

INFLATION REPORT QUARTER II, 2020

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

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

CENTRAL BANK COUNCIL: Radoje Žugić, PhD, Governor
Nikola Fabris, PhD, Vice-Governor
Miodrag Radonjić, Vice-Governor
Zorica Kalezić, PhD, Vice-Governor
Milorad Jovović, PhD
Ruždija Tuzović
Nikola Milović, PhD

DESIGNED BY: Nikola Nikolić
Nikola Marđonović

TRANSLATED BY: Department for Financial Stability,
Research and Statistics

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1. INFLATION INDICATORS

Consumer prices decreased by 0.6% in Q2 2020, mostly due to the decline in prices under transport, clothing and footwear, and housing, water, electricity, gas and other fuels (Table 2). The consumer prices monthly trend shows that a slight price increase was present in May and June (of respective 0.1% each), while prices declined in April (-0.7%). Average consumer prices rate (the first six months of 2020 compared to the same period of 2019) amounted to 0.1%, while prices in June 2020 decreased by 0.2% compared y-o-y.

Table 1

Inflation, %						
	2019				2020	
	III	VI	IX	XII	III	VI
Change in relation to the previous year-end	0.7	0.3	0.4	1.0	-0.4	-0.9
Annual change	0.8	-0.1	-0.2	1.0	0.0	-0.2

Source: MONSTAT

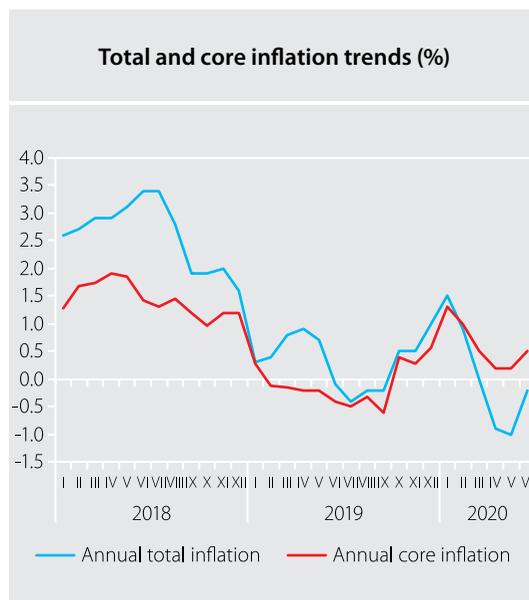
In Q2 2020, six out of twelve categories that make up 47.9% of the consumer basket recorded prices decline in Montenegro. *Transport* prices recorded the highest decrease of -5% due to the decline in the prices of fuels and lubricants for personal transport equipment (-10.7%). This resulted from the significant oil prices fall at the international market caused by the Covid-19 pandemic. During this reporting period, the following categories also recorded price decline: *clothing and footwear* (-3%), *housing, water, electricity gas and other fuels* (-0.7%), *furnishing, household equipment and routine household maintenance* (-0.5%), *hotels and restaurants* (-0.3%) and *miscellaneous goods and services* (-0.2%). Prices under *food and non-alcoholic beverages* recorded the highest price increase (0.8%) due to growing prices of fruit (10.2%), non-alcoholic beverages, and vegetables (by respective 0.9% and 0.8%). Prices also increased in *health* (0.6%), *alcoholic beverages and tobacco* (0.4%) and *recreation and culture* by 0.1%. Prices under *communication* and *education* remained unchanged in Q2 2020.

Table 2

Share of selected categories in total inflation ¹				
	Weights	VI 20 / III 20	Growth rate	Contribution
TOTAL	1000	99.4	-0.6	-0.6
Food and non-alcoholic beverages	341.1	100.8	0.8	0.3
Alcoholic beverages and tobacco	40.4	100.4	0.4	0.0
Clothing and footwear	86.1	97.0	-3.0	-0.3
Housing, water, electricity gas and other fuels	154.0	99.3	-0.7	-0.1
Furnishing, household equipment and routine household maintenance	39.4	99.5	-0.5	0.0
Health	40.8	100.6	0.6	0.0
Transport	109.4	95.0	-5.0	-0.5
Communication	48.5	100.0	0.0	0.0
Recreation and culture	32.0	100.1	0.1	0.0
Education	18.7	100.0	0.0	0.0
Restaurants and hotels	47.6	99.7	-0.3	0.0
Miscellaneous goods and services	42.0	99.8	-0.2	0.0

