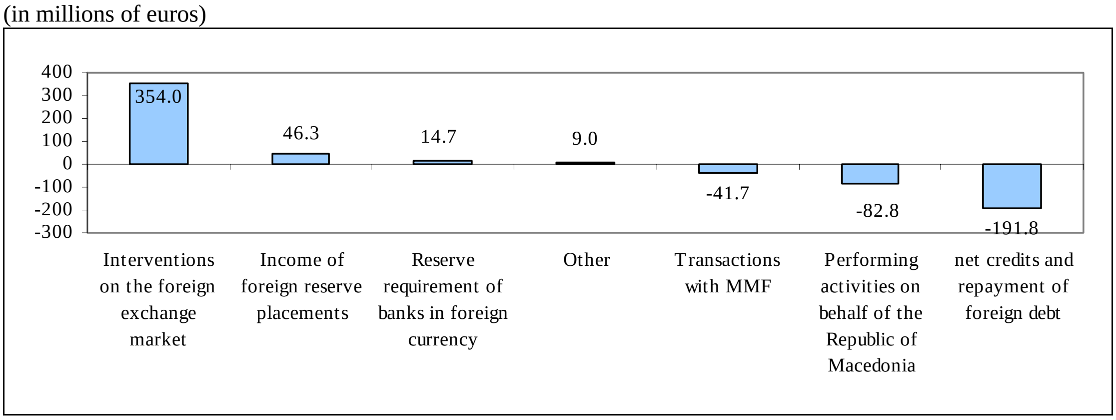
The foreign reserves registered an upward trend (figure 2) in 2007 notwithstanding intermittent fluctuations. In the first quarter, the foreign reserves were kept at a stable level as a result of the early repayment of a significant share of the debt to the Paris Club of Creditors.

Figure 2
Monthly stock of foreign reserves in 2007
(in millions of euros)



In the second quarter, the foreign reserves registered upward trend as a result of the considerable purchase of foreign exchange on the foreign exchange market. Yet, at the end of the quarter, they decreased as a result of the early repayment of the debt to the World Bank and IMF. By the end of the year, the foreign reserves registered continuous upward trend. At the turn of the year, considerable outflows were additionally realized as a result of foreign payments on behalf the Government.

Figure 3
Factors[2] which influenced the level of foreign reserves 2007
(in millions of euros)

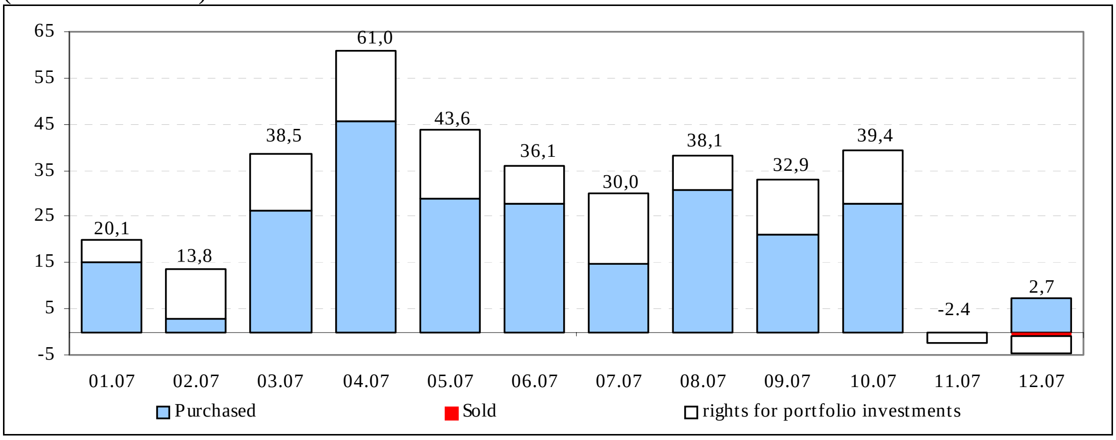


- **Interventions on the foreign exchange market.** The positive developments in the capital and financial account of the balance of payments, mainly as a result of the realized net inflows from foreign direct and portfolio investments, enabled sequel of the positive developments on the foreign exchange market, a process which began in 2006. Thus, in 2007, through the National Bank interventions on the foreign exchange market, net purchase of foreign reserves in amount of Euro **354.02** million was realized (figure 4). Euro 247.05 million of the realized net purchase of foreign exchange were purchased based on

[2] The factor "other" includes: exchange rate differentials, price changes, temporary funds based on deposits of nonresidents and costs for accounts.

interventions[3], whereas sold rights to non-residents for purchasing foreign currencies for portfolio investments contributed to Euro 106.97 million.

