



PRICE STABILITY REPORT 2011



CENTRAL BANK OF MONTENEGRO

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ABBREVIATIONS

ARIMA	Auto-Regressive Integrated Model with Variable Averages
GDP	Gross Domestic Product
CBCG	Central Bank of Montenegro
CPI	Consumer Price Index
ECB	European Central Bank
EICP	European Index of Consumer Prices
EU	European Union
EUR	Euro
MFI	Microcredit financial institution
MONSTAT	Statistical Office of Montenegro
OPEC	Organization of Petroleum Exporting Countries
VAT	Value Added Tax
FDI	Foreign Direct Investments

CONTENTS

1. INFLATION INDICATORS.....	7
1.1. Inflation development in Montenegro	7
1.2. Inflation in the region and the EU	10
2. INFLATION FORECASTS OF THE BANKING SECTOR AND ECONOMY	12
2.1. Banks' expectations.....	12
2.2. Expectation of economy (except banks)	13
3. INFLATION DETERMINANTS	14
3.1. Demand.....	14
3.1.1. Movement of salaries and other available demand determinants	15
3.1.2. Public sector demand	17
3.1.3. Economy	17
3.1.4. External demand and balance of payments current account	18
3.2. Supply and production	19
4. MONETARY POLICY	20
4.1. Monetary policy measures for inflation suppression	21
4.2. Fiscal policy measures and other measures for suppressing inflation	21
5. INFLATION FORECAST IN 2012.....	22
5.1. Model assessment	22
5.2. Expert's assessment	24

1. INFLATION INDICATORS

1.1. Inflation development in Montenegro

In December 2011, y-o-y increase of consumer prices amounted to 2.8%, being significantly higher than the annual price increase in December 2010, when the lowest inflation rate was ever recorded in Montenegro, measured both by retail prices or costs-of-living. Still, recorded inflation rate was lower than in the EU. Moreover, it should be noted that this was a late price adjustment, which happened in the EU and neighbouring countries in the second half of 2010. Observed quarterly, the highest price increase in 2011 was recorded in Q1 2011 of 3.3%, when prices of food, alcohol, tobacco and fuels grew significantly. In Q2 2011, consumer prices decreased by 0.6%, while a repeated mere price increase of 0.3% was recorded in Q3 2011. Observed by months, the highest consumer prices growth was reported in February (1%), March (2%) and August (0.7%), while the highest decline was recorded in June (-0.5%) and July (-0.3%), due to usual decline in prices of agricultural products.

The highest annual increase in 2011 was in prices of alcoholic beverages and tobacco (26.3%), mostly as a result of increase in excise duties to some products under this category. Prices of alcoholic beverages and tobacco recorded respective increase by 8% and 39.1%. Higher prices of fuels and lubricants and of transport services by 7.2% and 14.5%, respectively, resulted in higher prices in category "transport" by 7.7%, while increase in prices of pharmaceutical products and outpatient services by 19.7% and 4.2%, respectively, resulted in price increase of category "health" by 15%. Prices under "housing" increased by 2.2%, mostly due to higher prices of water supply and other services by 37.5% and prices under "restaurants and hotels" and "other goods and services" increased by 3% and 3.1%, respectively. Prices under communication recorded lower annual growth of 1.1%, while prices under "food and non-alcoholic beverages" grew (with the highest weight sum in total consumer

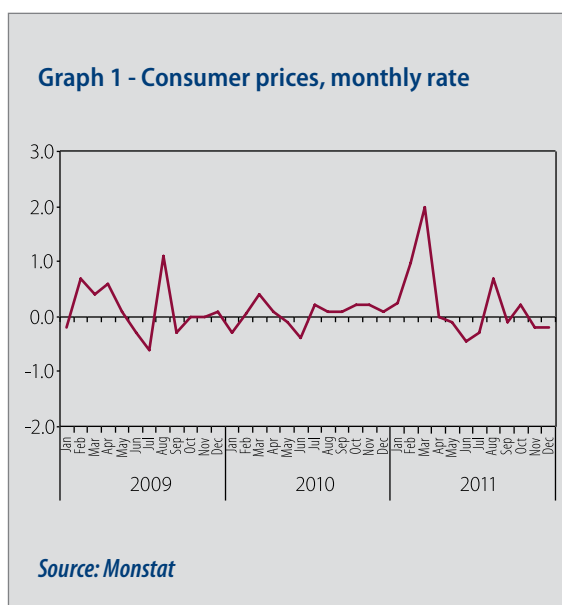
Table 1 – Inflation, %

	2010				2011			
	III	VI	IX	XII	III	VI	IX	XII
Change in relation to the previous year end	0.2	-0.2	0.2	0.7	3.3	2.7	3.0	2.8
Annual change	0.7	0.2	0.3	0.7	3.7	3.5	3.4	2.8

Source: Monstat

basket structure) increased by 37.5%. After the maximum (y-o-y) growth rate of this category in March (5.9%), and in April and May when the same growth rate of 6.1% was recorded, annual growth rate of this category amounted to 0.5% at 2011-end. Compared y-o-y, lower prices under this category were recorded by meat (2.1%), vegetables (6.9%), fruit (0.1%) and fish (2.6%), while prices of milk, cheese and eggs, oils and fats, bread and cereals (in which prices of bread increased by some 12%) and non-alcoholic beverages grew by 1.1%, 3.5%, 8.1% and 2.4%, respectively. Global prices decreased in December 2011 in relation to their record level in February, but it is assumed that the level of prices shall remain high and fluctuating in the coming period. The fact that demand for food increases as population grows, and that the output does not follow demand is just a single factor that may determine the price of food in the coming period. If we add the climate changes and insufficient investments into agriculture that may lead to disruptions at the global food markets, it may be expected that global prices shall not decrease. Due to large dependence on imports, changes in food prices shall surely be reflected to the food prices in Montenegro.

In the reporting period, prices in categories "culture and recreation" were 3.9% lower, while lower prices of footwear and clothes



by 3.5% and 0.5% affected a 1.8% decrease in prices of category "clothes and footwear". Lower prices were recorded under category "furnishing and housing equipment" (-0.9%) and in category "education" where prices were 0.6% lower.

