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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
Nikola Fabris, PhD, Vice-Governor
Asim Telaćević
Milivoje Radović, PhD
Milorad Jovović, PhD
Srđa Božović, PhD

DESIGNED BY: Andrijana Vujović
Nikola Nikolić

TRANSLATED BY: Translation Services Division

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1. INFLATION INDICATORS

CPI inflation in Montenegro in March 2013, relative to December 2012, was 0.5%. In the reporting quarter, the highest increase was recorded in prices under *food and non-alcoholic beverages* by 0.9% and prices under category *transport* by also 0.9%. The increase in consumer prices on a monthly level was recorded in March (0.4%), followed by February (0.1%), while in January there was a decline in prices by 0.1%. The average CPI (first three months of 2013 compared to the same period of 2012) was 3.6%.

Prices in the category *food and non-alcoholic beverages* grew by 0.9% in Q1 2013 and thus recorded the highest share in total inflation (76.2%). Within this category, the following prices recorded an increase: fruits (6%), vegetables (5.9%), meat (0.4%), fish (2.2), and bread and cereals (0.1%) and other food products (2.8). There was a decline in prices of milk, cheese and eggs by 0.5%, oils and fats by 4.4% as well as prices from the group sugar, jam, honey, chocolate and confectionary products by 0.4%. In Q1, the prices of non-alcoholic beverages increased by 0.7%. The prices from the category *transportation* recorded a 0.9% increase, primarily resulting from higher prices of fuels and lubricants (1.4%) and recorded a share of 20.3% in total inflation. The increase of prices in March, compared to December 2012 was recorded in the category *clothes and footwear* (0.4%), category *other products and services* (0.7%), category *health* (0.5%), while the categories *alcohol beverages and tobacco* and *communication* recorded an increase of 0.1%. Decline of prices was recorded in the category *housing and routine maintenance* (-0.8%), *hotels and restaurants* (-0.3%), as well as category *housing, water, electricity, gas and other fuels* (-0.1%). Prices under categories *education* and *entertainment and culture* did not change in March 2013 relative to December 2012.

Table 1 – Inflation, %

	2012				2013
	III	VI	IX	XII	III
Change in relation to previous year end	2.2	3.2	4.3	5.1	0.5
Annual change	2.7	3.9	4.4	5.1	3.3

Source: Monstat

Annual inflation in March 2013 amounted to 3.3%, while prices in March relative to 2012 average increased by 2%. Annual inflation measured by HICP amounted to 3%.

During first two months of 2013, monthly **core** inflation was lower than official monthly inflation and had a negative sign (-0.3% for January as well as February), due to "stabilisation" of prices comprising core inflation, while in March it recorded a slightly higher level compared to official inflation.

Prices of oil at the global markets during the first three months are on an upward trend compared to prices from the last quarter in 2012. In Q1, the price of reference OPEC basket on average amounted to 109.5 USD/barrel, or some 2.8% higher than in December 2012. The average price of Brent in Q1 2013 was 112.6 USD/barrel, or about 3% higher relative to the price in December 2012. The highest price of brent was in February (116.3 USD/barrel), while in March it amounted to 108.4 USD/barrel and was lower by 0.8% compared to December 2012. In February, the prices of oil reached the highest level during the last nine months. This came as a result of positive economic signals from China and USA at the beginning of the year, as well as seasonal increase in demand. In March, there was a decline in prices due to increased supply, while at the same time there was a deceleration of global demand for this fuel.

Graph 1 - Consumer prices, monthly rate

Source: Monstat

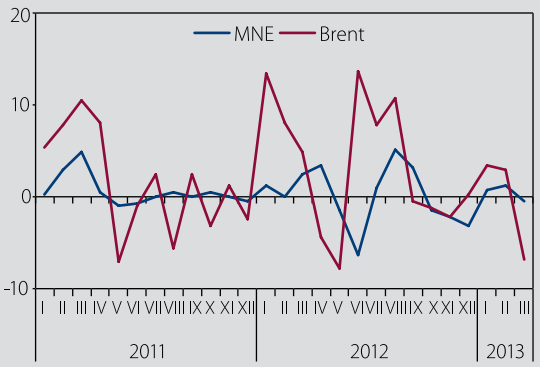
Table 2 – Share of individual categories in total inflation*

	Weights	III 13/XII 12	Growth rate	Contribution	Share in total inflation
TOTAL	1000	100.5	0.5	0.5	100.0
Food and non-alcoholic beverages	386.4	100.9	0.9	0.4	76.2
Alcoholic beverages and tobacco	37.9	100.1	0.1	0.0	0.7
Clothes and footwear	70.7	100.4	0.4	0.0	5.6
Housing, water, electricity, gas and other fuels	153.1	99.9	-0.1	0.0	-3.6
Housing and routine maintenance	46.9	99.2	-0.8	0.0	-8.4
Health	38.2	100.5	0.5	0.0	3.8
Transport	101.0	100.9	0.9	0.1	20.3
Communications	57.1	100.1	0.1	0.0	0.9
Entertainment and culture	27.2	100.0	0.0	0.0	-0.2
Education	15.7	100.0	0.0	0.0	0.0
Restaurants and hotels	23.0	99.7	-0.3	0.0	-1.3
Other goods and services	42.8	100.7	0.7	0.0	6.0