Source: MONSTAT and CBCG calculations

Graph 1



Source: MONSTAT and CBCG calculations

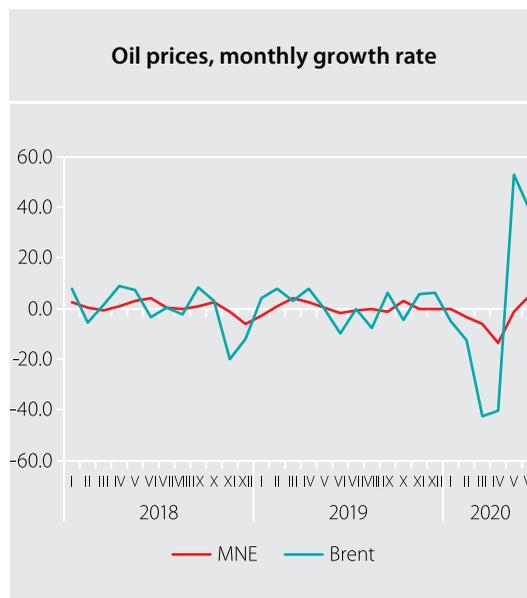
During the second quarter, the *monthly core inflation* was lower in May and June 2020. Yet, it was higher than official monthly inflation in April. It remained negative throughout all three months.

The *annual core inflation rate* in June 2020 amounted to 0.5% and was higher by 0.7 percentage points than the total inflation. Annual core inflation was above total annual inflation in all three months of the second quarter (Graph 1).

¹ Note 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 or the third decimal.

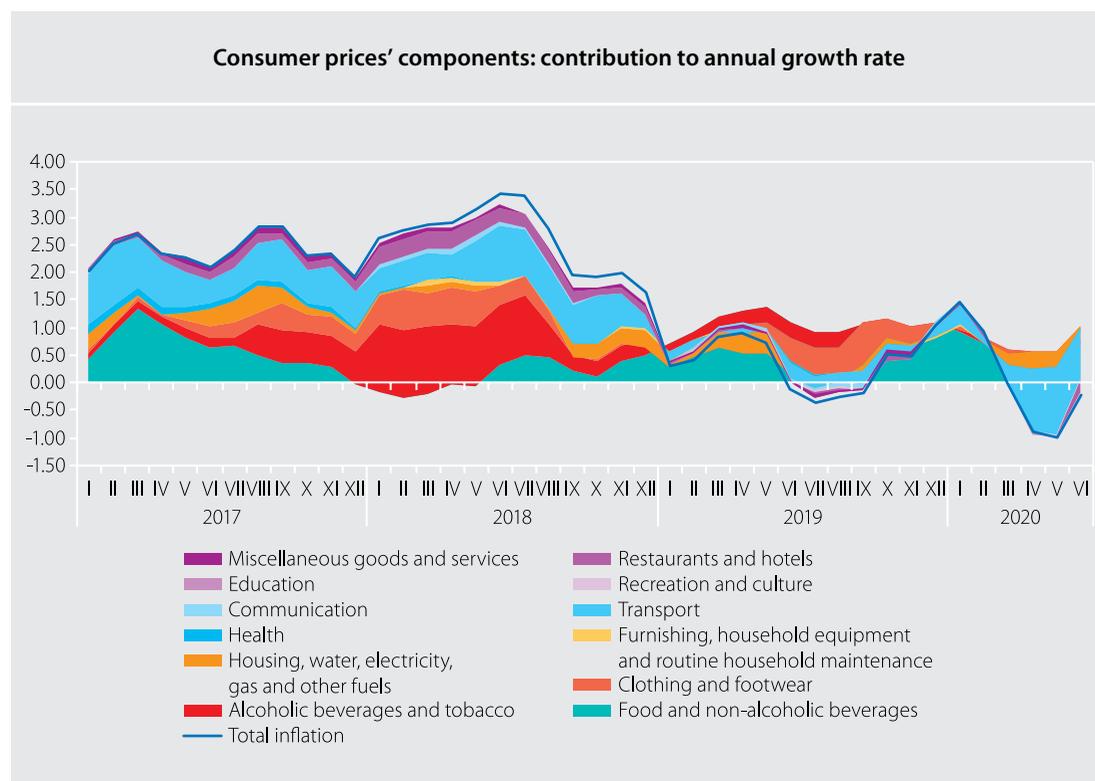
The oil prices at global markets recorded a significant quarterly decrease in Q2 2018. In the observed quarter, the OPEC reference basket price averaged 26.6 USD/barrel, being 48.3% lower than the average price seen in the previous quarter. The lowest price of the reference basket since December 2001 was recorded in April, and it amounted to 17.66 USD/barrel. The average price of Brent in Q2 was 29.2 USD/barrel, which is 41.7% less compared to the price recorded in the previous quarter. This significant drop in oil prices resulted from adverse global economic developments as a result of the current pandemic and the declining demand for oil.

