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1. INFLATION INDICATORS

In Q2 2016 in Montenegro, consumer prices increased by 0.7%, with the highest growth rates in the categories *hotels and restaurants* 5.6%, followed by prices of *transport* 3.9% and *alcoholic beverages and tobacco* 2.2%. Observing the trend of prices on a monthly basis, consumer prices growth was recorded in all three months of the second quarter: April (0.4%), May (0.2%) and June (0.1%). At the annual level, consumer prices in June fell by 1%, while the average rate (period on period) amounted to -0.5%.

Table 1

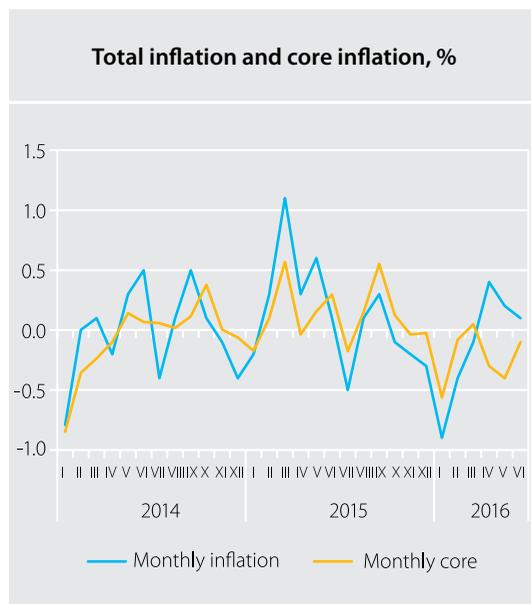
Inflation, %						
	2015				2016	
	III	VI	IX	XII	III	VI
Change in relation to the previous year end	1.2	2.2	2.1	1.4	-1.3	-0.6
Annual change	1.6	1.9	1.7	1.4	-0.9	-1.0

Source: Monstat

Hotels and restaurants recorded the most significant increase of 5.6%, mostly due to the increase in the prices of accommodation by 23.6%. Prices in the category *transport* have increased by 3.9%. This was due to higher prices of fuels and lubricants by 9.8%. This had an impact on *transport* category, which with the category *food and non-alcoholic beverages*, where prices rose by 1.2%, recorded the highest positive contribution to overall inflation of 0.4 percentage points. In the category *food and non-alcoholic beverages* higher were the prices of fruits (19.9%), vegetables (6.6%), fish and seafood (2.5%), milk, cheese and eggs (0.8%), food products (0.5 %) and sugar, jam, honey and chocolate (0.2%), while the decline was recorded in meat prices (-2.4%), oils and fats (-0.6%), bread and cereals (-0.5 %) and non-alcoholic beverages (-0.3%). During this period prices in the category *alcoholic beverages and tobacco* increased by 2.2%, mainly due to higher prices of tobacco by 3.3%, and in the categories *health* (0.7%) and *communications* (0.2%). The largest price drop of 1.6% was recorded in the category *housing, water, electricity, gas and other fuels*, whereby prices of electricity, gas and other fuels recorded the highest decline of 2.1%. During the second quarter, the prices in the categories *clothing and footwear* decreased by 1.2%, *furnishings, household equipment and routine household maintenance* by 1%, *other goods and services* by 0.8% and *recreation and culture* by 0.5%. Prices in the category education remained unchanged in the second quarter.

The monthly **core** inflation had a lower level than the official monthly inflation. Officially published monthly inflation had a positive rate, while core inflation recorded a negative rate during the three months.

Graph 1



Source: Monstat

In Q2 2016, there was a rise in oil prices in relation to Q1. The price of reference OPEC basket averaged 42.3 USD/barrel, which is 17.1% more compared to the average price in the first quarter of this year. The average price of Brent in the second quarter was 45.5 USD/barrel, which is 34.3% more compared to the average price in the first quarter of this year. Growth of oil prices at world markets in Q2 is the result of interruptions in supply, with large losses recorded in Canada because of the fire at the oil sand fields and Nigeria due to militant attacks on energy infrastructure in the country. Interruption in oil production was also recorded in Libya, Kuwait and Iraq. The highest price of Brent in the second quarter was recorded in June, when it stood at 48.28 USD/barrel, which is the highest price in the first half of this year. According to the latest forecast of the World Bank it is expected that the average oil price in 2016 will amount to 43 USD/barrel¹.

Table 2

Share of individual categories in total inflation ²				
	Weights	VI 16/III 16 index	Rate	Contributions
TOTAL	1000	100.7	0.7	0.7
Food and non-alcoholic beverages	351.7	101.2	1.2	0.4
Alcoholic beverages and tobacco	38.6	102.2	2.2	0.1
Clothing and footwear	85.1	98.8	-1.2	-0.1
Housing, water, electricity gas and other fuels	155,3	98,4	-1,6	-0,2
Furniture, household equipment and routine household maintenance	41.2	99.0	-1.0	0.0
Health	40.9	100.7	0.7	0.0
Transport	107.0	103.9	3.9	0.4
Communications	49,9	100.2	0.2	0.0
Recreation and culture	33.2	99.5	-0.5	0.0
Education	19,3	100.0	0.0	0,0
Hotels and restaurants	31.3	105.6	5,6	0.2
Other goods and services	46.5	99.2	-0.8	0.0

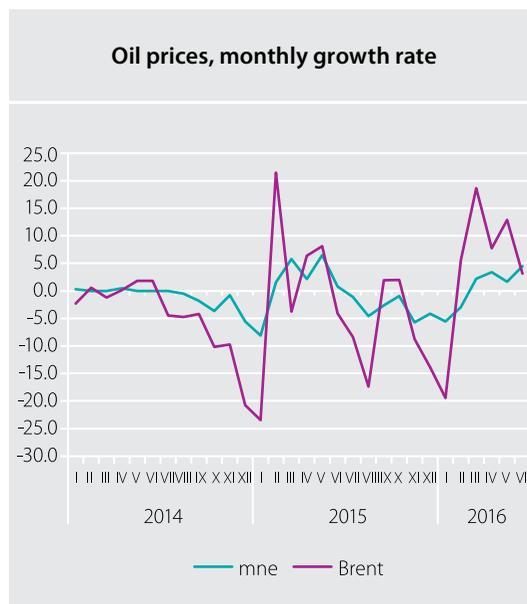
Source: Monstat and CBCG calculations

¹ Source: World Bank: „Commodity Markets Outlook“, July 2016

² We note that, despite the index changes, the contribution of share of individual categories for weighting structure is recorded only at the second or third digit.

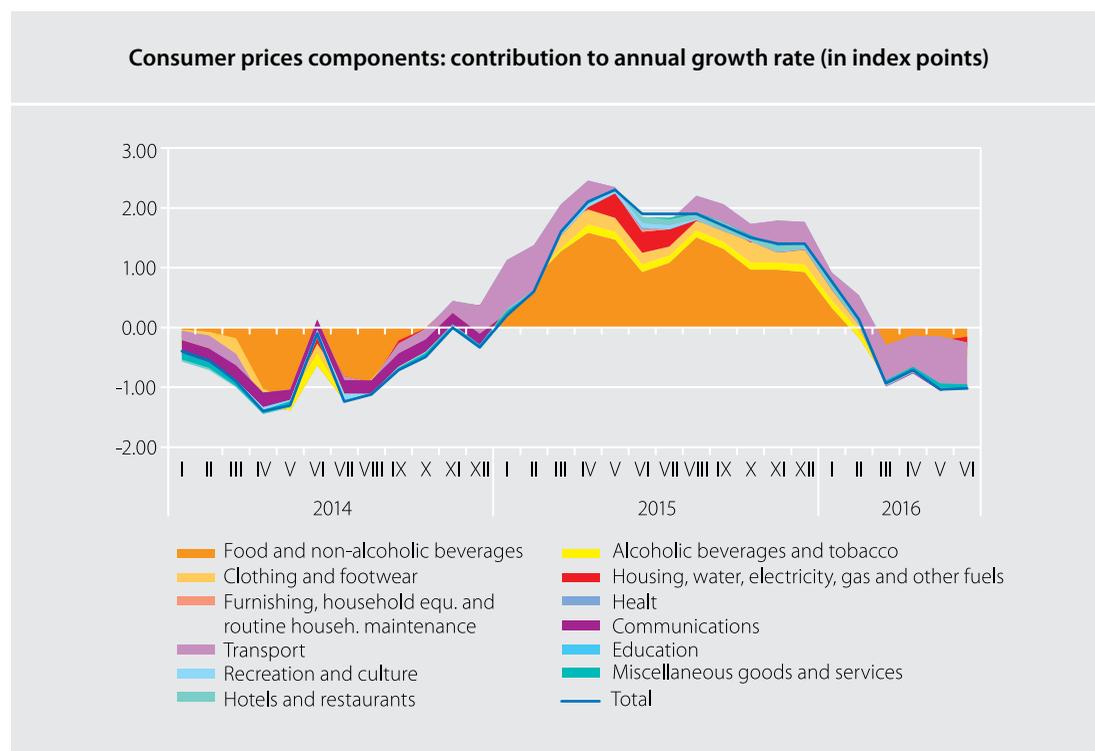
The fall in prices, annually, in the category *transport* of 6.9% gave the largest contribution to the decline (-0.7 percentage points) to the total annual inflation rate of -1.0%. The annual decline in prices in June was recorded in the following categories: *food and non-alcoholic beverages* (-1.4%), *other goods and services* (-1.3%) categories housing, water, electricity, gas and other fuels and *furniture, household equipment and routine household maintenance* (-0.9%) and the category *recreation and culture* (-0.4%). The price growth on an annual basis was recorded in prices of the following category: *clothing and footwear* (2.7%), *alcoholic beverages and tobacco* (2.6%), *health* (2.0%), *hotels and restaurants* (0.9%) and *communication* (0.5%). Prices in the category education remained unchanged in relation to the previous year.

