



CENTRAL BANK OF
MONTENEGRO

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CONTENTS

| | |
|--|----|
| 1. INFLATION INDICATORS | 5 |
| 2. INFLATIONARY EXPECTATIONS | 10 |
| 2.1. Banks' expectations | 10 |
| 2.2. Expectations of the economy (except banks) | 12 |
| 3. INFLATION DETERMINANTS | 15 |
| 3.1. Demand | 15 |
| 3.1.1. Salaries and other available demand determinants | 16 |
| 3.1.2. Budgetary analysis | 18 |
| 3.1.3. Nonfinancial sector | 19 |
| 3.1.4. External demand and the current account | 20 |
| 3.2. Supply and demand | 21 |
| 3.3. Stock exchange indices | 22 |
| 4. MONETARY POLICY | 23 |
| 5. INFLATION FORECAST FOR 2019 AND TWO QUARTERS OF 2020 | 24 |
| 5.1. Model assessment | 24 |
| 6. EXPECTED INFLATION IN 2019 | 27 |

1. INFLATION INDICATORS

Consumer prices decreased by 0.4% in Q2 2019 in relation to the previous quarter. The largest contributions to the decrease were prices in the categories of clothing and footwear and housing, water, electricity, gas and other fuels. Observing the monthly price developments, a slight increase in consumer prices was recorded in April (0.1%), and in May (0.2%), while in June they fell by 0.7%. The average consumer prices rate (the first six months of 2019 in relation to the same period of 2018) amounted to 0.5%, while at the annual level, prices decreased by 0.1%.

Table 1

| Inflation, in % | | | | | | |
|---|------|-----|-----|-----|------|------|
| | 2018 | | | | 2019 | |
| | III | VI | IX | XII | III | VI |
| Change in relation to the previous year-end | 1.5 | 2.0 | 2.2 | 1.6 | 0.7 | 0.3 |
| Annual change | 2.9 | 3.4 | 1.9 | 1.6 | 0.8 | -0.1 |

Source: MONSTAT

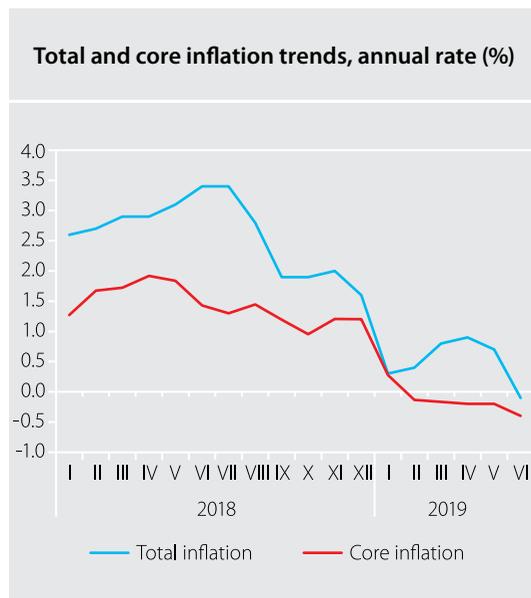
In Q2, price decrease in Montenegro was recorded in five of the twelve categories that account for 35.5% of the consumer basket (Table 2). The prices in the *clothing and footwear* category, with a decrease of 6.4%, mostly as a result of a fall in clothing prices by 8.7% made the largest contribution to total inflation (-0.6 percentage points). Prices in *housing, water, electricity, gas and other fuels* (-0.3 percentage points) with a decline of 1.9% also contributed significantly, mainly due to a 2.8% decrease in electricity prices and 2.3% in solid fuels. The Q2 price drop was also recorded in the categories: *health* (-0.2%), *recreation and culture* and *other goods and services* by -0.1%, respectively. During the same period, the largest price increase of 5.4% was recorded in the *hotels and restaurants* category, as a result of the usual

Graph 1



Source: MONSTAT and CBCG calculations

Graph 2



Source: MONSTAT and CBCG calculations

seasonal increase in the prices of accommodation services (13%). Increases in prices of fruits (15.5%), oils and fats (2.3%), meat (1.5%) contributed most to the 0.4% increase in prices in the *food and non-alcoholic beverages* category. In Q2, prices also increased in the category of *furnishings, household equipment and routine household maintenance* (0.5%) and *transport* (0.3%). In the category of *alcoholic beverages and tobacco, communication and education*, there were no changes in prices compared to Q1 2019.

In Q2, the *monthly core inflation* was lower in April and May 2019, while it was slightly above the official monthly inflation in June. The core inflation had a negative rate during April and June, while it was positive in May.

The *annual core inflation rate* in June 2019 amounted to -0.4% and was lower by 0.3 percentage points than the total inflation. Annual core infla-

Table 2

| Share of selected categories in total inflation ¹ | | | | |
|---|---------|----------------|-------------|--------------|
| | Weights | VI 19 / III 19 | Growth rate | Contribution |
| TOTAL | 1000 | 99.6 | -0.4 | -0.4 |
| Food and non-alcoholic beverages | 341.1 | 100.4 | 0.4 | 0.2 |
| Alcoholic beverages and tobacco | 40.4 | 100.0 | 0.0 | 0.0 |
| Clothing and footwear | 86.1 | 93.6 | -6.4 | -0.6 |
| Housing, water, electricity gas and other fuels | 154.0 | 98.1 | -1.9 | -0.3 |
| Furnishing, household equipment and routine household maintenance | 39.4 | 100.5 | 0.5 | 0.0 |
| Health | 40.8 | 99.8 | -0.2 | 0.0 |
| Transport | 109.4 | 100.3 | 0.3 | 0.0 |
| Communication | 48.5 | 100.0 | 0.0 | 0.0 |
| Recreation and culture | 32.0 | 99.9 | -0.1 | 0.0 |
| Education | 18.7 | 100.0 | 0.0 | 0.0 |
| Restaurants and hotels | 47.6 | 105.4 | 5.4 | 0.3 |
| Miscellaneous goods and services | 42.0 | 99.9 | -0.1 | 0.0 |

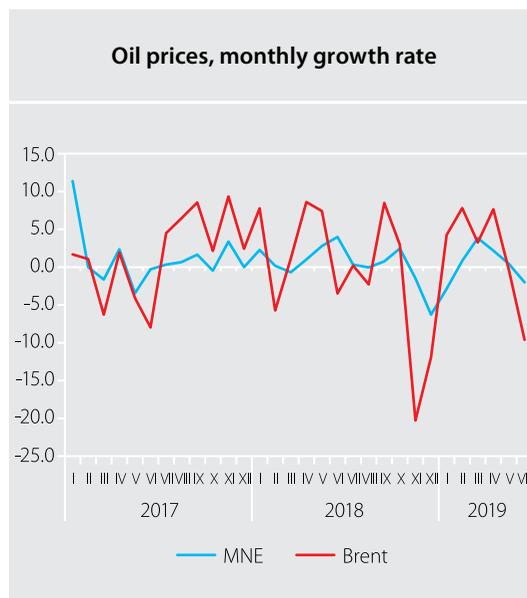
Source: MONSTAT and CBCG calculations

¹ It should be noted that, regardless of the index changes, due to the weight structure, the contribution of the share of certain categories is not recorded before the second, i.e. third decimal.

tion was below total inflation in all three months of Q3, having the negative rate throughout that period (Graph 2).