Graph 2



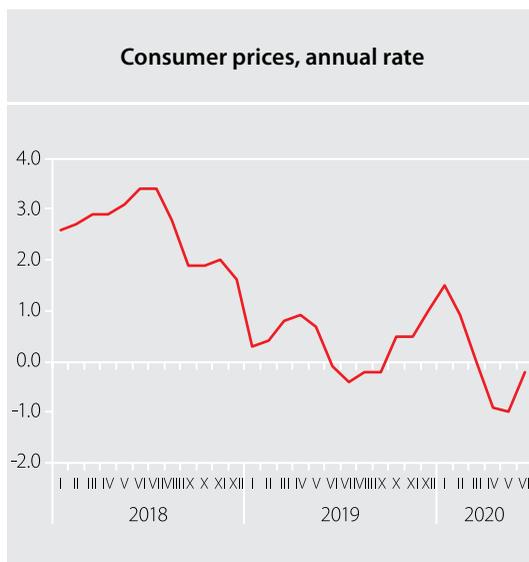
Source: MONSTAT and "Monthly Oil Market Reports", OPEC

Graph 3



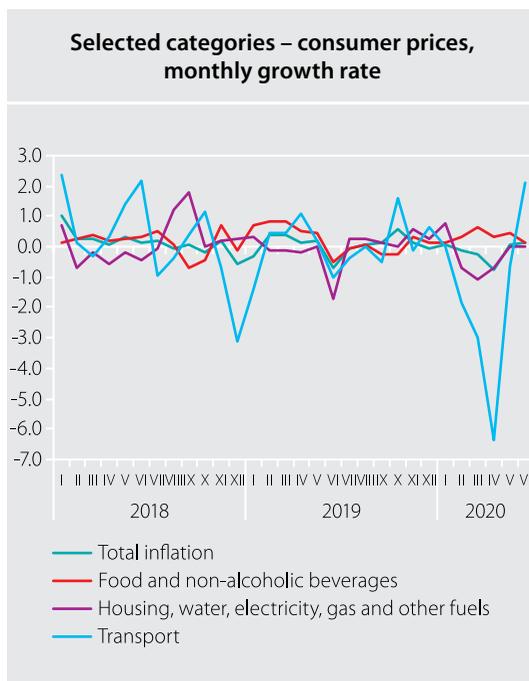
Source: MONSTAT and CBCG calculations

Graph 4



Source: MONSTAT

Graph 5



Source: MONSTAT

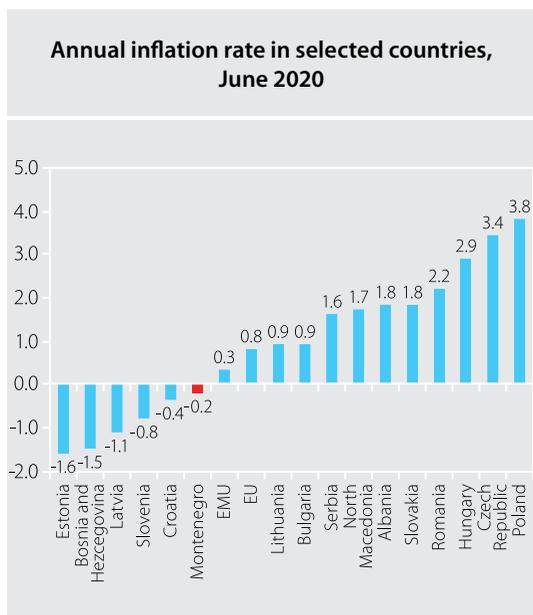
Annual price decline of 8.4% in the *transport* category in June 2020 gave the most considerable contribution (0.9 percentage points) to the total annual inflation rate growth of -0.2%. The annual price decline was also reported in *hotels and restaurants* (-4.3%), *furnishing, household equipment and routine household maintenance* (-1.4%), *communication* (-0.6%), *recreation and culture* (-0.4%), and *housing, water, electricity, gas and other fuels* (-0.3%). Annual price growth was also reported in *alcoholic beverages and tobacco* (2.9%), *clothing and footwear* (2.8%), *food and non-alcoholic beverages* (1.9%), *health* (1.6%) and *education* (0.1%). Prices under *miscellaneous goods and services* remained unchanged.

In June 2020, **producers' prices of manufactured products** recorded a 0.1% decline compared to December 2019. This was due to the price decline in the mining and quarrying sector of -2.6%. In comparison, the manufacturing industry sector recorded a 0.7% growth. Prices under electricity, gas and steam supply sector remained unchanged. At the annual level, producers' prices of manufactured products decreased by 0.5%.