** 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

Graph 2 – Oil prices, monthly growth rate

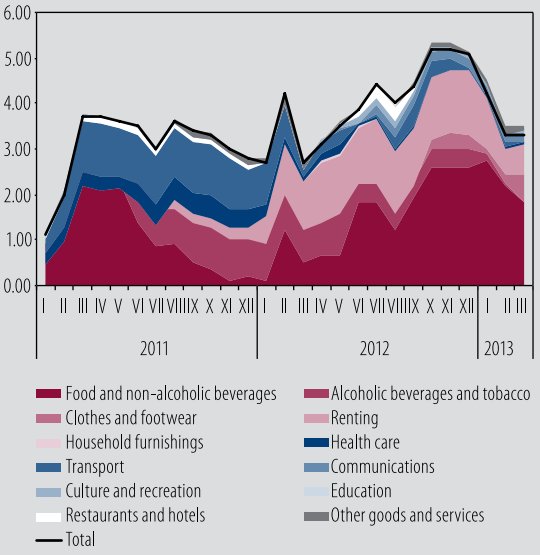


Source: Monstat and "Monthly Oil Market Reports", OPEC

Grafik br. 4 – Potrošačke cijene, godišnja stopa

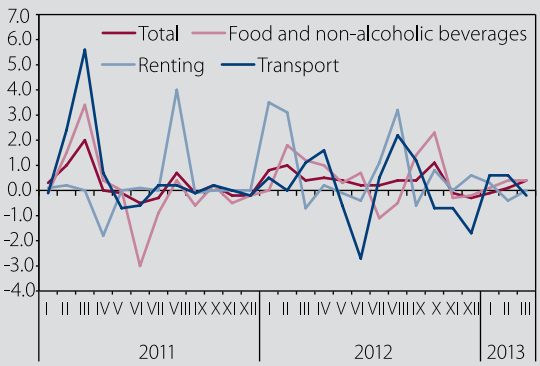
Source: Monstat

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



Source: Monstat and CBCG calculations

Graph 5 – Selected categories – consumer prices, monthly rate



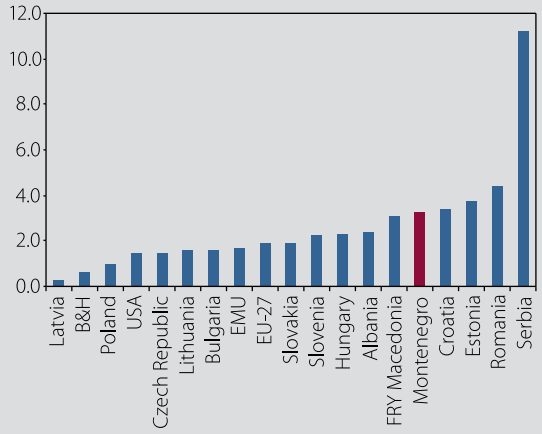
Source: Monstat

In March 2013, the annual inflation of 3.3% was largely the result of prices under the category *food and non-alcoholic beverages* (1.8 pp.) followed by prices from the category *housing, water, electricity, gas and other fuels* (0.8 pp.) and prices from the category *clothes and footwear* (0.6 pp.).

In March 2013, **producers' prices of manufactured products** remained unchanged in relation to December 2012, whereby the prices in the processing industry recorded a decline of 0.5%, while the prices of mining and quarrying increased by 4.5%. The prices under electricity, gas and water supply remained unchanged. Producers' prices of manufactured products recorded y-o-y increase of 4.2%.

The comparison of annual inflation recorded in Montenegro to the inflation in selected countries shows that the following countries recorded higher inflation rate: Croatia (3.4%), Estonia (3.8%), Romania (4.4%), as well as Serbia (recorded the highest annual growth of 11.2%). Macedonia recorded a growth of 3.1% while when it comes to neighbouring countries the lowest inflation was recorded in Bosnia and Herzegovina (0.6%).

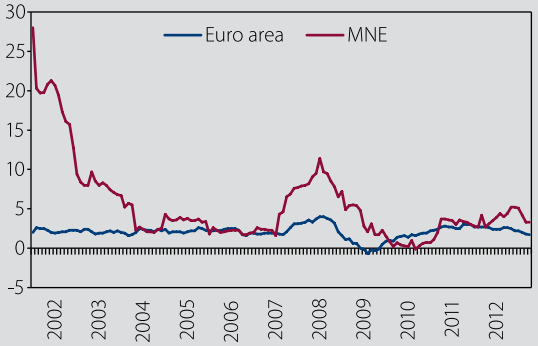
Graph 6 – Annual inflation rate in selected countries, March 2013



Source: National Statistical Offices and Eurostat

Annual inflation rate growth recorded in Euro area, measured by Harmonized Index of Consumer Prices (HICP) amounted to 1.7%, growth in Montenegro measured by consumer prices amounted to 3.3%, while annual inflation in Montenegro, measured with harmonized index amounted to 3% in March 2013.

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



Source: Monstat and Eurostat

2. INFLATION FORECASTS

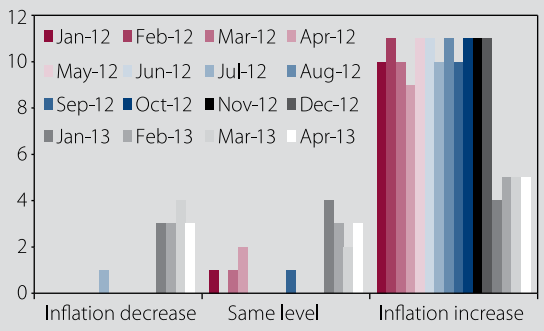
2.1. Banks expectations

Regarding inflatory forecasts of banks, based on the survey conducted in April 2013, three banks expected lower inflation rate, three banks expected the same inflation rate as in 2012 while five banks expected higher inflation rate in relation to 2012 (Graph 8).