Table 2 – Share of individual categories in total inflation*

	Weights	XII 11/XII 10	Growth rate	contribution	Share in total inflation
TOTAL	10000	102.8	2.8	2.8	100.0
Food and non-alcoholic beverages	3755	100.5	0.5	0.2	7.3
Alcoholic beverages and tobacco	372	126.3	26.3	1.0	35.0
Clothes and footwear	761	98.2	-1.8	-0.1	-4.8
Housing	1287	102.2	2.2	0.3	10.3
Furniture and appliances	494	99.1	-0.9	0.0	-1.6
Health	280	115.0	15.0	0.4	15.0
Transportation	1216	107.7	7.7	0.9	33.6
Communications	558	101.1	1.1	0.1	2.1
Culture and entertainment	321	96.1	-3.9	-0.1	-4.5
Education	218	99.4	-0.6	0.0	-0.5
Restaurants and hotels	296	103.0	3.0	0.1	3.2
Other goods and services	442	103.1	3.1	0.1	5.0

* We would like to note that, despite the index changes, the share of certain categories is recorded only at the second or the third digit, due to the weighting structure

Source: Monstat and CBCG calculations

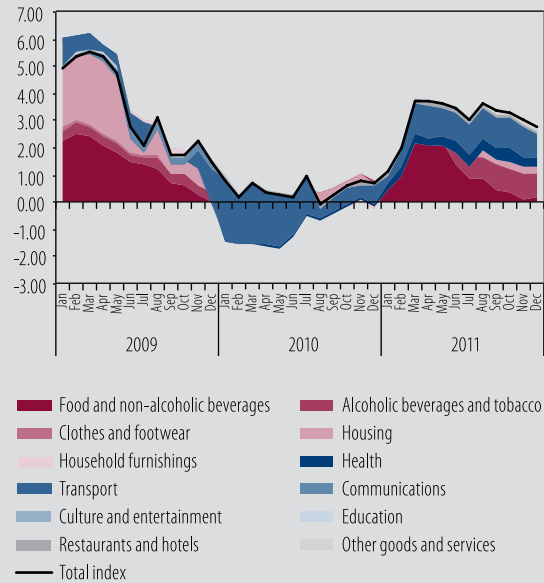
In 2011, the average price of OPEC reference basket amounted to USD/barrel 107.4, being by 38.9% higher in relation to the average price recorded in 2010. Average price of Brent amounted to USD/barrel 111.3 in 2011 or 40% higher in relation to average price in 2010. Such trend in prices was the result of several factors like riots in the Arabic countries, political situation in the countries exporting oil, as well as temporary breaks in the output and supply of oil. Due to significant slowdown of the global economic growth and problems in the Euro Area, the “pressure” to oil prices increase due to foreign demand should not be expected. However, since prices of oil significantly depend on geopolitical movements, each tension at the oil-rich Middle East may imply higher prices.

Prices under category “alcoholic beverages and tobacco” had the highest contribution in total annual rate of 1 percentage point, while prices under category “transportation” had the contribution of 0.9 percentage points. Total share of prices recorded in these two categories in total inflation amounted to 68.6%. Relatively high contribution (0.4 percentage points) was recorded in prices under “health”. Graph 3 shows contributions of some components of consumer prices to annual growth rate.

Annual **core inflation** rate amounted to 0.95% in December 2011 and it was by 1.86 percentage points lower than total annual inflation. During the whole 2011, annual core inflation was lower than total inflation whereby it was negative in the first two months. De-

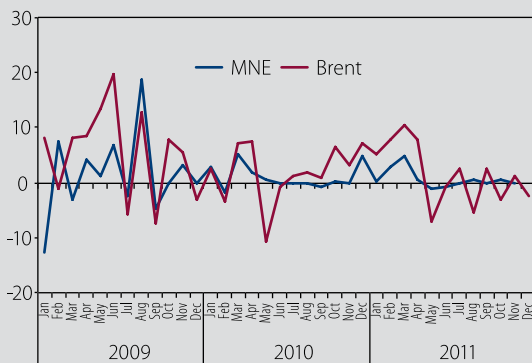
velopment of the annual rate of the total and core inflation is shown in the Graph 4.

Graph 3 – Consumer prices' components: contribution to annual growth rate (index points)



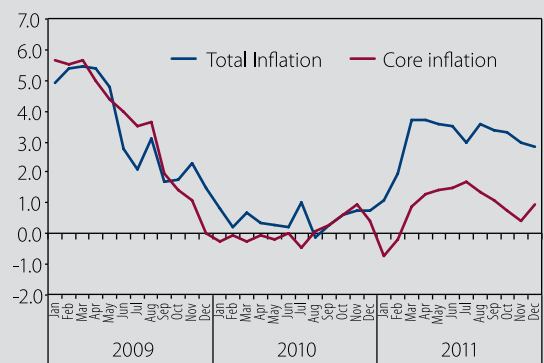
Source: Monstat and CBCG calculation

Graph 2 - Oil prices, monthly growth rate



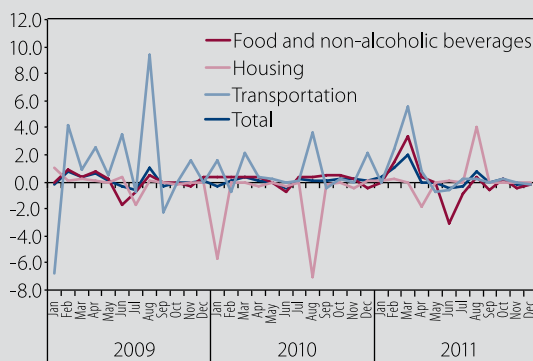
Source: Monstat and “Monthly Oil Market Reports”, OPEC

Graph 4 – Consumer prices, annual rate



Source: Monstat

Graph 5 – Selected categories – consumer prices, monthly rate



Source: Monstat

Compare y-o-y, **producers' prices of manufactured products** increased by 1% in December 2011. Producers' prices in manufacturing industry and mining and quarrying prices increased by 2.2%, and 2.1%, respectively, while producers' prices in electricity, gas and water supply sector declined by 2.6%. The average growth in producer prices of manufactured products amounted to 3.2% in 2011, whereby the average increase in prices in the manufacturing industry was 5.8%, while decline in prices was recorded in mining and quarrying and in production of electricity, gas and water supply by -4.3% and -1.9%, respectively.

Compared y-o-y, **export prices of manufactured products**¹ decreased by 6.3% in December 2011, while average annual price growth was 7.6%. Annual decline of 6.6% was recorded in prices under manufacturing industry, while prices under mining and quarrying increased by 1.3%.

Imported prices of manufactured products², recorded a y-o-y increase of 4.3% in December 2011, or a 6.6% growth observing average annual growth rate. Increase was recorded in prices of manu-

¹ We note that for the calculation of the index of producer prices of manufactured products for export, prices of representative products of identical quality which will be mostly exported in the long-term are used.

² For the calculation of this index, the prices of representative products of similar quality are used which are expected to be largely imported in the long-time period.