Figure 4
Interventions on the foreign exchange market
(in millions of euros)



In 2007, the National Bank was continuously present on the foreign exchange market purchasing foreign exchange as a result of the greater supply relative to the demand for foreign exchange and the tendencies for appreciation of the nominal foreign exchange rate of the Denar. The last two months of 2007 were an exception to the annual developments. Namely, as a result of the developments in the current account of the balance of payment in November and December (increase in the trade deficit and the deficit in the income balance, as well as decrease in the current transfers), the demand for foreign exchange on the foreign exchange market increased. Simultaneously, in November and December the inflow of foreign exchange based on purchased rights for portfolio investments was reduced, amid downward movement of equity prices on the Macedonian Stock Exchange since the beginning of September . Such development on the markets in November and December resulted in foreign currency sale by the National Bank aimed at balancing the supply and the demand on the foreign exchange market and returning of the foreign exchange rate to the average level of 2007.

- **Performing activities on behalf of the Republic of Macedonia**

The National Bank, as bank of the state, performs foreign payment activities for the account of the Government and for the Government bodies .

Net outflow of foreign currencies equaling Euro **191.8** million was realized based on inflows and the servicing of the Government foreign debt**.** Based on granted credits from abroad, inflow of assets in amount of Euro **23.42** million was realized, based on credit from the International Bank for Reconstruction and Development for support of the balance of payment of the Republic of Macedonia. Simultaneously, repayment of foreign debt of Republic of Macedonia in the amount of Euro **215.2** million was realized. Most significant outflow of foreign currencies was registered based on early repayment of the Government debt to the World Bank (Euro 96.4 million) and to the Paris Club of Creditors (Euro 88.4 million). Other payments were realized based on regular payment of debt in amount of Euro 30.4 million.

Based on performing other activities for the account of the Government, net outflow from the foreign reserves in the amount of Euro **82.8** million was realized. On the side of inflows, which amounted to Euro 96.7 million, the payment for obtaining license for third

[3] National Bank intervened through the four market-making banks: "Stopanska Banka" a.d. Skopje, "Komercijalna Banka" a.d. Skopje, "NLB Tutunska Banka" a.d. Skopje and "Invest Banka" a.d. Skopje.

mobile operator of Mobilecom Austria (Euro 10 million) and the credit from the European Investment Bank for the Road Fund (Euro 9 million) represented more significant inflows. On the side of outflows, which amounted to Euro 179.5 million, most significant outflows were realized based on return of assets of pre-privatization of ESM to the European Bank for Reconstruction and Development in amount of Euro 21.6 million, as well as the payment of liabilities to OKTA and EVN in amount of Euro 27.23 million and Euro 22.5 million, respectively.

- **Credits from the International Monetary Fund.** In 2007, the National Bank repaid debt to the IMF in the amount of Euro 43.1 million, out of which Euro 41.68 million (Euro 32.8 million early repayment) of principal and Euro 1.38 million of interest.

- **Reserve requirement of banks in foreign currency.** In 2007, the reserve requirement of banks in foreign currency was factor which contributed to an increase in the foreign reserves by Euro 14.7 million. The reserve requirement in foreign currency rose as a result of the growth in the foreign currency deposits which are included in the comparison basis for calculating the reserve requirement.