Comparison of annual inflation recorded in Montenegro with inflation recorded in selected countries in June shows that negative annual rates were recorded in Bosnia and Herzegovina, Croatia, Estonia, Latvia, Montenegro and Slovenia. The highest positive annual inflation rate was recorded in Poland (3.8%). In comparison, Bulgaria and Lithuania recorded the lowest positive annual inflation rate (by 0.9% each).

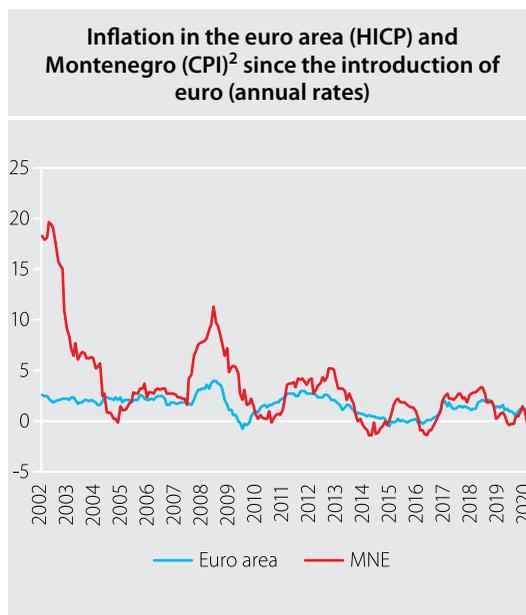
The annual HICP inflation rate reported in the euro area amounted to 0.3%, CPI inflation in Montenegro amounted to -0.2%, and annual HICP inflation in Montenegro was -1%.

Graph 6



Source: National statistical offices and Eurostat

Graph 7



Source: MONSTAT and Eurostat

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

2. INFLATIONARY EXPECTATIONS

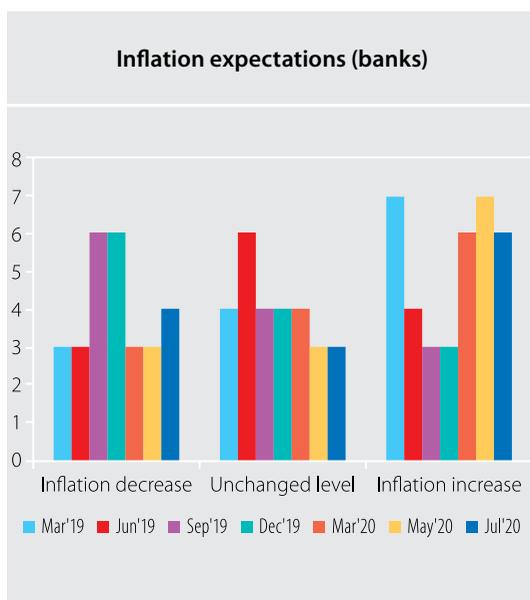
2.1. Banks' expectations

Concerning inflation expectations of banks, based on the July 2020 survey, six banks expect inflation to grow, while four banks expect inflation at the same level. Three banks expect unchanged inflation compared to 2019 (Graph 8).