Graph 2



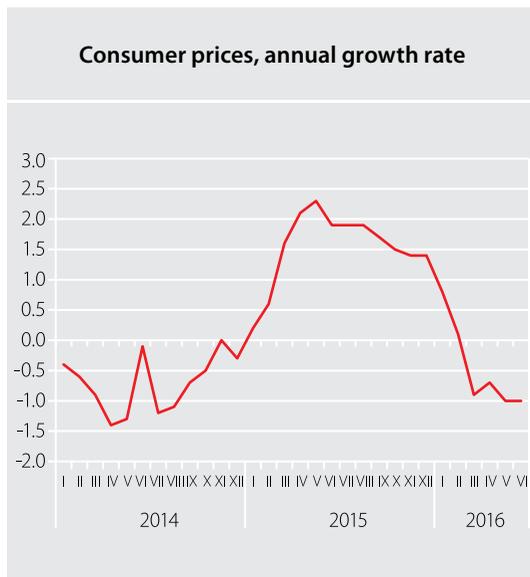
Source: Monstat and "Monthly Oil Market Reports", OPEC

Graph 3



Source: Monstat and CBCG calculations

Graph 4

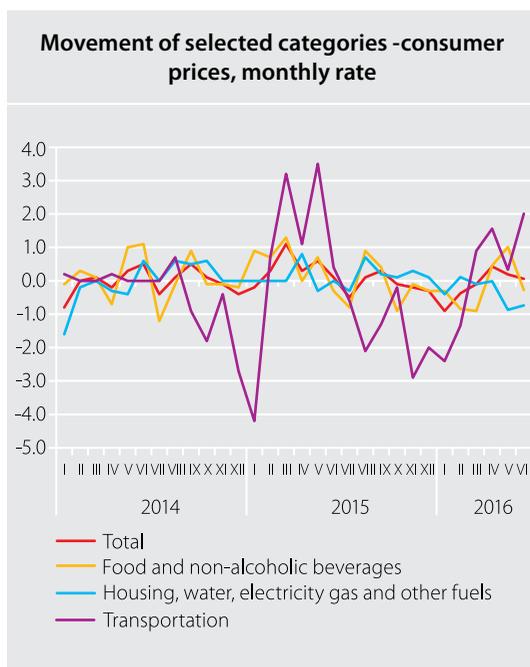


Source: Monstat

The **producers' prices of manufactured products** in June recorded a 0.3% decrease in relation to end-2015. Prices in the sector of electricity, gas and steam supply declined by 1%, whereas prices in mining and quarrying sector increased by 2.3%. Prices in manufacturing industry remained unchanged. On an annual level, producers' prices of manufactured products remained unchanged.

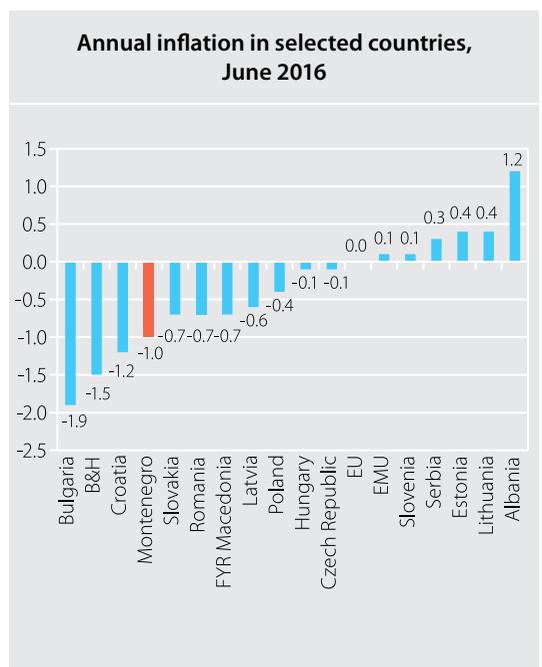
The comparison of annual inflation recorded in Montenegro and inflation in selected countries shows that the negative annual rate, in addition to Montenegro, was recorded in most of the observed countries. Positive inflation rate was recorded only in Albania (1.2%), Lithuania and Estonia (0.4%, respectively), Serbia (0.3%) and Slovenia (0.1%). The highest negative annual inflation rate was recorded in Bosnia and Herzegovina (-1.5%), Croatia (-1.2%) and Macedonia (-0, 7%).

Graph 5



Source: Monstat

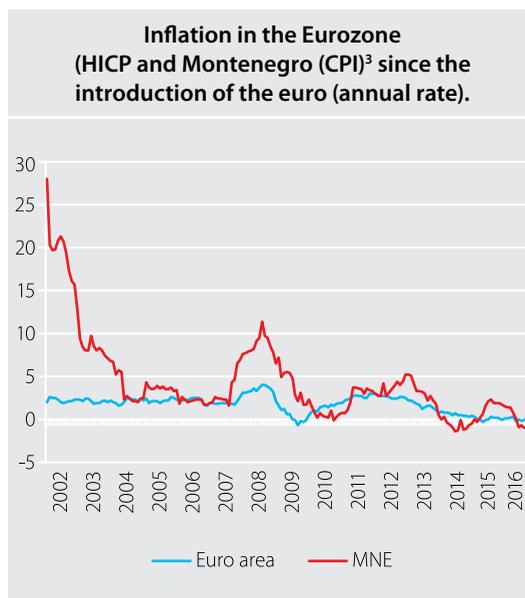
Graph 6



Source: National statistical offices and Eurostat

The annual inflation rate recorded in Euroarea, measured by the harmonized index of consumer prices was 0.1%, and inflation in Montenegro, measured by consumer prices amounted to -1%, while the annual inflation rate in June, measured by the harmonized index in Montenegro amounted to -0.6%.

Graph 7



Source: Monstat and Eurostat

³ Cost of living and consumer prices for Montenegro served as a measure of inflation until 2009.