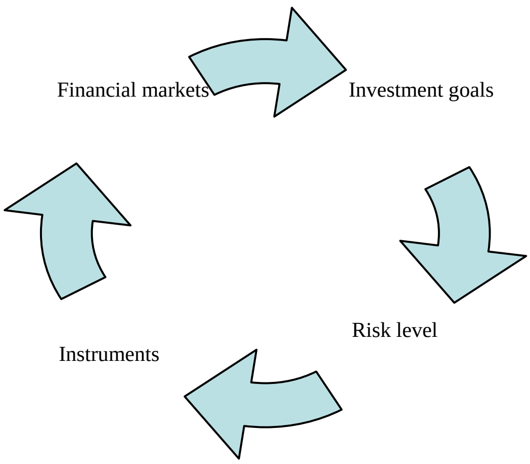
- **Income of foreign reserve placements.** The realized income from foreign reserves investments equaled Euro 46.3 million (Euro 15.46 million more in comparison with 2006). The income growth was a result of the increase of the interest rates on international financial market in the first half of the year, the application of the new concept for investment portfolio management, as well as the moderate increase in the level of foreign reserves.

3. Foreign reserves investment

In the foreign reserves investment process, the National Bank defines a management strategy, taking in consideration the developments on the international financial markets, which incorporates investment goals, the acceptable risk tolerance and the eligible financial instruments in which the foreign reserves are invested,.

Considering that the investment strategy incorporates the basic principles of safety, liquidity and profitability, the selection of eligible instruments for investment in conditions of turbulent developments on the international financial markets was in the focus of interest in 2007.

Chart 2
Investment strategy elements

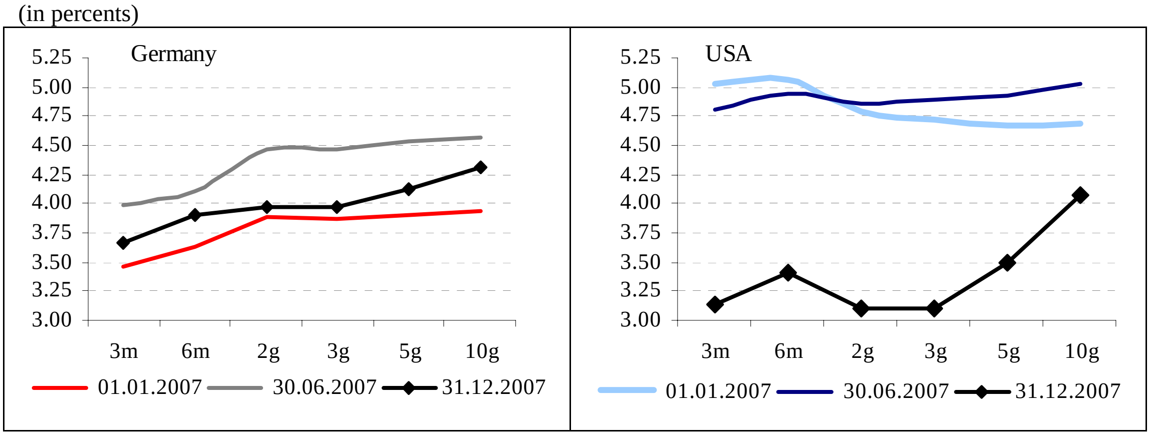


The instability on the international financial markets stressed the significance of the risk management, especially the credit and the liquidity risk.

- **The developments on the international financial markets**, especially in the second half of 2007, were under considerable influence from the fallout from the mortgage market crisis in the USA which spilled over into the market of structured products, with significant effects also on the inter-bank money market. The measures undertaken by the Federal Reserve Bank aimed at relaxing the financial markets and calming the crisis, had impact on the foreign exchange market, which resulted in further depreciation of the US Dollar relative to the Euro by 11%. The financial crisis had negative influence on the economic growth, which contributed to deepening of the negative trends on the international financial markets. The growth in the inflation rate additionally influenced the international financial markets, mainly as a result of the growth in the prices of food and oil derivatives. All these developments reflected on the financial market in USA and in the Euro-zone, and they initiated downward movements of the yield curves of Government securities. The demand for Government debt securities, as safest investment instruments, increased significantly amidst turbulent developments on the markets in the largest economies, which in turn resulted with rise in their prices.

