



CENTRAL BANK OF  
MONTENEGRO

# **PRICE STABILITY REPORT 2012**

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PUBLISHED BY: Central Bank of Montenegro  
Bulevar Svetog Petra Cetinjskog 6  
81000 Podgorica  
Telephone: +382 20 664 997, 664 269  
Fax: +382 20 664 576

WEB SITE: <http://www.cbcg.me>

CENTRAL BANK COUNCIL: Milojica Dakić, MS, Governor  
Velibor Milošević, PhD, Vice-Governor  
Asim Telačević  
Milivoje Radović, PhD  
Milorad Jovović, PhD  
Srđa Božović, PhD

DESIGNED BY: Andrijana Vujović  
Nikola Nikolić

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## ABBREVIATIONS

|         |   |
|---------|---|
| ARIMA   | Autoregressive Integrated Moving Average          |
| GDP     | Gross domestic product                            |
| CBCG    | Central Bank of Montenegro                        |
| CPI     | Consumer price index                              |
| EU      | European Union                                    |
| MFI     | Micro-credit financial institution                |
| IMF     | International Monetary Fund                       |
| MONSTAT | Statistical Office of Montenegro                  |
| OPEC    | Organization of the petroleum exporting countries |
| VAT     | Value added tax                                   |
| FDI     | Foreign direct investments                        |
| UN      | United Nations                                    |
| USD     | U.S. dollar                                       |



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# 1. INFLATION INDICATORS

## 1.1. Inflation trend in Montenegro

The annual growth in consumer prices in December 2012 amounted to 5.1% and it showed a y-o-y increase by 2.3 percentage points. The annual inflation in Montenegro was significantly higher than the inflation reported in the EU and that of some regional countries. Moreover, the rate of 5.1% was the highest inflation rate reported in Hungary as an EU member state. Observed by quarters, the highest growth in prices in 2012 was reported during Q1 (2.2%), when the consumer prices, together with the increase in prices of some food products, showed the highest growth due to the increase in electricity prices, excise duties on certain products and fuel prices. The consumer prices grew at a rate of 1% in Q2 and Q3, while the lowest growth was reported in the last quarter (0.7%).<sup>1</sup> Observed by the month, the highest growths in consumer prices were recorded in

February (1%)<sup>2</sup> and October (1.1%), while monthly decline in prices was recorded only in November (-0.1%) and December (-0.3%).

The highest growth in 2012 was in the prices from the category "housing, electricity, gas and other fuels" (11.6%) due to the growth in electricity prices (17.6%) and solid fuels (12.4%). The group "alcoholic beverages and tobacco" has shown double digit growth for the second consecutive year. The annual growth in December 2012 was 10.7% (as compared to 26.3% last year), which mainly resulted from the increase in excise duties on certain products of this group. Alcoholic beverages' prices increased by 2.7%, while tobacco prices increased by 16.5%. The growth in prices of almost all groups of food products influenced the growth in prices of the group "food

**Table 1 – Inflation, %**

|                                      | 2011. |     |     |     | 2012. |     |     |     |
|--------------------------------------|-------|-----|-----|-----|-------|-----|-----|-----|
|                                      | III   | VI  | IX  | XII | III   | VI  | IX  | XII |
| Change relative to previous year-end | 3,3   | 2,7 | 3,0 | 2,8 | 2,2   | 3,2 | 4,3 | 5,1 |
| Annual change                        | 3,7   | 3,5 | 3,4 | 2,8 | 2,7   | 3,9 | 4,4 | 5,1 |

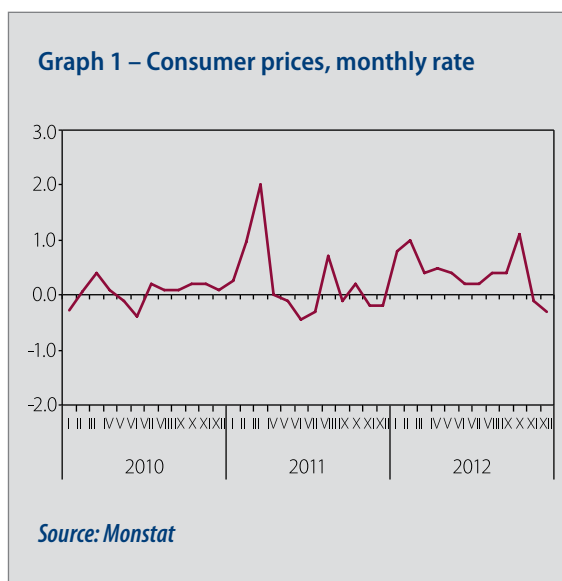
**Source: Monstat**

<sup>1</sup> Due to rounding figures when calculating quarterly inflation, the sum of rates insignificantly differs from total annual inflation.

<sup>2</sup> For the calculating of CPI, basket of products included new products in February, although total weighting structure remained unchanged at the groups' level. It is possible that weighting change influenced the inflation in February with increases in prices of certain groups of products.

and non-alcoholic beverages" by 6.9%. The growth in prices was the following within this group: vegetables (24.6%), fruits (23.8%), oils and fats (15.5%), milk, cheese and eggs (4.1%), meat (1.1%), fish (2.4%) and other food products (2.8%). The prices of non-alcoholic beverages increased by 9% whereby prices from the group coffee, tea and cocoa grew by 12.4%. The annual decline in prices of 1% was shown only by the group "bread and cereals". Due to the increase in prices of clothing by 8.6%, the annual increase of 3.9% was also recorded in the category "clothing and footwear". The following categories showed growth in prices: communications (3.3%), recreation and culture (3.2%), hotels and restaurants (2%), while somewhat lower annual growth was recorded in the categories "health" (0.7%) and "transport" (0.5%).

The prices of food at global level during summer 2012 reached the level from the period of the global food crisis in 2008. After a decline in demand and a decline in the prices of main cereals, oils and fats in the last months of 2012, food prices dropped by 7% compared to the previous year. With regard to a decline in stock of grains, it is assumed that global food market will remain unstable also in the following period. The UN "World Economic Situation and Prospect 2013" reported that the food prices should be somewhat moder-



ate in 2013 due to slowing down of global demand. However, since this market is very sensitive, even relatively small disruptions in food supply could easily boost the prices. Due to high dependence on exports, the changes in food prices at global markets will reflect also on food prices in Montenegro, which remained relatively high in 2012.