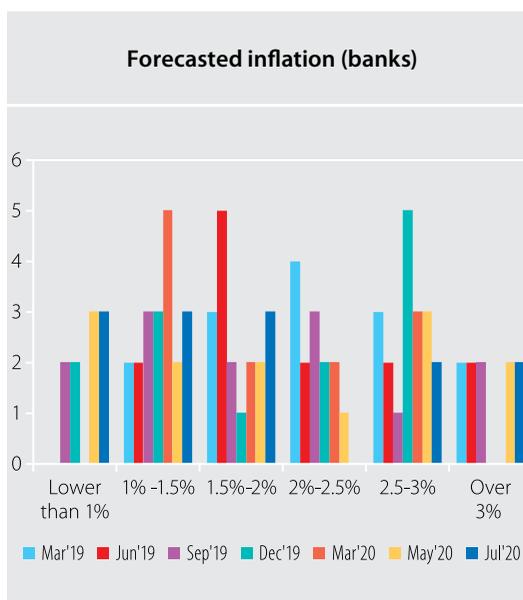
The expectations concerning inflation levels varied among banks. Three banks each expect inflation rate lower than 1%, between 1% and 1.5%, and between 1.5% and 2%. Two banks each expect inflation between 2.5% and 3% and above 3%, while none of the banks expects inflation between 2% and 2.5% (Graph 9).

Concerning the expectations regarding the nominal lending interest rate trends in 2020, one bank expects decline, and five banks expect growing nominal lending interest rate. In comparison, seven banks expect it to remain unchanged. Compared to the previous year, eight banks' expect unchanged effective interest rates, and five banks expect their growth. None of the banks expects them to decline.

Graph 8

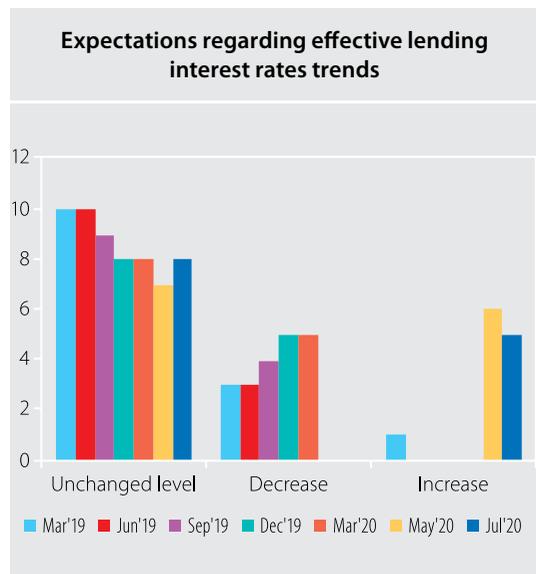


Graph 9

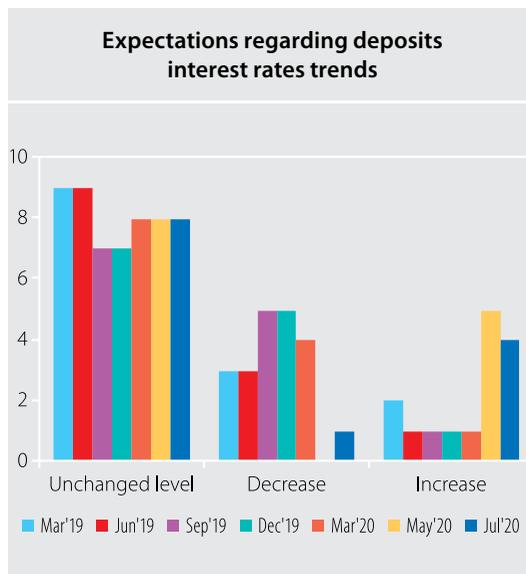


Concerning deposit interest rates trends, eight banks expect no change, four banks expect growth, and one bank expects a decrease in deposit interest rates.

