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RESEARCH AND STATISTICS AND IT DEPARTMENT

INFLATION REPORT
I – III QUARTER 2008

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1. INTRODUCTION

With a view to following contemporary trends in monetary policy, in mid-2005, the Central Bank of Montenegro initiated the publication "Inflation Report". The number of central banks that publish this report is continuously increasing. Many European central banks and those implementing the inflation targeting policy publish this kind of report. One of the most important tasks of this report is to point to the factors influencing the prices movements, as well as to forecast future inflation movements.

Most of the countries use model assessments in inflation forecasting and some countries use expert assessments.

Bearing in mind that many statistical data are not available, that majority of available data have short time series and a part of data is not reliable, we diecided to combine model and experts' assessments.

Global movements of inflation and economic performances were mostly affected by the financial crisis, as well as prices movements of the stock exchange products (oil derivatives, basic metals and other). In such an environment, the majority of central banks made mistakes in forecasting inflation and performed one or more revisions of their own forecasts. Our forecasting model as of the beginning of 2008 is still valid, that is, there was no need for the model revision although the level of uncertainty increased.

In comparison with the usual contents of this report, the balance of payment data is missing, bearing in mind that while drafting this report the data on visible trade movements in the third quarter were not available. The Chief Economist Report for January - September 2008 will comprise the entire balance of payments data.

2. INFLATION INDICATORS[1]

Cost of living increased by 0.99% in the third quarter of 2008 and recorded significant decline in relation to the second quarter (3.35%). Observed by months, cost of living in July recorded monthly decrease of 0.4%, while in August and September it recorded increase of 0.3% and 1%, respectively.

Over the period July – September 2008, the prices of goods recorded an increase of 0.85%, while the prices of services increased by 2.18%. Measured by the cost of living, the annual inflation growth in September amounted to 8.5%, while CPI inflation recorded a decrease of 8.4%.

The prices of food products increased by 0.93% over the period July - September 2008 and recorded a 47.62% share in total inflation. This increase was mostly due to the prices of fresh and processed meet (3.89%), fresh and processed milk (3.83%) and prices of fats (1.66%). The inflation calming down in the third quarter was influenced by the decrease of prices of fresh and processed vegetables (-1.86%) as well as the prices of fresh and processed fruits (8.94). The prices of some services recorded significant increases in the third quarter. Thus, prices from the category "housing" increased by 16.14%, education and culture by 3.97% while the costs for car maintenance increased by 4.68%. The prices of liquid fuels and lubricants decreased by 2.58%, while the electricity prices remained the same in the observed period.

Graph 1 – Cost of living, monthly growth rate

Source: Monstat

Table 1 – Inflation, %

	2007				2008		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Change to end of the previous year	0,6	1,1	5,5	7,7	2,0	5,4	6,4
Annual change	2,4	1,6	6,5	7,7	8,2	11,4	8,5

Source: Monstat

[1] *Inflation rates in July 2007 are overestimated, due to the methodological error which Monstat made while calculating the price of electricity.*

The annual **core inflation rate** amounted to 7.83% in September, and was insignificantly lower than the total annual inflation rate (by 0.69 percentage points). This indicates that the inflation was not influenced by external factors only (increase of oil prices), but also by the internal factors. Namely, the increase of the electricity prices, as well as the increase of food and other products prices through the increase of costs of production, transport and the like, contributed to the decrease of the range between core and total inflation.

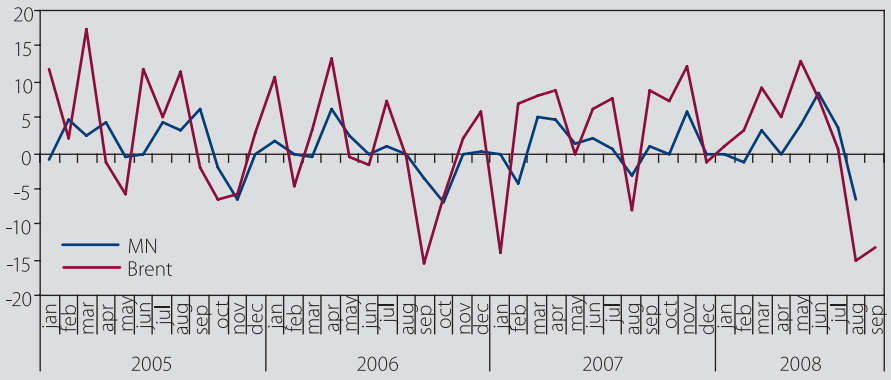
The price of the OPEC reference basket, which in January amounted to 88.35 USD/barrel, was constantly increasing. The average price of the reference basket in the third quarter amounted to 113.49 USD/barrel. The highest price was recorded in July (131.22 US$/barrel), while it decreased to 96.85 USD/barrel in September. The average price of the "Brent" oil in the third quarter amounted to 114.78 USD/barrel, and the highest price was recorded in July (133.19 USD/barrel). The key factors which influenced the growth of oil price in the third quarter were tensions

Table 2 – Share of individual categories in total inflation

	weight	IX'08/VI'08	growth rate	contribution	share in total inflation
TOTAL	10.000	100,99	0,99	0,98	100,00
Food	5.046	100,93	0,93	0,47	47,62
Tobacco and beverages	694	100,85	0,85	0,06	6,03
Clothing and footwear	845	101,20	1,20	0,10	10,36
Housing	1.259	101,69	1,69	0,21	21,64
Electricity	605	100,00	0,00	0,00	0,00
Hygiene and health	712	99,96	-0,04	0,00	-0,29
Education and culture	460	103,97	3,97	0,18	18,62
Transportation and telecommunication	984	99,74	-0,26	-0,03	-2,57
Liquid fuels and lubricants	400	97,42	-2,58	-0,10	-10,51
Transportation and telecommunication services	414	100,38	0,38	0,02	1,60
Goods	8.994	100,85	0,85	0,76	77,62
Services	1.006	102,18	2,18	0,22	22,38

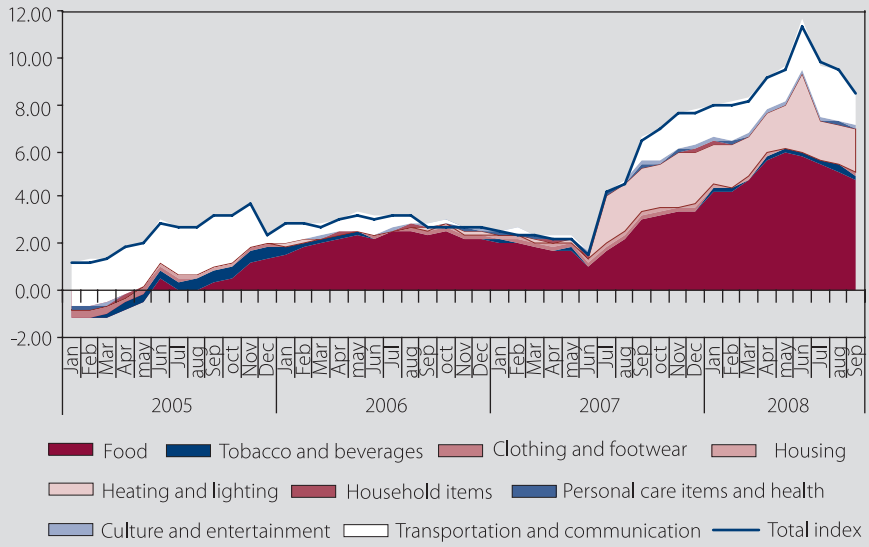
Source: Monstat and CBM calculations

Graph 2 - Oil prices, monthly growth rate



Source: Monstat and "Monthly Oil Market Reports", OPEC

Graph 3 - Components of cost of living index: contribution to annual growth rate (index points)