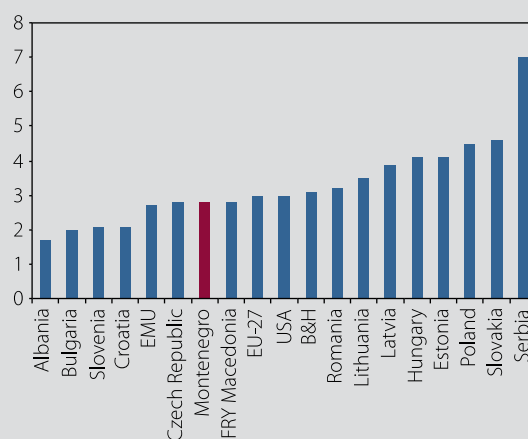
facturing industry sector (4.3%), while y-o-y decrease was recorded in mining and quarrying prices (23.4%).

1.2. Inflation in the region and the EU

Inflation recorded in Montenegro was at the level of inflation recorded in the Euro area. The comparison of annual inflation recorded in Montenegro to the annual rates recorded in some countries of the region shows that inflation in Montenegro was the same as in Macedonia (2.8%). As regards countries in the region, lower inflation rate was recorded in Croatia (2.1%), Slovenia (also 2.1%), Albania (1.7%), while a 3.1% growth was recorded in Bosnia and Herzegovina, while the highest annual growth was recorded in Serbia (7%).

As regards inflation in the EU member states, the lowest annual inflation was recorded in Bulgaria (2%), while the highest was in Poland (4.5%) and Slovakia (4.6%). Measured by HCPI, annual inflation recorded in Euro area amounted to 2.7%, while components with the highest annual growth were transportation (4.3%), housing (4.9%), tobacco and beverages (3.8%), food (3%), while communications was the only category that recorded the annual decline (-1.9%).

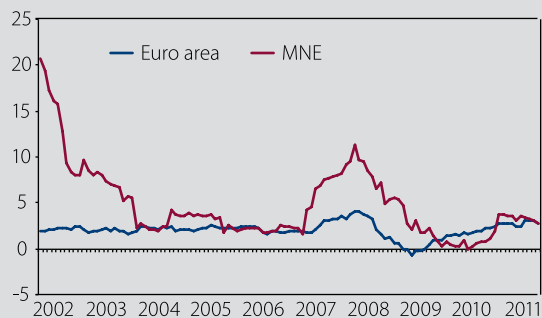
Graph 6 - Annual inflation rate in selected countries, December 2011



Source: National Statistical Offices and Eurostat

The annual inflation measured in EU27 (EICP – European Index of Consumer Prices) amounted to 3% in December 2011, while annual inflation in Euro area and in Montenegro was 2.7% and 2.8%, respectively.

Graph 7 – Inflation in Euro area and Montenegro since introduction of Euro (annual rates)



Source: Monstat and Eurostat

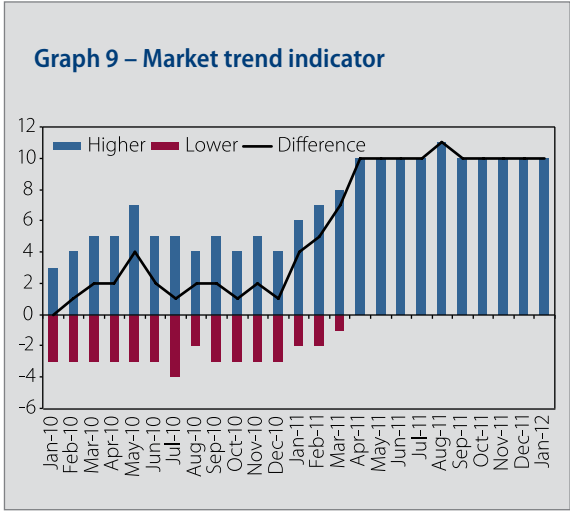
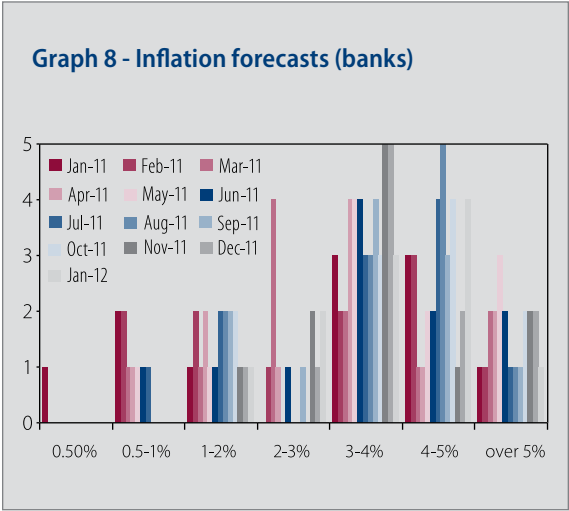
2. INFLATION FORECASTS OF THE BANKING SECTOR AND ECONOMY

2.1. Banks' expectations

Regarding the banks' expectations on inflation, based on survey results from January 2012, most of banks (four) expected inflation ranging between 4% and 5%, three banks expected inflation ranging between 3% and 4%, while two banks expected inflation ranging between 2% and 3%. One bank expected inflation rate ranging between 1% and 2%, and one bank expected inflation over 5%.

Market trend indicator (black line in Graph 9) is used for the purpose of calculating inflation forecasts. It is calculated as the difference between the number of banks expecting an inflation growth (blue bars)

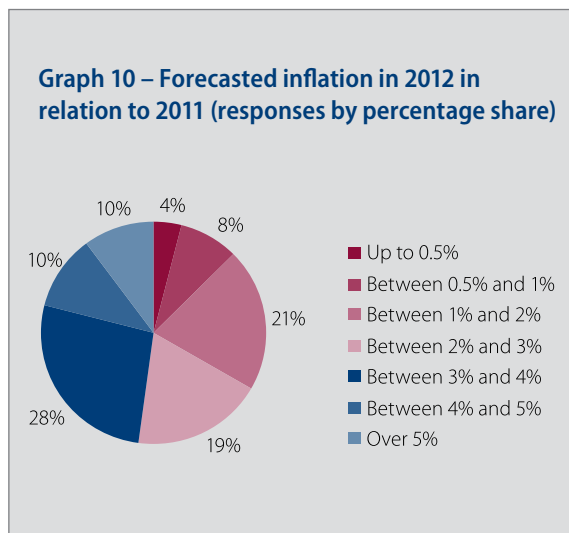
and the number of banks expecting inflation decrease (red bars). If the market trend indicator has a negative value, a decrease in the inflation rate is expected in the upcoming period. If it has a positive value, then an increase in the inflation rate can be expected. If it has a zero value, an unchanged inflation rate can be expected in the upcoming period. The more negative value, the lower inflation forecast, and vice versa, higher positive value means higher inflation. Thus, Graph 9 shows that inflation forecasts started increasing in 2011 and, as of April 2011 (ending with expectations in January 2012), they have been on the significantly higher level than the developments at early 2011.