Graph 10

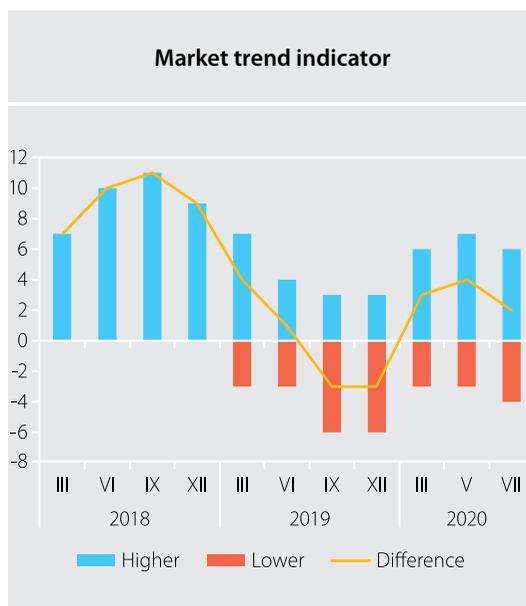


Graph 11



To calculate inflation forecasts, we use market trend indicator (line in Graph 12). It is calculated as the difference between the number of banks expecting inflation growth and the number of banks expecting inflation decrease. A negative value of the market trend indicator points to an expected inflation rate decrease 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. During most of the previous year, inflation expectations were declining, while they increased during the first seven months of 2020.

Graph 12

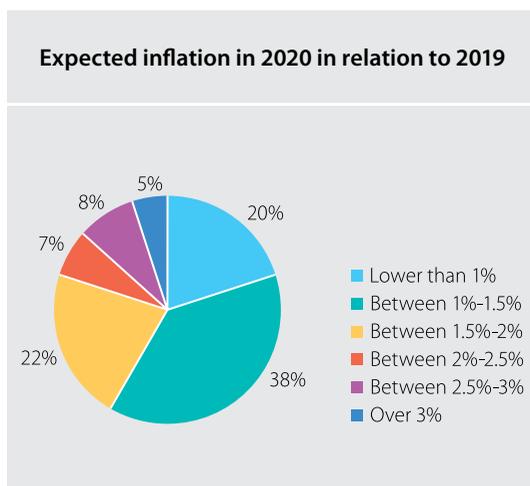


2.2. Expectations of economy (except banks)

Inflation

In the total number of surveyed companies, the majority (38%) expected the inflation in 2020 to range between 1% and 1.5%. Some 22% of companies expect inflation between 1.5% and 2%, while 20% of surveyed economic entities expect inflation below 1%. Some 8% expect respective inflation between 2.5% and 3%, while some 7% expect inflation in 2020 between 2% and 2.5%. Some 5% of the surveyed companies expect it to be above 3% (Graph 13).

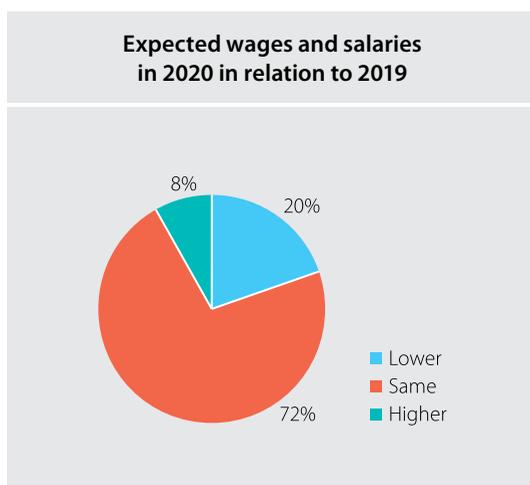
Graph 13



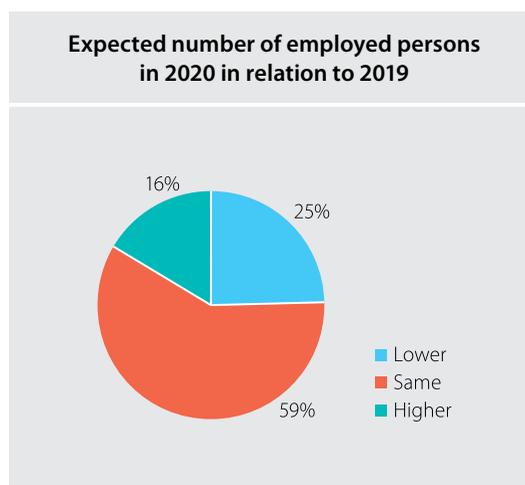
As much as 72% of surveyed companies expect wages and salaries to remain unchanged in 2020, 20% of the surveyed companies expect them to decline, while 8% expect wages and salaries to increase. Concerning the number of employed persons, 59% of surveyed companies expected it to remain unchanged, 25% expected this number to decrease, and 16% expected it to increase compared to the previous year.