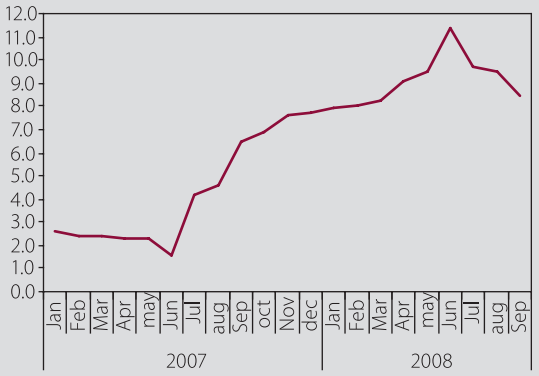


between Iran and the West, military conflicts in Georgia, as well as various speculative activities. At one point, price fluctuation was affected by the closure of American refinery capacities which was influenced by the strong hurricane which stroke some parts of USA. However, the record July prices decreased in mid-August, down to 96.85 USD/barrel recorded in September. Price of "Brent" oil amounted to 98.13 USD/barrel in September. The decrease was due to the weakening of U.S. economy and reduction of demand for this product in leading consumer countries, which was largely affected by the global financial crisis.

The annual rate in September 2008 increased by 8.52%, and was significantly lower than the annual rate from June (11.36%). The annual increase was mostly affected by the growth of food prices (9.32%), heating and lightning (24.3%), transportation and postal services (12.6%). Observed annually, food prices recorded growth of 8.7%, and in total annual inflation accounted for 91.65%, while the prices of services increased by 7.1% and accounted for 8.35% in total inflation. The annual rate of consumer prices increased by 8.4%.[2]

During the period July - September, **retail prices** increased by 0.98%, which was affected by the increase of industrial food products prices and industrial non-food products by 2.67% and 0.13%, respectively.

Graph 4 – Cost of living, annual growth rate



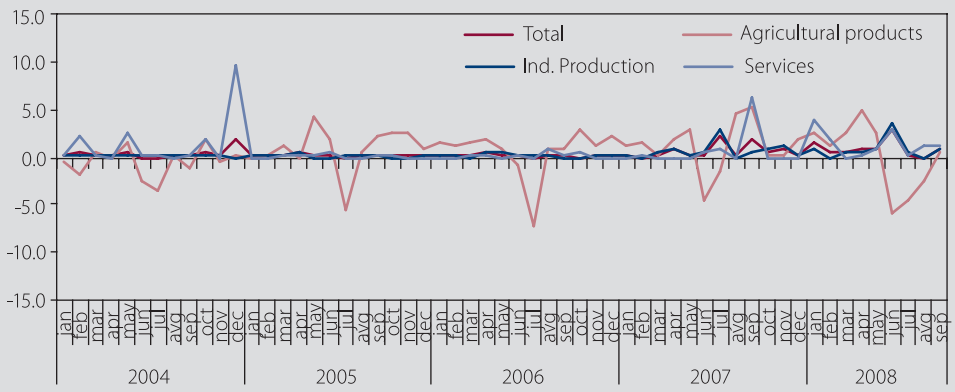
Izvor: Source: Monstat

Prices of goods and services increased by 0.61% and 2.46%, respectively. Observed annually, retail prices in September increased by 9.8%.

Producers' prices of manufactured products increased by 0.3%, in the period July - September. In relation to end-2007, growth in September amounted to 13.9%. The annual growth rate in September amounted to 17.1%.

[2] *In July 2008, Monstat published CPI which represents internationally comparable inflation measurement.*

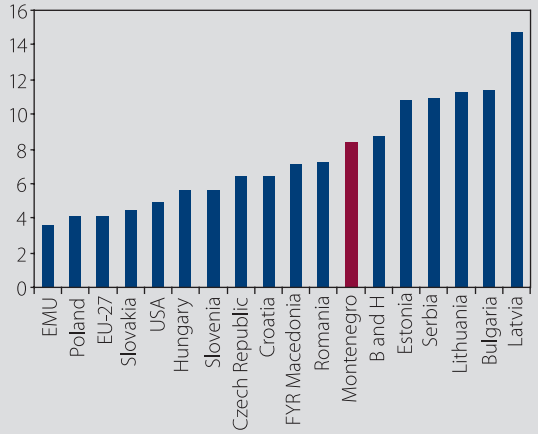
Graph 5 - Retail prices, monthly growth rate



Source: Monstat

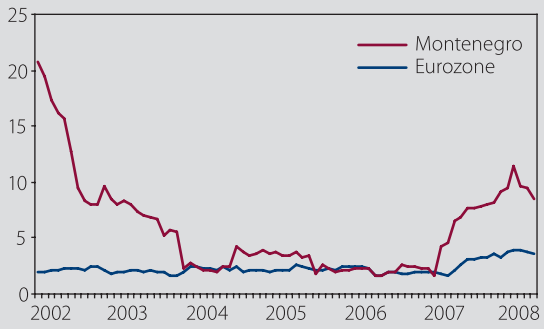
Graph 6 shows the published data on HICP (Harmonized Index of Consumer Prices) and CPI (Consumer Price Index). In most of the countries, the annual inflation rate decreased in September. Annual inflation in Eurozone amounted to 3.6% in September, and the components with the highest growth rates are food (5.7%), housing (6.2%) and transportation (5.8%). Inflation in Bosnia and Herzegovina, Estonia, Serbia, Lithuania, Bulgaria and Latvia was higher than inflation recorded in Montenegro (8.4%).

Graph 6 - Annual inflation rate in selected countries, September 2008



Source: National Statistical Offices and Eurostat

Graph 7 – Inflation in Eurozone and Montenegro since introduction of euro (annual rates)



Source: Monstat and Eurostat

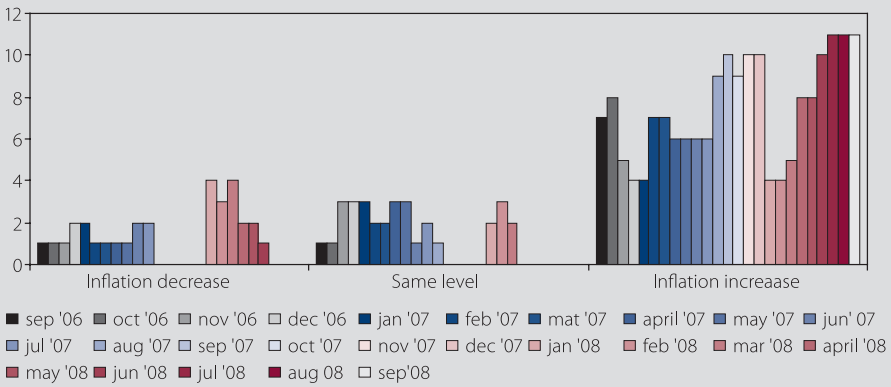
3. INFLATION FORECASTS

BANKS' EXPECTATIONS

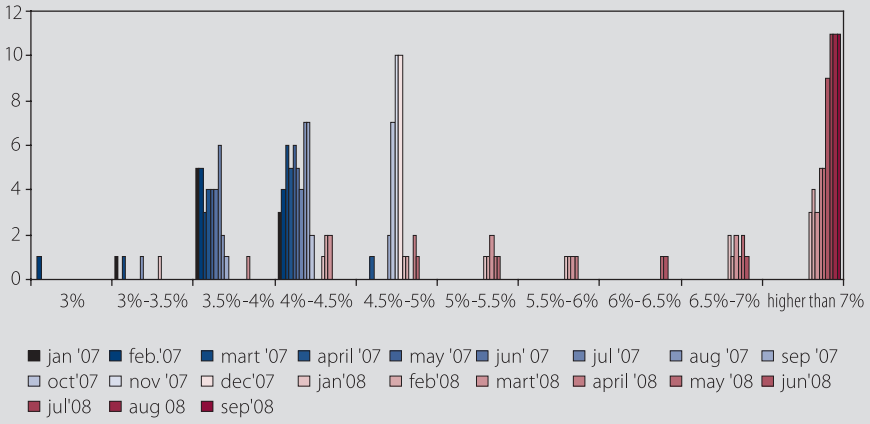
In September, all 11 banks expected higher inflation rate in relation to the previous year (Graph 8).