Chronologically observed, in the beginning of 2007 the yields on Government securities in the Euro-zone had an upward trend, reflecting the positive economic developments and the undertaken restrictive monetary policy measures [4]. The yield curve of the Government securities in the Euro-zone (Germany) was positively sloped on the short end, which indicated the expectations of the market participants for further increase in the interest rates on short term, as a preventive measure for keeping the inflation at a stable level. The US Government securities yield curve was inverted due to the strong expectations that FED will start cutting the interest rates. But in the first half of 2007, the FED funds target rate remained unchanged at, 5.25%,which caused flattening of the Government securities yield curve (figure 5).

Figure 5
Yield curve of Government securities
(in percents)



In the second half of the year the tensions on the financial markets spread, initiated by the problems in the mortgage market and the housing market in USA. The uncertainty relative to the size of the losses in the structured products market prompted non-confidence among market participants and lower liquidity in the money market, thus the demand for risk free Government securities in USA and the Euro-zone significantly increased. The last quarter of 2007 brought additional problems to the global economy. As a result of the growth in food and oil prices, the inflation effects began to emerge[5]. Under such conditions, the reference rate in the Euro-zone remained unchanged, while in the USA, the risks for the economic growth emanating from problems in the financial markets had dominant significance which resulted in easing of the monetary policy[6].

[4] ECB in March and in June increased, for overall 50 basis points, the reference interest rate which reached the level of 4%.

[5] The inflation rate in the Euro-zone in the fourth quarter equaled 2.9% and significantly increased relative to the previous quarter when it equaled 1.9%. The growth in the inflation rate was registered also in USA where it reached the level of 4.1%, compared to 2.8% in the previous quarter.

[6] In the last quarter, the USA central bank on several occasions, successively, lowered the benchmark interest rate (FED funds rate) for total 100 base points reaching the level of 4.25%

The crisis in the international financial markets led to higher scrutiny by the central banks in the process of foreign reserves management. In accordance with the research made by the Central banking publications[7], the central banks are expecting the developments in the international financial market to influence the foreign reserve management, which will depend on the amount of invested funds in certain asset classes and the investment horizon. Also, the deteriorating of the market conditions may contribute to revision of the long-term investment strategies and abandoning or delaying the process of diversification in instruments. In that sense, more than 90% of the central banks included in the research, expect the significance of the criteria safetyand liquidity to increase, which will create continuously greater demand for Government securities, as risk-free financial instruments in which the foreign reserves are being placed.

- **Risk management in the process of foreign reserves investment**

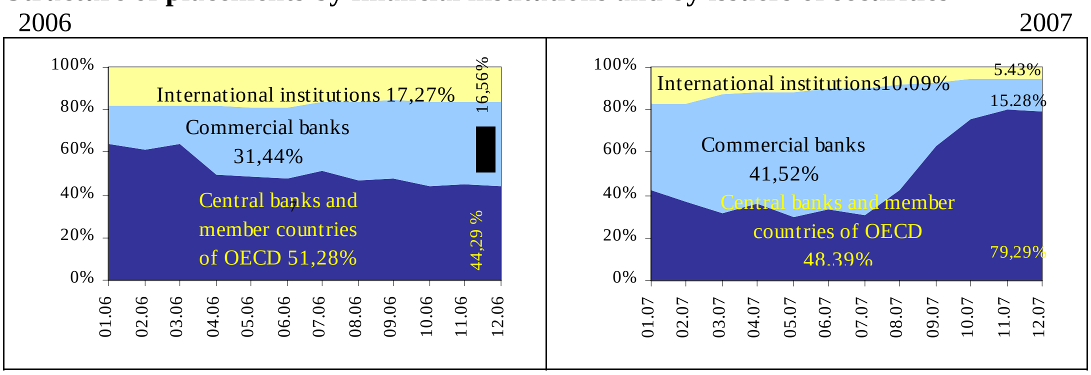
The National Bank's basic principles when investing the foreign reserves are determined by the acceptable risk level. In that regard, the principle of safety is provided through credit risk management and through investment diversification in certain types of instruments. The adherence to the liquidity principle is ensured by maintaining the target level of the liquidity portfolio and dispersed maturity of deposits and placements in liquid debt securities in the investment portfolio.