2.2. Expectation of economy (except banks)

Inflation

Of total surveyed companies, some 48% expected higher inflation rate in 2012 in relation to 2011. Some 28% of surveyed companies expected that the annual inflation in 2012 will range between 3% and 4%, while 21% of surveyed companies believed that the inflation will range from 1% and 2%, and some 19% percent expected inflation to range between 2% and 3%. Some 10% of surveyed companies expected inflation to range between 4% and 5%, and also 10% expected inflation rate higher than 5%, while 8% expected inflation rate higher than 5%, and also 10% expected inflation rate higher than 5%, while 8% expected inflation rate to range between 0.5% and 1%. The lowest number of surveyed companies (4%) expected inflation rate below 0.5% in 2012.

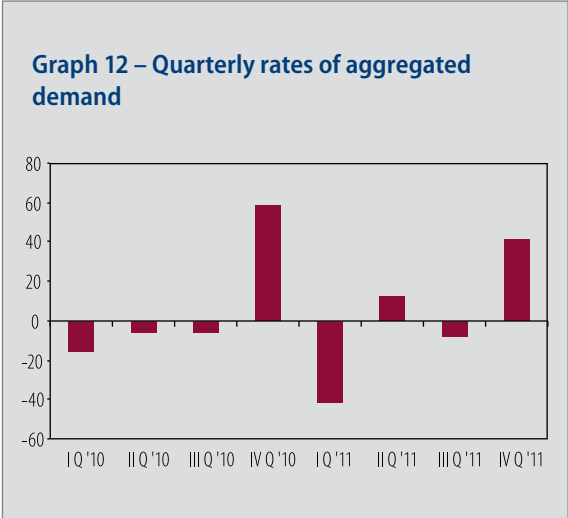
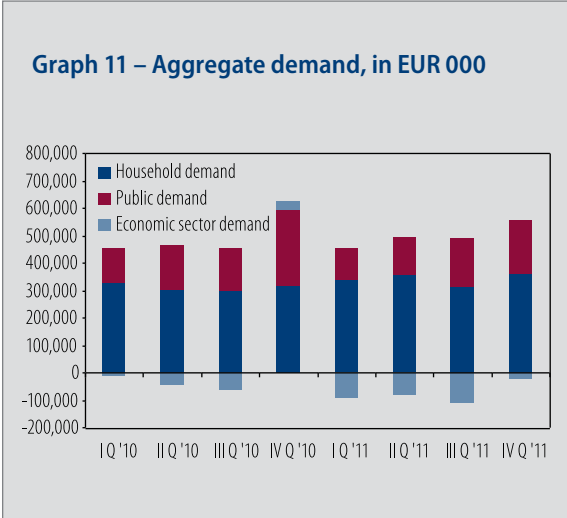


3. INFLATION DETERMINANTS

3.1. Demand

According to preliminary data, the highest aggregate demand level in 2011 was recorded in Q4, as usual at year-end, when outstanding liabilities are paid by companies and from the budget. Total de-

mand in Q4 2011 was lower compared to the Q4 2010. Observing the structure of total demand in Q4 2011 y-o-y, share of households' demand increased, while public demand declined.



Box 1 - Aggregate demand calculation methodology

With a view of more complete follow-up of aggregate demand as an inflation determinant, the CBCG has developed the methodology for calculating the aggregate demand. The starting point of this methodology is that aggregate demand is the sum of

demand in three sectors: personal consumption (households), investment consumption (corporate sector) and public consumption. However, taking into account the lack of numerous data necessary for calculating the aggregate demand, the existing data should not be treated as the indicator of the exact amount of aggregate demand, but as an indicator showing the aggregate demand trend. Due to unavailability, the existing methodology does not contain a set of important data like: corporate investments, revenues from selling shares, non-market incomes, non-observed economy revenues, and the like. 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 = aggregated demand, **C** – personal consumption, **I** – investment consumption, **G** – public consumption

3.1.1. Movement of salaries and other available demand determinants

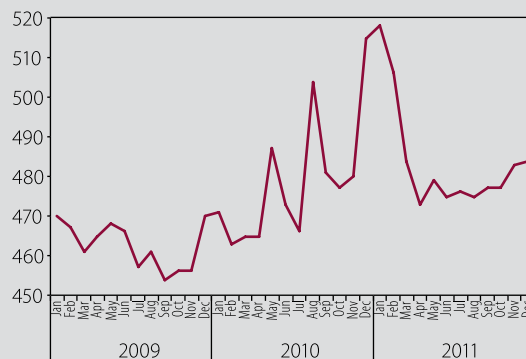
Average salary in Montenegro in 2011 amounted to EUR 722, while the average salary without taxes and contributions was EUR 484. The average gross and net salary in 2011 increased each by 1%.

Observed by months, the highest nominal growth of salaries without taxes and contributions was recorded in May and November of 1.3% each. The highest monthly decline of salaries without taxes and contributions was recorded in March amounting to 4.3%.

Taking into account the consumer prices, i.e. salaries in real amounts, it can be concluded that real salaries recorded highest growth in May and November, while the highest decline was recorded in March and February.

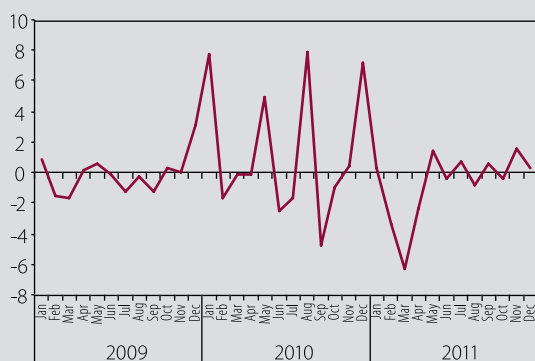
Lending to the household sector recorded negative trend in 2011. Monthly declining average amounted to 0.3% (in 2010, loans averaged by 0.5%) and at end-2011 these loans amounted to EUR 833.7 million, and were by EUR 29.9 million or 3.5% lower in relation to end-2010.