As for the inflation rate level, all surveyed banks (11 banks) forecasted the inflation rate to be higher than 7%.

Graph 8 - Inflation forecasts (banks)



Graph 9 – Forecasted inflation rate level (banks)

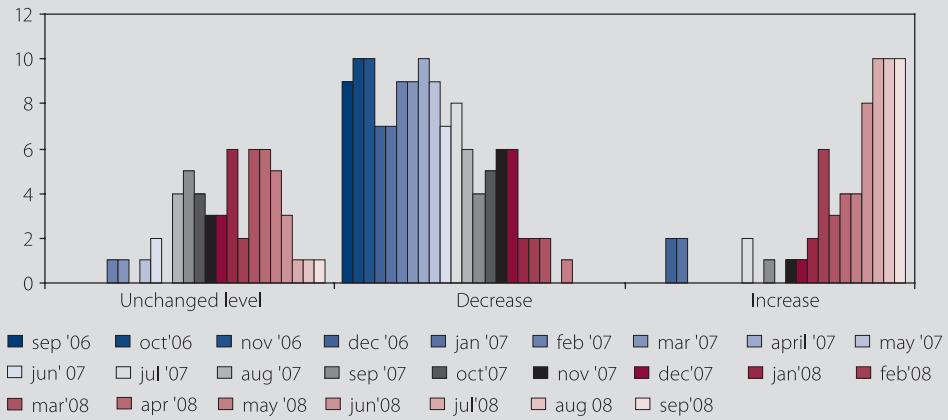


As for the nominal interest rate trends, ten banks expected upward trend, while only one bank expected unchanged level (Graph 10). Concerning the expectations on the movement of effective interest rates, one bank expected the unchanged level, while ten banks expected growth of effective interest rates (Graph 11). There were no expectations of the downward trend neither in nominal nor in effective interest rates.

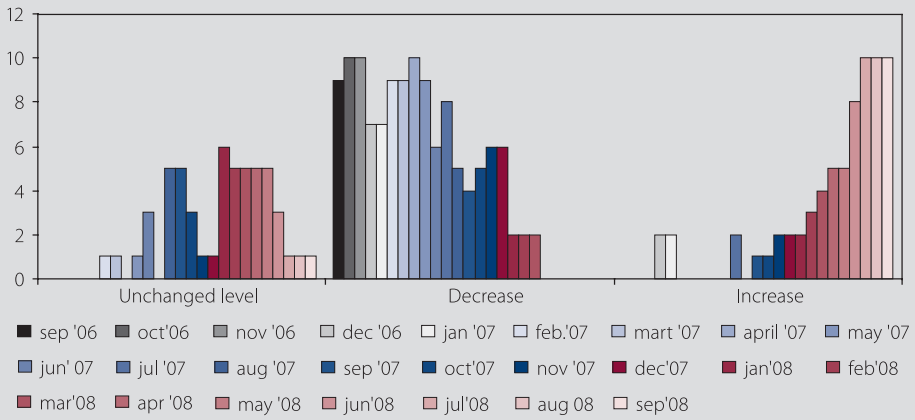
Concerning the expectations on the movement of deposit interest rates, ten banks expected increase of deposit interest rates while only one bank expected unchanged level in 2008 in relation to 2007.

For the purpose of calculating inflation forecasts we use market trend indicator (black line in Graph 12). It is calculated as the difference between the number of banks expecting an inflation increase (blue columns) and the number of banks expecting an inflation decrease (red columns). If the market trend indicator has a negative value, a decrease in the inflation rate is expected in the upcoming period. If it has a positive value, then an increase in the inflation rate can be expected. If it has a zero value, then an unchanged inflation rate can be expected in the upcoming period. The more negative value, the lower inflation forecast, and vice versa. The graph clearly shows that the inflation forecasts remained significantly high in the period June – September 2008, regardless the decrease of the inflation rate over the third quarter.

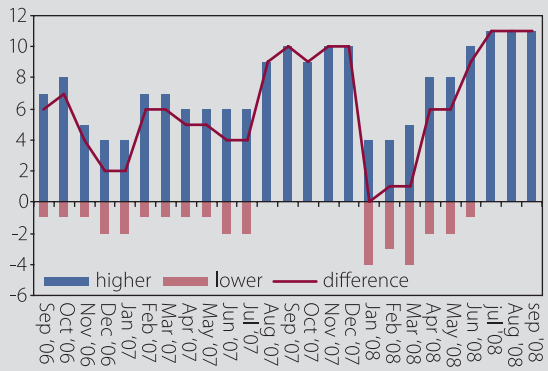
Graph 10 – Nominal interest rate movement forecasts



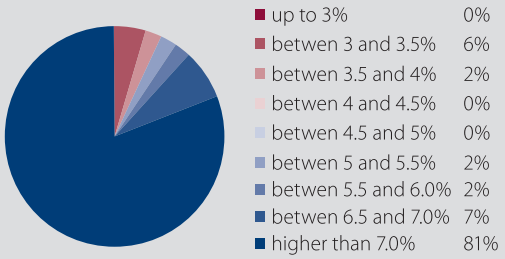
Graph 11 – Effective interest rate movement forecasts



Graph 12 – Market indicator



Graph 14 – Forecasted inflation in 2008

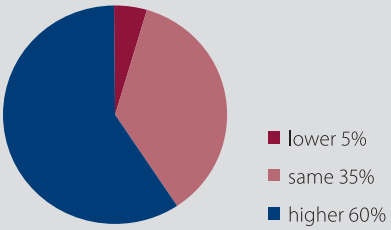


EXPECTATION OF ECONOMY (EXCEPT BANKS)

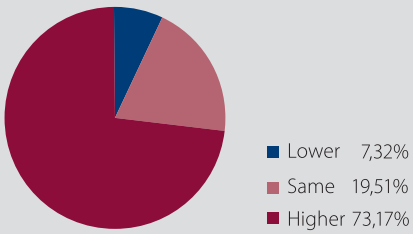
Inflation

The company survey showed that 73% of companies expect a rise of inflation, 20% believe that it will stay at the same level, while 7% expect lower inflation rate in 2008, in relation to 2007. In addition, 81% of surveyed companies believe that inflation in 2008 will be higher than 7% (in the second quarter, 59% of surveyed companies believed that inflation will be higher than 7%). The majority of surveyed companies expect higher salaries for their employees by the end of 2008. In addition, 71% of surveyed companies expect higher value of prices of the production inputs which they use, while 51% of those companies expect the same level of prices of their products (services).