Credit risk

The monitoring of the level of credit risk exposure incorporates aset of criteria and indicators, starting from rating opinions of the rating agencies to individual assessments and market information for creditworthiness of the counterparties. In that regard, the broadest framework for defining the credit risk of the National Bank envisages investment of the foreign reserves in member countries of OECD and in financial institutions with long-term credit rating of at least Aa3 by Moody's or AA- by Standard&Poor's. At the same time, the National Bank is managing the credit risk also through setting criteria for selection and determination of quantity limits for exposure to financial institutions and issuers of debt securities in which the foreign reserves are invested.

In 2007, most significant share of the foreign reserves, 48.4% on average, was placed in deposits with foreign central banks and in Government securities. Also, considerable share of the foreign reserves, 41.5% on average, was placed with commercial banks, whereas the placements with the international financial institutions amounted 10% of the foreign reserves, on average (figure 6).

Figure 6
Structure of placements by financial institutions and by issuers of securities



The second half of 2007 was especially significant from aspect of credit risk management. Namely, under conditions of intense turbulent developments in the international

[7] RBS Reserve Management Trends 2008.

financial markets, it became obvious that certain commercial banks are facing huge losses arising from investments in structured products, collateralized with risky (sub-prime) mortgage credits. The uncertainty on the size of the losses, as well as the announcements for change in the credit rating of certain commercial banks, were assessed by the National Bank as increased credit risk. In that regard, since the beginning of August, the National Bank reallocated its placements from the commercial banks to central banks. As a result of that, at the end of 2007, the exposure to the central banks and member countries of OECD reached up the level of 79.3%.

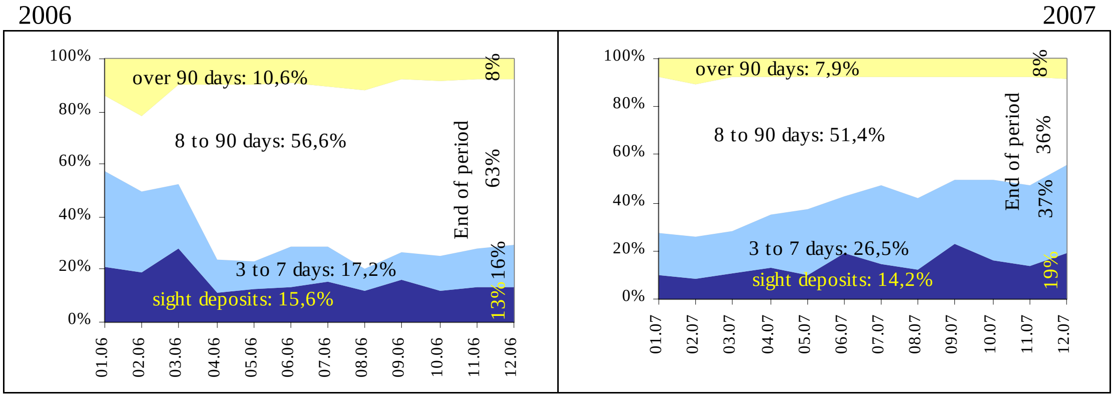
Liquidity risk

The liquidity risk incorporates an assessment of the liquidity of different types of financial instruments based on the following indicators: the size of the market (capitalization), bid-ask prices spread, level of development of the repo-market for the certain instrument, etc. Also, in the process of selecting the financial instruments, a horizontal dispersion of the liquidity risk is made taking care for the selection of short-term instrument within the liquidity portfolio, whereas in the investment portfolio liquid securities are selected.

The concept of liquidity risk management, created in such manner, reflects the maturity structure of the foreign reserves with significant participation of instruments with high level of liquidity (figure 7). The assets placed in sight deposits were most liquid, participating with 14.2%, on average. As a result of increase in the investments in securities[8] within the investment portfolio, the instruments with maturity from 3 to 7 days rose and at the end of the year their share was 37%. On the other hand, the deposits placed with maturity from 8 to 90 days were reduced and at the end of the year they participated with 36% in the maturity structure of the foreign reserves. Additionally, the liquidity structure of the placed deposits was provided through successive maturing during the entire year.