The majority of surveyed economic entities (72%) did not expect changes in the prices of production inputs, whereas 88% did not plan to change the prices of their products (services) in 2020.

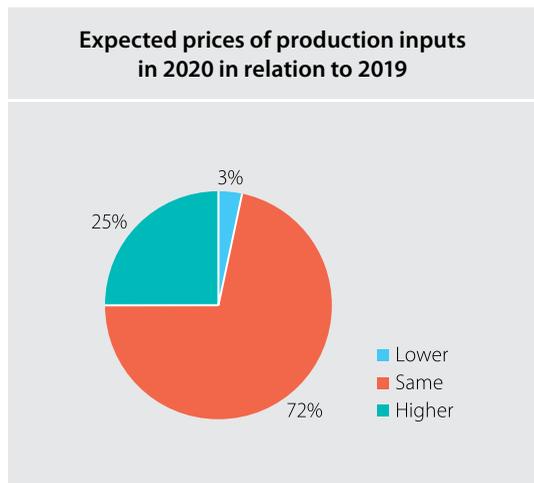
Graph 14



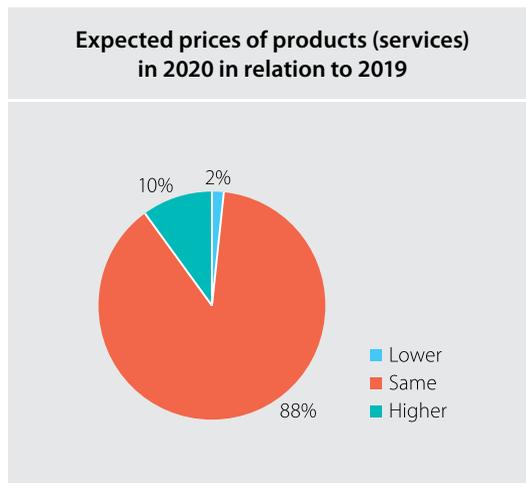
Graph 15



Graph 16



Graph 17

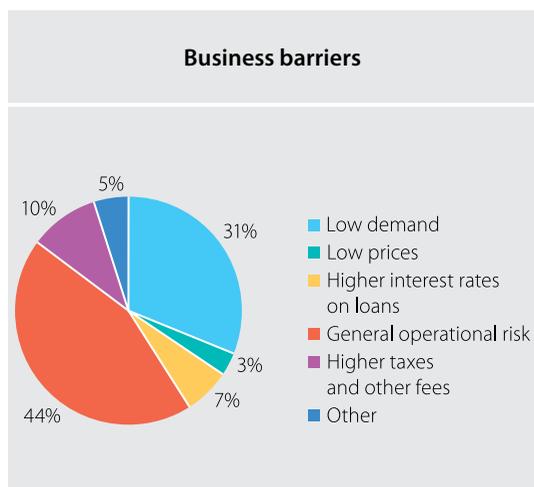


Business Environment

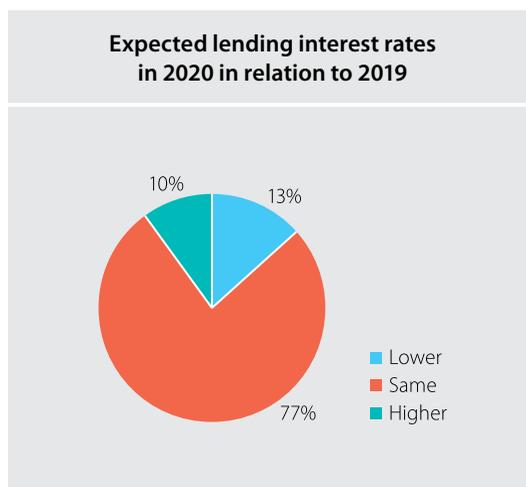
In the area of business barriers, survey results showed that most of the surveyed companies saw general operational risks (44%) and low demand (31%) as main obstacles.