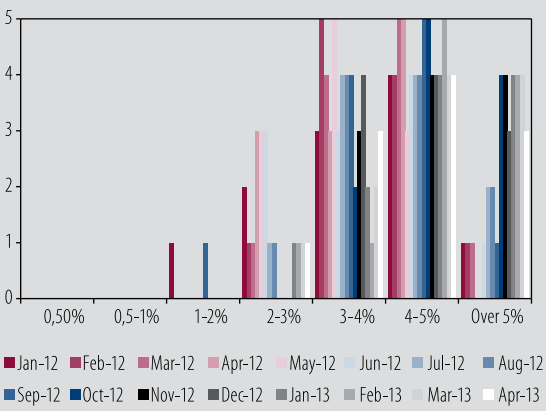
There were different expectations of banks with regards to the inflation. Four banks expected inflation to range from 4% to 5%. Three banks each expected the inflation to range from 3% to 4% and above 5%, while one bank expected the inflation to range from 2% to 3% (Graph 9).

Concerning the forecasts on nominal lending interest rates, eight banks forecasted unchanged levels, while three banks expected a decline of nominal lending interest rate. On the other hand, seven banks expected unchanged amount of effective interest rates, while four banks expected a decline. In April 2013, none of the banks expected an increase in nominal and effective lending interest rates.

Graph 8 - Inflation forecasts (banks)



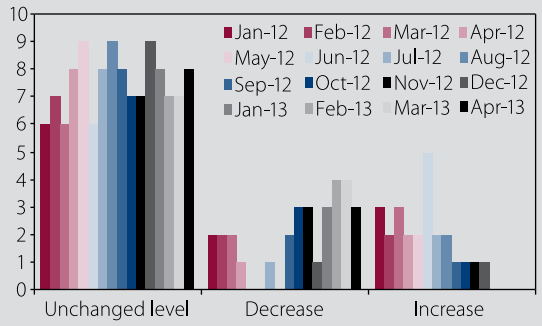
Graph 9 – Forecasted inflation level (banks)



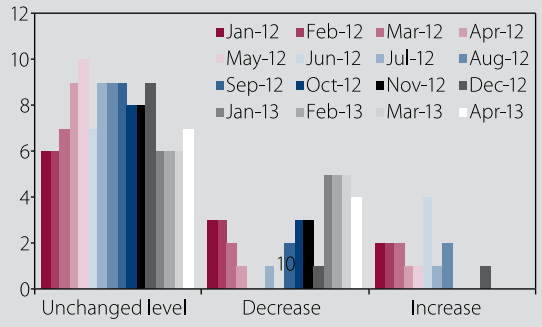
Regarding the deposit interest rates, seven banks expected unchanged amount while four banks expected a decline in deposit interest rates.

For the purpose of calculating inflation forecasts we use market trend indicator (black line in Graph 12). It is calculated as a 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, and vice versa, while higher positive value means higher inflation level forecasts. Inflation forecasts recorded a sharp decline in January 2013 and since then they maintained lower levels compared to the previous period, especially period of the last quarter 2012 when all banks expected inflation growth.

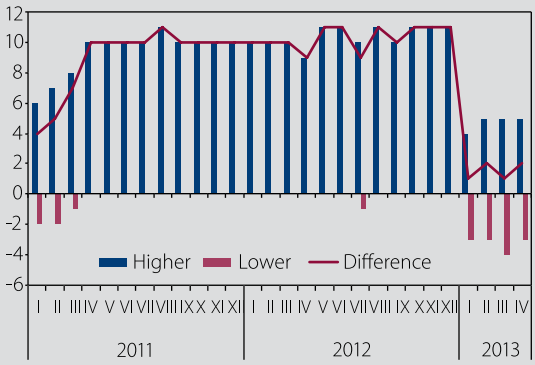
Graph 10 – Nominal lending interest rates forecasts



Graph 11 – Effective lending interest rates forecasts



Graph 12 – Market trend indicator



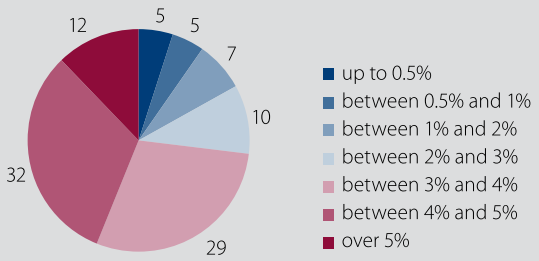
2.2. Expectations of economy (except banks)

Inflation

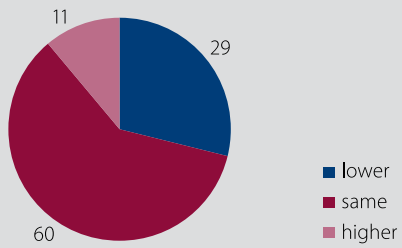
Out of total surveyed companies, 32% expected that inflation in 2013 would range between 4% and 5% relative to 2012. Inflation ranging between 3% and 4% is expected by 29% of companies, while 12% expected inflation above 5%. Inflation ranging between 2% and 3% is expected by 10% of the surveyed companies, while 7% expected inflation levels between 1% and 2%. Inflation ranging up to 0.5% and between 0.5% and 1% is forecasted by 5% each. Some 29% of companies expected decrease in salaries; some 60% expected unchanged levels relative to 2012, while only 11% expected increase in salaries. As for the number of employees, 54% of surveyed companies expected unchanged number, 29% of them believed in decrease and 17% expected an increase compared to 2012.

Most of surveyed companies (66%) expected the higher level of production input prices, and the same number expected the same prices of their products (services) in 2013.