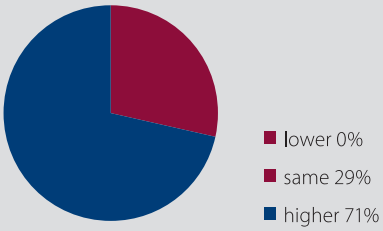
Graph 15 – Expected level of salaries by end-2008



Graph 13 - Forecasted inflation in 2008, in relation to 2007 (responses by percentage ratio[3])

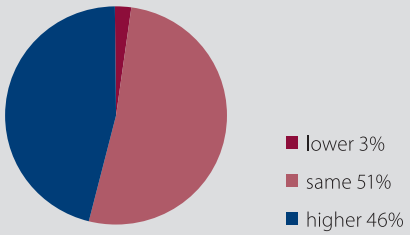


Graph 16- Expected price level of inputs of production by the end of 2008

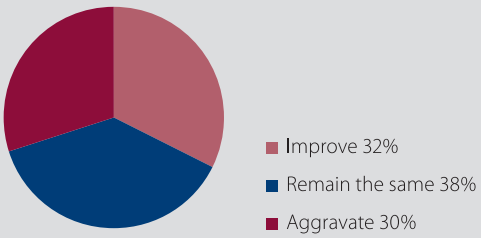


[3] *Responses to all questions from the survey on companies are presented as share, which hereinafter will not be specially indicated.*

Graph 17- Expected price level of products (services) by the end of 2008



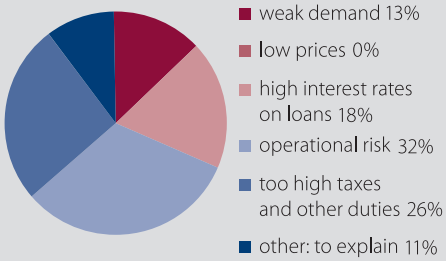
Graph 18 – Expected business climate in 2008 compared to 2007



Business environment

The survey results show that most of surveyed enterprises (38%) expect unchanged business environment. The improvement of the business climate was expected by 32%, whereas 30% of enterprises expect its aggravation by the end of 2008. At the same time, 7% of surveyed companies expect lower level, 33% the same, and 60% of surveyed companies expect higher level of lending interest rates in 2008 compared to 2007.

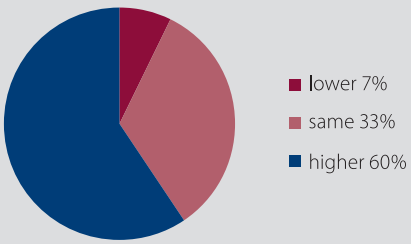
Graph 19 – Business barriers



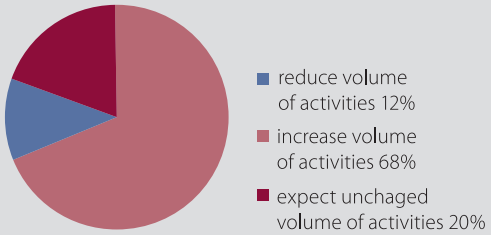
Investments

Of total surveyed enterprises, 68% plan to increase the volume of activities by the year-end, that is, 86% of surveyed enterprises plan new investments. Most investments relate to increase in fixed assets, and low demand and insufficient use of existing capacities are described as the largest obstacle to new investments. When business barriers are concerned, most surveyed companies see as obstacles the general operational risks (32% of enterprises), too high taxes and other forms of duties (26%), and high lending interest rates (18%).

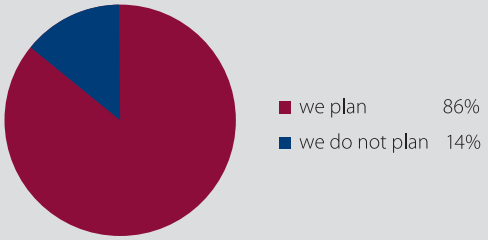
Graph 20 – Expected level of lending interest rates in 2008 compared to 2007



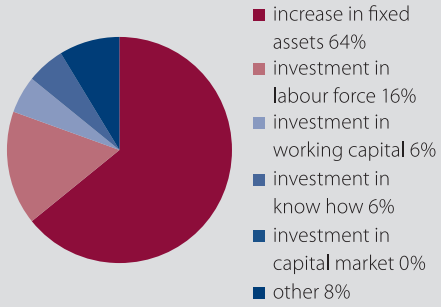
Graph 21- Expected volume of activities by the end of 2008



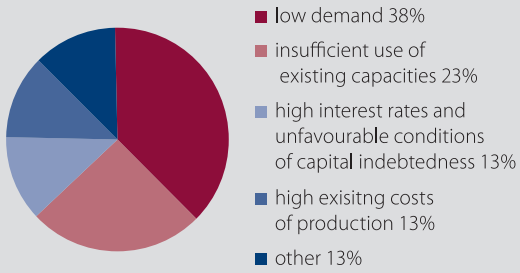
Graph 22- New investments by the end of 2008



Graph 23- Type of planned investments by the end of 2008



Graph 24- Obstacle to new investments by the end of 2008



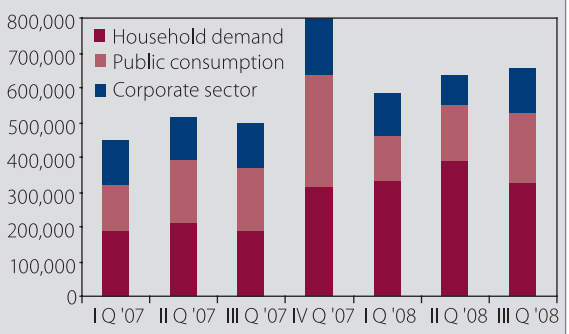
4. INFLATION DETERMINANTS

4.1. DEMAND

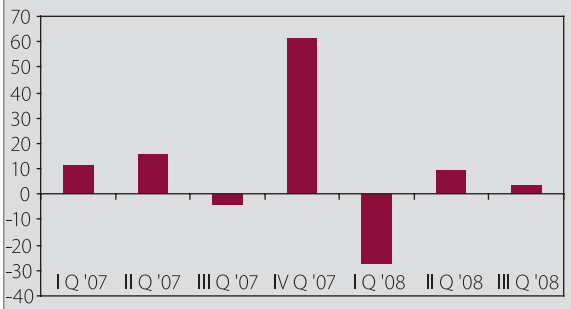
In the third quarter of the current year, the aggregate demand registered an insignificant growth than in the previous quarter, while the level of demand registered in the third quarter was lower than its implementation in the last quarter of the previous year. In the total structure of demand, the share of public consumption and the corporate sector increased, while the household demand decreased in relation to the previous quarter of the current year. This was mostly contributed by the increase in the corporate sector indebtedness, i.e. reduction of corporate sector deposits, as a result of increase in public consumption.

The rate of increase of aggregate demand in the third quarter 2008 was somewhat lower than the growth rate in the second quarter.