2. INFLATORY EXPECTATIONS

2.1. Banks' Expectations

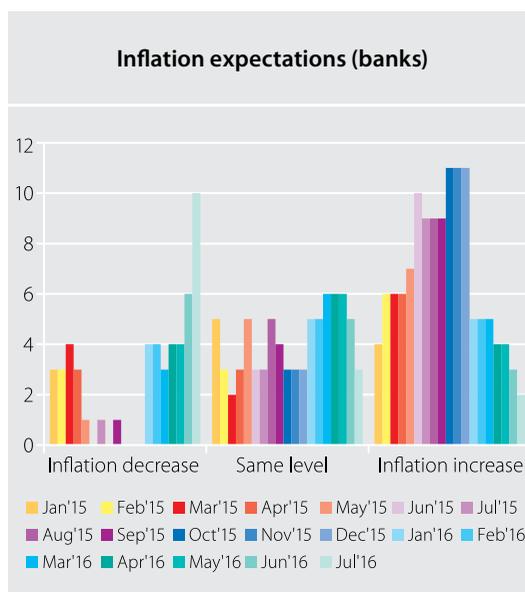
When it comes to inflation expectations of banks, based on a survey conducted in July this year, ten banks expected lower inflation rate, the same level of inflation expected three banks, while a higher inflation rate in 2016 compared to 2015 will play two Bank (Graph 8).⁴

As Graph 9 shows, there are different expectations of banks on the movement and the amount of inflation by the end of this year. Six banks expected inflation between 0.5% and 0%, four banks expected level of inflation between 0.5% and 1%, while three banks expect inflation between 0% and 0.5%. The level of inflation between 1.5% and 2% and over 2% was expected by one bank, while inflation between -1% and -0.5%, and between 1% and 1.5% was expected by no interviewed bank.

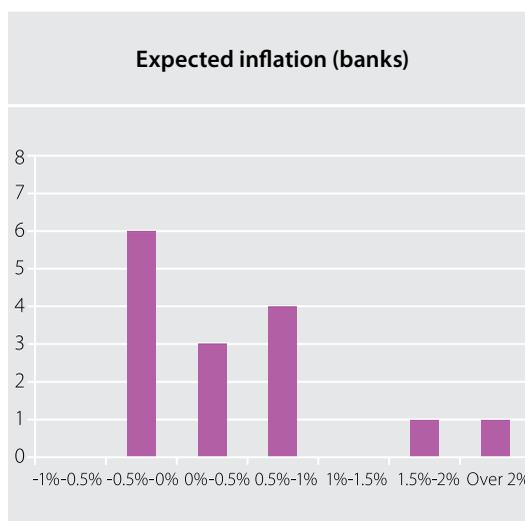
Regarding expectations about the movement of nominal lending interest rate, thirteen banks expected decline in active nominal lending interest rates, two banks considered they will remain at the same level, while no bank does expected the active growth of nominal lending interest rates. Identical were expectations of banks also with regard to movements of efficient lending interest rates.

When it comes to expectations of banks on the movement of deposit interest rates, twelve banks expected decline in deposit rates, three banks believe that they will remain at the same level, while none of the surveyed banks do not expect growth in deposit interest rates in 2016 compared to 2015.

Graph 8

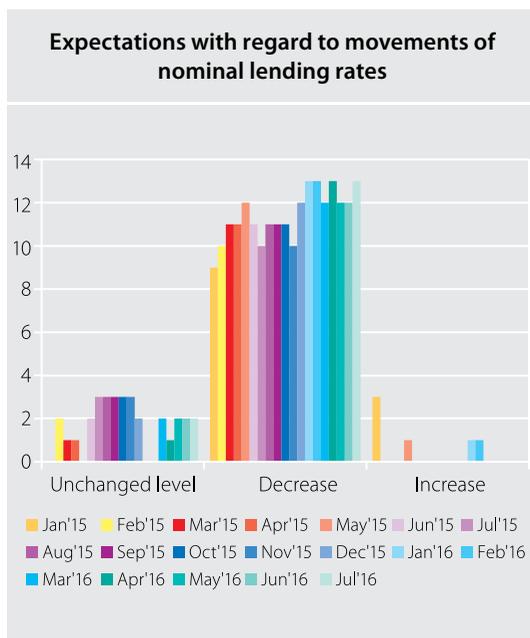


Graph 9

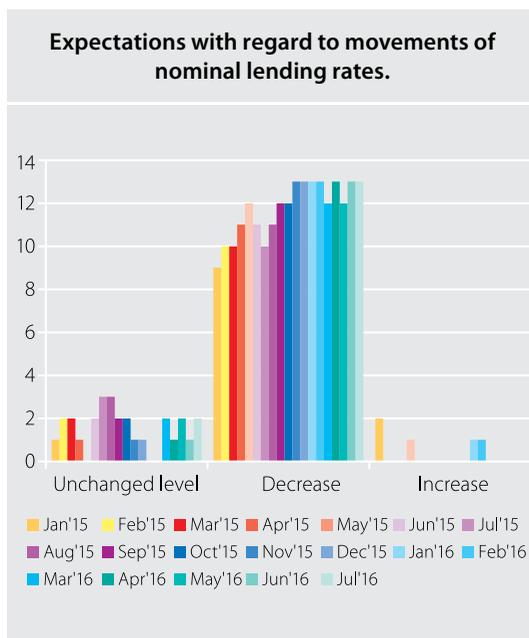


⁴ Since July 2016, the survey included a new Azmont bank.

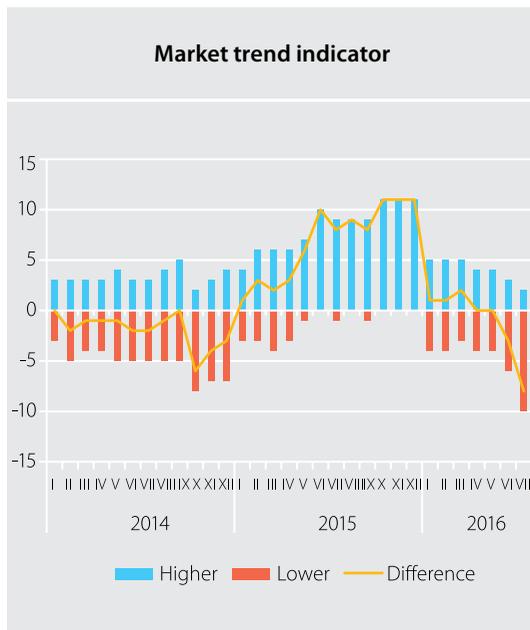
Graph 10



Graph 11



Graph 12



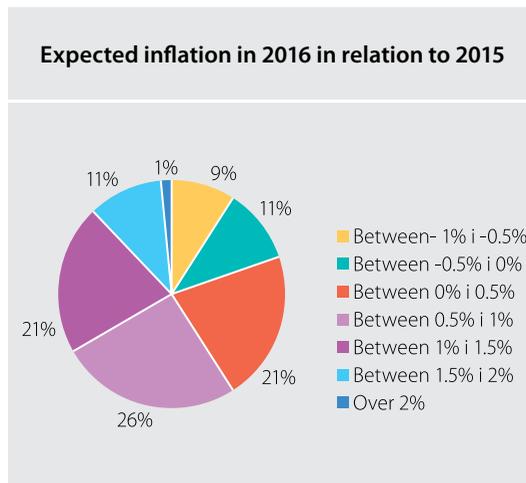
For the purpose of calculating inflation expectations we use market trend indicator (line in the Graph 12). It is calculated as the difference between the number of banks that expect an increase in inflation and the number of banks expecting inflation decrease. If the market trend indicator has a negative value, inflation rate decline is expected in the coming period. If there is a positive value inflation is to be expected in the coming period. If it has a zero value, unchanged inflation rate is expected. The more its value is negative inflation expectations are lower, while higher positive value means higher level of inflation expectations. Inflation expectations in the previous year were significantly high, especially in the last quarter when all banks expected inflation growth. During the first six months of 2016, inflation expectations were significantly lower level than in the previous period.

2.2. Corporate Sector Expectations (other than banks)

Inflation

Of the total number of surveyed companies most of them, 26%, believe that the inflation will range between 0.5% and 1% in 2016. That the inflation will range between 0% and 0.5% and between 1% and 1.5% was expected by 21% of surveyed companies, while 11% expected inflation between 0.5% and 0%, and between 1.5% and 2% (Graph 13). That wages and salaries will not change in 2016 compared to the previous year was expected 80% of surveyed companies, lower level of income is expected by 6%, while 14% of surveyed companies expected increase in 2016. In terms of the number of employees in the same period, 72% of respondents believe that the number will not change, and 19% expected increase, while 9% believe that the number of employees will decline in the current compared to the previous year.