**Table 2 – Share of individual categories in total inflation\***

|   | Weights       | XII 2012/XII 2011 | Growth rate | Contribution | Share in total inflation |
|---|---------------|-------------------|-------------|--------------|--------------------------|
| <b>TOTAL</b>  | <b>1000,0</b> | <b>105,1</b>      | <b>5,1</b>  | <b>5,1</b>   | <b>100,0</b>             |
| Food and non-alcoholic beverages                                  | 375,5         | 106,9             | 6,9         | 2,6          | 51,7                     |
| Alcoholic beverages and tobacco                                   | 37,2          | 110,7             | 10,7        | 0,4          | 7,9                      |
| Clothing and footwear   | 76,1          | 103,9             | 3,9         | 0,3          | 5,9                      |
| Housing, water, electricity, gas and other fuels                  | 128,7         | 111,6             | 11,6        | 1,5          | 29,7                     |
| Furnishing, household equipment and routine household maintenance | 49,4          | 98,5              | -1,5        | -0,1         | -1,5                     |
| Health  | 28,0          | 100,7             | 0,7         | 0,0          | 0,4                      |
| Transport   | 121,6         | 100,5             | 0,5         | 0,1          | 1,3                      |
| Communications  | 55,8          | 103,3             | 3,3         | 0,2          | 3,7                      |
| Recreation and culture  | 32,1          | 103,2             | 3,2         | 0,1          | 2,1                      |
| Education   | 21,8          | 100,0             | 0,0         | 0,0          | 0,0                      |
| Hotels and restaurants  | 29,6          | 102,0             | 2,0         | 0,1          | 1,2                      |
| Other products and services                                       | 44,2          | 97,4              | -2,6        | -0,1         | -2,2                     |

\* 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



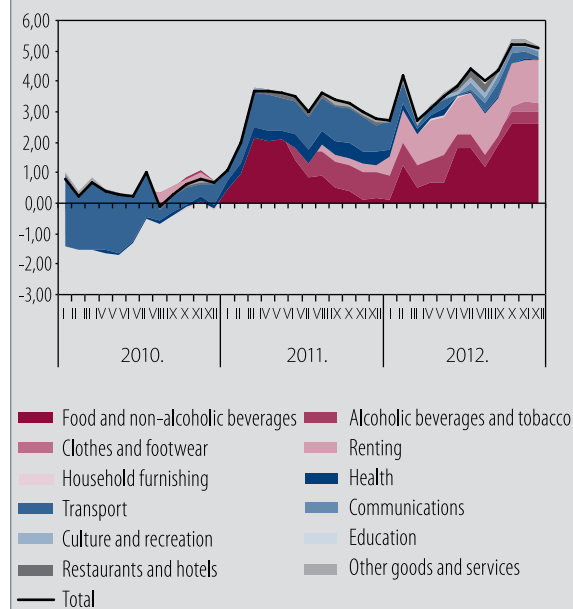
The prices under the category furnishing, household equipment and routine household maintenance declined (-1.5%) mostly due to the decline in prices in furniture and furnishings by 7.8%. The prices in the group "other products and services" showed annual decline of 2.6%, while the prices in category "education" remained unchanged relative to the previous year.

The prices of fuels and lubricants in Montenegro, mostly depending on the changes in global oil prices, recorded the annual growth of 1.3%. The OPEC Reference Basket was 109.5% USD/barrel on average in 2012, which represented an increase compared to average price in 2011. Brent average price in 2012 was 111.6 USD/barrel, which represented an increase of 0.3% compared to the prior year average price. Prices gradually softened after the increase in crude oil during August and September, which resulted from the decline in demand and various geopolitical tensions in the oil-producing countries. In addition, long-term pessimism with regard to global recovery reflects on the decline in demand in this product. It is expected that slow economic growth and oil stocks will be a limiting factor of the growth prices in the following year.

The prices under the category "food and non-alcoholic beverages" accounted for the main share of 2.6 percentage points, while prices from the category "housing, water, electricity, gas and other fuels" accounted for 1.5 percentage points. The prices of products of these two categories made up 81.4% of total inflation. The categories "furnishing, household equipment and routine household maintenance"

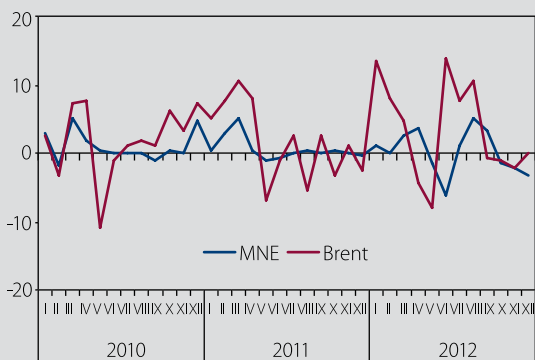
and "other products and services" were on negative 0.1 percentage points. Graph 3 below shows shares in annual inflation of individual components of consumer prices.

**Graph 3 – Consumer prices components: share in annual rate (in index points)**



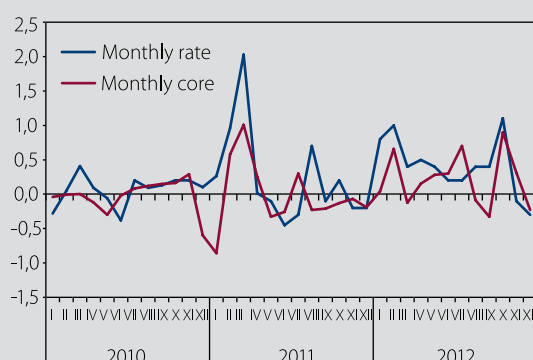
Source: Monstat and CBCG calculation

**Graph 2 – Oil prices, monthly rate**



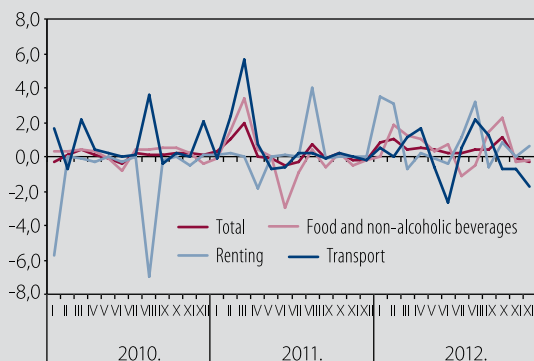
Source: Monstat and "Monthly Oil Market Reports", OPEC

**Graph 4 – Consumer prices, monthly rate**



Source: Monstat

**Graph 5 – Selected categories trend - consumer prices, monthly rate**



Source: Monstat

During 2012, monthly rate<sup>3</sup> of **core inflation** was mostly below the total monthly inflation, except the amounts in June, July, November and December. The highest range between total monthly and core inflation was recorded in August and September (due to the increase in prices of certain products that would be otherwise excluded from the calculation of core inflation, e.g. electricity prices, agricultural product prices and the like). Both rates declined at year-end and were negative in December (see Graph 4). Graph 4 shows the trend in the annual rate of total and core inflation.