Graph 25- Aggregate demand, in EUR 000



Graph 26 - Quarterly growth rates of aggregate demand



Box 1- Methodology of calculating the aggregate demand

With a view to more complete following-up of aggregate demand as an inflation determinant, the CBM has developed the methodology for its calculation. The starting point of the methodology is that the aggregate demand is the sum of demand of three sectors: personal consumption (households), investment consumption (corporate sector) and public consumption. However, bearing in mind the lack of a large number of data needed for calculating the aggregate demand, the existing data shall not be

treated as an indicator of an accurate amount of the aggregate demand, but as an indicator in which direction the aggregate demand is going in. A range of significant data like corporate sector investments, revenues from the sale of shares, non-market income, revenues from grey economy and alike. The methodology for calculating the aggregate demand is given in the following equation:

$$AD = C + I + G$$

C= sum of paid salaries+ sum of paid pensions+ payment of old frozen foreign currency deposits+ net compensations to households- net savings of households (savings- granted loans)
I= net savings of the corporate sector (deposits-loans)
G= public consumption- paid pensions- salaries paid from the budget- net savings of government (deposits-loans- T-bills)
AD= aggregate demand, C- personal consumption, I- investment consumption, G- public consumption

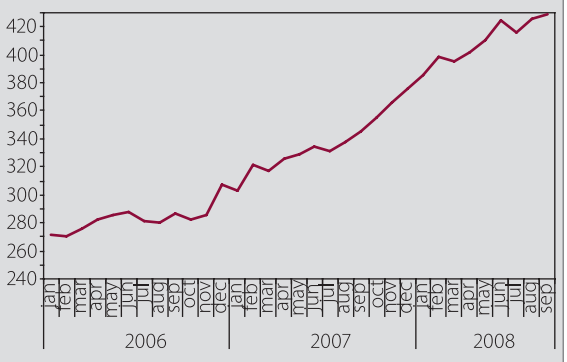
4.1.1. MOVEMENT OF SALARIES AND OTHER AVAILABLE DEMAND DETERMINANTS

Growth of average salaries and salaries without taxes and contributions, which characterized the second quarter (increase recorded in all three months) was continued even in the third quarter (the decline was registered only in July compared to June). Average salary in Montenegro in the third quarter amounted to EUR 622, while the average salary without taxes and contributions was EUR 424. Observed according to the previous quarter, average salary without taxes and contributions increased by 2.7%.

If we take into account the costs of living, i.e. if we observe the movement of salaries in real amounts, it can be concluded that real salaries in the third quarter grew only in August, whereas in July and September they declined.

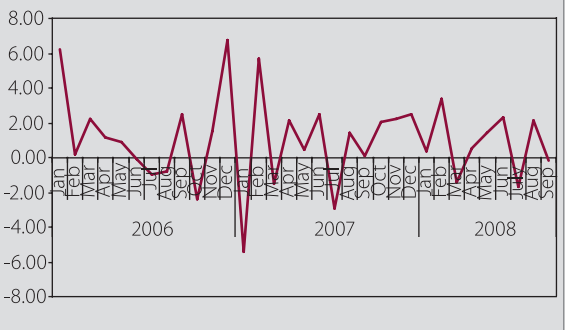
In the first three quarters 2008 the household indebtedness from **banks' loans** increased, so that at end-September it was by 32.1% higher compared to end-2007. Total amount of loans granted to households at end-September this year amounted to EUR 1.049,4 million, which was by 32.1% more compared to end-2007. Compared to September 2007, loans to households increased by EUR 398.3 million or 61.2%. Average monthly growth rate of loans granted to households amounted to 3.2% in the first nine months this year, which pointed to slower growth than in the same period of the previous year, when it was 8.6%.

Graph 27- Average wages without taxes and contributions in Montenegro



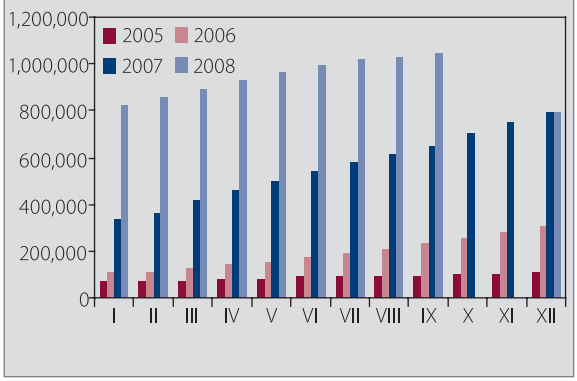
Source: Monstat

Graph 28- Real wages (monthly growth rate)



Source: Monstat

Graph 29- Loans to households, in EUR 000



Observed in the absolute amount, loans to households increased by EUR 255.3 million compared to the previous year-end.

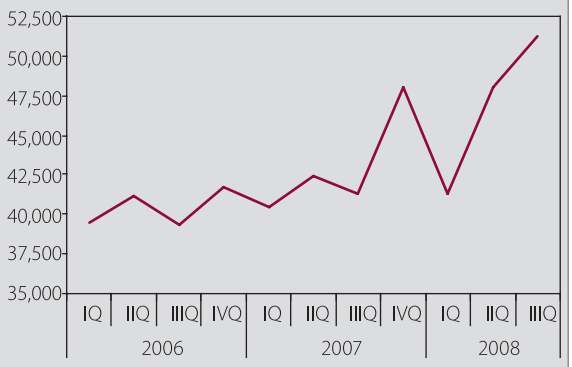
In addition to household debt to banks from loans, their debt to microcredit financial institutions to which they owed EUR 67.9 million also increased at end-September 2008.

At end-September this year household deposits amounted to EUR 1.114,1 million, or they grew by 9.3%, compared to the previous year-end and being above the level of loans granted. At end-September 2008, the loans/deposits ratio for this sector amounted to 0.94. Net savings of households to banks was EUR 64.7 million at end-September 2008.

The balance of payments statistics show that the inflow of funds from abroad to natural persons in the third quarter 2008 was 6.5% higher compared to the previous quarter, which was mostly contributed by the increased inflow from remittances from abroad, as well as salaries and employees' compensations. This inflow, therefore, includes employees' compensations, pensions, remittances and other transfers.

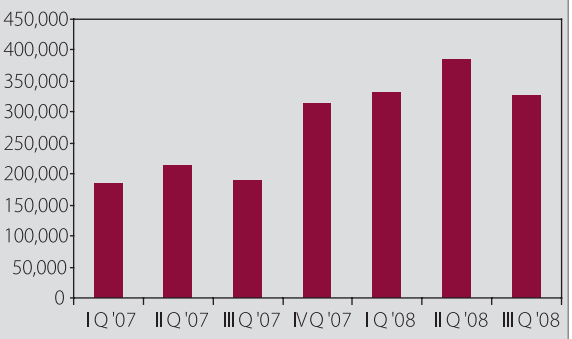
Observing the total demand of household sector by quarters, a significant increase in demand is noticeable in this year, compared to the same period of the previous year, while the demand declined compared to the previous two quarters.

Graph 30- Inflow of funds from abroad to households, in EUR 000



Source: CBM

Graph 31- Household demand, in EUR 000



4.1.2. BUDGETARY ANALYSIS

4.1.2.1. Consolidated public consumption

According to the data of the Ministry of Finance[4] in the first nine months of 2008, total current public revenues[5] amounted to EUR 1,099.1 million or 36.3% of estimated GDP for 2008. Compared to the same period of the previous year, public revenues increased by 23.7%.

[4] Data source is XIII Bulletin of the Ministry of Finance

[5] Total current public revenues include budgetary revenues, government funds and local government

In the structure of public revenues, revenues from taxes which rose by 23.7% are dominant compared to the same period and amounted to EUR 687.6 million, as well as revenues from contributions which increased by 16.8% and amounted to EUR 231.1 million. Revenues from taxes amounted to EUR 28.1 million and rose by 4.4%, from compensations EUR 93.5 million or 70% more, while other revenues increased by 20.5%, compared to the same period of the previous year and amounted to EUR 52.6 million. Revenues from payment of loans granted amounted to EUR 6.2 million, which was 29% less than revenues from the last year on this basis for the same period.