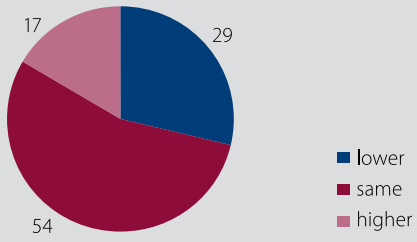
Graph 13 – Forecasted inflation in 2013 relative to 2012



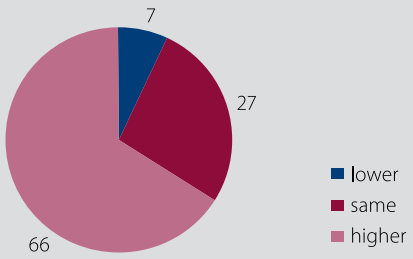
Graph 14 – Expected level of salaries in 2013 relative to 2012



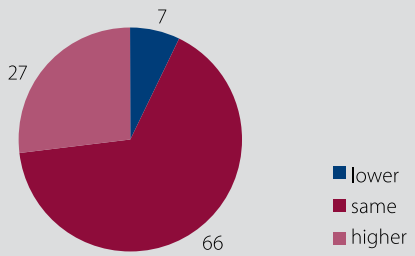
Graph 15 – Expected level in number of employees in 2013 relative to 2012



Graph 16 - Expected level of prices of production inputs in 2013 relative to 2012



Graph 17 - Expected level of prices of products (services) in 2013 relative to 2012

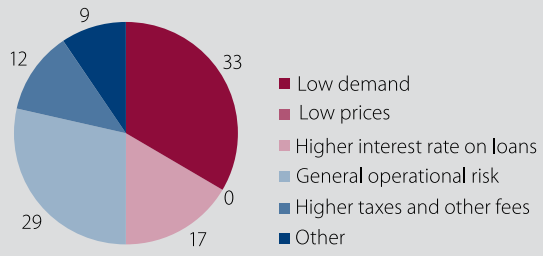


Business Environment

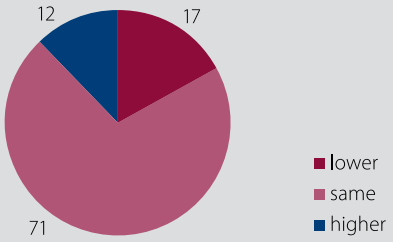
The survey results showed that most of the surveyed companies saw low demand (33%), general operational risks (29%) and high lending interest rates (17%) as red tape.

Besides, 71% of surveyed companies expected unchanged levels, 17% lower, while 12% of them expected higher lending interest rates in 2013 relative to 2012.

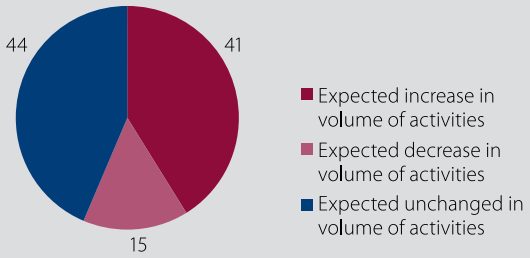
Graph 18 – Business barriers



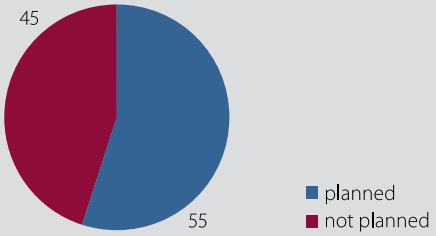
Graph 19 – Expected level of lending interest rates in 2013 relative to 2012



Graph 20 - Forecasted volume of activities in 2013



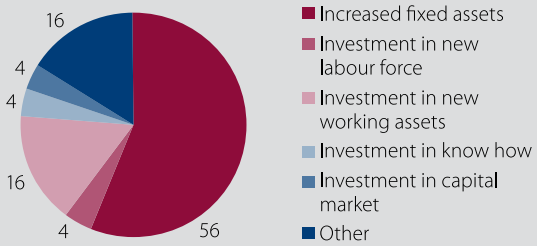
Graph 21 - New investments in 2013



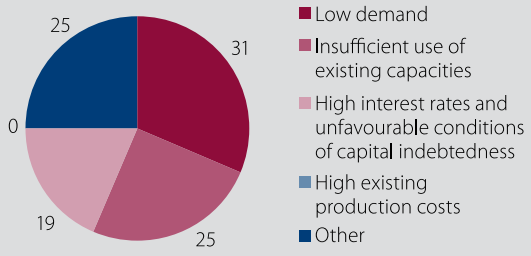
Investments

Out of the total number of surveyed companies, 41% planned the increase in volume of activities during 2013, while 55% planned new investments. Most investments (56%) referred to the increase in fixed assets, while low demand (31%), insufficient exploitation of existing capacities (25%), other obstacles (25%) and high interest rates and unfavourable conditions for capital borrowings (19%) were described as largest barriers to new investments.

Graph 22 - Types of forecasted new investments in 2013



Graph 23 – Obstacles to new investments in 2013

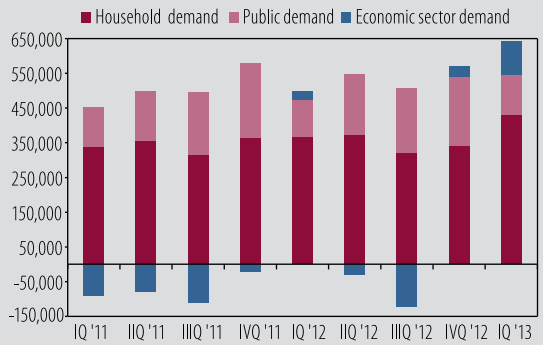


3. INFLATION DETERMINANTS

3.1. Demand

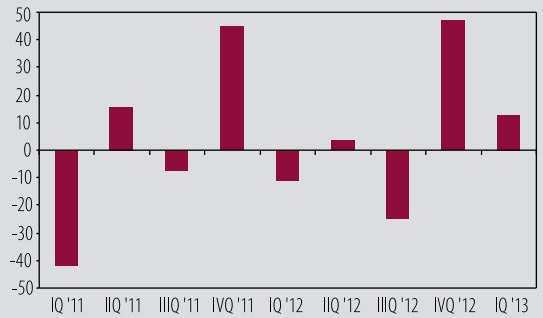
According to the preliminary data, aggregate demand recorded an increase[1] in Q1 2013 compared to Q1 2012 as well as compared to Q4 2012. The structure of total demand, compared to the Q4 2012, shows the increase in share of household and economic sector demand, and the decrease in public consumption.