Graph 13

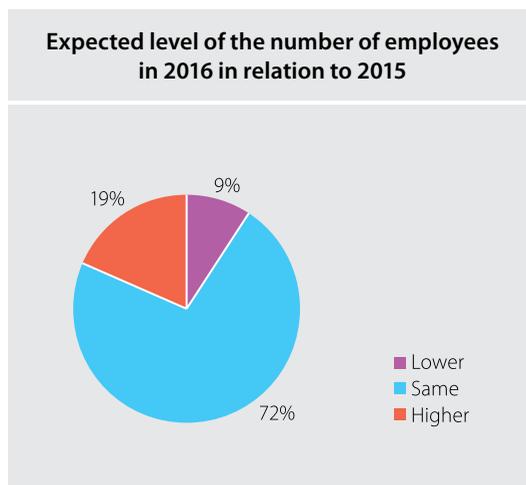


The majority of surveyed companies (66%) expects the same level of prices of production inputs, and 77% of respondents expect the same prices of their products (services) in 2016.

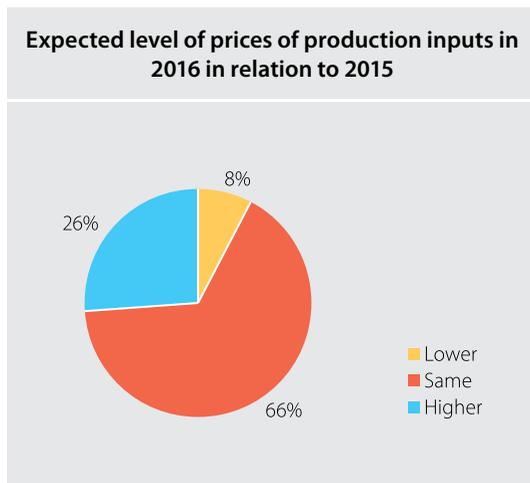
Graph 14



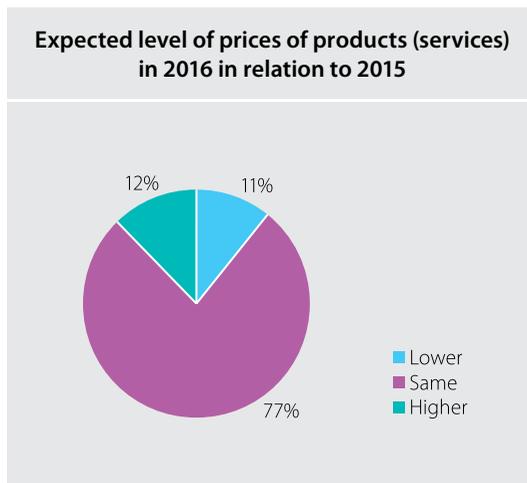
Graph 15



Graph 16



Graph 17

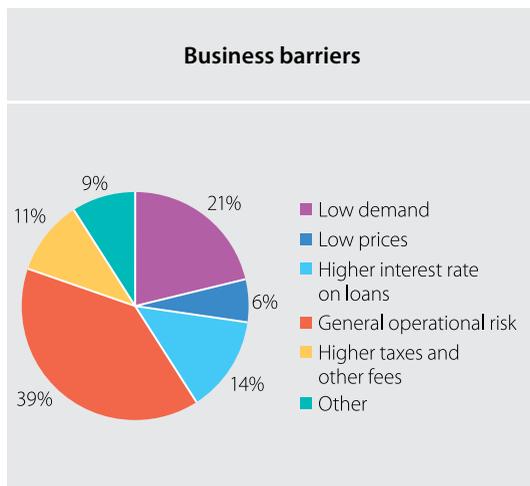


Business environment

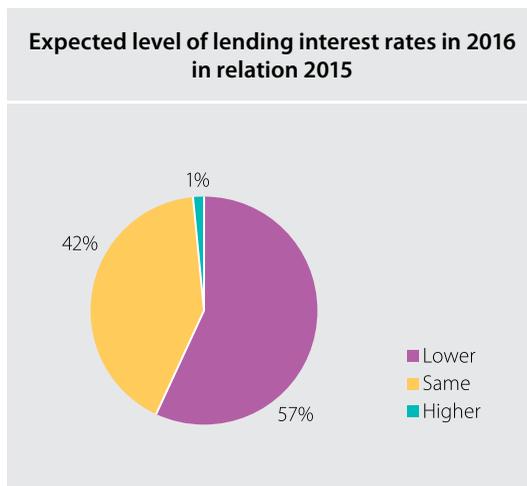
The survey results show that most of the surveyed enterprises in the field of business barriers, saw general business risks (39%) as an obstacle, low demand (21%) and high interest rates on loans (14%).

In fact, 57% of surveyed companies expected lower level, the same level is expected from 42% companies, while 1% expected higher level of lending interest rates in 2016 compared to 2015.

Graph 18



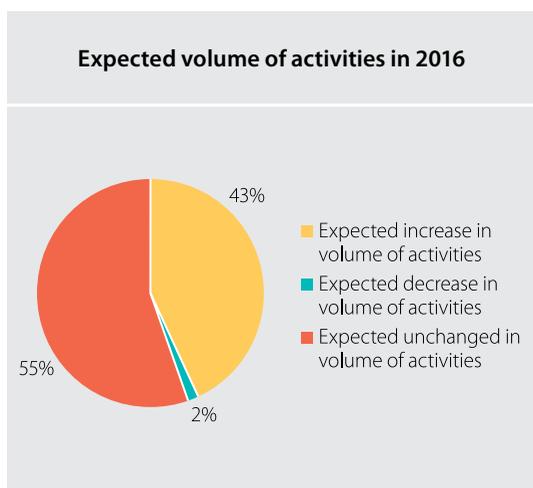
Graph 19



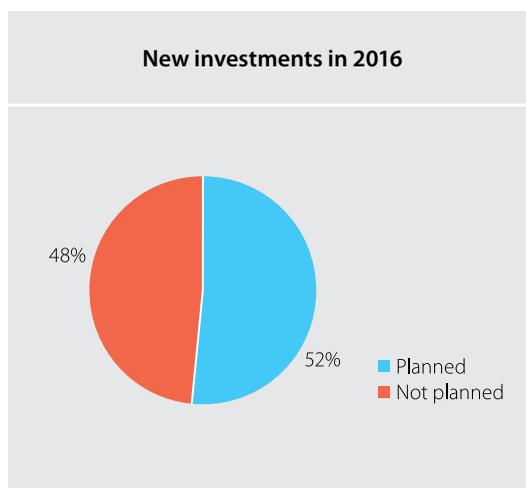
Investments

Of the total number of surveyed companies, 43% planned to increase the volume of activities during 2016, and 52% of respondents is planning new investments. The largest number of investments (73%) relates to the increase in fixed assets, and other barriers represent the largest obstacles to new investments (35%), as well as insufficient utilization of existing capacity (23%), low demand and high interest rates and unfavourable conditions for capital borrowings (by 19%), as well as the existing high production costs (4%).