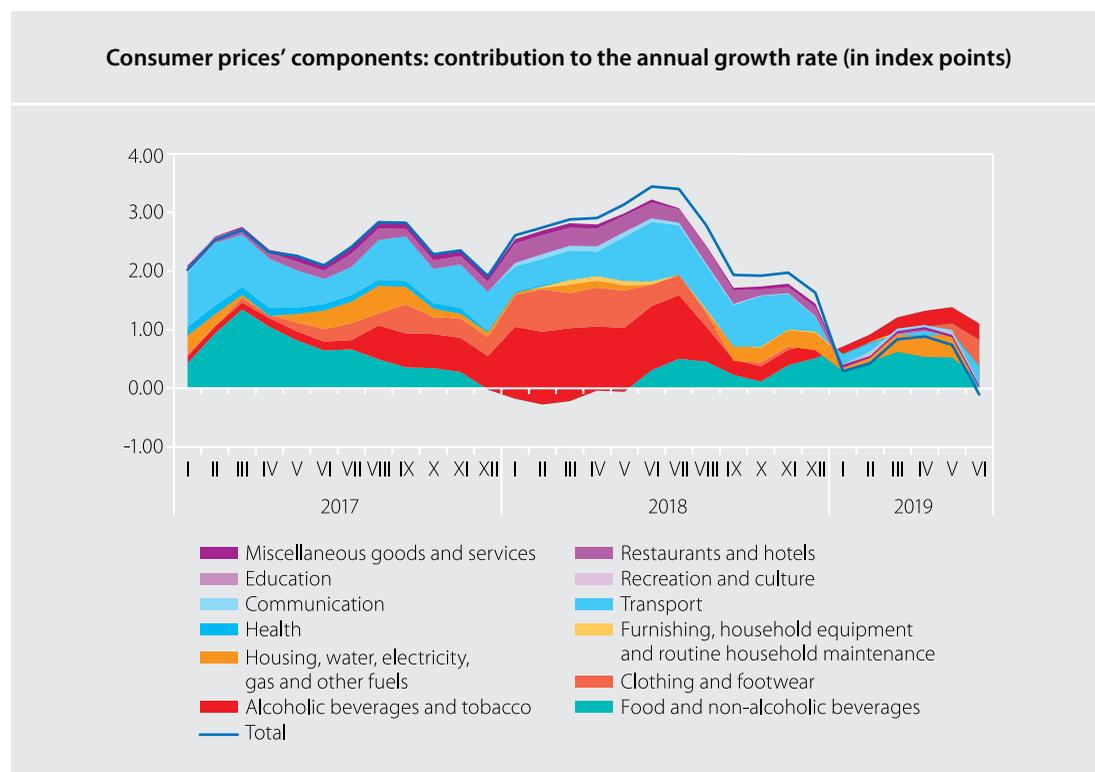
In Q2 2019, the oil prices at global markets recorded a slight increase, compared to the same prices in Q1 2019. The price of the OPEC reference basket averaged to 67.9 USD/barrel in Q2 2019, being 7.8% higher than the average price in Q1. In this period, the average price of Brent stood at 68.7 USD/barrel, or 8.8% more compared to the average price in Q1. The largest monthly decline in Brent was recorded in June (9.3%).

Graph 3



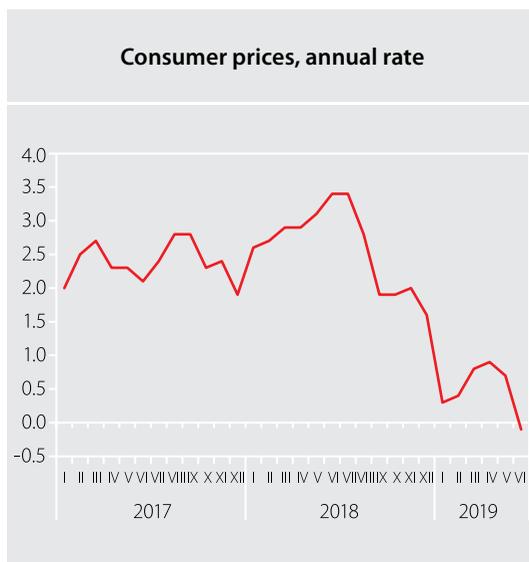
Source: MONSTAT and "Monthly Oil Market Reports", OPEC

Graph 4



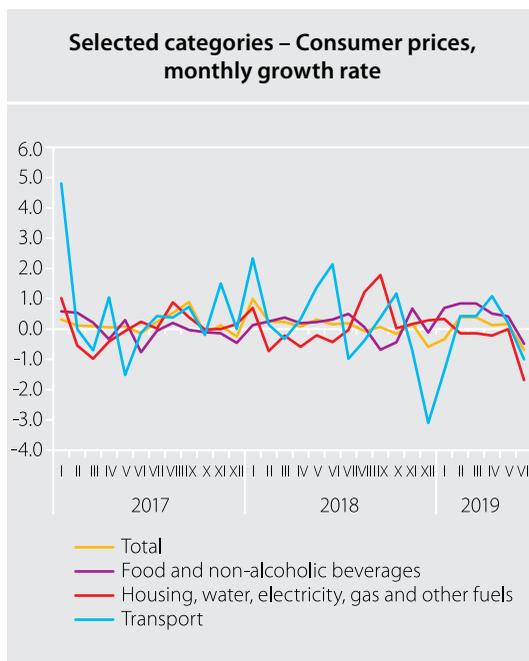
Source: MONSTAT and CBCG calculations

Graph 5



Source: MONSTAT

Graph 6



Source: MONSTAT

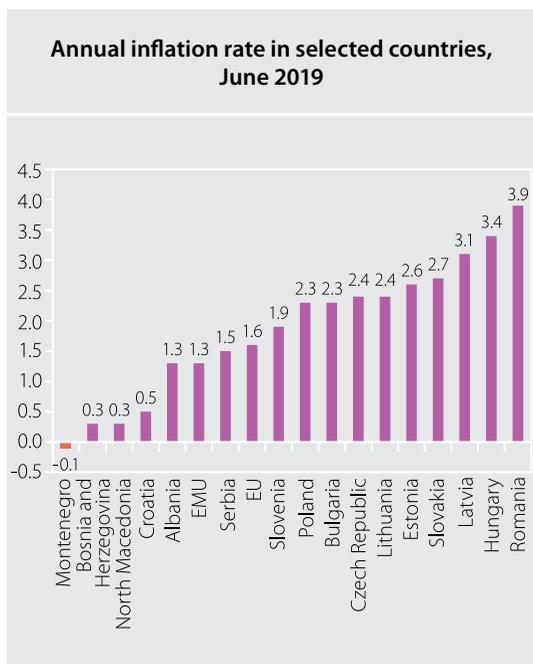
The annual price drop in June in the *clothing and footwear* category of 7.9%, made the largest negative contribution to the decline (-0.7 percentage points) in the total annual inflation rate of -0.1%. The annual fall in prices was also recorded in the following categories: *alcoholic beverages and tobacco* (-6.8%), *transport* (-2.6%), *recreation and culture* (-1.1%), *communications* (-0.9%) and *health* (-0.5%). Annual price growth was reported in *food and non-alcoholic beverages* (3.2%), *housing, water, electricity, gas and other fuels* (1.5%), *other goods and services* (1%) and *furnishings, household equipment and routine household maintenance* (0.1%), while prices in the *education* category remained unchanged.

In June 2019, **producers' prices of manufactured products** recorded 2.7% growth in relation to December 2018. This was due to the growth recorded in all three sectors: mining and quarrying sector (6.1%), electricity, gas and steam supply (3.8%) and manufacturing industry (0.9%). At the annual level, producers' prices of manufactured products rose by 2.9%.

Comparison of annual inflation recorded in Montenegro in June 2019 with inflation recorded in selected countries shows that the negative inflation was recorded in Montenegro only. The highest annual inflation rate was recorded in Romania (3.9%) while, apart from Montenegro, Bosnia and Herzegovina and North Macedonia recorded the lowest positive annual inflation rate of 0.3% each.