Graph 24 - Aggregate demand, EUR thousand



Aggregate demand recorded an increase in Q1 2013 compared to Q1 2012 as well as compared to Q1 2011.

Graph 25 - Quarterly rates of aggregated demand



[1] *The increase is partly caused by methodological changes of the monetary statistics referring to statistics of households and economy.*

Box 1 - Aggregate demand calculation methodology

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 the 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 incomes, non-observed economy revenues, and the like. The methodology for calculating the aggregate demand is given in the following equation:

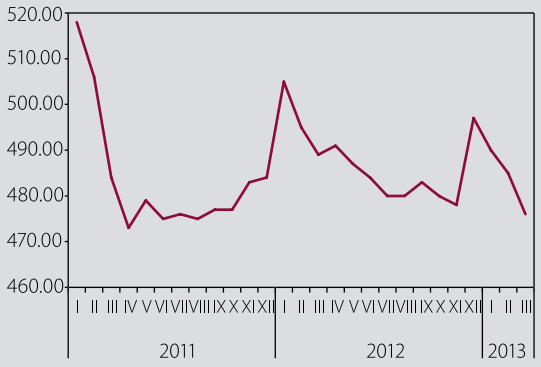
$$AD = C + I + G$$

C = sum of paid salaries + sum of paid pensions + 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

In Q1 2013, the average gross salary in Montenegro amounted to EUR 729, while average salary without taxes and contributions amounted to EUR 484. Average salary recorded a 0.8% increase compared to Q4 2012 while average salary without taxes and contributions recorded a decline of 0.3%. Compared to Q1 2012, the average gross salary as well as the average salary without taxes and contributions decreased by 1.5% i.e. 2.4%.

Graph 26 - Average salaries without taxes and contributions in Montenegro



Source: Monstat

Graph 27 – Real wages (monthly rate)

Source: Monstat

Taking into account the consumer prices, i.e. salaries in real amounts, it can be concluded that real salaries only grew in February. Their decline was recorded in January and March.

At the end of March 2013, households' loans amounted to EUR 865.5 million. Compared to end-2012 households' loans increased by 7% while compared to March 2012 they increased by 4.4%. During Q1 2013 households' loans increased at the average monthly rate of 2.3% while at the same period in 2012 the loans in this sector declined on average rate of 0.2%.

Debt per capita[2] amounted to EUR 1,396 at end-Q1 2013, and it was EUR 91 higher compared to end-2012 i.e. EUR 59 higher compared to Q1 2012.

Graph 28 – Loans to households, in EUR thousand

Household loans in MFIs amounted to EUR 33.3 million at end-Q1 2013, which is 18.1% more compared to end-2012, i.e. 6.1% more compared to Q1 2012.

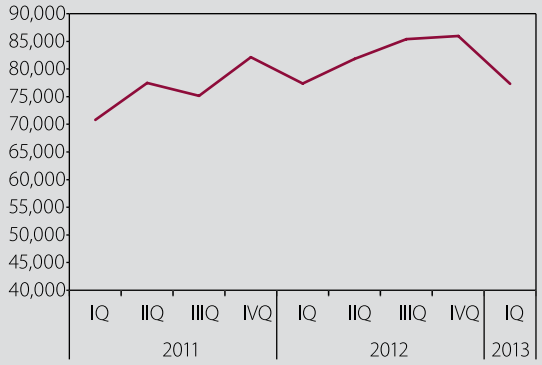
Deposits of the household sector amounted to EUR 1,165 million at the end of March 2013, which is 1.6% more compared to end-2012, i.e. 12.7% more compared to March 2012.

Loans to deposits ratio amounted to 0.74 at the end of March 2013, and compared to end-2012 it deteriorated (0.71), while it improved in comparison to March 2012 (0.80). Since July 2010, the households sector became a net depositor. At the end of March 2013, net savings by households amounted to EUR 299.4 million and was decreased by EUR 38.2 million i.e. 11.3% compared to end-2012, while net savings of this sector increased by EUR 94.2 million, i.e. 45.9% relative to March 2012.

In Q1 2013 there was a slight decline in inflow of remittances, which is largely a result of lower inflow based on foreign gifts and assistance to natural persons compared to Q1 2012.

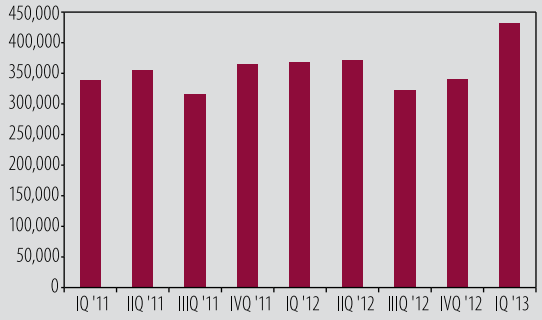
The total demand of household sector by quarters shows significant increase of demand in Q1 2013 relative to previous quarters, especially compared to demand from previous two quarters.