The gold[9], as a strategic mean for investing the foreign reserves, was invested on long term. Although the quantity of gold did not change during the year, its relative share in the foreign reserves fluctuated as a result of the fluctuations in the price of gold in the international markets[10]. As a result of turbulent developments in the international financial markets and higher inflation, the gold was treated as an asset that provides insurance against these risks. The price of gold in 2007 went up by 28%.

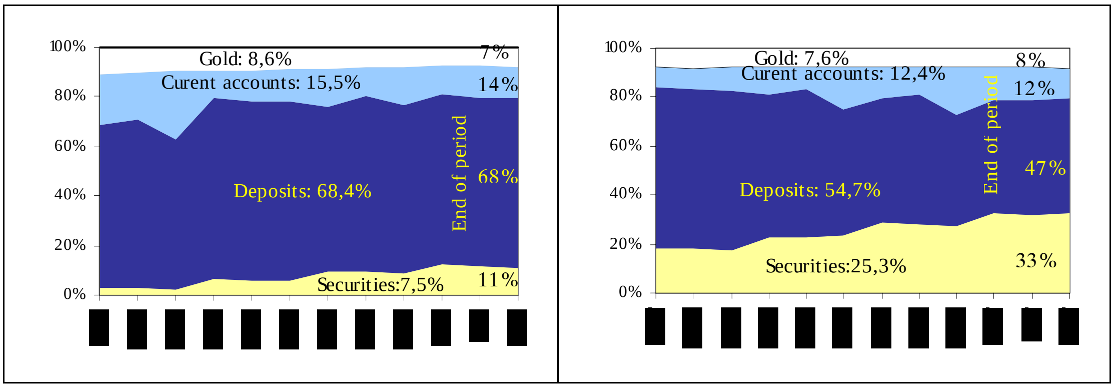
Figure 7
Structure of placements by maturity



[8] The securities in which the foreign reserves are placed are being traded on liquid secondary markets and thus they are classified as placements with maturity from 3 to 7 days.
[9] The gold placed with the foreign banks has characteristics which are in accordance with the standards of the London Bullion Market Association (London Good Delivery Standard), which enables its adequate market valuation.
[10] The price of gold from US Dollar 635.7 per fine ounce on December 31, 2006 rose to US Dollar 836.5 per fine ounce on December 31, 2007.

The increase in the investments in securities, besides the maturity structure, had also impact on the structure of the placements by instruments (figure 8). Thus, the participation of the placements in the securities was gradually rising, reaching the level of 33% at the end of 2007. On the other hand, the participation of the deposits was reduced to 47% in the structure of the placements by instruments.

Figure 8
Structure of placements by instruments

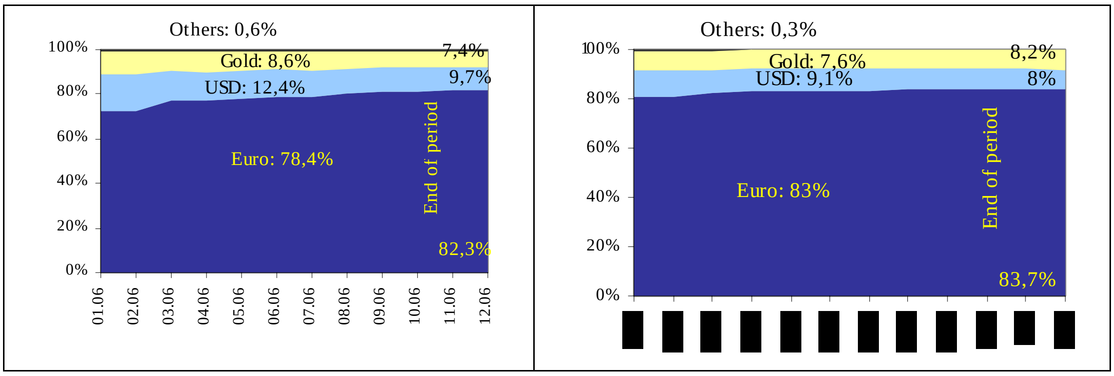


Currency risk

In 2007, the National Bank kept the usual currency composition determined by the application of the strategy of de facto fixed foreign exchange rate of the Denar relative to the Euro. In that regard, the Euro had dominant share of 84% in the foreign reserves. The currency risk exposure was limited to the part of the foreign reserves kept in US Dollars, other currencies[11] and gold (figure 9).