Graph 13- Average wages without taxes and contributions in Montenegro



Source: Monstat

Graph 14 – Real wages (monthly growth rate)



Source: Monstat

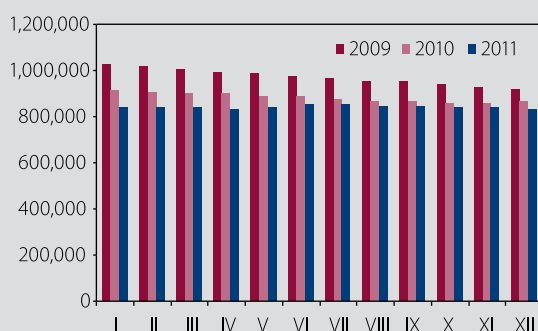
Household deposits had a rather growing trend in 2011 (except in January and October 2011) and recorded the average monthly growth of 0.7% (average monthly decline of 1% was recorded in 2010). Deposits of this sector amounted to EUR 1,033.4 million at end-2011, and were by EUR 81.6 million or 8.6% higher than at end-2010.

As a result of decrease in loans and household deposits increase, loans to deposits ratio in this sector amounted to 0.81 at end-2011 and it improved in relation to end-2010 when it amounted to 0.91. As a result, the net household savings amounted to EUR 199.7 million was at end-2011, being EUR 111.5 million or 126.3% higher than at end-2010.

The balance of payments statistics shows that in 2011, in relation to 2010, monetary assets inflow from heritage, alimony and other presents and assistance, salaries and compensations to employees and from pensions, disability allowances and other social benefits increased.

According to preliminary indicators, total demand of household sector in Q4 2011 was higher than demand in the previous three quarters, as well as in relation to Q4 2010.

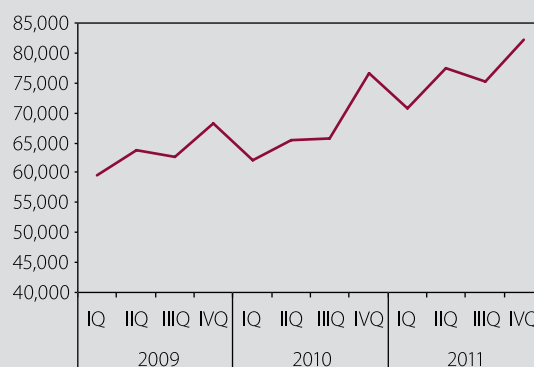
Graph 15 – Loans to households, in EUR 000



Average indebtedness of the household sector decreased due to decline in lending to this sector. Thus, debt *per capita* amounted to EUR 1,345 at end-December 2011, and was by EUR 20 or 1.5% lower than at end-2010.

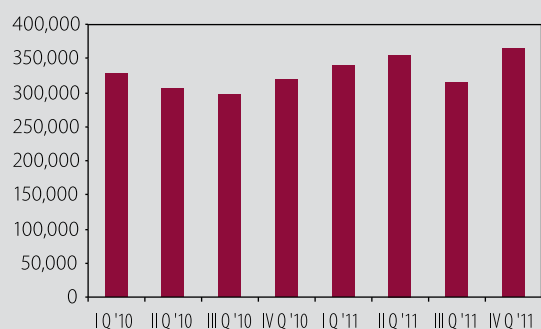
In addition to reducing the household debt to banks, their debt for loans granted by MFIs also decreased, thus loans of this sector with MFIs amounted to EUR 32.7 million at end-2011 and were by EUR 10.4 million or 24.2% lower than in the previous year.

Graph 16 – Inflow of funds from abroad to households, in EUR 000



Source: CBCG

Graph 17 – Household demand, in EUR 000



3.1.2. Public sector demand

Consolidated public consumption

The assessment of the Ministry of Finance showed that the consolidated public consumption in 2011 amounted to EUR 1,403.9 million or 42.9% of estimated GDP³ for 2011. Compared to the same period of 2010, public consumption was by 1.9% lower, while it was by 0.3% lower than planned. Recorded level of public consumption was financed from tax revenues in the amount of EUR 789.4 million, contributions (EUR 349.6 million), fees (EUR 72.4 million), taxes (EUR 21.9 million), other current revenues (EUR 36.9 million), and revenues from loan repayments (EUR 4 million).

Current public revenues⁴ were estimated at EUR 1,274.1 million or 38.9% of estimated GDP, and they were by 4.3% lower in relation to the plan, and 0.5% lower than in the same period of 2010. Tax revenues with 62% were still dominant in the structure of current revenues, followed by contributions (27.4%), while other revenues had the share of 10.6%. Revenues from corporate income taxes of legal persons, local taxes and other Republic taxes were recorded above plan, while other revenues recorded lower collection in relation to the annual plan.

³ Estimated GDP for 2011 amounts to EUR 3,273 million.

⁴ Total current public revenues include revenues of the budget, state funds and local self-administration.

Current public consumption (public expenditures minus capital expenditures) amounted to EUR 1,285.1 million or 39.3% of GDP and it was 1.6% higher than planned, while capital budget amounted to EUR 118.9 million or 3.6% of GDP.

In the structure of public expenditures by economic classification and individually, the highest share was recorded by current expenditures (49.7%), followed by transfers (40.5%), capital expenditures (8.5%) and other expenditures (1.3%).

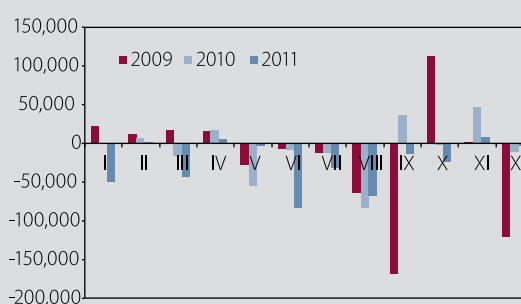
In the period January – December 2011, **public expenditure** ran a deficit amounting to EUR 129.8 million.

3.1.3. Economy

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

Loans granted to the corporate sector were substantially higher than their deposits in 2011, thus, this sector was net debtor also in 2011. Net debt of the corporate sector amounted to EUR 466.9 million or EUR 301.2 million (39.2%) lower in relation to end-2010.⁵

Graph 18 – Net indebtedness of the corporate sector, monthly change, EUR thousand



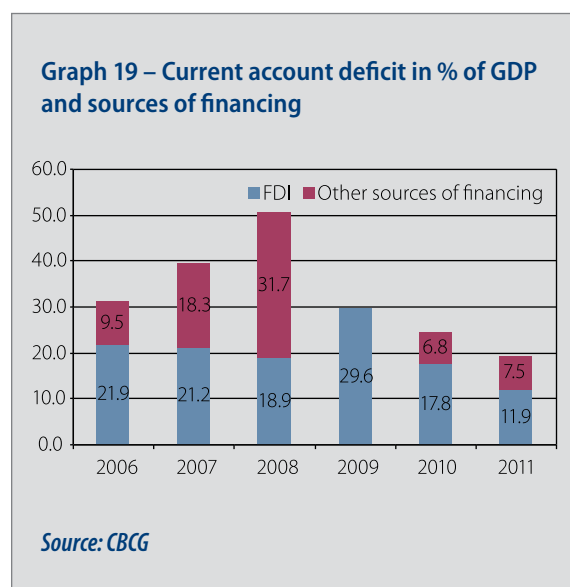
⁵ Decrease in loans to corporates is largely the result of displacing loans from balance sheets of Motnenegrin banks to balance sheets of parent banks or factoring companies.