Consolidated public expenditures in the first two quarters of 2008 amounted to EUR 974.3 million or 32.2% of estimated GDP. In relation to the comparative period of the previous year they were 39.1% higher, as a result of increase in current expenditures (33.7%), transfers for social protection and transfers to institutions, individuals, non-government and public sector cumulatively (31%), capital expenditures (81%), granted borrowings and loans (170.2%) as well as reserves (42.5%).

In the period January-September 2008, a surplus in public consumption to the amount of EUR 124.8 million was achieved, which enabled the regular servicing of obligations to budgetary users and international financial institutions.

4.1.2.2. Montenegrin budget and government funds

According to the data of the Ministry of Finance, in period January-September 2008 current **budgetary revenues**, which, according to the amendments to the Law on Budget[6] since January 2008 included Montenegrin budget and government funds, amounted to EUR 942.3 million and compared to the same period of the previous year they rose by 20.1%.

Current budgetary revenues in period January- September 2008, continued their dynamic growth as a result of continuing increase in revenues from taxes which grew by 23.1% in relation to the comparative period and amounted to EUR 625.8 million, since some EUR 231.1 million was earned from contributions, which was 16.8% higher compared to the same period of the previous year. Revenues from taxes had a share of 66.4% in the current revenues, and contributions of 24.5%. In the first three quarters 2008, a positive trend was registered from revenues on the basis of different fees (administrative, judicial, resident and other fees) and compensations with a share of 4.7% in source revenues, and particularly good payment was executed from ecological compensations which increased by 406% after the introduction of ecological fee on vehicles on their entrance in the territory of Montenegro, and other compensations by 37%. The negative trend and decline of 34% registered revenues from the sale of capital, as well as revenues from payment of loans granted which were 10% lower.

According to the data of the Ministry of Finance, in period January-September 2008, **consolidated budgetary expenditures**[7] amounted to EUR 817.7 million or 27% of estimated GDP. Budgetary expenditures were 35.7% higher compared to the same period of the previous year, as a result of increase in the current and capital expenditures and transfers.

In the structure of budgetary expenditures a high share of 50.4% or EUR 411.8 million had current budgetary expenditures, which is by 33.4% more compared to the same period of the previous year. Cumulatively some EUR 319.5 million or 39.1% of total expenditures was spent on transfers to institutions, individuals, non-government and public sector and transfers for social protection, whereas EUR 64.9 million or 7.9% of expenditures was allocated for capital expenditures, which were significantly higher than in the same period of the previous year. In the observed period some EUR 14 million was allocated from borrowings and loans, which was 152% higher in relation to the comparative period, and 43.2% more funds or EUR 7.4 million was spent for budgetary reserves.

Observing the amount **surplus/deficit** as a difference between revenues and expenditures, whereas revenues were reduced for borrowings, accepted transfers, donations and revenues from the property sale, and expenditures for repayment of capital in the country and abroad arising from the debt originating from loans taken and issuing of securities, in period 1 January- 30 September 2008. The Montenegrin budget[8] registered a surplus of EUR 124.6 million[9].

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[6] "Official Gazette of Montenegro" no 12/07

[7] Total expenditures reduced by repayment of debts

[8] Montenegrin Budget and Government funds

[9] Methodology of calculating the surplus/deficit »Official Gazette of RoM«, 71/05.

4.1.2.3. Local self-administration

According to the Ministry of Finance preliminary data, current local self-administration revenues in the period January – September 2008 amounted to EUR 156.9 million or 5.2% of the forecasted GDP. Compared to the same period last year, they increased by 51.3%. The structure of revenues shows that the highest share was in revenues from fees (44.3%) and taxes (39.4%), while other revenues (duties, receipts from credit repayments and other revenues) made up to 16.3%.

Consolidated expenditures of local self-administration in the period January – September 2008 amounted to EUR 156.6 million or 5.2% of the estimated GDP. In relation to the first three quarters 2007, they increased by 59.2% due to increased capital expenditures (78%), current expenditures (37%), transfers to institutions, individuals, non-governmental and public sector (65%), loans and credits (400%) and reserves (34.3%). The most important expenditures item in local self-administration consumption was capital expenditures with the share of 46.4%.

4.1.3. ECONOMY

Due to the absence of data on investments by the corporate sector, we can use net indebtedness of the corporate sector for demand approximation.

These data show that loans disbursed to the corporate sector were significantly higher than their deposits, so the corporate sector represented the net debtor. What is positive is that the share of long-term loans in total loans disbursed to this sector at end-September 2008 amounted to 64%, which means they were dominantly used for increasing the volume of economic activity.

4.2. SUPPLY AND PRODUCTION

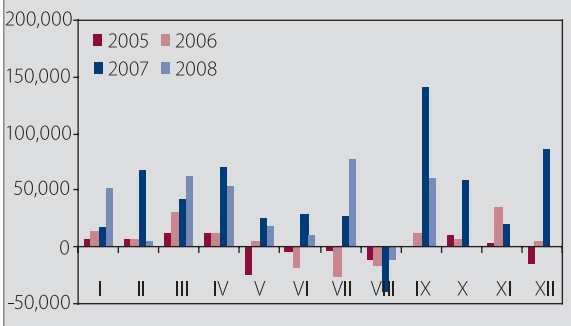
In the first nine months of the current year, a real GDP growth of 8% was recorded, with GDP amounting to EUR 2,328.21 million.

The physical volume of industrial production in the period July – September recorded a growth of 17.16% in relation to the end of the second quarter this year. Monthly data on the physical volume of industrial production show that a decrease of 2.1% in industrial production was recorded in July in relation to the previous month, while an increase of 2.9% and 16.3% was recorded in August and September, respectively. The growth of industrial production in September in relation to the previous month was a result of increase of 65% and 8% in production in energy, gas and water supply as well as in manufacturing, respectively.

In the first nine months of this year, the industrial production was 3.9% higher in relation to the comparative period of last year due to increase of production in mining and quarrying sector (29.6%) and electricity, gas and water supply (52%). Manufacturing sector recorded a decrease of production by 7.6%.

According to Monstat data, Montenegro was in the first nine months visited by 1,119 thousand **tourists**, which is 4.9% higher than the same period previous year. The number of arrivals of domestic tourists

Graph 32 – Net indebtedness of the corporate sector, monthly change, EUR thousands



Graph 33 – Industrial production, annual growth rate

Source: Monstat

and foreigners increased by 5.6% and 4.8%, respectively. Number of overnight stays in the observed period was 7446.4 thousands, which is by 5.8% more than in the respective period previous year.

Total **wood production** in the period January-September 2008 amounted to 189.9 m^3, which is by 2.42% lower in relation to the respective period of the previous year.

Decrease in the volume of passengers transport in the first nine months of this year was recorded in the **road** transport by 13%, while transport of goods increased by 60.2%.

Transport of passengers in **railway** transport in the first nine months of this year increased by 9.5% (measured by passenger kilometres), while transport of goods decreased by 5.4 % (measured by tonne kilometres).

Air transport recorded positive results in the first nine months. The number of passengers by air transport was 951 thousand, which is 10.2% more than in the same period previous year, and the transport of goods increased by 18.24%.