**Producers' prices of manufactured products** showed the y-o-y increase of 5.7%. Manufacturing industry prices grew by 1.8% while the prices of electricity, gas and other fuels grew by 18.7%. The mining and quarrying prices reported the annual decline of 1.5%. The average growth in the producers' prices of manufactured products amounted to 1.9% in 2012, whereby an average growth in prices was recorded in manufacturing industry (0.7%) and electricity, gas and other fuels (6.2%), while the mining and quarrying prices recorded an average decline of 2%.

<sup>3</sup> Data on annual change in prices for all products included in the basket of core inflation were not available for 2012, and it was not possible to calculate annual core inflation.

**Export prices of producers of manufactured products**<sup>4</sup> recorded the y-o-y decline of 0.5%, while average annual decline in prices was 5.8%. Manufacturing industry reported annual decline in prices of 0.4%, and mining and quarrying reported a decline of 1.1%.

**Import prices of manufactured products**<sup>5</sup> grew by 0.5% in December 2012 compared to the previous year, and the average annual rate showed an increase of 1.8%. Annual growth was also reported by the manufacturing industry prices (0.5%), while mining and quarrying prices reported annual decline of 7.6%.

## 1.2. Inflation trend in region and EU

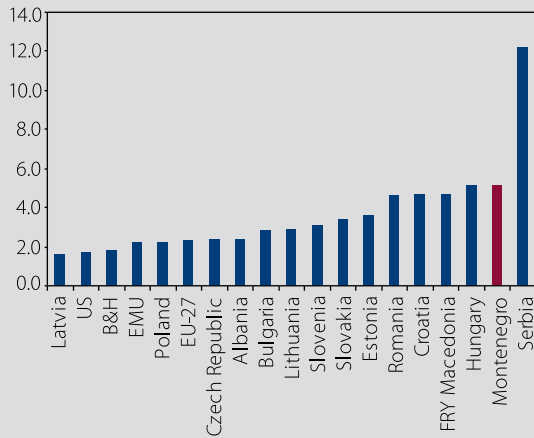
The inflation rate in Montenegro was significantly above inflation reported in the Euro area. Moreover, the annual inflation rate in Montenegro was identical to the annual inflation of Hungary which was the highest among the EU member states. Compared with individual regional countries, the inflation rate in Montenegro was higher than the inflation reported in majority of regional countries. The lowest growth in inflation was reported in Bosnia and Herzegovina (1.8%), Albania (2.4%) and Slovenia (3.1%). Croatia and Macedonia reported the same annual inflation of 4.7% each, while the highest annual growth was recorded in Serbia (12.2%).

With regard to the inflation in the EU Member States, the lowest annual inflation rate was recorded in Greece (0.3%), Sweden (1.1%), France and Cyprus (both at 1.5%), while the highest rate was recorded in Hungary (5.1%), Romania (4.6%) and Estonia (3.6%). The annual inflation rate reported in the Euro area was 2.2% and the components that recorded the highest growth were tobacco and beverages (3.6%), housing (3.4%), food and educations (each at 3%), while communications reported the annual decline (-3.8%).

<sup>4</sup> The exports prices index represents the monitoring of monthly changes in the prices in industrial products made by companies and sold at foreign markets. It is an important economic indicator that can be used as time series deflator, particularly for national account purposes.

<sup>5</sup> The imports prices index represents the monitoring of monthly changes in the prices of industrial products from imports. It can be used as a deflator of time series, particularly for the national account purposes and as a tool for price adjustments when entering different purchase and sales agreements.

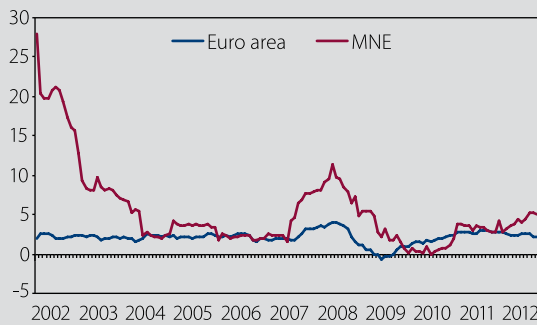
**Graph 6 – Annual inflation in selected countries, December 2012**



Source: National Statistical Offices and EUROSTAT

The annual rate reported in the EU 27 was 2.3% in December 2012; it was 2.2% in Euro area, while it was 5.1% and/or 4.4% in Montenegro, measured by harmonised consumer price index.

**Graph 7 – Inflation in Euro area and Montenegro since the introduction of euro, annual rates**



Source: Monstat and Eurostat

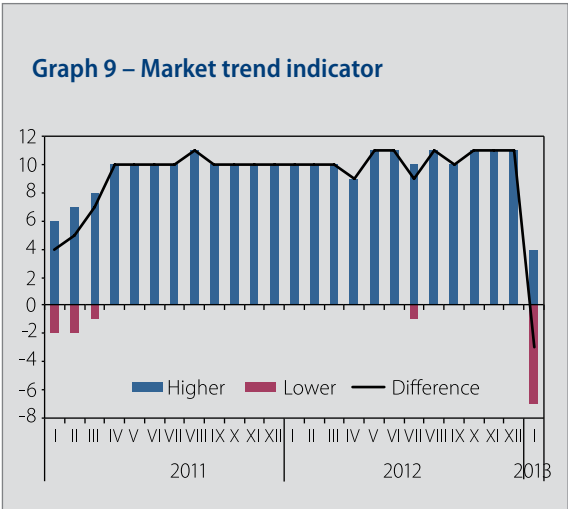
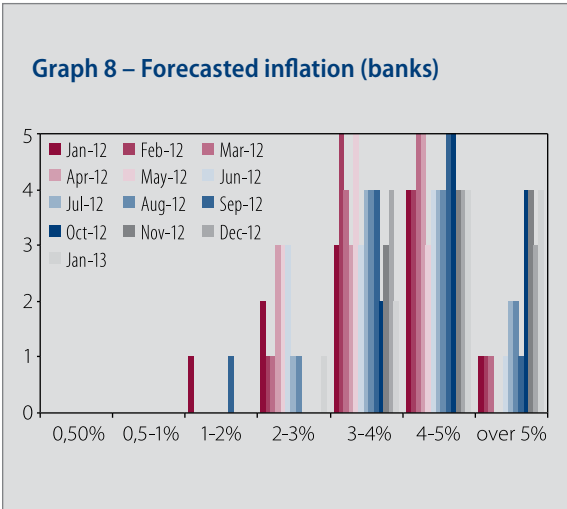
# 2. INFLATION EXPECTATIONS OF THE BANKING SECTOR AND ECONOMY

## 2.1. Banks' expectations

With regard to the inflation forecasts of banks, based on the survey conducted in January 2013, four banks expect the inflation ranging between 4% and 5%, while four banks expect inflation higher than 5%. Two banks expect inflation between 3% and 4%, while one bank expects the inflation ranging between 2% and 3%.