The structure of loans granted to the corporate sector shows that the share of long-term loans were dominant at end-2011 (over 73%) which points to their dominant use for increasing the volume of economic activity.

3.1.4. External demand and balance of payments current account

Further adjusting of balance of payments current account continued in 2011. Due to faster growth of exports than the domestic demand, and higher prices of key export products, current account deficit declined by 17% as compared to 2010. In 2011, according to preliminary data, current account deficit amounted to EUR 633.8 million or 19.4% of GDP and it was largely funded from the FDI and portfolio investments inflow.

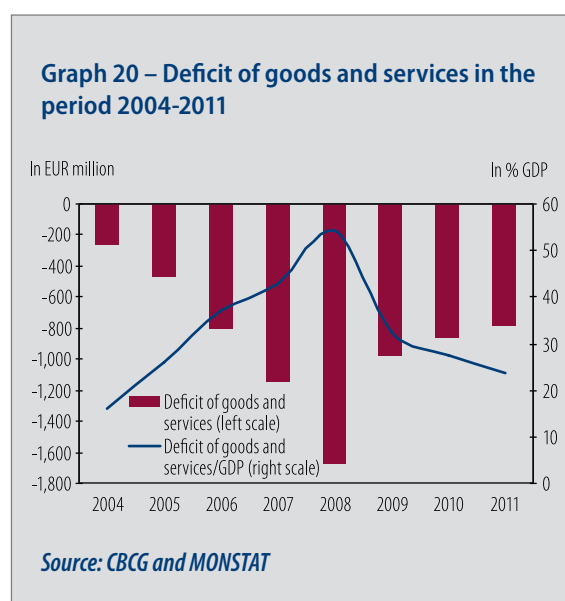
Due to significantly lower domestic consumption and investments, slower visible trade deficit growth was recorded as compared to the years before the crisis. Export of goods increased by 33.6% due to increased output and higher prices of metals at global markets. The highest value of goods export in the last few years was recorded in 2011 amounting to EUR 476.6 million, being 5.8% higher than in the pre-crisis 2008. Merchandise trade recorded still significantly high level of dependence on imports, taking into account that the share of import in GDP for 2011 was 54.5%, resulting in high foreign trade



deficit of 39.9% of GDP⁶. Prices of industrial products recorded annual increase of 6.6%⁷ in 2011, which affected the increase in total value of import by 9.8%. The result of such trends in 2011 was foreign trade deficit amounting to EUR 1.3 billion, or 3% more than in 2010.

Positive result was recorded at services sub-account, resulting in recorded surplus amounting to EUR 530.4 million or 16.2% of GDP, or 29.3% more than in 2010. Recovery of tourist turnover, recorded in 2010, continued in 2011, which largely contributed to recording of surplus at the services sub-account. In 2011, revenues from travelling – tourism were by 12% higher compared to 2010. The increase in revenues was largely the result of good physical indicators in the tourist season, i.e. showing annual increase in foreign tourist arrivals and overnights by 10.4% and 12%. Goods and services deficit (a component of GDP) decreased by 9.5% as a result of faster growth in exports of goods and services from imports.

In 2011, funds to natural persons from factor income and transfers recorded annual increase. Total inflow from factor income amounted to 5.9% of GDP, or 16% more than in 2010, while inflow of current transfers amounted to 4.7% of GDP or increase by 5.7%.

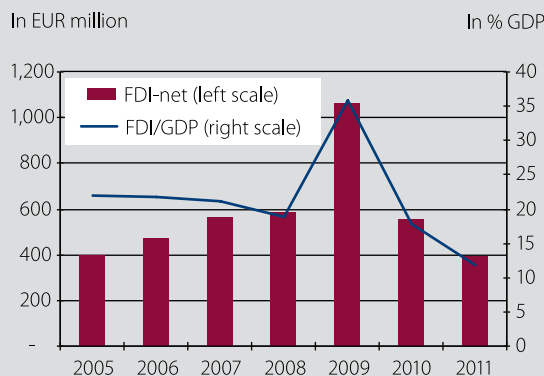


⁶ Monstat's data with CBCG adjustments for the purpose of balance of payments, pursuant to the IMF methodology (Balance of Payments Manual, Fifth edition, IMF, 1993).

⁷ Source: Release: Price Indices of Industrial Products Imported in Montenegro, December 2011, Monstat

Due to problems in the real sector and at global financial markets, which affected lower interest of foreign investors, capital inflow at the financial account decreased in 2011. Net FDI inflow amounted to EUR 389 million. Compared to 2010, net FDI inflow declined by 29.5%, but it is positive that the level is still relatively high and that, despite the crisis and negative factors, there were no abrupt stopping of capital inflow.

Graph 21 - Foreign direct investments inflow in the period 2005 - 2011



Source: CBCG

3.2. Supply and production

Industrial production in 2011 recorded annual decline of 10.3. Production decline was recorded in production of electricity, gas and water supply (32.7%), while production growth was recorded in mining and quarrying and manufacturing sector by 6.3% and 6.8%, respectively. Total industrial output also recorded annual decline by 37.1%, whereby the annual decline was recorded in all three sectors: mining and quarrying (0.3%), manufacturing industry (8.3%) and production of electricity, gas and water (63.6%). Monthly data on industrial output showed increase in June (16.9%), July (5.7%), August (1%), September (6.3%) and October (3.2%).

Montenegro was visited by 1,373.5 thousand tourists in 2011, showing annual increase of 8.7%. The number of domestic tourists arriv-

Graph 22 - Industrial output, annual growth rate



Source: Monstat

als decreased by 1.6%, while foreign tourists' arrivals increased by 10.4%. The number of overnight stays amounted to 8775.2 thousand, or 10.2% more than in 2010.

Total **wood production** in 2011 amounted to 293.7 thousand m³, or 14.6% higher than in 2010.

According to the preliminary Monstat data, total value of **construction works** in 2011 amounted to EUR 283.1 million, which was 10.7% higher than in 2010, while measured by effective working hours, it increased by 19.4%.

In 2011, some 4.4% passengers more was transported in the air transport, while railway and road passenger transport recorded annual declines by 28.2% and 0.8%, respectively.

In relation to the previous year, railway cargo transportation recorded 10.1% decrease (in tonne kilometres), air cargo transportation decreased by 50.3%, while road cargo transportation declined by 38.5% (in tonne kilometres).