Total turnover in **harbours** in the first nine months amounted to 1464.3 thousand tons, which is by 7.7% decrease in relation to the same period previous year. Transport of goods decreased by 14.2% in the observed period.

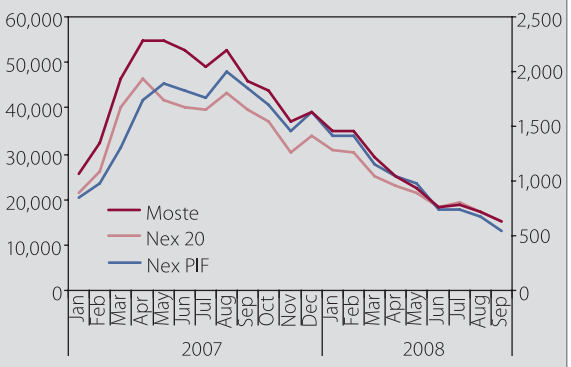
4.3. STOCK EXCHANGE INDICES

Capital market correction in the most obviously reflected in the decrease of stock exchange indices.

All three indices recoded continuous decline from the beginning of the year. In relation to 2007 year end, Moste recorded a decrease by 61%, while NEX20 and NEX PIF decreased by 55.2% and 66.4%, respectively.

The indices were considerably below the level in the end September 2007. On annual level, Moste recorded a decrease of 66.8%, while NEX20 and NEX PIF decreased by 61,1% and 70,2%, respectively.

Graph 34 – Movement of indices on NEX Montenegro and Montenegro stock exchange (NEX20 and NEX PIF - left scale and MOSTE - right scale)



Source: NEX Montenegro and Montenegro stock exchange

Table 3 – General data on indices

	MOSTE		NEX 20		NEXPIF	
Value on 30 September 2008	634,74		15.309,36		13.193,78	
Absolute change in first 9 months of 2008	-993,0		-18.859,3		-26.035,4	
Starting value of index	100,0		1000,00		1000,00	
Maximum value in the first 9 months of 2008	1.613,04	09.01.2008	34.168,63	09.01.2008	39.229,17	09.01.2008
Maximum historical value	2.455,4	07.05.2007	48.617,88	07.05.2007.	50.780,54	17.08.2007
Minimum historical value	94,8	23.06.2004	918,57	14.04.2003	959,53	02.04.2003
Increase (decrease) from 31 December 2007 to 30 September 2008	-61.0		-55.2		-66.4	

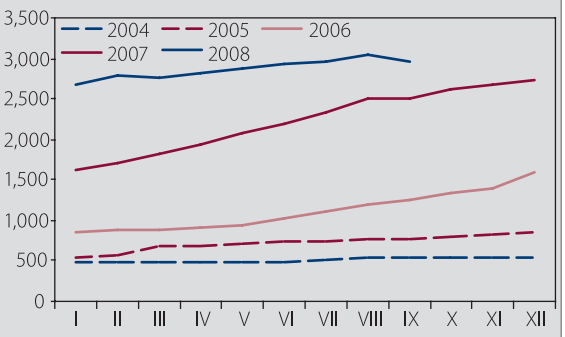
Source: Montenegro and NEX Montenegro stock exchange

Compared to their maximum historical values (reached in 2007), at end September 2008 MOSTE, NEXPIF and NEX20 indices decreased by 74.1%, 74.0% and 68,5%, respectively.

4.4. MONEY IN CIRCULATION

Money in circulation (broad money M21) amounted to EUR 2,968 million and in relation to the end of the previous year it increased by EUR 239.8 million, i.e. 8.8 %. Annual growth of money in circulation amounted to EUR 467.8 million, i.e. 18.7 %. Money supply M11, accounted for 51.1% of the M21 structure, at end-September 2008.

Graph 35 – Monetary aggregate M21, EUR million



5. MONETARY POLICY

The Council of the Central Bank of Montenegro in mid September 2008 adopted the set of decisions closely arranging the banking operations in Montenegro. The purpose of adopting new regulations is the increase of capitalization level of Montenegrin banks, as well as improving the quality of supervision in order to preventively act on maintaining the stability of Montenegrin banking system.

Anticipating future events, Central Bank of Montenegro passed stricter legislation compared to international standards in order to prepare banking sector for possible negative consequences of global financial crisis.

These stricter solutions mostly refer to the solvency ratio threshold, thus the necessary capital for covering risk, stricter treatment of collaterals for providing the exposure, stricter treatment of past due liabilities, stricter criteria for credit risk and liquidity risk management as the most important risks in the Montenegrin banking system, stricter treatment of reserves allocations, etc.

The adopted legislation, that came into force in end October this year, includes following decisions: Decision on Capital Adequacy for Banks, Decision on Minimum Standards for Market Risk Management in Banks, Decision on Minimum Standards for Liquidity Risk Management in Banks, Decision on the Methods for Country Risk Management in Banks, Decision on the Minimum Standards for Managing Interest Rate Risk Not Resulting from Bank Trading Activities, Decision on Market Risk Management in Banks, Decision on Internal Audit in Banks, Decision on Minimum Standards for Operations with Bank Related Parties, and Decision on the Basics of the Internal Controls System in Banks.

Among all passed decisions, new Decision on Capital Adequacy for Banks has the greatest importance, and being mostly based on European directives and international standards that define the methodology of calculation and minimum capital requirements for covering all risks that banks may be exposed to in their operations. The aim of new Decision on Capital Adequacy for Banks is to determine the level of adequate capital that banks have to maintain using instruments and measurement methods. The decision should improve the existing bank quality system from the aspect of its risk profile and it should achieve the primary goal, i.e. the protection of deponents' and creditors' interests. The innovations in the decision comprise the methodology of calculating the necessary capital for credit, market, operating and other risks, the possibility of using techniques for diminishing credit risk, possibility of using debtor's credit rating from the recognized external institution or credit agency, etc.

It is also worth noticing that, due to protection of banking system from the results of the global financial crisis and to maintaining its security and stability, the Law on measures of protection of banking system was passes this October which guarantees payment of all deposits, opening the possibility of capital increase of the banking system by the state and prescribing measures for maintaining the liquidity and solvency of banks founded and operating in Montenegro.

Pursuant to this law, the Government of Montenegro passed the following two decisions at end October this year: Decision on Reserve Requirement for Banks to Be Held with the Central Bank of Montenegro for a period longer than 1 day and the Decision on Granting Short-Term Loans to Banks.

Pursuant to the *Decision on Reserve Requirement for Banks to Be Held with the Central Bank of Montenegro for a period longer than 1 day*, CBM may, as the result of the world financial crisis, approve banks that may have problems in maintaining the liquidity to use up to 50% of allocated reserve requirements to the period longer than one day and the maximum of seven working days in a month.

Pursuant to the *Decision on Granting Short-Term Loans to Banks*, CBM may grant a short-term loan to the period shorter than 30 days to a solvent bank which as a result of the world financial crisis, has problems in maintaining the liquidity and has used all possibilities of solving the liquidity problem available in the market.

6. INFLATION FORECAST FOR 2008 AND THE FIRST QUARTER 2009

Fan Chart of RPIMNE for 2009

Selected ARIMA models, modified for the structural changes occurred in the second half of the year ARIMA1 (5,1,4)[10] and ARIMA2 (5,1,4)[11] (two models, with and without structural shocks), are reliable enough for the inflation forecast. In this direction, these model forecasts were used as the values of the central projection of the Fan Chart index of retail prices for 2008. Obtained values represent the distribution mode, i.e. the values with the highest frequency in distribution of these time series.