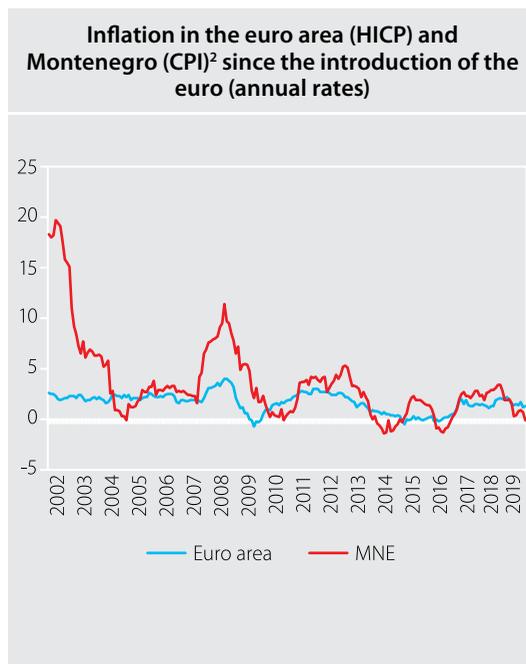
The annual HICP inflation rate reported in the euro area amounted to 1.3%, while both CPI and HICP inflation in Montenegro amounted to -0.1%.

Graph 7



Source: National statistical offices and Eurostat

Graph 8



Source: MONSTAT and Eurostat

² Cost of living were used for measuring inflation in Montenegro until 2009, after which consumer prices were introduced.

2. INFLATIONARY EXPECTATIONS

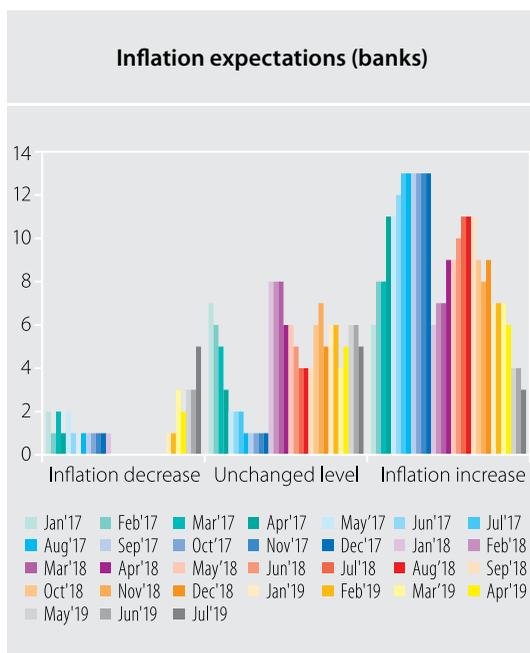
2.1. Banks' expectations

In reference to inflation expectations of banks, based on the survey conducted in July this year, five banks expect the fall and the same level of inflation as in 2018, while three banks expect inflation to increase in relation to 2018 (Graph 9).

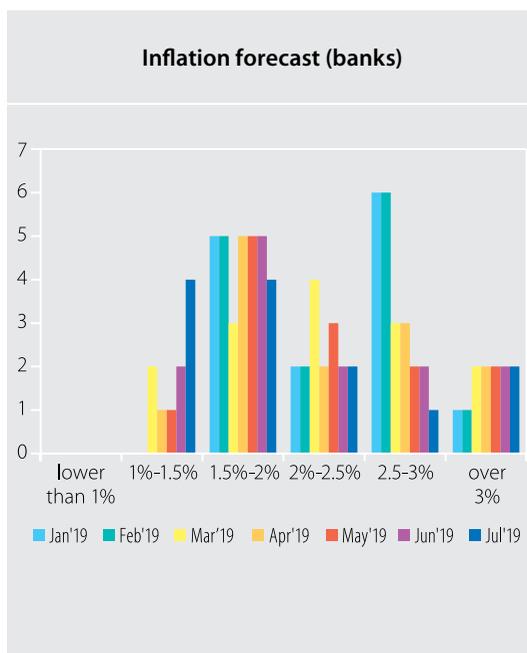
When it comes to inflation levels, expectations varied among banks. Four banks expect inflation level between 1% and 1.5%, i.e. between 1.5% and 2%, two banks expect inflation level between 2% and 2.5% and over 3%, one bank expects inflation between 2.5% and 3%, while no bank expects inflation below 1% (Graph 10).

Concerning the expectations on the nominal lending interest rates trends, nine banks expect this rate to remain at the same level, four banks expect it to decline, and none of the banks expect the nominal lending interest rate to grow. The banks' expectations regarding the effective interest rates are the same.

Graph 9

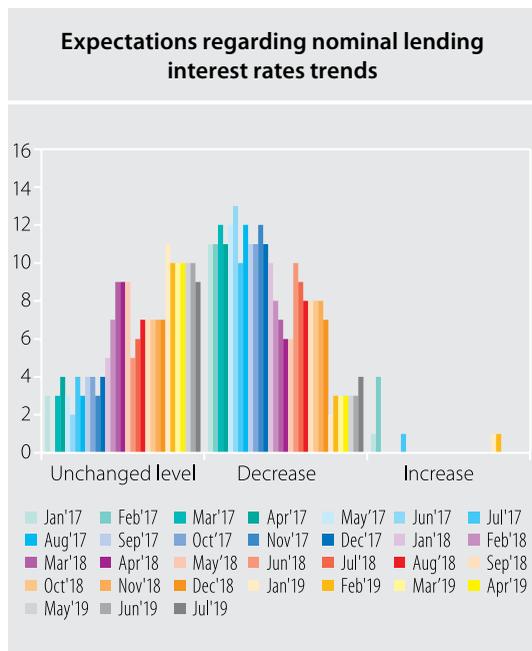


Graph 10

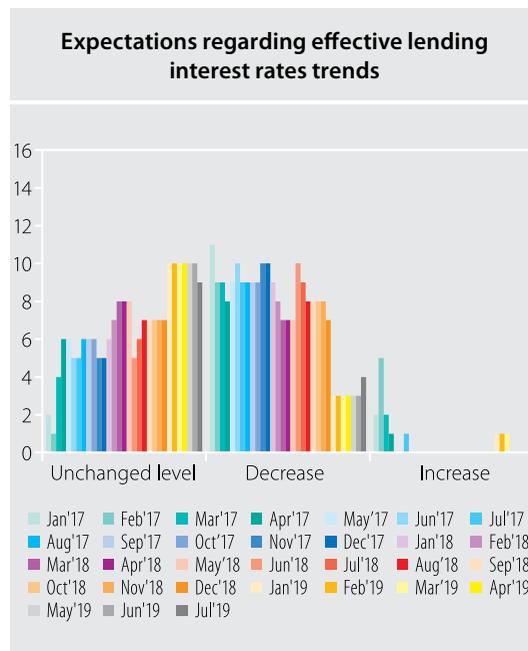


Regarding expectations about the deposit interest rates trend, nine banks expect unchanged deposit interest rates, four banks believe they will decline, while none of the banks expects their growth.

Graph 11

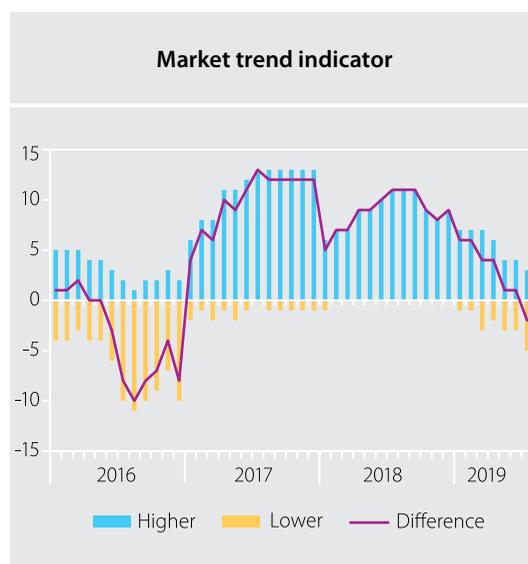


Graph 12



For the purpose of calculating inflation forecasts we use market trend indicator (line in Graph 13). It is calculated as the difference between the number of banks expecting inflation growth and the number of banks expecting inflation decrease. If the market trend indicator has a negative value, a decrease in the inflation rate is expected in the upcoming period. If its value is positive, 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 expectations are, and vice versa, higher positive value means higher inflation level expectations. Inflation expectations were significantly high over the previous year, with a slight decline as of January 2019.