Total turnover in harbours amounted to 1,750 thousand tonnes in 2011, which was by 0.5% lower in relation to 2010, whereby export decreased by 9.3% and import increased by 20.2%.

4. MONETARY POLICY

CBCG is responsible for monetary policy, fostering and maintaining financial system stability, including fostering and maintaining sound banking system and safe and efficient payment operations. One of key goals of the CBCG's monetary policy is contributing to the maintenance of the price stability in the country.

The Central Bank of Montenegro Law (OGM, 40/10 and 46/10) defines the following CBCG's primary monetary policy instruments: open market operations, credit operations, lender of last resort and reserve requirements.

During H1 2011, CBCG passed a set of new decisions governing the use of monetary policy instruments in the area of open market operations, credit operations and lender of last resort. Thus, possibilities of CBCG's acting pursuant to objectives defined by the Constitution and the Central Bank of Montenegro Law have been expanded. The CBCG amended the reserve requirements policy in the second half of 2011.

The Decision on Open Market Operations (OGM, 15/11) interprets the use of this monetary policy instrument in a manner that the Central Bank, with a primary objective of regulating the banking system's liquidity, purchases from and sells to banks securities issued by the State of Montenegro, EU Members States and international financial institutions or other securities. Moreover, this instrument indirectly affects the level of the banks' lending potential, their lending activity, and consequently to total economic activity in the country. Due to limitations in sources of funds available to CBCG, the use of this instrument has been rather limited in practice and has not been used so far.

The Decision on Detailed Conditions for Granting Liquidity Loans to Banks (OGM, 15/11) closely defines the regular needs for banks' liquidity. Pursuant to this decision, the CBCG may grant the liquidity loan to banks in the form of:

- intraday liquidity loan;
- overnight liquidity loan;
- short-term liquidity loan.

With this decision, the CBCG gives banks the possibility of bridging short-term liquidity needs appearing in regular operations, thus acting to stability of banking and financial systems.

Decision on Granting Last-Resort Financial Assistance (OGM, 15/11) foresees the possibility of providing credit support to banks and financial institutions to the period not exceeding 180 days, with a view to preventing aggravating of banking system stability and soundness, providing that a financial institution has been unable to provide necessary funds from other sources. This instrument increases the resistance of the financial sector to potential sources of financial instability through timely reaction and prevention of risk execution.

In July 2011, the reserve requirement policy was amended, from the focus of providing liquidity to the banking sector to improving maturity adjustment and banks' placements. With this change, the CBCG tends to improve maturity structure of deposits to the favour of time deposits in a long run, in order to reduce potential vulnerabilities of banks in operations. The *New Decision on Bank Reserve Requirement*

to Be Held with the Central Bank of Montenegro (OGM, 35/11) foresees that banks calculate the reserve requirement by applying the rate of:

- 9.5% - on a part of the base comprised of demand deposits and deposits with the agreed maturity up to one year (365 days);
- 8.5% - on a part of the base comprised of deposits with the agreed maturity over one year (over 365 days).

This Decision came into force on 1 October 2011, whereby banks were enabled gradual adjusting to the new reserve requirements regime.

4.1. Monetary policy measures for inflation suppression

Since inflation rate in Montenegro was modest in 2011, there was no need for implementing any form of monetary measures with a view to suppressing the inflation.

4.2. Fiscal policy measures and other measures for suppressing inflation

As a response to the crisis, the Government of Montenegro adopted a set of measures during the past two years, including rationalization of all categories of expenditures, especially non-essential spending, and decreasing the wages pool, aimed at decreasing public consumption. In that sense, the Law on Wages of Civil Servants and State Employees was amended whereby, among other issues, giving the possibility of full control of employment in the Ministry of Finance. These measures had the desired effects and resulted in the decreasing public consumption in 2010.

The implementation of these measures continued in 2011, resulting in decreased public spending by 1.9% in relation to 2010, while current fiscal spending was at the approximately same level as in 2010⁸, which resulted positively to inflation trend.

However, despite passing the amended Law on Wages of Civil Servants and State Employees, which gave the possibility of full control of employment in the Ministry of Finance, with a view to decreasing the wages pool, the target was not recorded in 2011.

To wit, expenditures from gross wages in 2011, according to Ministry of Finance's estimate, increased by 31% in relation to 2010, which had adverse effects to aggregate demand growth and consequently to inflation trend.

Excise duties to some products from category "alcoholic beverages and tobacco" were changed in 2011, resulting in the increased contribution of this category in total annual inflation rate (2.8 percentage points) by 1 percentage point.

⁸ *Forecast of the Ministry of Finance*

5. INFLATION FORECAST IN 2012

5.1. Model assessment

The “Fan Chart” is a graphic presentation of the distribution of projected inflation forecasts expressed in the form of Consumer Price Index (CPI). To wit, instead of identifying some specific points, the Fan Chart, through the distribution of forecasts, takes into consideration potential risks and uncertainties that could affect the inflation movements over the upcoming period of time. The purpose of the Fan Chart is to point out and take into consideration any existing uncertainty in real economy, consequently reflecting on the inflation rate growth (higher prices of fuels and increase/decrease in foreign trade deficit).

The Fan Chart of Montenegro for 2012 is based on the following three assessment components:

1. **Values of the central projection** – The values of the Fan Chart central projection are deducted from the ARIMA model, and also by applying the Tramo/Seats simulation in order to obtain the most efficient model.
2. **Level of uncertainty** – determines the Fan Chart width. The level of uncertainty ratio is a result of analytic analysis and calculation of relative effects of potential internal (expected increase in electricity prices) and external shocks (oil and food prices) that may occur in the Montenegrin economy in 2012.
3. **The Fan Chart curve** – Following the curve showing the level of the projected inflation distribution, the Fan Chart is adjusted to the forecast in the sense that the values of cen-

tral projection forecasting the inflation rate movements are either “overrated” or “underrated”. The position of an average value of the inflation distribution will depend on this direction.

Fan Chart Central Projection – ARIMA Model for 2012

For the purpose of Fan Chart preparation, the ARIMA (Auto-Regressive Integrated Model with Variable Averages) model of temporal series of inflation in Montenegro expressed by Consumer Price Index was developed⁹.

ARIMA model was used for the purpose of short-term forecasts (12 months) where an iteration of 533 ARIMA models was prepared. All models were ranked according to their respective diagnostics efficiency and quality. Selected Arima model, ARIMA (4,1,4)¹⁰ is sufficiently reliable for the needs of this forecast.