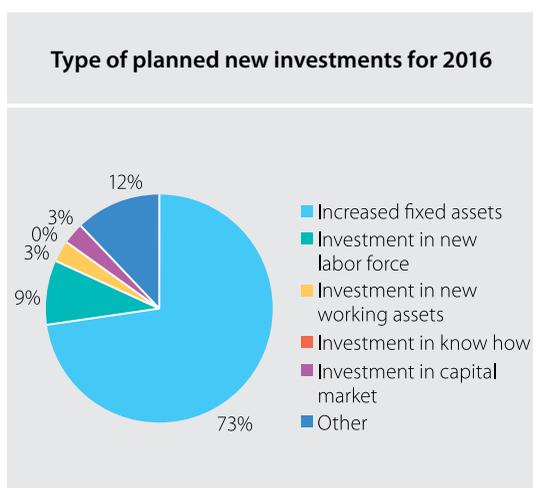
Graph 20



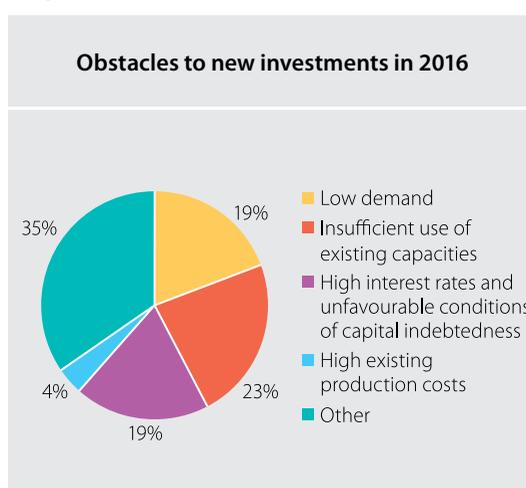
Graph 21



Graph 22



Graph 23



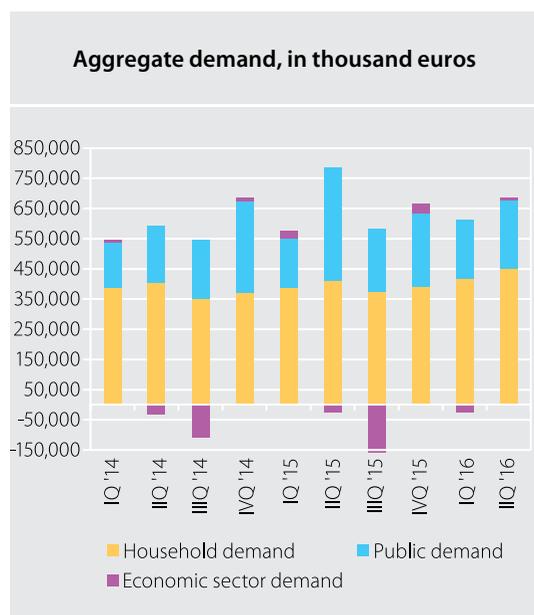
3. INFLATION DETERMINANTS

3.1. Demand

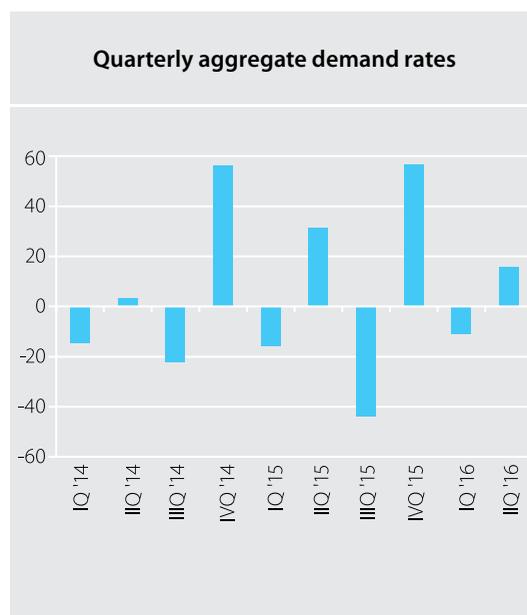
Aggregate demand, according to preliminary data, in the second quarter of 2016, recorded a growth compared to the previous quarter, while compared to the second quarter 2015 recorded a decline. Looking at the structure of total demand, compared to the structure of the previous quarter, the share of the household sector and public spending reduced, while the share of the corporate sector increased.

Aggregate demand rate in Q2 2016 is lower than the aggregate demand rate in the same period of the previous year, while being higher than the rate from in the previous quarter.

Graph 24



Graph 25



Box 1: Aggregate demand calculation methodology

For the purpose of complete monitoring of aggregate demand as the inflation determinant, the CBCG has developed a methodology for the aggregate demand calculation. The starting point of this methodology is that the aggregate demand is the total demand of three sectors: personal spending (households), investment spending (corporate sector) and personal spending. However, given the lack of a large number of data needed to calculate the aggregate demand, the existing data on aggregate demand should not be treated as an indicator of the exact amount of aggregate demand, but as an indicator of the direction in which aggregate demand is moving. The existing methodology lacks a number of important data such as: corporate investments, revenues from selling shares, non-market income, income generated in the shadow economy and others. The methodology for calculating the aggregate demand is given 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)

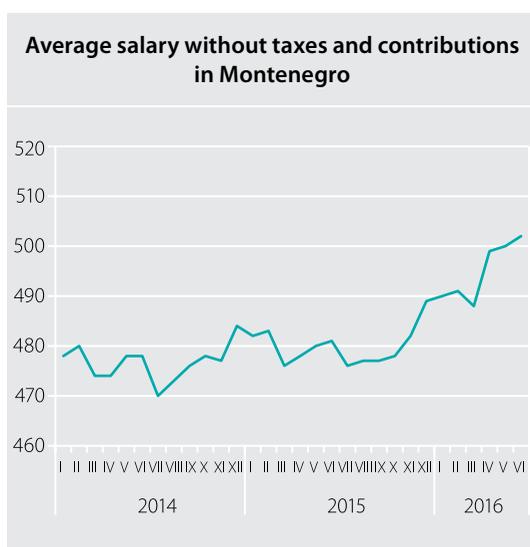
G = public consumption - paid pensions - salaries paid from the state budget - net savings by the Government (deposits - loans - Treasury bills)

AD - aggregate demand, C - personal spending, I - investment spending, G - personal spending

3.1.1. Salaries and other available demand determinants

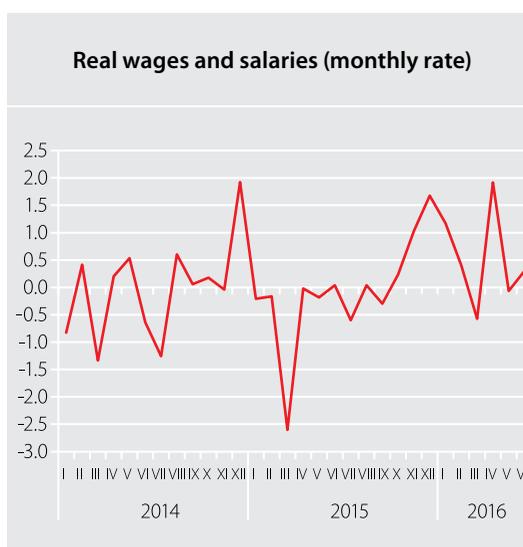
The average salary in Montenegro in the second quarter was 753 euros, while average wage without taxes and contributions amounted to 500 euros. In relation to the previous quarter, the average salary has increased by 2.1%, while average salary without taxes and contributions increased by 2.2%.

Graph 26



Source: Monstat

Graph 27



Source: Monstat

If we take into account the consumer prices, i.e. wages and salaries in real terms, it is concluded that real wages in the second quarter recorded an increase in April and June, while in May it remained unchanged.

Lending to the household sector during the first half of 2016 was marked by a positive trend. The average monthly loans to this sector grew at a rate of 0.8%, while in the same period of 2015 it recorded a growth at an average rate of 0.4%. At the end of the second quarter of 2016, total loans to the household sector amounted to 965.7 million euros or by 44.4 million euros or 4.8% more than at the end of 2015, or by 49 million euros or 5.3 % more than in the same period last year.

Per capita debt⁵ amounted to 1,552 euros at the end of June 2016, and was 71 euro higher than at the end of 2015 and by 78 euros higher than at the end of the second quarter of the previous year.

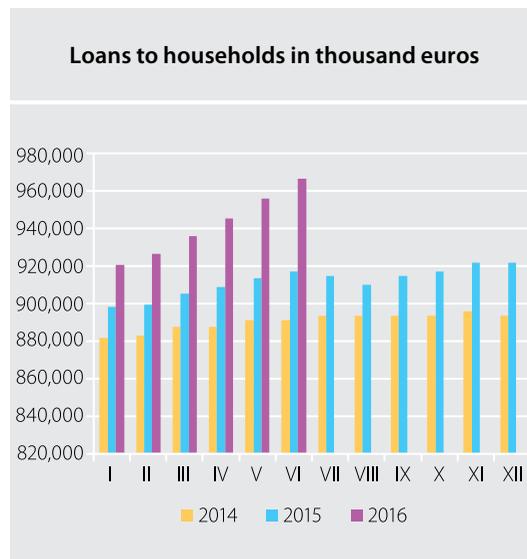
Total loans of MFIs granted to the household sector amounted to 48.8 million euros at the end of June 2016, which is 3 million or 6.6% more than at the end of the previous year, and 6.9 million euros or 16,6% higher than a year before.

Deposits of the household sector during the first half of 2016 recorded a slight average monthly increase of 0.1% (in the same period in 2015 there was an average monthly increase of 0.5%). Deposits of this sector amounted to 1,448.7 million euros at the end of June this year and were 8.9 million euros or 0.6% higher than at the end of 2015, i.e. 78.4 million euros or 5.7% higher compared to the same period last year.