Graph 29 - Inflow of foreign funds to households, EUR thousand



Source: CBCG

Graph 30 - Households' demand, EUR thousand



[2] *Population data is a result of 2011 census.*

3.1.2. Budgetary analysis

Budget of Montenegro

In the period January – March 2013, Montenegrin Budget, according to Ministry of Finance preliminary data, recorded total revenues[3] amounting to EUR 283.1 million.

Source revenues amounted to EUR 218.5 million or 6.2% of estimated GDP[4], and in relation to the plan, they increased by 3.3%, and they showed a y-o-y increase of 13.3%. Tax revenues recorded the highest share in the structure of current revenues (62.1%), followed by contributions (31.4%), other revenues (2.3%), duties (2.3%), fees (1.6%) and repayment of loans granted (0.3%).

Tax revenues amounted to EUR 135.7 million and were by 3.2% higher than planned, as well as showing y-o-y increase of 13.6%. Nominally, the highest increase of revenues compared to 2012 was realised in VAT, amounting to EUR 12.8 million or 19.3%. This increase of VAT revenues came as a result of implementation of measures to combat the gray economy.

Lower tax revenues were registered in taxes on foreign trade, in the amount of EUR 3.3 million, i.e. 43.8%, which is a result of the agreement with WTO coming into force in H2 2012.

Revenues from contributions amounted to EUR 68.6 million or 6% more in relation to plan for Q1 2013, and they showed y-o-y increase of 11.1%.

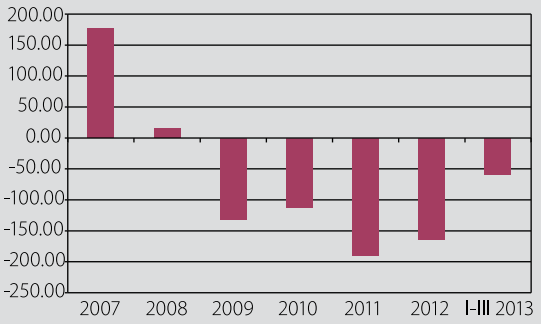
In Q1 2013, **budget expenditures** amounted to EUR 278.2 million or 8% of GDP. Realised expenditures were 11.5% lower than planned for Q1 2013, while they were 3.5% higher relative to Q1 2012.

Current budget consumption amounted to EUR 271.6 million or 7.8% of GDP while capital budget amounted to EUR 6.6 million or 0.2% of GDP.

Current expenditures amounted to EUR 128.5 million or 13.1% lower than planned. Almost all expenditures, except expenditures for subsidies, were below planned.

The Montenegrin Budget deficit[5] was estimated at EUR 59.7 million, or 1.7% of GDP.

Graph 31 – Budget surplus/deficit in the period 2007 – March 2013, in EUR million



Source: Ministry of Finance

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 substantially above than their deposits with banks in Q1 2013. Net debt of the corporate sector at end-Q1 2013 amounted to EUR 488.4 million, i.e. 26.6% more compared to end-2012, while it was 3.3% lower compared to end-Q1 2012.

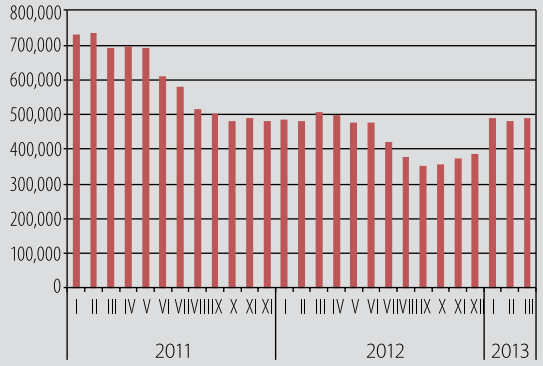
The structure of loans granted to the corporate sector shows that the share of long-term loans in total loans granted to this sector amounted to 72% at the end of the reporting period, whereby loans with maturity over 3 years made up over 51% of total loans granted to the corporate sector. This structure of loans points to their dominant use for increasing the economic activity.

[3] *Revenues include source revenues (direct and indirect taxes and non-tax revenues), borrowings, donations and revenues from privatization and sale of properties.*

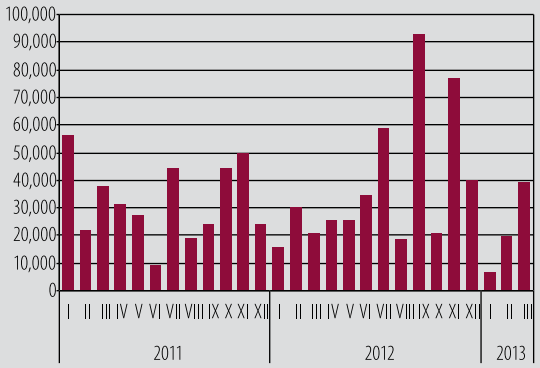
[4] *Source: Ministry of Finance; estimated GDP for 2013 amounts to EUR 3,500 million.*

[5] *Budget deficit represents difference between source revenues and expenditures.*

Graph 32 - Net indebtedness of the corporate sector, EUR thousand



Graph 33 – Net FDI inflow in the period 2011 – March 2013, in EUR thousand



Source: CBCG

3.1.4. External demand and the current account

In Q1 2013, current account deficit declined, resulting from positive trends at the goods account. According to preliminary data, current account deficit amounted to EUR 192.2 million, showing a y-o-y decrease of 18.8%. Movements in the current account balance were mostly influenced by movements in the goods account, i.e. decline in foreign trade deficit by 13%. Deficit decline came as a result of increased export of goods by 6.3%, along with a decline in import by 9%. These movements were mostly influenced by increased export and reduced import of electricity, as well as decline in import of oil and oil derivatives compared to Q1 2012.