The share of US Dollar and other currencies was determined by the currency structure of the foreign credit liabilities of the Government, which are serviced with the foreign reserves, as well as with the need for keeping current liquidity in the process of foreign payments.

Figure 9
Structure of placements by currencies



- **Quantification of the risk exposure**

[11] In 2007, the amount of other currencies in the foreign reserves was determined at level which was enough for ensuring the current liquidity in the process of payments to abroad. The other currencies include: Australian Dollar, Canadian Dollar, Swiss Franc, Danish Krone, Norwegian Krone, British Pound, Japanese Yen, Swedish Krona and SDR.

For monitoring the interest risk on the foreign reserves, the National Bank applies the target modified duration, whereas for quantifying the effect of the currency and interest risk applies Value at Risk (VaR).

The target modified duration is determined depending on the acceptable level of risk and it represents limiting criteria in determining the allocation of every instrument in the investment portfolio. The acceptable risk level is determined based on the shortfall approach depending on the deviation between the assessment of the yield on six-month Treasury bills (risk-free instrument) and the assessment for future possible loss, and it is determined through calculating the worst income when the yield curve in parallel manner moves up by 200 basis points.

The National Bank continued the gradual build up of the portfolio of securities in the form of test-portfolio and in 2007 the target modified duration was applied only to the test-portfolio. The target modified duration of the test-portfolio in euros in 2007 was set to 9 months, considering that the shape of the yield curve indicated conservative interest risk management, in anticipation of further increases in the reference interest rates in the Euro-zone., The target modified duration of the test-portfolio in US Dollars was set to 12 months considering the inverted shape of the yield curve for US government securities along with expectations for lowering the benchmark interest rates in USA.

VaR represents methodology which assesses the maximal change in the value of the foreign reserves due to the change in the prices of the financial instruments and change in the foreign exchange rate, with confidence level of 99% for time period of 10 days[12]. The fluctuations in the prices of instruments and foreign exchange rates are determined by the historical changes in prices and foreign exchange rates of instruments and currencies which are included in the foreign reserves at the end of the month.

The market risk of the National Bank, quantified through VaR, at the end of 2007 equaled Euro 9.37 million or 0.62% of the foreign reserves. The VaR of change in the foreign exchange rate (which includes change in the price of gold) equaled Euro 8.22 million, and VaR of the change in the prices of instruments which are invested in the foreign reserves amounted to Euro 1.15 million.

4. Conclusion

The foreign reserves in 2007 had upward trend and the purchase of foreign exchange on the foreign exchange market had significant influence compensating the outflows based on realized early repayment of a share of the external debt of the Republic of Macedonia.

In the process of foreign reserves management, the National Bank continued increasing the investments in securities which was due to the decision to decrease the exposure to bank deposits, and consequently, to credit risk. The credit risk management was additionally accentuated in the second half of 2007, Namely, under conditions of intense turbulent developments in the international financial markets, it became obvious that certain commercial banks are facing huge losses arising from investments in structured products, collateralized with risky (sub-prime) mortgage credits. The uncertainty on the size of the losses, as well as the announcements for change in the credit rating of certain commercial banks, were assessed by the National Bank as increased credit risk. In that regard, since the beginning of August, the National Bank reallocated its placements from the commercial banks to central banks.

Simultaneously, significant attention was paid to the development and application of the modern guidelines and standards in the area of foreign reserves management. In that regard, the test-portfolio enabled verification of the established procedures where the results of the application of the test-portfolio indicates to preparedness of the National Bank for application of the selected strategy on the overall investment portfolio.

[12] By the recommendations of the Basel Agreement in 1998.