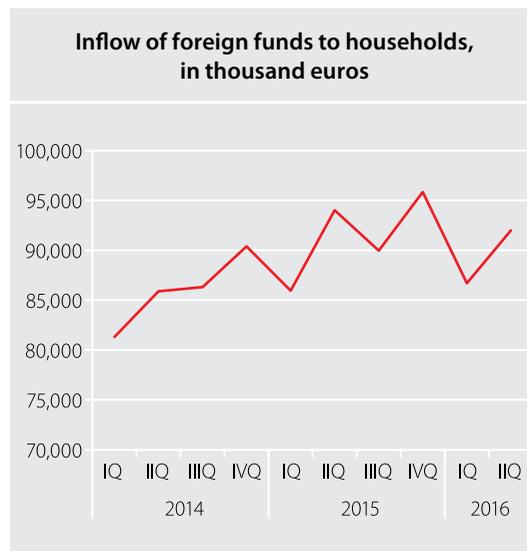
The loans/deposits ratio for this sector amounted to 0.67 at end-June 2016 and was at a higher level compared to the previous year when it stood at 0.64, while in the comparable period of the previous year remained unchanged.

The household sector net savings amounted to 483 million euros, which is by 35.4 million euros or 6.8% lower than at the end of 2015, or 29.4 million euros or 6.5% higher than in the same period last year.

Graph 28



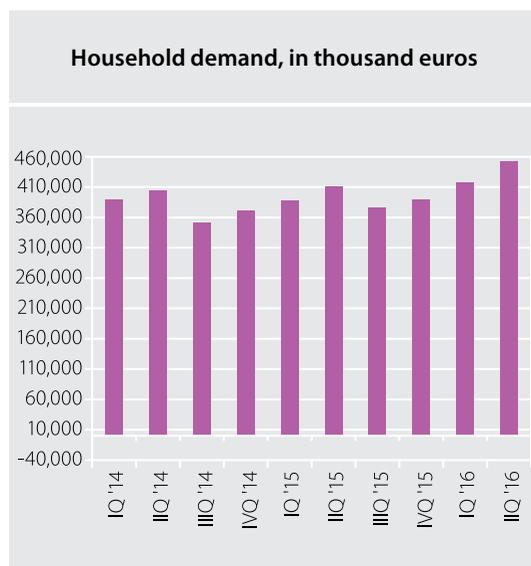
Graph 29



Source: CBCG

⁵ Population in 2016 and 2015: Assessment on 1 January (2016 and 2015). The source is Monstat

Graph 30



The Q2 2016 recorded increase of inflow of funds from foreign remittances in favour of domestic natural persons, inheritance, alimony and other gifts and grants, pensions and salaries and compensation of employees in the first quarter.

Observing the total demand of household sector by quarters, we note that the demand in the second quarter of this year was higher than the demand in the previous quarter and compared to the demand of the population in the second quarter of 2015.

3.1.2. Budget analysis

Budget of Montenegro

According to preliminary data of the Ministry of Finance, revenues of the Budget of Montenegro and the state funds amounted to 972.5 million euros in the first half of 2016.⁶

Source revenues amounted to 633.2 million euros or 16.8% of the projected GDP⁷, and compared to the plan there was an increase of 1.2%, and compared with the same period of 2015 of source revenues were higher by 7.7%. In the structure of source revenues, taxes accounted for the main share of 62.9%, followed by contributions with 31.3%, other revenues 2.5%, duties 0.9%, donations 0.6%, and revenues from loan repayments 0.3%.

Tax based revenues amounted to 398.3 million euros, recording 5.8% decrease relative to the plan, i.e. 8.8% y-o-y increase. All taxes, except for taxes on real estate, were higher compared to the same period last year. In nominal terms, the largest increase in revenues compared to the previous year was recorded in the value-added tax of 11.9 million euros or 5.7%, as well on personal income tax in the amount of 8.9 million euros or 22.1% and in excise duties in the amount of 6.8 million or 9.7%.

Revenues from contributions amounted to 198.4 million, as it is planned, while compared to the same period in 2015 they increased by 5.6%.

⁶ Revenues include source revenues (direct and indirect taxes and non-tax revenues), borrowings and loans from asset sale.

⁷ Source: Ministry of Finance, Estimated GDP for 2016 amounted to 3,762.2 million euros.

Budget expenditures amounted to 742.8 million euros or 19.7% of GDP. Actual expenditures in relation to the plan for the first half of the current year were lower by 16.2% as compared to the first half of 2015 were lower by 12.5% or 105.8 million euros, mainly due to the reduction of capital budget which was 169.5 million euros lower than in the same period of the previous year.

Current budget expenditures in the reporting period amounted to 353.5 million euros and were 0.7% higher than planned. Almost all current expenditures, other than expenditures on interest, services, other personal income and rent, were below planned.

Capital budget amounted to 13.2 million euros or 0.4% of GDP.

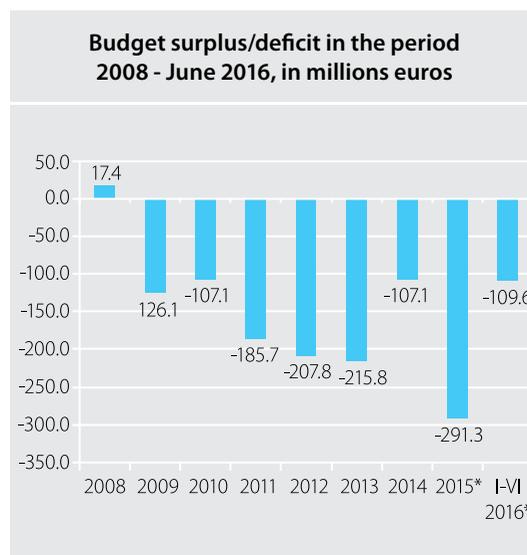
Budget deficit of Montenegro is estimated at 109.6 million euros or 2.9% of GDP.

3.1.3. Corporate sector

Due to the absence of data on the corporate sector investments, net indebtedness of the corporate sector can be used as an approximation.

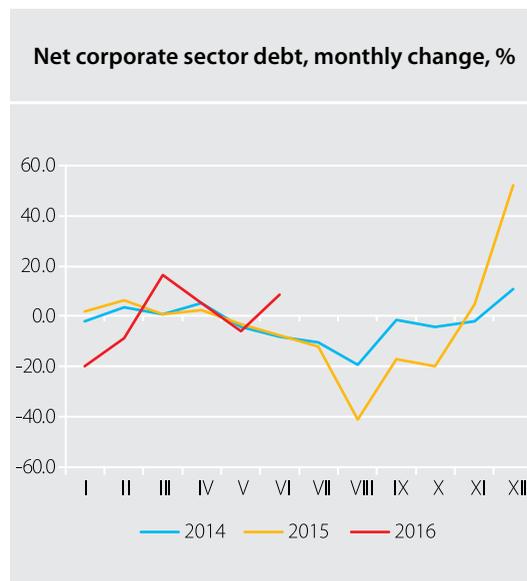
Loans to the corporate sector were higher than the deposit of this sector. Thus, the net debt of the corporate sector amounted to 138.4 million euros at the end of the period, and was 13.2 million euros or 8.7% lower than at the end of 2015, while compared to the end of the second quarter of the previous year was lower by 138.3 million euros or 50%. In the structure of loans in this sector, second quarter of 2016 was dominated by long-term loans with 73.6%, indicating that the loans the corporate sector were dominantly used for increasing the volume of economic activity.

Graph 31



Source: Ministry of Finance

Graph 32

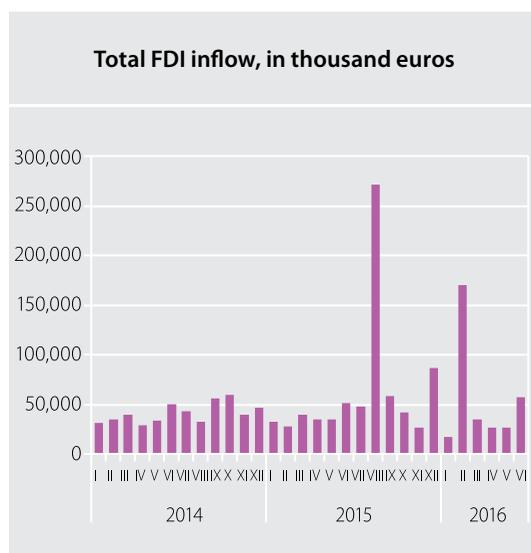


3.1.4. External Demand - Balance of Payment

In the first half of 2016 there was an increase of current account deficit, which is the result of an imbalance in the goods account. According to preliminary data, the deficit of the current account deficit amounted to 661.6 million euros or 35.7% more than in the same period of 2015. In the observed period, there was an increase in deficit on goods account for 16.1%, as a result of a decrease in exports of goods by 0.5% while imports increased by 13.2%. The significant increase in imports is largely a result of higher imports of machinery and transport equipment for the construction of the highway.