Graph 13

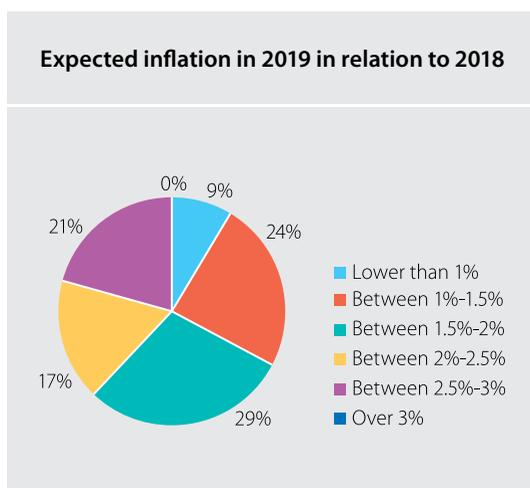


2.2. Expectations of the economy (except banks)

Inflation

Out of a total number of surveyed economic entities, the main share (29%) expected the 2019 inflation to range between 1.5% and 2%. Inflation in the range 1% - 1.5% was expected by 24% of companies, while 21% of surveyed economic entities expected the inflation to range between 2.5% and 3%. Some 17% of companies expected inflation to fluctuate between 2% and 2.5%. Inflation rate lower than 1% in 2019 is expected by 9% of respondents, while none of the surveyed companies predict inflation over 3% (Graph 14).

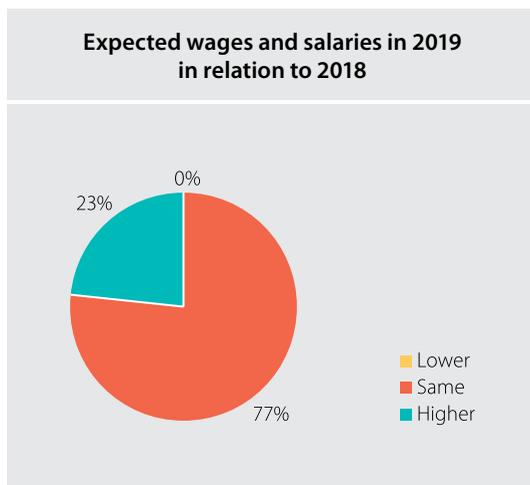
Graph 14



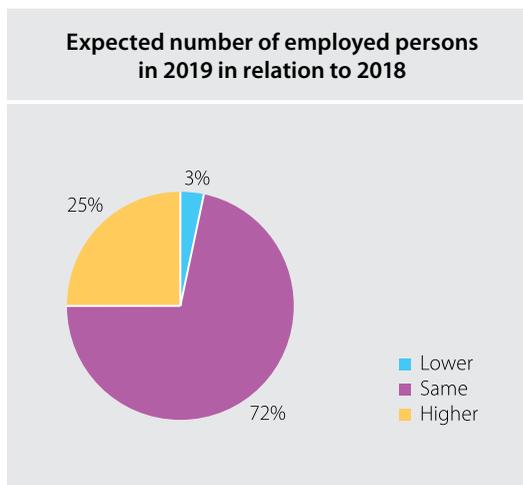
As much as 77% surveyed companies expect wages and salaries to remain unchanged in 2019, 23% of the surveyed companies expect them to increase, while none of those surveyed expect them to decrease. With regard to the number of employed persons, 72% of surveyed companies expected it to remain unchanged, 25% expected this number to increase, and 3% expected it to decrease in relation to the previous year.

The majority of surveyed economic entities (54%) did not expect changes in the prices of production inputs, whereas 76% did not plan to change the prices of their products (services) in 2019.

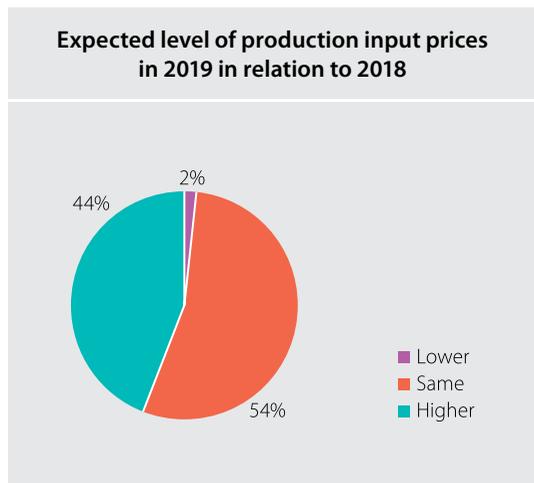
Graph 15



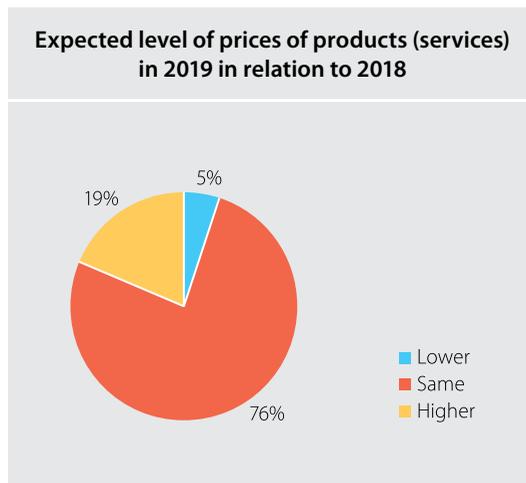
Graph 16



Graph 17



Graph 18

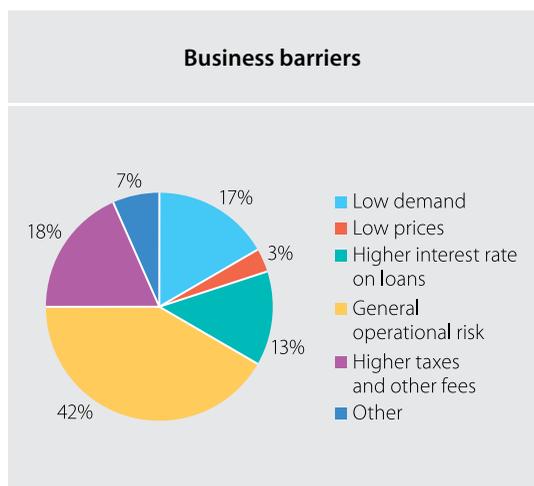


Business Environment

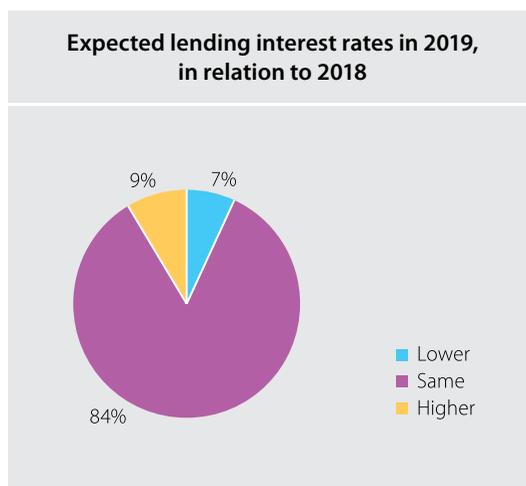
Concerning the business barriers, survey results showed that most of the surveyed companies saw general operational risks (42%), high taxes and other forms of duties (18%) and low demand (17%) as main obstacles.

In reference to lending interest rates, 84% of surveyed companies expected them to remain at the same level, 9% expected them to increase, while barely 7% expected lower lending interest rates in 2019 relative to 2018.