For the purpose of calculating inflation forecasts, we use market trend indicator (black line in Graph 9). It is calculated as the difference between the number of banks expecting an inflation growth (blue columns) and the number of banks expecting 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, an unchanged inflation rate can be expected in the upcoming period. The more negative its value is, the lower the inflation forecast is, while higher positive value means higher level of inflation forecasts. In that respect, Graph 9 indicates that inflation forecasts with smaller fluctuations showed relatively high inflation from April 2011 to December 2012, while they show inflation decline in January 2013.

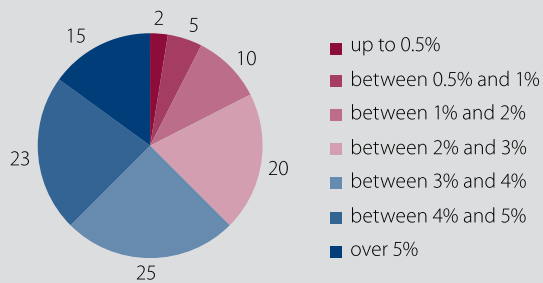


## 2.2. Expectations of economy (except banks)

### Inflation

Of total surveyed companies, 15% of companies expect inflation higher than 5% in 2013, i.e. inflation higher than those in 2012. The largest number of surveyed companies (25%) expects that the inflation will range between 3% and 4%, while 23% of the surveyed companies expect inflation to range between 4% and 5%, and 20% of the companies expect inflation between 2% and 3%. Furthermore, 10% of the surveyed companies believe that the inflation will range between 1% and 2%, while 5% of the surveyed companies expect inflation between 0.5% and 1%. The lowest number of surveyed companies (2%) expects inflation to be below 0.5% in 2013.

**Graph 10 – Expected annual inflation rate in 2013 (responses based on percentage share)**



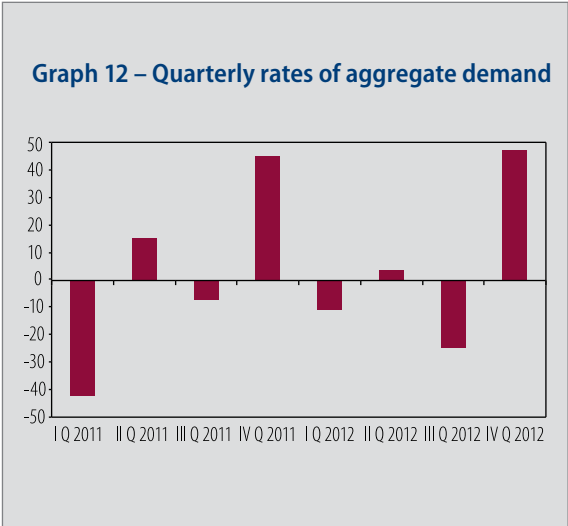
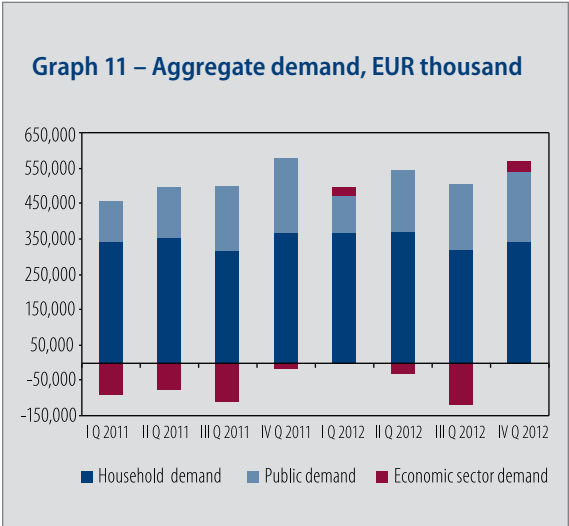
# 3. INFLATION DETERMINANTS

## 3.1. Demand

Based on the preliminary data, the highest level of aggregate demand was recorded in Q4 2012, which indicates seasonal character, because outstanding obligations of the companies and the budget are paid at the end of the year. Total demand in Q4 2012 was somewhat higher than the demand shown in Q4 2011. With regard to the structure of total demand in Q4 2012 relative to Q4 2011, the share

in demand of households and public consumption declined, while corporate increased.

The level and the rate of aggregate demand in Q4 2012 increased in relation to the previous three quarters of 2012, as well as in relation to Q4 2011.



## Box 1 - Methodology for calculating aggregate demand

For the purpose of complete monitoring of aggregate demand as the inflation determinant, the CBCG has developed the aggregate demand calculation methodology. The starting point of this methodology is that the aggregate demand is the total demand of 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 an indicator of the exact amount of aggregate demand, but as an indicator showing the aggregate demand trend. In the existing methodology, a number of substantial data were not available, such as: corporate investments, revenues from selling shares, non-market income, non-observed economy revenues, and the like. Methodology of calculation of the aggregate demand is expressed by the following equation:

$$AD = C + I + G$$

**C** = sum of paid salaries + sum of paid pensions + paid frozen foreign currency deposits + net compensations to households – net savings by households (savings – loans granted)

**I** = – net savings of economy (deposits – loans)

**G** = public consumption – paid pensions – salaries paid from the budget – net savings by the Government (deposits – loans – Treasury bills)

**AD** – aggregate demand, **C** – personal consumption, **I** – investment consumption, **G** – public consumption

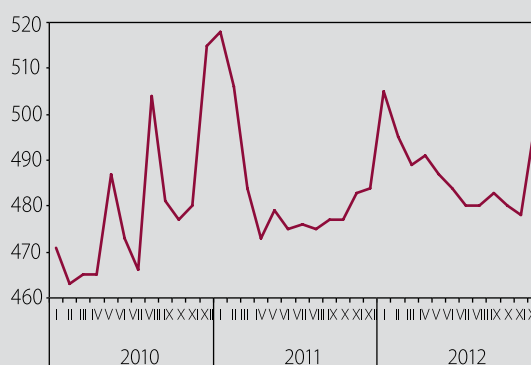
### 3.1.1. Salaries and other available demand determinants

The average gross salary in Montenegro amounted to EUR 727 in 2012, while average salary without taxes and contributions amounted to EUR 487. The average salary (gross) recorded an increase of 0.7% in 2012, while the average salary without taxes and contributions (net) recorded a growth of 0.6%.