International trade in services Montenegro recorded a surplus of 92.2 million euros, which is 24.4% lower than in the same period of the previous year and is due to increased expenditures arising from transportation, telecommunications and professional and consulting services. Primary income account recorded a deficit of 5.3 million euros, as opposed to last year when there was a surplus of 28 million euros. These developments are the result of a large outflow arising from paid dividends. Secondary income account recorded a surplus in the amount of 50.3 million euros, which is 0.5% more than in the same period in 2015.

Graph 33



Source: CBCG

Developments at the financial account are characterized by a decrease in net inflow of foreign direct and portfolio investments compared to 2015. According to preliminary data, net FDI inflow in the period January-June 2016 amounted to 96.2 million euros, which is 47.7% less compared to the same period in 2015. Total FDI inflow amounted to 335.6 million euros, while at the same time achieved outflow was 239.4 million euros. In the structure of FDI inflow, equity investments amounted to 140.8 million euros, accounting for 42% of the total inflow in the first six months of 2016, while the inflow in the form of intercompany debt amounted to 64.1 million or 40.9% less than in the same period in 2015. The inflow of monetary assets arising from the withdrawal of residents' funds invested abroad amounted to 130.7 million euros (mostly in the form of the intercompany debt).

In the first half of 2016, portfolio investments account recorded a net inflow of 26.5 million euros, which is significantly less than in the same period of 2015 (350 million euros). These developments are the result of state borrowing by issuing Eurobonds at the international capital markets with a simultaneous refinancing of obligations from previous years. Developments at other investments account are characterized by reduction in state sector liabilities from loans, while liabilities of banks and other sectors (of the corporate sector) increased. As a result of these trends on the account of other investments in the first half of 2016 there was a net inflow of 41.9 million euros.

3.2 Supply and Demand

Total industrial production decreased by 5.3% compared to the same period last year. The decline in production was recorded in all three sectors: the sector of mining and quarrying by 37%, in the manufacturing industry by 5.1% and in the sector of electricity, gas and water supply by 1.2%. Looking at the monthly data on industrial production, growth was recorded in March (33.8%), June (6.1%) and February (1.7%), while a decrease was recorded in April (-21.6%), January (-14.2%) and May (-3.9%).

Some 411,964 thousand tourists visited Montenegro in the first six months of the current year, which is 5.6% more than in the comparative period of 2015. Overnights amounted to 2.1 million euros, which is a y-o-y increase of 5.5%. Foreign tourists accounted for 90.6% of total overnights.

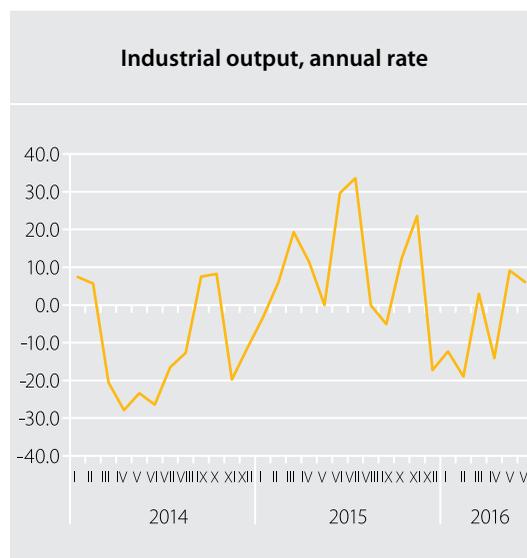
Thus, 101.209 m³ of *wood products* were produced in the first six months of 2016, which is a y-o-y decrease of 7.2%⁸.

According to preliminary data, the value of executed *construction works* for the first six months of this year was higher by 22.5% compared to the same period, while construction activity measured by effective working hours increased by 10.9%.

According to Monstat data, in the first six months of 2016, road transport recorded 7.4%⁹ more passengers than in the same period last year, while road cargo transport decreased by 3.1%.¹⁰ Railway passenger transport increased by 0.9% and cargo transportation decreased by 11.5%.¹¹ During Q2 2016, in air transport, the number of passengers in airports increased by 9.6%, while transport of goods increased by 2.1% compared to the same period last year.¹²

Total turnover in ports in the first six months of this year amounted to 693,614 tonnes and was lower by 9% compared to the same period of the previous year, while exports accounted for 50.3% and imports 49.7%. Exports in this period declined by 20.9% while imports increased by 7.9%.

Graph 34



Source: Monstat

⁸ This is expressed by weighted index, while expressed by non-weighted index production decreased by 4.8% over the same period.

⁹ Expressed through the number of passengers/passenger km, growth of passenger transport was 0.8%.

¹⁰ In terms of goods transported in thousands of tons, and via tonne km, decline amounted to 15.9%.

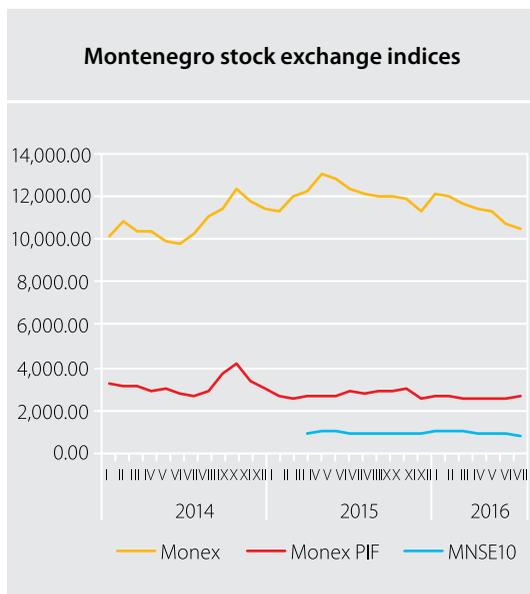
¹¹ Expressed through thousands of tonnes, and in tonne-kilometres a decrease was 26.1%.

¹² In terms of passengers transported in thousands, and over the passenger kilometres growth was 2.9%.

3.3 Stock Exchange Indices

Stock exchange index Monex is characterized by a decline in the second quarter of 2016, with the index amounting to 10,493.32 at the end of June of the current year and dropped by 1,634.75 index points or 13.5% compared to the previous year, and the decline from 1,861.23 index points or 15.1% compared to the same period last year.

Graph 35



Source: Montenegro Stock Exchange

On the other hand, investment funds index Monex PIF have fallen on a monthly basis in the first four months of this year, while in May and June indicated index recorded a monthly increase. At the end of June 2016, Monex PIF amounted to 2690.34 and was 4.47 index points or 0.2% lower than at the end of 2015, i.e. 185.39 index points or 6.4% lower on an annual basis.

MNSE10 index stood at 854.16 at the end of the second quarter and recorded a decline of 190.58 index points or 18.2% compared to the end of 2015, while compared to the same period of the previous year it was 147.17 index points or 14.7% lower.

4. MONETARY POLICY

In May 2016, Decision amending the Decision on reserve requirement of banks with the Central Bank of Montenegro has been adopted (OGM 33/16) whereby banks which as at 31 December 2016 held up to 25% of required reserves in Treasury bills, may continue to hold the bills as part of the reserve requirement until their maturity date, but not later than 31 March 2017. In accordance with this amendment it is prescribed that banks must submit reports on mandatory reserves on appropriate forms to the CBCG by 28 March 2017.¹³

¹³ PObR, PObR-p, PObR-d1 and PObR-d2

5. INFLATION FORECAST FOR 2016 AND Q2 2017

5.1. Model Assessment

Graph „Fena“ of inflation („fan chart“) of Montenegro is a graphical representation of the distribution of probability forecasts for the inflation rate expressed through the consumer price index. In this regard, instead of determining specific points, the graph is likely to take into account potential risks and uncertainties via distribution, which could affect distribution of inflation in the coming period. The very purpose of the chart „Fena“ is to point out and take into account the uncertainty that exists in the real economy flows, which is consequently reflected in the movement of the rate of inflation (increase in energy prices, the increase-decrease in foreign trade deficit, and the like).