Graph 19



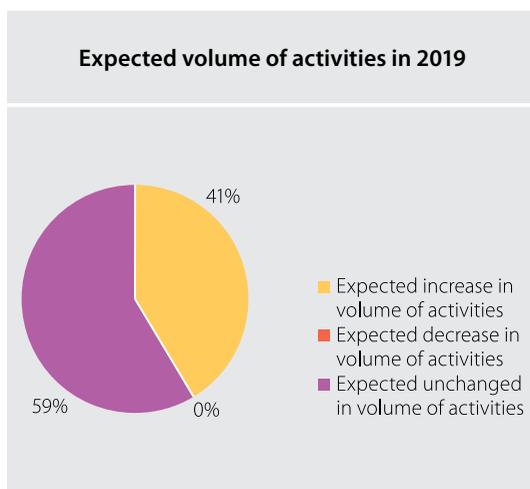
Graph 20



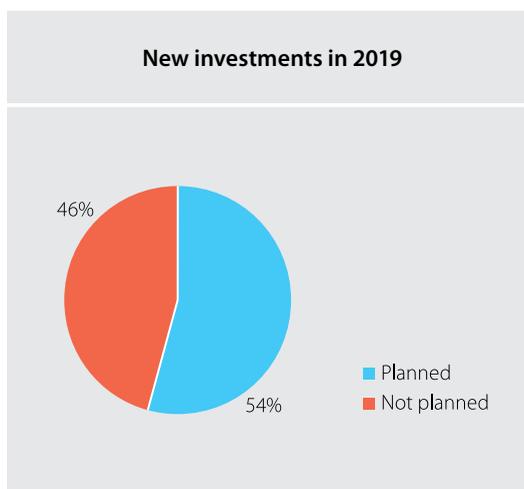
Investments

Out of a total number of surveyed companies, 59% expected unchanged volume of activities in 2019, while 54% planned new investments. Most investments (74%) referred to the increase in fixed assets, while insufficient exploitation of existing capacities, high interest rates and unfavourable conditions for capital borrowings and low demand were described as main barriers to new investments.

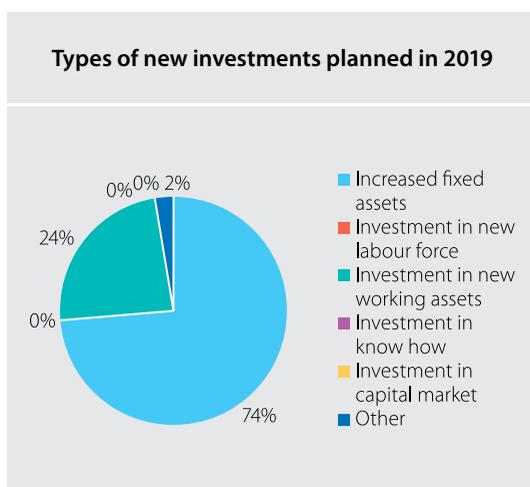
Graph 21



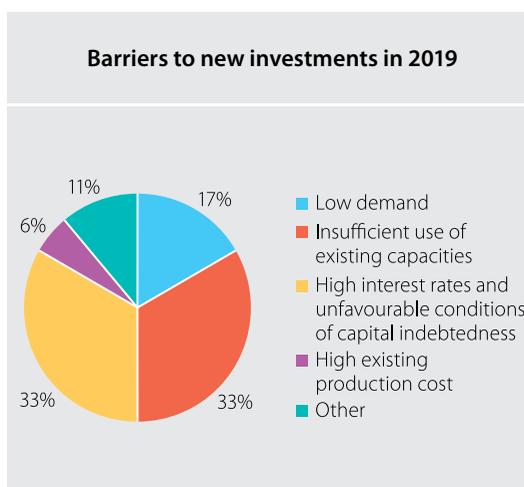
Graph 22



Graph 23



Graph 24

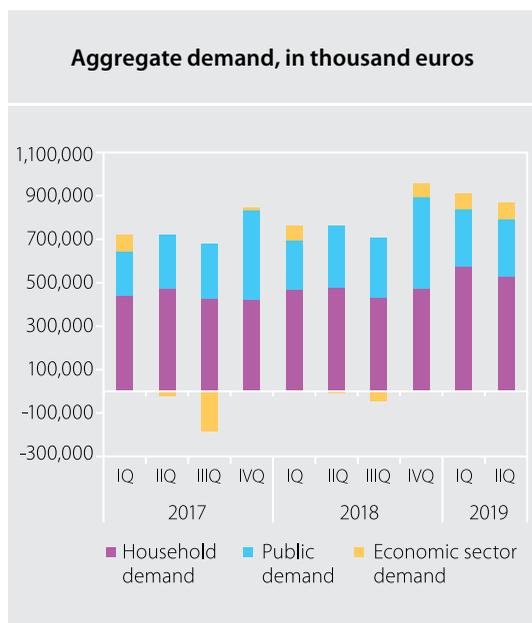


3. INFLATION DETERMINANTS

3.1. Demand

As per preliminary data, in Q2 2019, the aggregate demand recorded a y-o-y increase, yet a decline in relation to Q1 2019. Taking into account the level of total demand in Q2 2019 in relation to Q1 2019, household sector demand decreased, while corporate sector and government spending grew.

Graph 25



Graph 26



Box 1 - Aggregate demand calculation methodology

For the purpose of a more complete monitoring of aggregate demand as a determinant of inflation, the CBCG has developed the aggregate demand calculation methodology. The starting point of this methodology states that the aggregate demand represents the sum of the demand of three sectors: personal spending (households), investment spending (corporate sector), and public spending. 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 share sales, non-market income, non-observed economy revenues, and the like. Methodology of aggregate demand calculation 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 household savings (savings – loans granted)

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

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

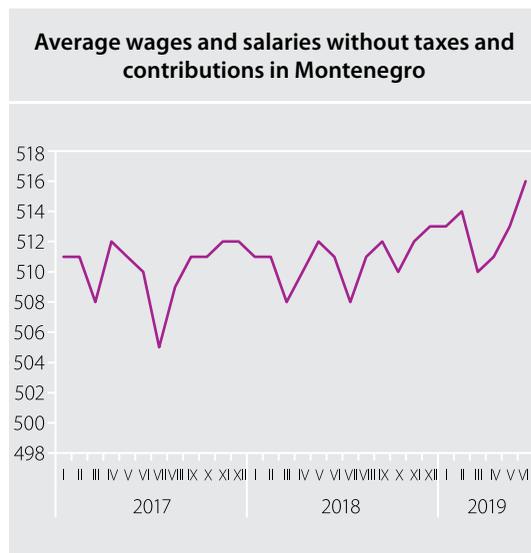
AD – aggregate demand, C – personal spending, I – investment spending, G – public spending

3.1.1. Salaries and other available demand determinants

In Q2 2019, an average salary in Montenegro amounted to 771 euros, while an average salary without taxes and contributions amounted to 513 euros. Compared to the previous quarter, average gross and net earnings increased by 0.2%.

If we take into account consumer prices, i.e. the wages and salaries trend observed in real terms, it is concluded that real wages and salaries increased in all three months in Q2 2019.

Graph 27



Source: MONSTAT

Graph 28



Source: MONSTAT

Retail sector loans³ were marked by a positive trend in H1 2019. Loans granted to this sector grew at the average monthly rate of 0.6%, while a year ago, they grew at the average rate of 1.05%. At the end of the observed period, total retail loans amounted to 1,295.3 million euro, or by 45.1 million euros or 3.6% more than at end-2018, i.e. by 106.3 million euros or 8.9% more than in same period of 2018 (Graph 29).

At end-June 2019, debt per capita⁴ amounted to 2,081.9 euros, recording an increase of 73.1 euros in relation to end-2018, and a y-o-y increase of 171.4 euros.

Total MFIs loans disbursed to retail sector amounted to 65.3 million euros at end-June 2019 which was by 2.5 million euros or 4% more than at end-2018, and by 3.4 million euros or 5.5% higher compared y-o-y.

At end-June 2019, this sector's deposits amounted to 1,215.5 million euros, which is by 112 million euros or 8.4% less than at the end-2018, or by 44 million euros (3.5%) less than in the same period of the previous year.

At end-June 2019, loans to deposits ratio for this sector amounted to 1.07 being higher both compared to end-2018 and y-o-y (0.94 in each case).