Observed by months, the highest nominal growth of salaries without taxes and contributions was recorded in January (4.3%) and in December (4%). The largest decline of salaries without taxes and contributions on monthly basis was reported in February (-2%) and in March (-1.2%).

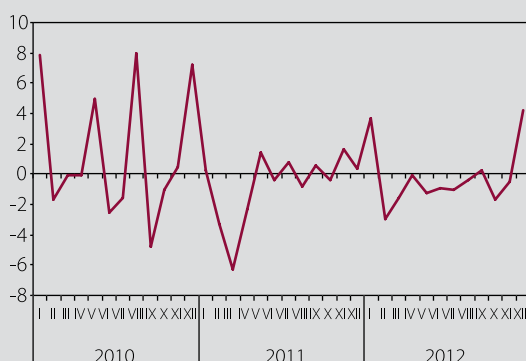
Taking into account the consumer prices, i.e. trends in salaries in real amounts, it can be concluded that real salaries reported the highest growth in January and December, while the highest real decline was reported in February, October and March.

Graph 13 – Average salaries without taxes and contributions in Montenegro



Source: Monstat

**Graph 14 – Real salaries (monthly growth rate)**



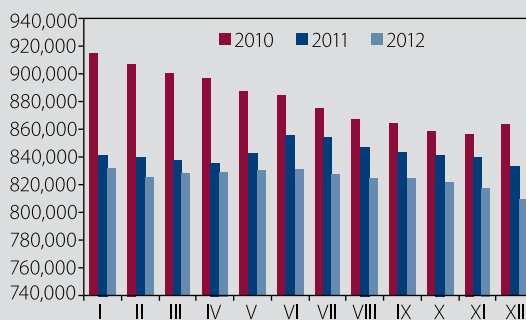
Source: Monstat

In addition to the decline in households' debt to banks, households' debt to MFIs also declined in 2012. Households' loans with MFI amounted to EUR 28.2 million at year-end 2012, and they declined by EUR 4.5 million or 13.8% y-o-y.

Household deposits were mainly on an uptrend in 2012 (except in January and May) and they recorded an average monthly growth of 0.9% (in 2011, an average monthly growth of 0.7% was recorded). Deposits of this sector amounted to EUR 1.146.8 million at end-2012, which represented a y-o-y increase of EUR 113.4 million or 11%.

Due to the downtrend in loans and increase in deposits of households' sector, loans to deposits ratio amounted to 0.71 at end-2012. This represented a significant increase in relation to the prior year end, when this ratio was 0.81. Households' sector reported total net savings in the amount of EUR 337.7 million, which represented a y-o-y increase of EUR 137.9 million or 69.1%.

**Graph 15 – Loans granted to households, EUR thousand**



Households' loans reported negative trend in 2012. The average monthly decline of loans in this sector was at a rate of 0.2% (this decline was at average rate of 0.3% in 2011). Total credit indebtedness of the households' sector was EUR 809.1 million at year-end 2012, which indicated a decline of EUR 24.6 million or 2.9% in relation to year-end 2011.

Due to declining trend in households' loans, the average indebtedness of this sector declined over the one-year period. Thus, debt per capita amounted to EUR 1.305 at December-end 2012, and it declined by EUR 40 or 2.9% at year-end 2011.

The balance of payment statistics showed that the y-o-y increase was recorded in the inflow of cash based on foreign remittances in favour of domestic natural persons, heritage, support, and other donations and assistance, as well as based on salaries and benefits to employees.

According to preliminary indicators, total demand of the household sector in Q4 2012 was lower compared to Q4 2011 as well as compared to the demand of the first two quarters of 2011, while a somewhat higher level was reported compared to Q3 2012.

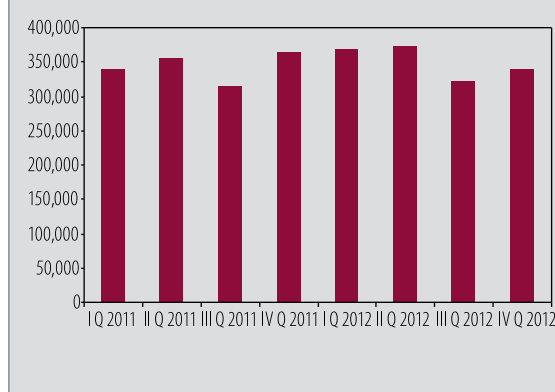
**Graph 16 – Inflow of foreign funds to households, EUR thousand**



Source: CBCG



**Graph 17 – Households' demand, EUR thousand**



### 3.1.2. Public sector demand

#### *Consolidated public consumption*

According to the Ministry of Finance estimate, public consumption in 2012 amounted to EUR 1.430.8 million or 43% of estimated GDP<sup>6</sup> for 2012. Public consumption showed a y-o-y decline of 2.1%. The achieved level of public consumption was financed by tax revenues in the amount of EUR 786 million, revenues from contributions in the amount of EUR 362.3 million, fees in the amount of EUR 23.3 million, other revenues by EUR 47.9 million and receipts from loan repayments in the amount of EUR 4.5 million.

Public revenues<sup>7</sup> were estimated in the amount of EUR 1.297.7 million or 39% of estimated GDP, and they increased y-o-y by 1%. Tax revenues accounted for the main share (60.6%) in the structure of public revenues, as well as revenues from contributions (27.9%), while other revenues accounted for 11.5%.

Current public consumption (public consumption reduced by capital expenditures) amounted to EUR 1.310.4 million or 39.4% of GDP and it declined y-o-y by 1.2%, while capital budget amounted to EUR 120.4 million or 3.6% of GDP.

<sup>6</sup> Estimated GDP for 2012 amounted to EUR 3.324 million.

<sup>7</sup> Total source public revenues include budget revenues, revenues of state funds and local self-governments.

Moreover, according to economic classification, current expenditures accounted for the main share in the structure of public expenditures (50%), followed then by transfers (38.1%), capital expenditures (8.4%), while 3.5% referred to other expenditures.

According to the Ministry of Finance data, **public consumption** reported a deficit in the amount of EUR 133.1 million or 4% of the estimated GDP.

#### *Budget of Montenegro*

According to the Ministry of Finance preliminary data, the Montenegrin Budget reported total receipts<sup>8</sup> in 2012 in the amount of EUR 1.447.4 million.

**Source revenues** amounted to EUR 1.118.8 million or 33.7% of estimated GDP. In relation to the plan, they declined by 2.7%, and they showed the y-o-y decrease of 0.9%. Tax revenues recorded the highest share in the structure of source revenues (61.4%), followed by contributions (32.4%), fees (1.1%), other revenues (3.1%), duties (1.6%) and receipts from loan repayments (0.4%).