When it comes to foreign invisible trade in Q1 2013, Montenegro recorded a surplus amounting to EUR 6.6 million, while subaccounts of factor income and current transfers recorded a surplus in the amount of EUR 59.5 million or 11.6% more compared to Q1 2012. Factor income account recorded a surplus of EUR 33.2 million, which is more compared to Q1 2012 when surplus amounted to EUR 22 million. Factor income revenues recorded a y-o-y increase of 6.8%, while revenues recorded a decline of 30.4% as a result of decline in revenues based on repayment of interests in the amount of EUR 12.4 million. During the reporting period, current transfers account recorded a surplus amounting to EUR 26.3 million or 16.6% less compared to the same period in 2012, which comes as a result of lower inflow based on foreign gifts and assistance.

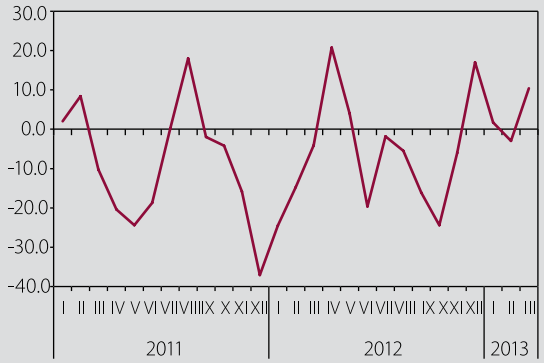
In Q1 2013, according to preliminary data, net FDI inflow amounted to EUR 65.5 million which is 2.2% less compared to the same period of 2012.

During the reporting period, the highest inflow was realised based on intercompany debt in the amount of EUR 40.7 million or 49.9% of total FDI inflow. Equity investments recorded an inflow of EUR 39.8 million, i.e. 48.7% of total inflow. When it comes to the structure of equity investments, the largest share refers to inflow based on real estate investments in the amount of EUR 36.9 million, while investments into companies amounted to EUR 2.9 million.

3.2. Supply and production

In Q1 2013, industrial output recorded y-o-y increase of 3.3%, primarily due to increase in electricity, gas and water supply sector by 66.3%. The output decrease was recorded in mining and quarrying sector and manufacturing industry sector by 6.7% and 34.5%, respectively. Monthly data on industrial output in the Q1 2013 show increase in February and March by 2% and 24.6%, respectively, while monthly decrease was recorded in January (-17%).

Graph 34 – Industrial production, annual growth rate



Source: Monstat

Some 53.5 thousand tourists visited Montenegro in Q1 2013, which was y-o-y growth of 7.3%. The number of domestic tourists arrivals decreased by 11%, while foreign tourists' arrivals increased by 14.3%. The number of overnights in the observed period amounted to 190.6 thousand or y-o-y decline of 2.1%.

In the first three months of this year, total wood production amounted to 10.778m^3 of wood products or a y-o-y increase of 834.9%. This is a result of extremely low basis in January 2012, i.e. absence of production in February 2012.

The value of executed construction works in Q1 2013 showed a y-o-y increase of 5.7%, while construction activity measured by effective working hours recorded an increase of 33%.

In Q1 2013, air passenger transport recorded y-o-y growth of 3.1% while air freight transport declined by 5.4%. Road passenger transport[6] recorded y-o-y decline of 4.1%, while road freight transport declined by 10.1%. Railway passenger transport and railway freight transport increased by 19.4% and 7.1%, respectively.

3.3. Stock exchange indices

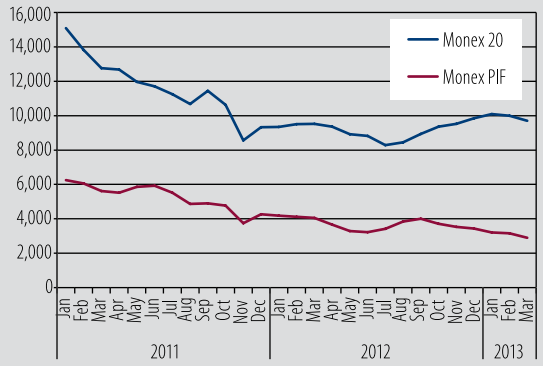
After a slight growth in January, Monex 20 recorded a decline during the last two months of Q1 2013. On the other hand, investment funds index, Monex PIF continued to record negative trends from last quarter 2012 and recorded a decline throughout Q1 2013.

In relation to end-2012, Monex 20 recorded an absolute decline of 156.61 index points or 1.6%, while Monex PIF decreased by 538.71 index points or 5.7%.

Compared to the end of March 2012, Monex 20 recorded an increase of 1.7%, while Monex PIF recorded a decline of 28.3%.

At end-March 2013, with regard to their historical maximum values (reached in 2007), Monex PIF and Monex20 declined by 5 times i.e. 17.5 times.

Graph 35 - Montenegro stock exchange indices



Source: Montenegro Stock Exchange

[6] *Data for all types of transportation, except for airport turnover (which remains to be a monthly indicator), will be quarterly published by Monstat.*

Table 3 – General Data on Indices

	MONEX 20		MONEX PIF	
Value as of 31 March 2013	9,693.31		2.903.13	
Absolute change of index in 2013	-156.61		-538.71	
Initial index value	1000.00	March 2003	1000.00	March 2003
Maximum value in 2013	10,247.75	16.01.2013	3,432.40	28.01.2013
Maximum historical value	48,617.88	07.05.2007	50.780.54	17.08.2007
Minimum historical value	918.57	14.04.2003	959.53	02.04.2003
Growth (decline) in 2013	-1.6%		-5.7%	

Source: Montenegro Stock Exchange

4. MONETARY POLICY

In the Q1 2013, there were neither change in existing, nor new decisions were passed referring to the CBCG monetary policy instruments.