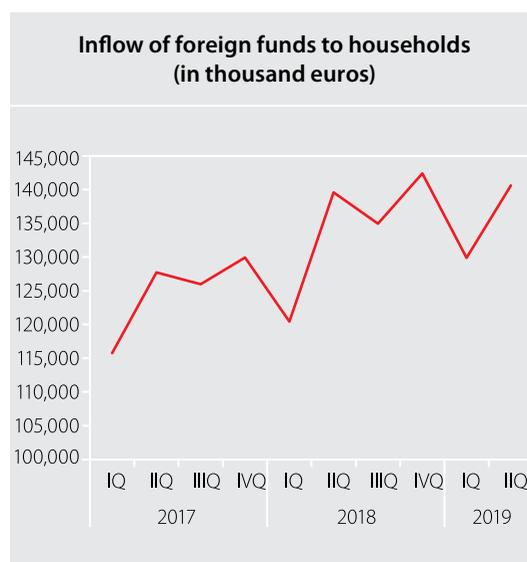
At end-Q2 2019, the retail sector had a net debt of a total 79.8 million euros.

In Q2 2019, the balance of payments statistics show a year-on-year increase in the inflow of remittances in favour of domestic natural persons.

Graph 29



Graph 30

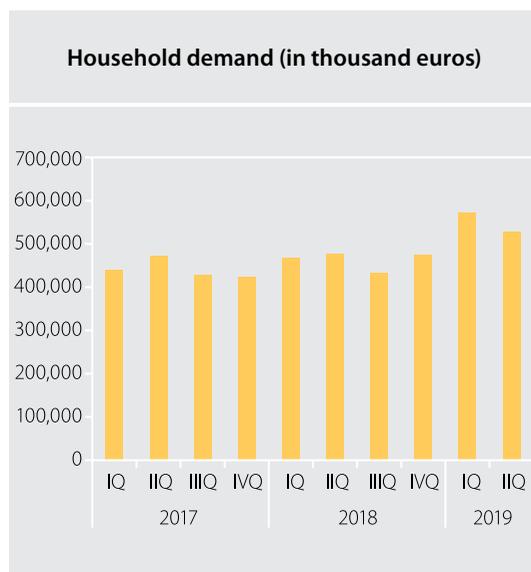


Source: CBCG

³ The retail sector includes resident natural persons and entrepreneurs.

⁴ Population estimate for 2019: Estimate as at 1 January 2019 equals 622,182, Source: MONSTAT

Graph 31



Observation of the total retail sector demand by quarters shows that retail demand in Q2 2019 was lower compared to the previous quarter, but higher compared y-o-y.

3.1.2. Budgetary analysis

According to Ministry of Finance preliminary data, total revenues⁵ of the Budget of Montenegro amounted to 1.11 billion euros in H1 2019.

Source revenues amounted to 824 million euros or 17.2% of estimated GDP⁶, increasing by 2.6% in relation to the plan, and they showed a year-on-year increase of 7.9%. In the structure of source revenues, tax revenues accounted for the main share of 64.4%, followed by contributions with 28.2%, other revenues with 2.4%, donations with 2.2%, fees with 1.6%, duties with 0.8%, and receipts from loan repayment and funds transferred from the previous year with 0.4%.

Tax revenues amounted to 530.2 million euros, recording a year-on-year increase of 8.1%, yet being 3.1% above the plan. All taxes increased compared to the first half of the previous year. In nominal terms, the highest growth of revenues in relation to the previous year was recorded in value added tax in the amount of 27.7 million euros or 10% as a result of the increase of the standard VAT rate by 2 percentage points.

Revenues arising from contributions amounted to 232.5 million euros being 5.3% above planned, and recording a year-on-year growth of 6.6%.

In the six months of 2019, *budget expenditures* amounted to 887.3 million euros or 18.5% of GDP. Compared to the plan for the six months of the current year, the expenditures were lower by 12.9%, yet being higher by 3.7% or 31.6 million euros y-o-y, mainly due to the increased transfers to the institu-

⁵ Revenues include source revenues (direct and indirect taxes and non-tax revenues), borrowings and loans, and revenues from sale of property.

⁶ Source: Ministry of Finance; Estimated GDP for 2019 amounts to 4,803.3 million euros

tions, individuals, NGOs and the public sector by 10.7 million euros.

Current budget expenditures in the observed period amounted to 409.4 million euros and were lower than planned by 9.4% as a result of the fall in capital expenditures by 16.6 million euros, while the most significant decrease in expenditures in relation to the comparative period of the previous year was recorded in expenses for services (12.1%).

Montenegro's capital budget amounted to 81.9 million euros or 1.7% of GDP.

The fiscal deficit of Montenegro in H1 2019 was estimated to 63.3 million euros, or 1.3% of GDP.

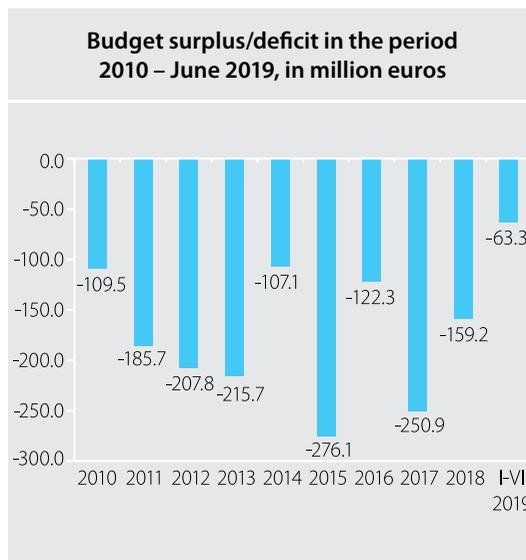
3.1.3. Nonfinancial sector⁷

Due to the lack of data on the nonfinancial sector investments, we can use the sector's net indebtedness as an approximation.

At end-June 2019, loans to nonfinancial sector were higher than this sector's deposits. At end-Q2 2019, net indebtedness of the nonfinancial sector amounted to 80.4 million euros (Graph 33).

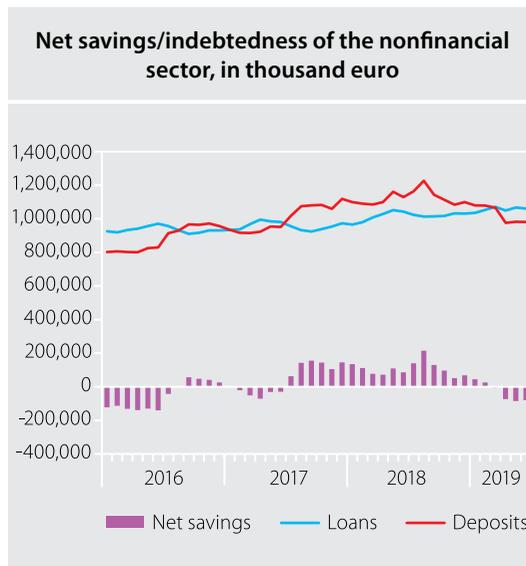
Long-term loans accounted for the main share of 76.4% in the structure of loans to the corporate sector, which indicates that loans to this sector were mainly used for increasing economic activity volume.

Graph 32



Source: Ministry of Finance

Graph 33



⁷ The nonfinancial sector includes state companies and private companies.

3.1.4. External demand and the current account

According to preliminary data, the current account deficit amounted to 644.3⁸ million euros in H1 2019, and represents a y-o-y increase of 4.2%, which is a consequence of the deepening of the imbalance on the goods account, and of decreased surplus at primary income account.