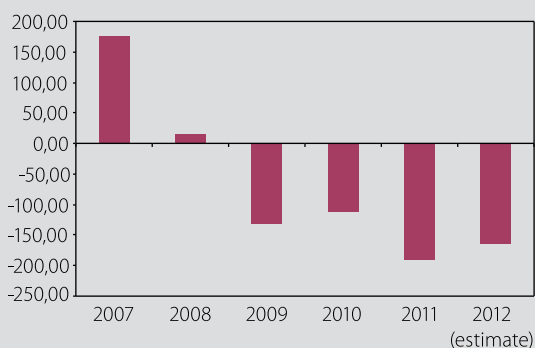
Tax revenues amounted to EUR 687.4 million and declined by 5.3% in relation to the plan, while they reported the y-o-y decline of 2.4%. Lower collection of taxes was mostly the result of substantial deviation from the collection of excise duties, VAT and custom duties, primarily due to noticeable lack of liquidity and problems in the industry sector, and the state of emergency that paralysed Montenegro's economy in February. The collection of corporate profit tax exceeded the plan by 36.6%, while it increased the y-o-y by 77.3%. Revenues from real estate turnover tax showed the y-o-y increase of 16.1%.

Revenues from contributions increased by EUR 362.2 million or 2.9% in relation to plan for 2012, while they showed the y-o-y increase of 2.5%.

**Budget expenditures** amounted to EUR 1.282.6 million or 38.6% of GDP in 2012 and they showed the y-o-y decline of 2.7%. Current expenditures in the observed period were EUR 652.8 million and they increased by 1.5% in relation to the plan.

<sup>8</sup> Receipts include source revenues (direct and indirect taxes and non-taxable revenues), borrowings, donations and revenues from privatisation and sale of property.

**Graph 18 – Budget surplus/deficit in the period 2007 – 2012, in EUR million**



Source: Ministry of Finance

Capital budget amounted to EUR 72.1 million or 2.2% of GDP.

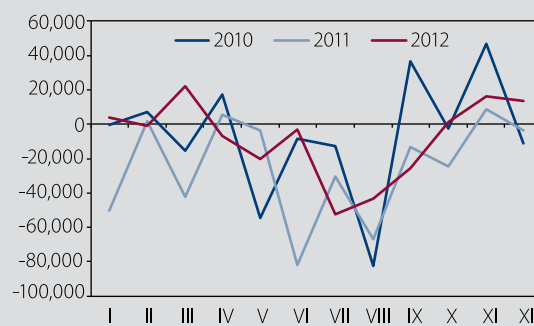
The Montenegrin Budget deficit was estimated at EUR 163.8 million or 4.9% of GDP.

### 3.1.3. Economy

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

Loans to corporate sector were significantly above the corporate deposits in 2012. Therefore, this sector was net debtor in 2012. Net corporate debt was EUR 372 million, which was the y-o-y decrease of EUR 94.9 million or 20.3%. Long-term loans (70%) accounted for the main share in the structure of loans to the corporate sector, which indicates that loans to this sector were mainly used for the increase in the volume of economic activity.

**Graph 19 – Net corporate debt, monthly change, in EUR thousand**



### 3.1.4. External demand and the current account

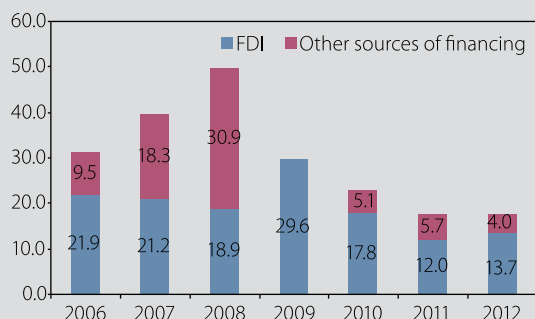
The current account deficit increased 2.4 % in 2012. This resulted from a decline in the visible export, while visible import remained almost at the same level. According to the preliminary data, the current account deficit was EUR 587.2 million or 17.7% of GDP and it was largely funded by FDI inflows (77.3%)

The growth of foreign trade deficit, compared to the previous year, was result of negative trends in international visible trade. The visible export declined by 17.8% in 2012 and it made up 11.8% of GDP. The imports dependence remains high in international trade in goods, bearing in mind that, according to preliminary data, imports made up 53.6% of GDP, which resulted in a high foreign trade deficit of 41.8% of GDP<sup>9</sup>. The prices of imported industrial products grew at the rate of 1.8%<sup>10</sup> relative to 2011, while imports of goods remained at approximately same level. As a result, foreign trade deficit in 2012 amounted to EUR 1.4 billion, which represented the y-o-y increase of 6.3%.

<sup>9</sup> Monstat data with adjustments made by the CBCG for the purpose of the balance of payment compilation in accordance with the IMF methodology (Balance of Payments Manual, Fifth edition, IMF, 1993).

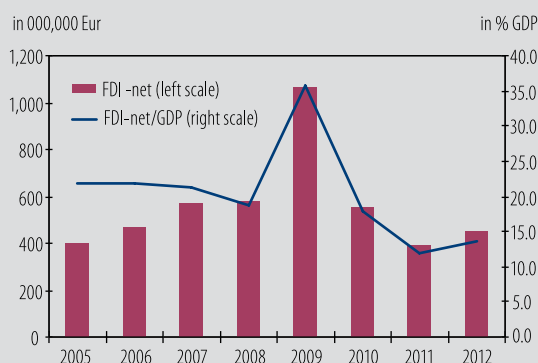
<sup>10</sup> Source: Release: Price Indices of Industrial Products Imported in Montenegro, December 2012, Monstat