The next step represents determination of the distribution average value, standard deviation (σ) and distribution skewness. On the basis of these data, the values sigma 1 (σ1) and sigma 2 (σ2) were determined. These values represent parameters of the left part of the N1 distribution (central projection, σ1), i.e. of the right part of the N2 distribution (central projection, σ2). If σ1<σ2, distribution moves towards the values over the mode, i.e. correspondent central projection underestimated future inflation values, i.e. distribution is positively skewed to the left. Therefore, we have Avg>Me>Mo. On the other hand, if σ1>σ2, distribution is concentrated above the mode, i.e. correspondent central projection overestimated future values of the inflation, i.e. distribution is negatively skewed Avg<Me<Mo.

In case of Fan Chart inflation in Montenegro, central projections on a monthly basis represent the distribution mode, i.e. their average values do not match with the mode value, which indicates the asymmetrical distribution, positively skewed.

If we observe the uncertainty level which determines the width of Fan Chart, it approximates over the distribution variation calculated by the model, so that the distribution of the inflation rate has the average value and variation:

$$E(RPICG)=\mu+\sqrt{2}/\pi(\sigma2-\sigma1)$$

$$VAR(E(RPICG)) = (1-2/\pi)(\sigma2-\sigma1)2 + \sigma2*\sigma1,$$

where μ represents the distribution mode, σ2 and σ1 are standard deviations of the left, i.e. of the right side of the asymmetrical distribution, while γ represents the approximation of the distribution skewness expressed by the difference between median and mode. The correspondent distribution has the following layout:

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[10] ARIMA model is usually marked as ARIMA(p,d,q), where p represent the number of autoregresible variables, d referes to the level of depending variable stationarity while q represents number of variables, mouvable averages which are placed in the correspondent model.

[11] Although it has the same ARIMA(p,d,q) structure, ARIMA2 model contains also two dummy variables which refer to the structural breakdowns in retail price index movements, becoming more sensitive to the potential future shocks.

f(RPICG)= RPICG exp(-(RPICG- μ)2(1+γ)/2σ2), if RPICG< μ[12]

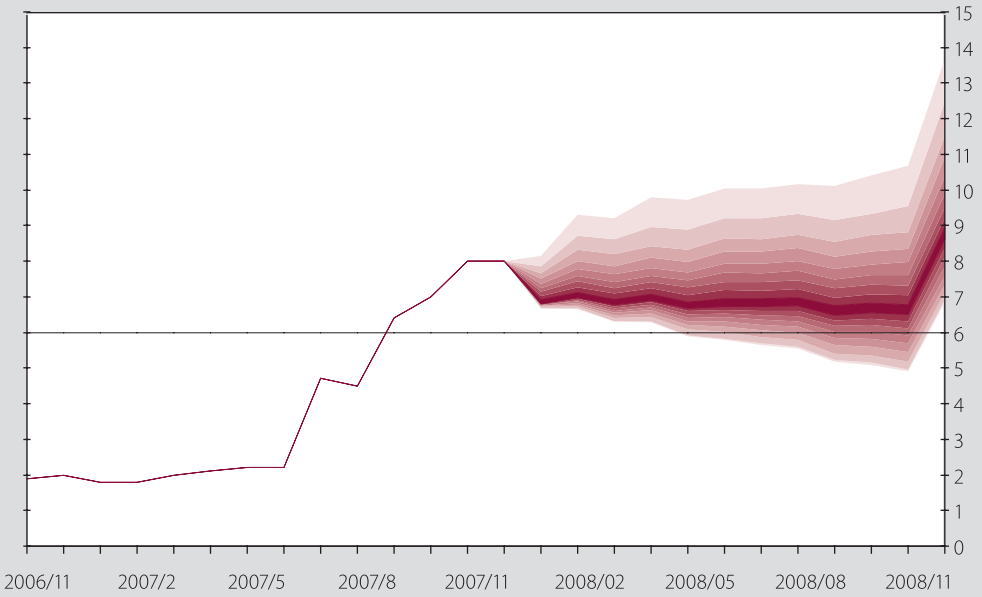
f(RPICG)= RPICG exp(-(RPICG- μ)2(1-γ)/2σ2), if RPICG< μ

On the basis of ARIMA1 model, which covers the scenario of further external shocks in 2008, central projection which corresponds to the distribution mode is obtained, with the average value of 7.13% of the skewness ratio ranging from 0.129 to 0.127, as well as with the standard deviation values of the layout from the left, i.e. right side of the asymmetric distribution **σ2=1.236 and σ1=1.347**, which indicate that the central band placed at the lower part of the distribution, i.e. that the level of uncertainty, influenced by the inflation expectations widens the Fan Chart towards the higher levels of inflation (graph 36).

Montenegro's inflation Fan Chart based on the ARIMA model for 2008 which implies the absence of external nature shocks similar to the second half of 2007, shows with a 90% probability that inflation, measured by the retail price index, will vary from 5% to 13.6%. Based on the Fan Chart's central projection, the same forecast with a 10% probability shows that inflation, measured by the retail price index in 2008, will range between 6.5% and 9%.

In the end, we should bear in mind that the absence of sufficiently long time series, numerous shocks over the past years, absence of some statistical indicators and insufficient level of liability of other statistical indicators may influence the lower degree of model forecasts liability in comparison to some other countries. Also, we should consider the fact that the forecast was done for the annual inflation rate, and not for the average annual inflation rate which is mostly lower than the annual rate.

Graph 36 - Projection of retail price index in Montenegro for 2008, based on ARIMA model with structural breakdowns



[12] *For detailed explanation of Fan Chart please consult Britton, E, Fisher, P.G. and Whitley, J.D. (1998), 'The Inflation Report projections: Understanding the Fan Chart', Bank of England, Quarterly Bulletin, 38, pp. 30–37.*

7. EXPECTED INFLATION IN 2008

The level of aggregate demand is still high and it has continuously grown since the beginning of the year. However, on the other hand, the level of economic activity is still high, and the estimated GDP growth rate (8%) is higher compared to the growth of the aggregate demand (3.3%). The fact that 68% of the surveyed companies expect an increase in the volume of activities and that 86% companies plan new investments may suggest that the influence can be still put to economic growth, which would have the anti-inflationary effect.

The costs of living increase rate, as well as the consumer price rate have grown in the first two quarters, but they had the decreasing tendency in the third quarter. The quantity of money in circulation has this year grown slower in relation to the growth of nominal GDP, which also has the anti-inflationary effect.

With reference to inflation expectations by the end of this year, all surveyed banks and enterprises expected that the inflation rate will be higher than 7%. All banks expected higher inflation rate in relation to the previous year, and higher rate is expected by 73% of the surveyed companies (20% of companies expected the unchanged level, and 7% expected lower inflation rate).

Model prognosis with the probability of 10% (central area) expects that the inflation rate this year would range from 6.5% - 9%. Our expert prognosis is very similar to model assumption and it points out that the expected inflation this year would range from 6% to 9%.

Table 4. – Estimated inflation rate

Optimistic estimate	Realistic estimate	Pessimistic rate
6%	7.5%	9%

This estimate is based on the following assumptions:

- That the prices of oil derivatives will not change by the end of the year by ± 10%,
- That there will be no price discrepancies by the end of the year and
- That there will be no misuse of the dominant position in the market.

Any deviation in any of these parameters from the expected values would require the revision of the estimate.