The chart „Fena“ of Montenegro for 2016 and the first two quarters of 2017 is based on three estimated components:

1. **Values of the central projection** - values of the central projection chart „Fena“ is derived from the ARIMA model;
2. **The level of uncertainty** - level of uncertainty determines the width of the chart „Fena.“ Coefficients level of uncertainty are obtained through analytical assessment and calculation of a relative impact of potential internal and external shocks, which are possible in Montenegrin economy for a period of one year, which are viewed through the „thickness“ band around the central projection.
3. **The curve of the chart** - based on the level of curve distribution of inflation projections of chart „Fena“ adapts to the forecast, in terms of whether the values of the central projections „overestimated“ or „underestimated“ the inflation rate developments. This will affect the position of the mean value of inflation distribution.

The central projection of chart „Fena“ - ARIMA model for 2016 and the first two quarters of 2017

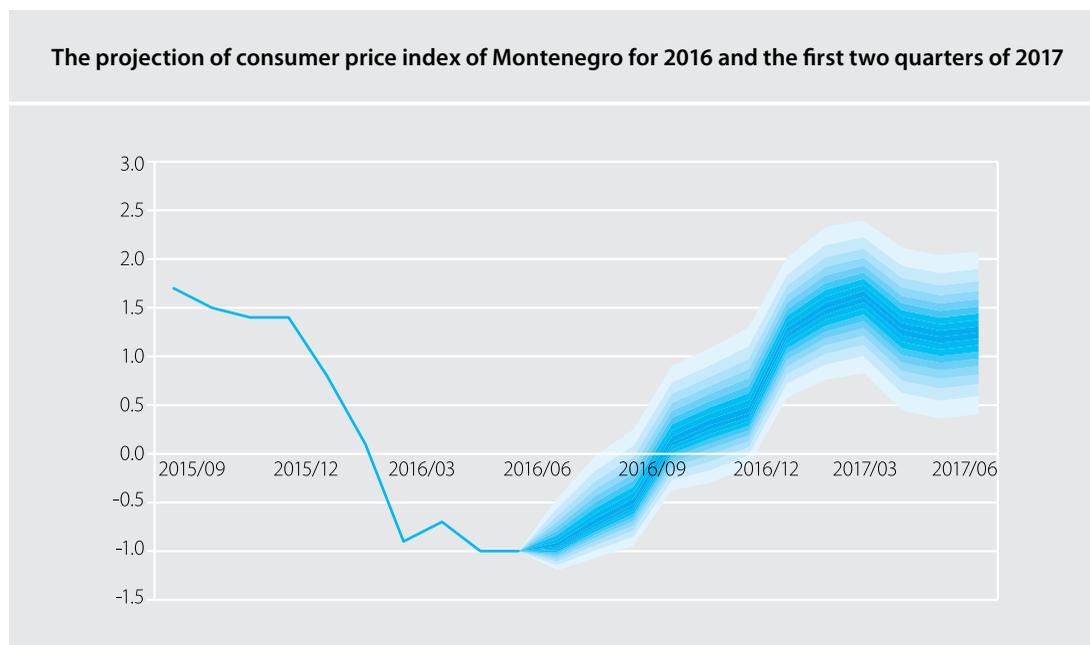
In order to prepare the chart „Fena“, ARIMA (autoregressive integrated moving averages model) model of temporal series of inflation in Montenegro was developed, expressed through the consumer price index¹⁴.

¹⁴ Detailed explanation of ARIMA model of Montenegro was presented in the working study of the Central Bank No. 11 "Forecasting inflation: Empirical research of developments of retail price index of Montenegro for 2007-application of ARIMA model."

ARIMA model was used for the purposes of short-term forecasts (12 months), the iteration is made of several ARIMA models, which were ranked based on their efficiency and quality of diagnostics. The selected ARIMA model, ARIMA (1, 1, 11)¹⁵, has sufficient level of confidence for forecasts' needs.

Value projections on a monthly basis are used for the values of the central projection of the chart consumer price index for the year 2016 and the first two quarters of 2017. The obtained values represent the distribution mode, i.e. values with the highest frequency in the distribution of this time series.

Graph 36



Source: CBCG

Mean value of the obtained model is 0.6. The value of the coefficient of asymmetry varies in the range of from 0.5 to 1, and the relative standard deviation is 0.3. Central span is located at the lower part of the distribution, in particular for a period of 2016. This indicates that the corresponding range of uncertainty was concentrated towards higher inflation levels, which is located under the central „the deepest shade of blue“ band. Chart „Fena“ explained the 90% probability of inflation distribution. Central projection is usually in the deepest shade of the chart, i.e. in the central 10% of probability. Chart „Fena“ has eight layers on each side, different colours, above and below the central layer, wherein each layer of the same colour, in sum, above and below the central band, cumulatively, the next 10% of probability of inflation trends. As uncertainty grows over time, chart „Fena“ spreads.¹⁶

¹⁵ ARIMA Model is generally referred to as an ARIMA (p, d, q) where p represents the number of autoregressive variables, d is related to the level of the stationarity of the dependent variable, and q is the number of variables, moving averages, which are contained in the corresponding model.

¹⁶ Usually mode value (central projection) is the darkest band; however, if there is a significant level of risk, then it may happen that the central projection does not include any 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, pages 30–37)

Graph „Fena“ inflation („fan chart“) of Montenegro, based on the ARIMA model for 2016 and two quarters of 2017, shows that, with a probability of 90%, *inflation measured by the index consumer prices, depending on the month, will range from -1.2% to 2.4%. At the same time, inflation is projected to range from -0.1% to 1.3% for the end of 2016, with a central tendency of 0.4%.* Central projection „Fan Chart“ (which refers to the darkest part of the Graph) represents the probability range of 10% (Graph 36).

Starting assumptions for the inflation forecasts for 2016 and the first half of 2017 are the following:

1. Imported inflationary pressures could strengthen at the end of 2016 and during 2017, due to the expected increase in inflation in the Euroarea, supported by the ECB measures and further recovery of the Euroarea.
2. According to the expectations of international institutions, food prices will record a drop in the international market during 2016, and the stabilization of food prices is expected only in 2017. In addition, in the projection we assumed fluctuation in prices of agricultural products by +/- 5%, conditioned by their seasonal character.
3. Second half of 2016 and 2017 provide for a slight increase in the price of oil, which, due to the low base from the previous period, could contribute to increasing the overall inflation rate.
4. Metal prices will remain low in this year, due to the slowdown in the Chinese economy, while a slight increase in metal prices can be expected in 2017.
5. The potential increase in electricity prices by 5%.
6. Stabilization of prices in the real estate market.

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

6. EXPECTED INFLATION IN 2016

Although higher than in the previous quarter, the level of aggregate demand was significantly lower than in the second quarter last year. The level of economic activity is on an upward trend. This is a result of expectations of corporate sector, as 48% of surveyed companies planned to increase the volume of activity, while only 2% of surveyed companies expected decrease in the volume of activity. Also, 48% of surveyed companies plan new investments. Such developments in the real sector will certainly affect disinflationary.

In terms of the amount of expected inflation by year-end, the majority of surveyed banks expected inflation in the range of -0.5% to 0%, while 32% of surveyed companies expected inflation rate in the range of -0.5% to 0.5%. Also, market trend indicator indicates declining inflation expectations. The external environment also indicates a very low or negative inflation rates.

The model projections indicate that, with a probability of 90%, inflation measured by the consumer price index, depending on month, will range from -1.2% to 2.4%. At the same time, for the end of 2016, inflation is projected to range from -0.1% to 1.3%, with a central tendency of 0.4%. Our expert estimation is similar to the model projections and it points out that this year we can expect inflation in the range of -1% to 1%.

Table 4

Inflation rate estimation		
optimistic projection	central projection	realistic projection
-1%	0%	1%

The assumptions on which this estimation is based are the same as the assumptions on which the model estimation is based. Deviation of any of these parameters from the expected values would require a revision of the estimation.