**Graph 20 – Current account deficit and funding sources, % of GDP**



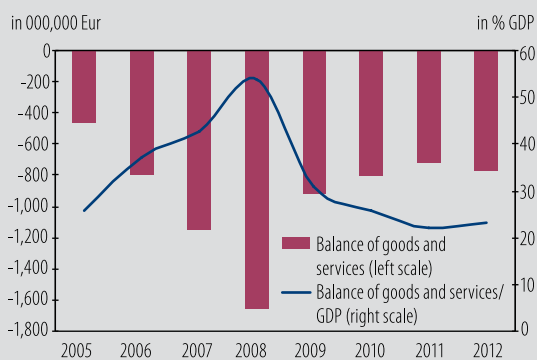
Source: CBCG

**Graph 22 – FDI inflow in period 2005-2012,**



Source: CBCG

**Graph 21 – Goods and services in period 2005 - 2012**



Source: CBCG and Monstat

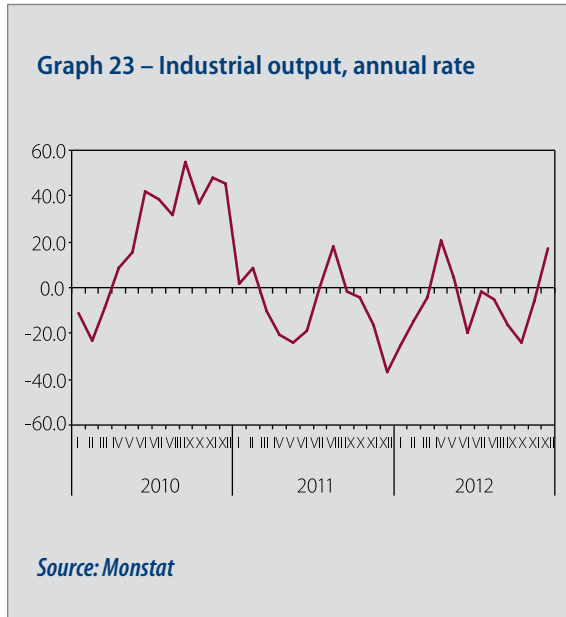
Positive trends were noted at the services account which resulted in a surplus of EUR 612.3 million or 18.4% of GDP, i.e. the y-o-y increase of 3.9%. The growth in tourist turnover continued also in 2012, which mostly contributed to the realisation of a surplus in the services account. Higher tourist demand in 2012 resulted in an increase in revenues from travel and tourism by 3.8% in relation to 2011. Good physical indicators in tourist season influenced the income growth, i.e. increase in foreign tourist arrivals by 5.3% and overnights by 4% on the annual basis.

The growth in foreign remittances remained stable in 2012. Higher inflow of funds in favour of private individuals based on factor income and transfers was reported in one-year period. Total inflow based on factor income was EUR 206.2 million or 6.2% of GDP, which was a y-o-y increase of 6.9%, while current transfers' inflow amounted to EUR 179.7 million or 5.4% GDP. This indicated a y-o-y increase of 15.3%.

A declining trend in FDI from the previous two years was stopped in 2012. According to preliminary data, net FDI inflows was realised in the amount of EUR 453.6 million in 2012, which was an increase of 16.6% over one-year period. Total FDI inflow amounted to EUR 633.3 million, which represented an increase of 28% in relation to 2011. Such an increase resulted from higher investments in companies and banks (by 34.9%) and properties (by 22.7%) and increased inflow based on intercompany debt by 22.2%.

### 3.2. Supply and production

The industrial production in 2012 recorded decrease of 7.1% in relation to the previous year. Output decline was evident in the mining and quarrying sector (21%) and manufacturing industry (10.1%), while electricity, gas and steam reported increase (1.4%). With regard to monthly data on industrial output trend, the highest monthly growth was realised in July (29.1%), while the highest decline was in May (-25.9%).



Some 1.439.5 tourists visited Montenegro in 2012, which represented the y-o-y increase of 4.8%. The number of domestic and foreign tourist arrivals increased by 1.7% and 5.3%, respectively. Some 9.151.2 thousand overnights were realised, which represented a y-o-y increase of 4.3%.

Total **production of forest products** was 240.900m<sup>3</sup> in 2012, which represents a decline of 18% in relation to the previous year.

According to preliminary Monstat data, total value of completed **construction works** amounted to EUR 245.8 million in 2012 and it declined by 13.2% over the one-year period. However, measured by effective working hours, it declined by 9.2%.

Air transport recorded an increase in passenger transport of 7.8%, as did road passenger transport (38.8%), while the railway passenger transport decreased by 4.2%.

Railway transport recorded a decline in cargo transport in 2012 of 45.9% (measured by tonne-kilometres). Cargo transport also declined in air transport by 28.7%, while in road transport it declined by 25.4% (measured by tonne-kilometres).

Total turnover in ports was 1.228 thousand tonnes in 2012. It showed the y-o-y decline of 29.8%, whereby exports declined by 45% and imports declined by 16.7%.

# 4. INFLATION FORECAST FOR 2013

## 4.1. Model assessment

Montenegro's inflation fan chart represents a graph of probability distribution of inflation rate expressed through the consumer price index. Therefore, instead of determining specific points, using the distribution of probability the "Fan Chart" includes the potential risks and uncertainties which might influence the movement of inflation in the future period. 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 trends (higher prices of energy-generating products, increase/decrease in foreign trade deficit, etc).

Montenegro's fan chart for 2013 was based on the following three estimated components:

1. **Central projection values** – The values of the Fan Chart central projection are derived from the ARIMA model, and also by applying the Tramo/Seats simulation in order to obtain the most efficient model.
2. **Degree of uncertainty** – determines the fan chart width. The degree of uncertainty ratios are obtained through analytical assessment and calculation of a relative impact of potential internal and external shocks which are possible in Montenegrin economy during 2013 and which are reflected through the width of the band around the central projection.

3. **Fan chart skewness** – based on the level of the skewness in the distribution of inflation projection, the fan chart is adjusted to the forecast to show whether the values of the central projections have "overestimated" or "underestimated" the inflation rates. This will also influence the position of the mean value of inflation distribution.

### Fan Chart central projection - ARIMA model for 2013

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 through the Consumer Price Index<sup>11</sup> was developed.

ARIMA model was used for short-term forecasts (12 months), whereby iteration of 1227 ARIMA models was made, which were ranked based on their efficiency and quality of diagnostics. The selected ARIMA model, ARIMA (3,2,4)<sup>12</sup> has sufficient confidence level for forecasts.

<sup>11</sup> 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".