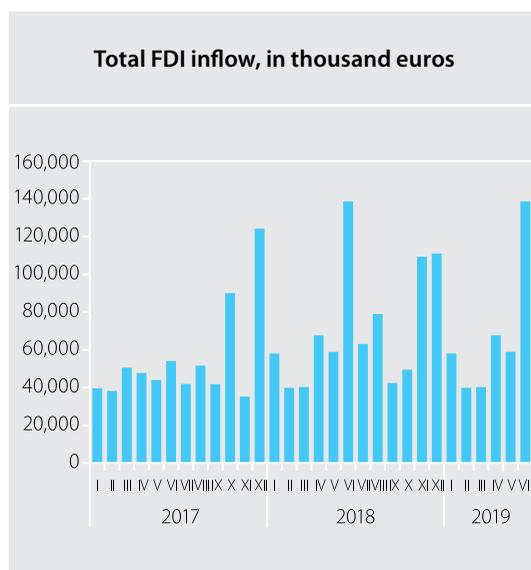
The increase in the goods account deficit by 3% continued as well in H1 2019. Total visible exports amounted to 215.5 million euros, while visible imports amounted to 1.2 billion euros. On the other hand, an increase of 6.7% in the surplus (to 210.7 million euros) was recorded on the services account. The increase of tourism revenues by 10.7% contributed significantly to this. The surplus in the primary income account was 6.4 million euros, being 75.4% less than in 2018 and is the result of an increase in expenditures based on compensation to employees, paid dividends and interest payments. Secondary income account ran a surplus of 129.9 million euros, or 7.8% more than in 2018.

According to preliminary data, net FDI inflow in H1 2019 amounted to 227.3 million euros, which is 48% more y-o-y. This trend is the result of an increase in equity investments, while at the same time a smaller outflow compared to 2018. Total FDI inflow amounted to 374.7 million euros. FDI inflow in the form of equity investments amounted to 245.4 million euros or 65.5% of total inflow recorded (growth of 6.4%). In the structure of equity investments, investments in companies and banks accounted for 166 million euros (increase of 8.7%) of total inflow, while inflow arising from the investments in real estates

amounted to 79.4 million euros (increase of 1.9%). FDI inflow in the form of intercompany debt amounted to 118.8 million euros or 31.7% of total inflow recorded. The total FDI outflow in the period January-June 2019 amounted to 147.4 million euros, being 41% less in relation to the same period of 2018. The outflow from residents' investments abroad amounted to 62.8 million euros, while withdrawal of non-residents' funds invested in Montenegro amounted to 84.6 million euros.

In H1 2019, *portfolio investments* account recorded net outflow of 132.2 million euros, while the net inflow in the *other investments* account amounted to 246.3 million euros. Developments on this account are characterized by lower borrowings on loans taken compared to the previous year, as well as a decrease in deposits by domestic banks abroad.

Graph 34



Source: CBCG

⁸ Montenegro's balance of payments data published in accordance with the new IMF methodology (IMF Balance of Payment Manual, Sixth Edition - BMP 6)

3.2. Supply and demand

In H1 2019, industrial output recorded a year-on-year decline of 12.2% due to the decline recorded in the manufacturing industry and electricity, gas and steam supply sectors of 3.6% and 25.4%, respectively. Output increase of 13.5% was recorded in the mining and quarrying sector. Observation of monthly data on the industrial output trends in Q2 2019 shows that decline was recorded in April (-24.1%), while the respective increase was recorded in May and June of 9.1% and 25.8%.

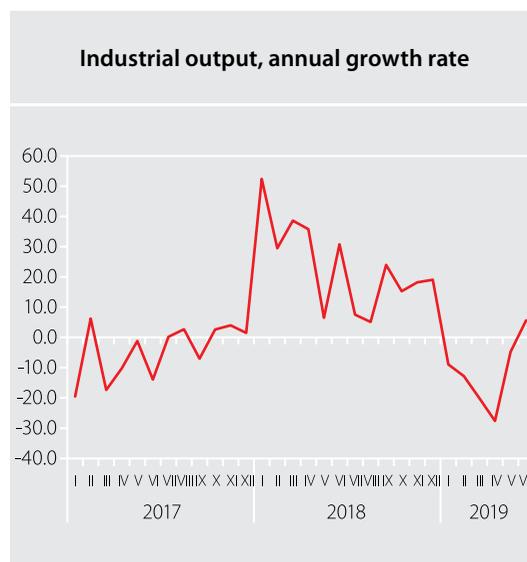
During the first six months of 2019, a total of 502,744 tourists stayed in collective accommodation establishments, which is a y-o-y increase of 23.6%. The number of domestic tourists arrivals in collective accommodation establishments increased by 7.1%, while the number of foreign tourists arrivals grew by 26%. Tourist overnights amounted to 1.5 million, which is an increase of 12.5% y-o-y.

In H1 2019, forestry recorded a total of 73,596 cubic metres of forest assortments, which is a y-o-y decrease of 32.7%⁹.

The value of executed construction works amounted to 371.6 million euros in H1 2019, recording a 12.3% y-o-y growth, and construction activity measured by effective working hours grew by 3%.

In the first six months of 2019, air passenger transport recorded a y-o-y increase of 8.7%, while air cargo transport decreased by 4.1%. In the same period railway passenger transport remained unchanged¹⁰, while railway freight transport increased by 2.2%¹¹. In Q2 2019, road passenger transport recorded y-o-y increase of 1.1%¹², while road freight transport increased by 8.2%¹³ y-o-y.

Graph 35



Source: MONSTAT

⁹ During the same period, production decreased by 33.4%, expressed by non-weighted index.

¹⁰ Presented through number of passengers in thousands, while presented through passenger kilometres the decline was 0.8%.

¹¹ Presented in thousand tonnes, while presented through passenger tonnes the increase was 4.9%.

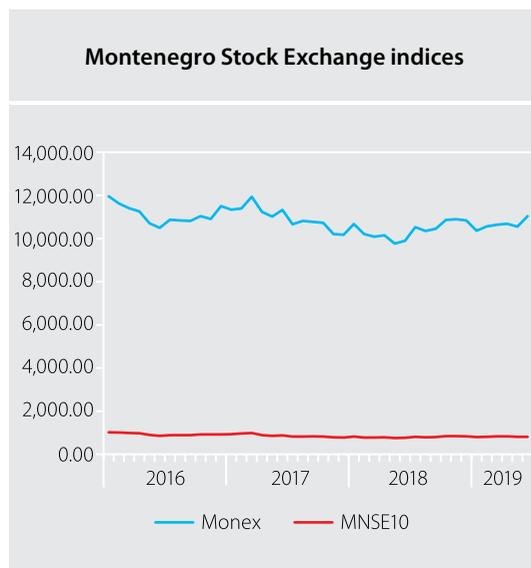
¹² Presented through number of passengers, while it increased by 0.7% expressed in passenger kilometres.

¹³ Presented through transported goods in thousand tonnes, while it increased by 7.4% presented in tonne kilometres.

3.3. Stock exchange indices

At end-Q2 2019, the MNSE10 index dropped in relation to end-2018, while Monex index grew. Year-on-year comparison reveals growth in both indices (Graph 36).

Graph 36



Source: Montenegro Stock Exchange

At end-June 2019, SE index Monex¹⁴ amounted to 11,037.96 recording an increase of 197.47 index points or 1.8% in relation to end-2018, and a year-on-year increase of 1,133.92 index points or 11.4%.

The MNSE10¹⁵ index stood at 809.59 at end-Q2 2019, and recorded a decrease of 27.49 index points or 3.3% compared to end-2018, while it was higher y-o-y by 39.35 index points or 5.1%.

¹⁴ The MONEX is a benchmark Montenegro Stock Exchange index aimed at providing a more precise description of the share price trends in the official and in the free market of Montenegro Stock Exchange AD Podgorica. With the new Methodology, the legal heir of the MONEX20 index - MONEX index - has more companies in its index basket.

¹⁵ The MNSE10 is the blue-chip index at the Montenegro Stock Exchange and it is aimed at providing a more precise description of the price trends of the most representative shares in the official and the free market of the Montenegro Stock Exchange AD Podgorica. It includes the top ten companies in the Montenegrin market.

4. MONETARY POLICY

During Q2 2019, there were no changes to the existing decisions, nor were new ones passed regarding the Central Bank of Montenegro monetary policy instruments.

5. INFLATION FORECAST FOR 2019 AND TWO QUARTERS OF 2020

5.1. Model assessment

Montenegro's inflation fan chart is a graphic representation of inflation rate forecast probability distribution presented by the consumer price index. In that respect, instead of determining specific points, the fan chart also takes into account potential risks and uncertainties through probability distribution that might influence the inflation trends in the upcoming period. The purpose of the fan chart is to indicate and consider the uncertainties in the real economy flows, which are consequently reflected in the inflation rate trend (increase in energy prices, increase/decrease in the foreign trade deficit, and the like).