⁹ A detailed explanation of the ARIMA model of Montenegro is given in the working study of the Central Bank of Montenegro No. 11 “Inflation Forecast: Empirical Research of Retail Price Index Movements in Montenegro in 2007 – Application of ARIMA Model”

¹⁰ ARIMA model is generally referred to as an ARIMA (p,d,q) where p represents the number of autoregressive variables, d refers to the level of dependent variable that needs to be made stationary, and q is the number of variables, moving averages, in the certain model.

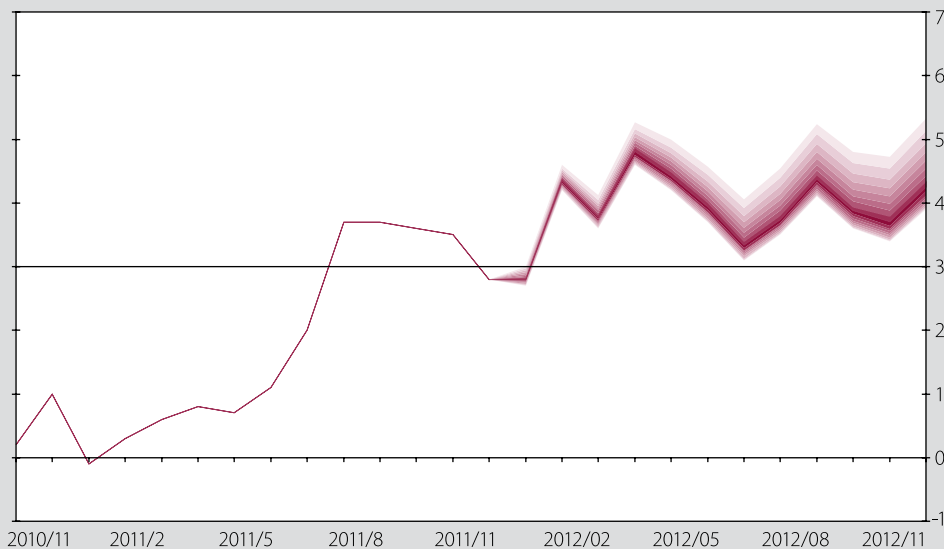
Following the Tramo/Seats¹¹ procedure, seven (7) breaking points were identified (Chow Test for the identification was used) in the previous series; those corresponding substantially to the changes in the inflation structure from 2001 to the end-2012, which was included in the ARIMA model through dummy variables.

Results of ARIMA projection were compared to the values of projected values by Tramo/Seats procedures which expressed substantial level of compatibility.

The monthly forecasts value was used as the value of central projection of the Fan Chart of CPI for 2011 and first ten months of 2012. Obtained values represent the distribution mode, i.e. the values with the highest frequency in distribution of this time series.

Mean value of the produced model is 3.3, curve ratio varied between -0.6 and 1.1, while the values of standard deviations amounted to $\sigma_2=0.07$ or $\sigma_1=0.14$. Like in the previous two years, this showed that the central span was located in the lower part of the distribution, which means that the corresponding range of uncertainty was concentrated towards the higher levels of inflation. This is shown in the graph as a “thicker” range concentrated above the central “dominantly red” range. Fan Chart explains 90% of the inflation distribution probability. The central projection is usually in the deepest shade of the Fan Chart, i.e. in the central 10% of probability.¹² The Fan Chart has an equal number of bands (eight) on either side of the central band whereby every band is of the same colour, both above and below the central band whereby every band is of the same colour, both above and below the central band, cumulatively takes the inflation projection to the next 10% of probability. As the degree of uncertainty grows over time, so the Fan Chart spreads.

Graph 23 – Projected Consumer Price Index of Montenegro for 2012



Source: CBCG, 2012

¹¹ Tramo program represents a program for model assessment and design (mostly ARIMA) having problems with a lack of data, data errors and the presence of a large number of extreme data in time series. SEATS program is used to extract the elements of time series than cannot be directly extracted; those elements are extracted as a trend, season, cycle, and occurrence of Easter or Christmas effect, which allows a superior analysis and projection of ARIMA model. For more details see manual Tramo and Seats (Gómez and Maravall, 1996).

¹² The mode value (central projection) is always placed in the deepest band shade, but in the case of a heavily unbalanced risk, the central projection may not cover either of these values (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)

The Fan Chart showing the inflation in Montenegro based on an ARIMA model assessment and Tramo/Seats simulation for 2012 shows **with 90% probability that the inflation, measured by CPI depending on month, will range between 2.6% and 5.2%**. To wit, as the time span for forecasting increases, thus the forecast span for central projections of the “Fan Chart” referring to the thickest part spreads, showing the probability range of 10%. The 10% probability shows that the inflation will range from 2.7% to 4.6% in 2012.

Assumptions referring to inflation forecast for 2012 include:

1. The price of oil and oil derivatives will not exceed 5% of the price from December 2011;
2. The price of aluminium will not increase more than 5% in relation to that from December 2011;
3. Prices of real estates will be on the standstill in relation to end-2011;
4. Electricity price increase up to 5%;
5. Real wages increase in 2012 is at the 2011 level;
6. There will be no significant increase in prices of food products in relation to September 2011;
7. Implementation of enacted higher excise duties in 2012.
8. The VAT is not planned to increase.

Derogation from some of these parameters would also require forecast correction.

5.2. Expert's assessment

Bearing in mind insufficient level of reliability of statistical data, insufficiently long time series as well as often present shocks, CBCG is adding expert's assessment of the inflation development to the model assessment.

The level of the aggregate demand in Q4 2011 was increasing (usual seasonal effect), yet showing y-o-y decline. Expectations for the GDP increase are in the zone of pessimistic, thus against the backdrop of recession, the aggregate demand pressure should not be expected.

Still, inflation trends are high, as shown by market trend indicator. According to our survey, both banking system and real sector expected inflation increase. Most of banks expect inflation ranging from 4% to 5%, while most of surveyed companies expected inflation to range between 3% and 4%. It is obvious that the deterioration in public finance affected the expectations on tax increase, which was “spilt” to price increase.

Inflation forecast model also points to the inflation increase. Thus, with 90% probability, it is expected that the inflation will range between 2.6% and 5.2%, while with 10% probability, it is expected that the inflation to amount between 2.7% and 4.6%.

Our expectations (expert's assessment) is similar to the model forecast, and we expect that the inflation rate in 2012 will range between 2.5% and 5%. This forecast does not include eventual increase in the VAT, and it is based on the same assumptions as the model assessment.

Table 3 – Estimated inflation rate

Optimistic assessment	Realistic assessment	Pessimistic assessment
2.5%	3.75%	5%

Deterioration of a parameter used for this forecast would require the revision of the assessment. If the VAT rate were increased by 2 percentage points, our expectations are that it would affect the inflation growth by 1.5%.

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