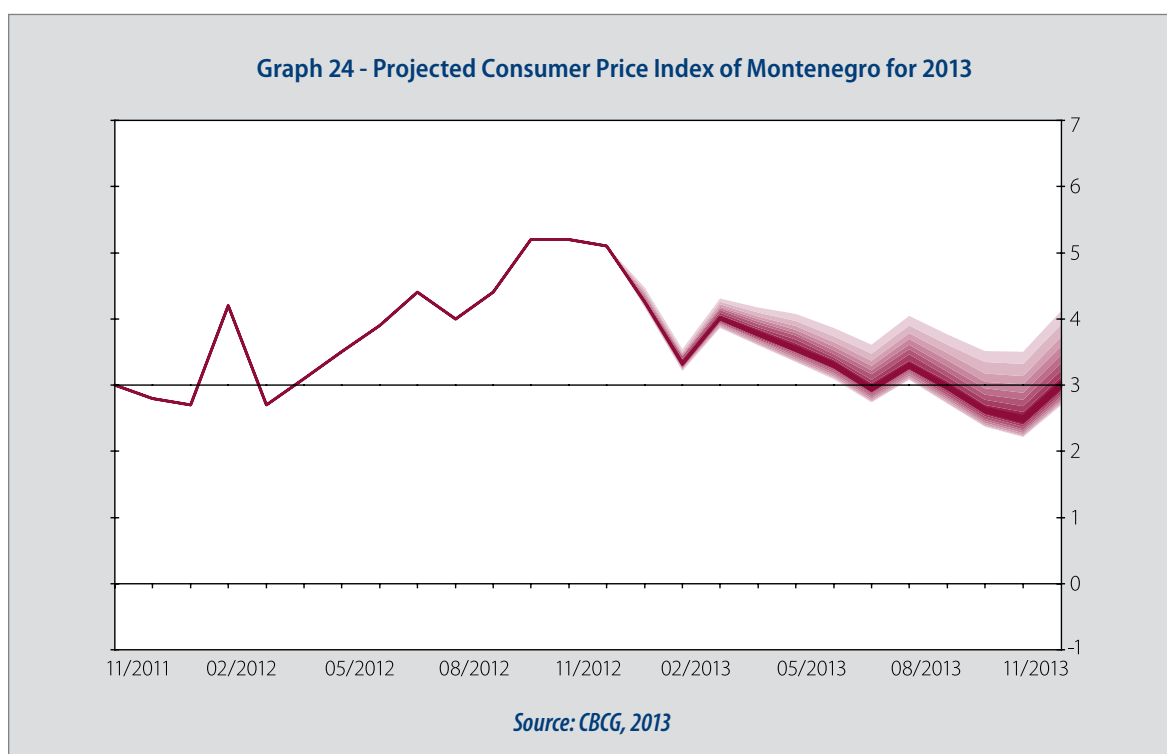
<sup>12</sup> ARIMA model is generally referred to as an ARIMA (p,d,q) where p represents the number of autoregressive variables, d refers to the level of dependent variable that needs to be made stationary, and q is the number of variables, moving averages, in the certain model.

Based on Tramo/Seats<sup>13</sup> procedure, 4 breakpoints (Chow Test was used for identification) have been identified so far, which correspond to a significant change in inflation structure from 2001 to end-2013 and which are included in the ARIMA model through dummy variable.

The result of ARIMA model projection was compared to forecasted values using Tramo/Seats procedure which have shown high level of compatibility.

The monthly forecasts value was used as the value of central projection of the Fan Chart of CPI for 2013. The obtained values represent the distribution mode, i.e. values with the highest frequency in the distribution of this time series.

Mean value of the obtained model was 3.15, while the curve (skewness) varied from -0.15 to 0.85, and standard deviation values were  $\sigma_2=0.13$  and/or  $\sigma_1=0.07$ . This pointed out that central band, as in the last two years, was placed in lower part of distribution, i.e. the corresponding degree of uncertainty was concentrated towards higher inflation levels, which are reflected in the graph through “thicker” band concentrated above central “the deepest shade of red” band. The fan chart presents a 90% probability of inflation distribution. The central projection is usually in the deepest shade of the Fan Chart, i.e. in the central 10% of probability.<sup>14</sup> 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, cumulatively takes the inflation projection to the next 10% of probability. As the degree of uncertainty grows over time, so the fan chart spreads.



<sup>13</sup> Tramo programme represents a programme 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 programme is used to extract time series elements that cannot be directly separated, separating elements such as trend, season, cycle, existence of Easter and Christmas effect, which enables better analysis and projection of ARIMA model. (For more details, see Handbook Tramo and Seats (Gómez and Maravall, 1996)

<sup>14</sup> The mode value (central projection) is, by construction, always in the deepest band shade, but in 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)

Montenegro's inflation Fan Chart, based on the ARIMA model and Tramo/Seats simulation for 2013 shows that with a probability of 90%, **the inflation, measured by the consumer price index, will vary from 2.2% to 4.5%, depending on the month. It is projected that the inflation will range from 2.7% to 4.1% at end-2013.** To wit, as the time span for forecasting grows, uncertainty will also grow and the forecast span for central projections of the "Fan Chart" referring to the thickest part spreads, showing the probability range of 10%.

The following external assumptions have been taken into account when forecasting the inflation in 2013 (nominal annual growth):

1. Oil and oil derivative prices will not exceed 5% of the prices in December 2012;
2. Aluminium prices will not exceed more than 5% of the prices in June 2012;
3. Real estate prices are stagnant relative to end of 2012;
4. Price of electricity growth will not exceed 5%;
5. Real wages in 2013 will remain at the 2012 level;
6. There will be no significant increase in prices of food products in relation to September 2012;
7. There will be no significant increase in VAT or other taxes.

Deviation of any of the abovementioned parameters would require the correction of the forecast.

## 4.2. Expert assessment

Bearing in mind insufficient level of confidence of statistical data, insufficiently long time spans and frequent presence of single shocks, the CBCG supplements the model assessment with the expert assessment of inflation trends.

The high inflation rate in 2012 was the result of many factors – late adjustment in prices of certain categories of products, increase in excise duties and introduction of new taxes, increase in controlled prices and change in structure of consumer basket. These factors are expected to have lower intensity in 2013.

The level of aggregate demand was on an uptrend in Q4 (normal seasonal effect). However, regardless of the fact that it was higher than the level of aggregate demand in Q4 2011, no pressure on prices on demand side should be expected, since 2013 will be characterised by slow economic growth. To wit, a low yet positive BDP growth rate is expected in 2013.

Moreover, the recession will still be present in the world and no significant increase in prices should be expected from this aspect.

Market indicators point to a decline in inflation expectations. Most of the banks and surveyed companies expect decline in inflation rate in the following year. The largest number of surveyed banks expects inflation between 4% and 5%, while the largest number of surveyed companies expects inflation between 3% and 4%.

In addition, the model forecast points to a decline in inflation. Therefore, using the probability of 90%, it is expected that the inflation will range between 2.2% and 4.5% during the year, while at the 2013 year-end the expected inflation is between 2.7% and 4.1%.

Our expert assessment is similar to the model-based assessment but it is somewhat lower than the model one due to the assessment that the model has "picked up" a portion of inflation from the previous year which resulted from the change in the structure of consumer basket. Therefore, our expectation is that the inflation will range between 1.5% and 3.5% at end-2013.

**Table 3 – Inflation rate forecast**

| Optimistic assessment | Realistic assessment | Pessimistic assessment |
|-----------------------|----------------------|------------------------|
| 1,5%                  | 2,5%                 | 3,5%                   |

This assessment is based on the same assumptions as the model assessment. The change in any parameter used for this forecast would require the forecast revision.

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