Montenegro's fan chart for two quarters of 2019 and two quarters of 2020 is based on three estimated constituent parts:

1. **Central projection values** – the values of the fan chart central projection are derived from the ARIMA (Autoregressive Integrated Moving Average) model;
2. **Degree of uncertainty** – determines the fan chart width. The uncertainty degree ratios are obtained through analytical assessment and calculation of the relative impact of potential internal and external shocks that are possible in the Montenegrin economy over the one-year period and which are reflected through the “thickness” of the band around the 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 have “overestimated” or “underestimated” inflation rates. The position of the mean value of inflation distribution will depend on this.

Central projection of fan chart - ARIMA model for two quarters of 2019 and two quarters of 2020

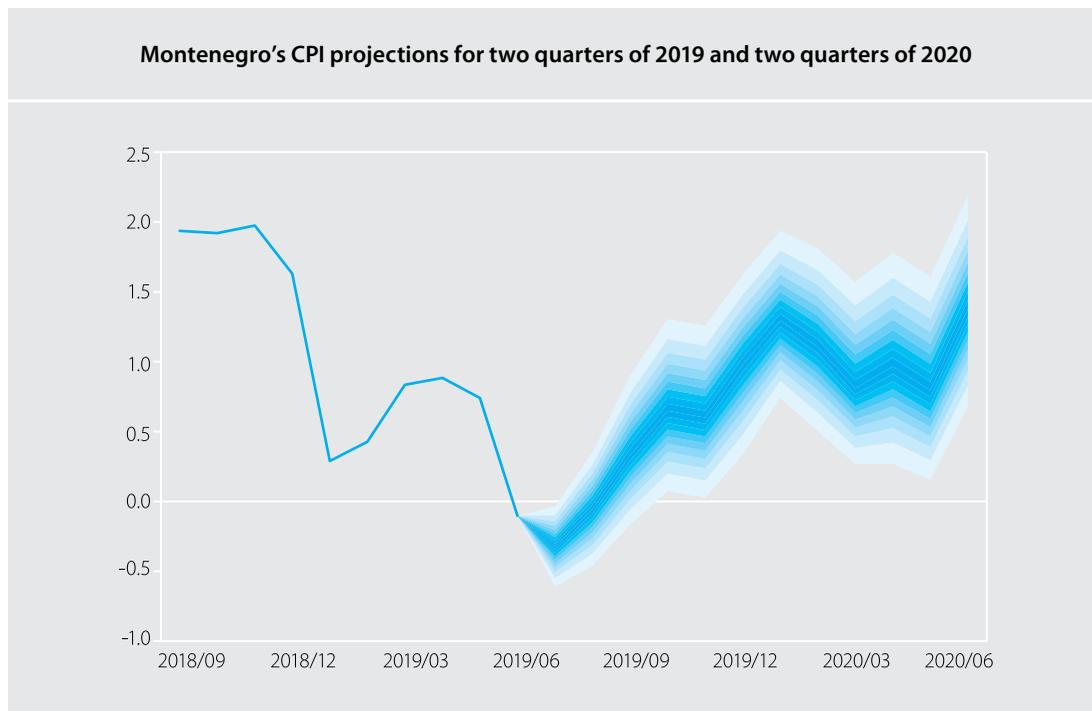
With a view to developing a fan chart, an ARIMA model of time series of inflation of Montenegro presented via Consumer Price Index was developed¹⁶.

¹⁶ A detailed explanation of the ARIMA model of Montenegro was presented in the CBCG working paper No 11 "Inflation Forecast" - Empirical research on the retail price index trend of Montenegro for 2007 - applying the ARIMA model.

ARIMA model was used for short term forecasts (12 months), whereby several iterations of ARIMA models were made, which were ranked based on their efficiency and quality of diagnostics. The selected ARIMA model, ARIMA (2, 1, 2)¹⁷ has sufficient confidence level for forecasts.

The monthly forecasts value was used as the value of central projection of the CPI graph for two quarters of 2019 and two quarters of 2020. Obtained values represent the distribution mode, i.e. values with the highest frequency in the distribution of this time series.

Graph 37



Source: CBCG, 2019

Mean value of the obtained model is 0.7. The value of the coefficient of asymmetry varies in the range of 0.5 to 1, and the relative standard deviation is 0.25. Model projection of inflation is located in the central span of the distribution. The fan chart describes 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.¹⁸ The fan chart has an equal number of bands (eight) on either side of the central band whereby every band of the same colour, both above and below the central band, cumulatively describes the next 10% of inflation trend probability. As uncertainty grows over time, the fan chart spreads.

¹⁷ 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.

¹⁸ The mode values (central projection) are usually in the deepest band shade, but in case of a significant risk level, it can happen that the central projection does 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 of inflation in Montenegro, based on the ARIMA model assessment for two quarters of 2019 and two quarters of 2020, indicates that there is a 90% probability that the CPI inflation will range between -0.5% and 2.2%, depending on the month, with the central projection of 0.7%. At the same time, inflation at end-2019 is forecasted to range between 0.3% and 1.5%, with the central projection of 0.9%. The fan chart central projection (the darkest part) represents a 10% probability span (Graph 36).

Starting assumptions for forecasting inflation for two quarters of 2019 and two quarters of 2020

The projection is based on projected energy and food prices, inflation projections in the euro area, and the announced excise duties calendar (for alcoholic beverages and coal). The risks related to the projected inflation rate shown on the fan chart are set symmetrically. Uncertainty about future price developments relates to the international environment, i.e. to the oil prices trend. Following the stabilisation and rise in oil prices in the first five months of the current year, oil prices fell 9.6% in June in relation to the previous month, indicating growing uncertainty in global oil demand.

Internal factors:

- Excise duties on cigarettes, coal, alcohol and carbonated water will remain the same until the end of 2019
- Potential increase in electricity prices of 6% in 2019
- Fluctuation of +/-5% in the agricultural product prices, caused by weather conditions
- Wages and salaries stagnation

External factors:

- By 2019, we assumed that crude oil prices in the international market would not increase significantly (up to 5%), while in 2020 the average crude oil price is projected to decline.
- For 2019, a moderate increase in food prices is forecasted, as well as the price of metals at the international market.
- In the projected period, we do not expect any significant inflationary pressures from the euro area. In the latest report, the ECB stated that growth risks were still down as a result of uncertainty over geopolitical factors. The expansion of economic activity in the euro area of 1.2% in 2019 will not exert inflationary pressures, thus the ECB stands by its expectations of the inflation rate being just below the target (1.3%)¹⁹.

Deviation of any of these parameters would require the forecast to be adjusted.

¹⁹ Source: Eurosystem staff macroeconomic projections for the euro area, June 2019

6. EXPECTED INFLATION IN 2019

A survey among entrepreneurs, forecasts by the CBCG and the relevant international organizations indicate the growth of economic activity in 2019, which will act anti-inflationary.

The largest number of surveyed banks and corporate sector expects an inflation rate of between 1.5% and 2%. As per preliminary data, in Q2 2019, the aggregate demand recorded a significant y-o-y increase, yet a decline in relation to Q1 2019.

In 2019, we do not expect inflationary pressures from the international environment, given the expected slight fall in crude oil prices in the global market, as well as the low projected inflation rate by the ECB.

For all these reasons, we expect a moderate inflation rate this year. The model estimation indicates that there is a 90% probability that the CPI inflation will range between 0.3% and 1.5% in December 2019, with the central projection of 0.9%. Our expert assessment is similar to a model estimate and we expect that in 2019 inflation will range from 0.3% to 1.3%.

Table 3

| Estimated inflation rate | | |
|--------------------------|----------------------|------------------------|
| Optimistic assessment | Realistic assessment | Pessimistic assessment |
| 0.3 | 0.8% | 1.3% |

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 the mentioned parameters from the expected values would also require revision of the estimation