5. INFLATION FORECAST FOR 2013 AND Q1 2014

5.1. Model assessment

Montenegro's inflation fan chart represents a graph of probability distribution of inflation rate presented by the consumer price index (CPICG). In that direction, instead of determining concrete points, by using the distribution of probability the „Fan Chart" includes potential risks and uncertainties which would in the future period influence the movement of inflation. The fan chart is aimed at considering uncertainties in the real economy flows, which result in the inflation rate movement (increase in energy prices, increase/decrease in the foreign trade deficit).

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

1. **Central projection values** – were derived from ARIMA model and use Tramo/Seats simulation for the purpose of obtaining more efficient model.

2. **Degree of uncertainty** – determines the fan chart width. The degree of uncertainty ratio is 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 read through "thickness" of the band around central projection.

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

Fan Chart central projection - ARIMA model for 2013 and Q1 2014

With a view to developing a fan chart, an ARIMA (Autoregressive Integrated Moving Average) model was developed of time series of inflation of Montenegro showed through the Consumer Price Index[7].

ARIMA model was used for short term forecasts (12 months), whereby iteration of 327 ARIMA models was made, which were ranked based on their efficiency and quality of diagnostics. The selected ARIMA model, ARIMA(3,2,3)[8] has sufficient confidence level for forecasts.

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[7] *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".*

[8] *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.*

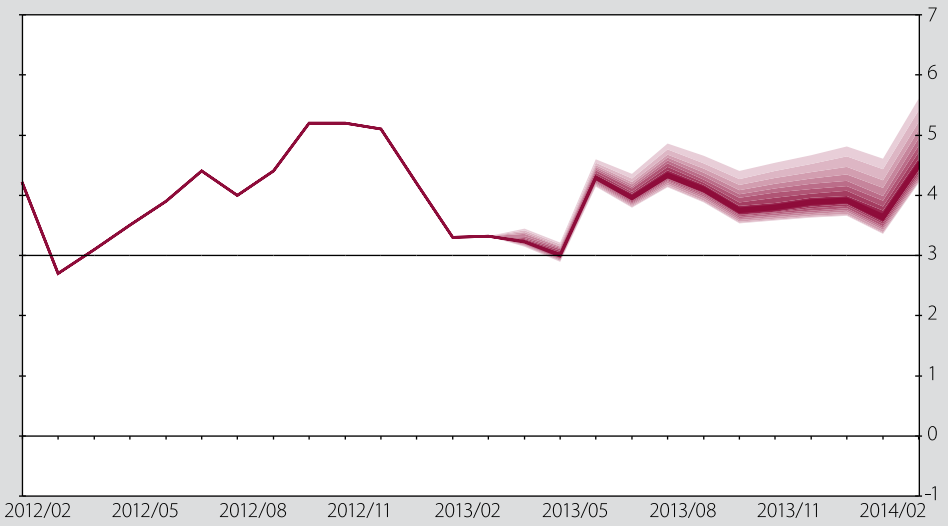
Based on Tramo/Seats[9] procedure, 4 bands (Chow Test was used for identification) have been identified so far, which correspond to a significant change in inflation structure from 2001 to end-2013 and which are included in the ARIMA model through dummy variable.

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 and Q1 2014. 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 3.5, while skewedness varied from -0.30 to 0.80, and standard deviation values were σ2=0.06 i.e. σ1=0.04. 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 is 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.[10] 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.

Graph 36 – Projected Consumer Price Index of Montenegro for 2013 and Q1 2014



Source: CBCG, 2013

[9] *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).*

[10] *The mode value (central projection) is, by construction, always 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 2013 and Q1 2014 shows with 90% probability that **the inflation, measured by CPI depending on month, will range between 2.9% and 5.7%. It is estimated that the inflation will range from 3.9% to 4.9% 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 and Q1 2014:

1. Oil and oil derivative prices will not exceed 5% of the prices in March 2013;
2. Aluminium prices will remain stagnant relative to March 2013;
3. Real estate prices are stagnant relative to end of 2012;
4. Price of electricity growth does not exceed 5% (potential growth in August 2013 not included);
5. Real wages in 2013 are at the 2012 level;
6. There will be no significant increase in prices of food products in relation to December 2012;
7. There will be an increase of VAT by 2 percentage points from July 2013 for higher VAT rate.

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

6. EXPECTED INFLATION IN 2013

Taking into account insufficient reliability of statistical data, insufficiently long time series, and often the presence of one-off shocks, the CBCG complements the model assessment with the expert assessment on inflation.

At end-Q1 2013, the annual inflation rate amounted to 3.3%, which is a decline relative to annual inflation rate in 2012, but remains to be slightly above inflation rate in the EMU.

The level of aggregate demand in Q1 had an upward trend, primarily due to increase in aggregate demand in the household and economy sector. The level of aggregate demand in Q1 2013 was higher compared to Q1 and Q4 2012, which is not common considering that a seasonal decline in demand is usually recorded Q1. On the other hand, there is an increase in production, but the increase of aggregate demand surpassed the increase in production.

The most of the surveyed enterprises expected inflation between 4% and 5%. Compared to the previous forecast from December, we decided to increase the inflation projection owing to expected introduction of VAT that will impact the increase of prices as well as due to increase in aggregate demand.

Our inflation forecast is similar to model-based assumption which estimates that at end-2013 inflation will range between 3.9% and 4.9%. Therefore we expect at end-2013 the inflation will range between 3% and 5%.

Table 4 – Estimated inflation rate

Optimistic assessment	Realistic assessment	Pessimistic assessment
3%	4%	5%

Experts' assessment is based on the same assumptions as the model assessment. Also, we assumed that the traders will not abuse increase of VAT to increase other prices. The change in any parameter used for this forecast would require the revision of the forecast.