As far as lending interest rates are concerned, 77% of surveyed companies expected unchanged levels, 13% expected them to decline. In comparison, 10% expected higher lending interest rates in 2020 relative to 2019.

Graph 18



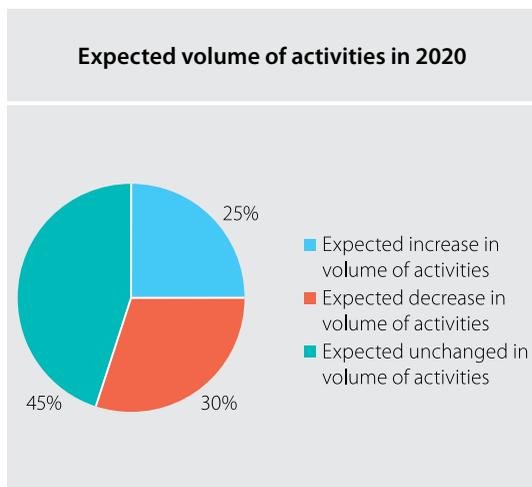
Graph 19



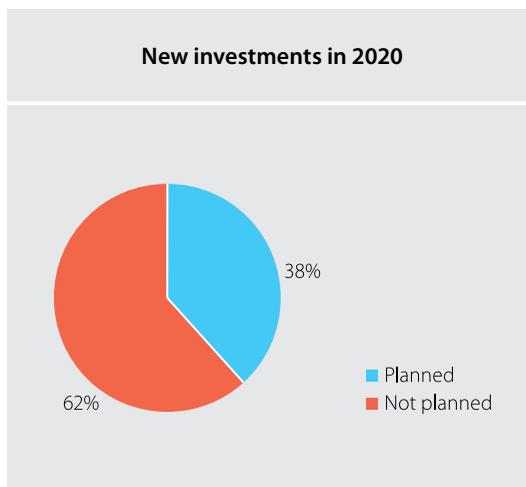
Investments

Out of the total number of surveyed companies, 25% planned the increase in the volume of activities in 2020, while 38% planned new investments. Most investments (56%) referred to increasing fixed assets. Concerning the main barriers to new investments, the surveyed entities stated the following: insufficient exploitation of existing capacities, low demand, and other barriers.

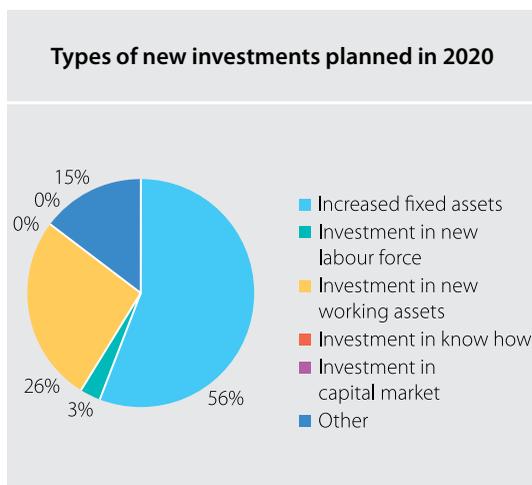
Graph 20



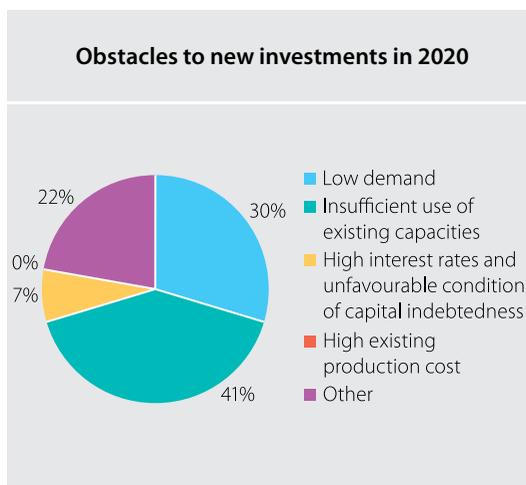
Graph 21



Graph 22



Graph 23

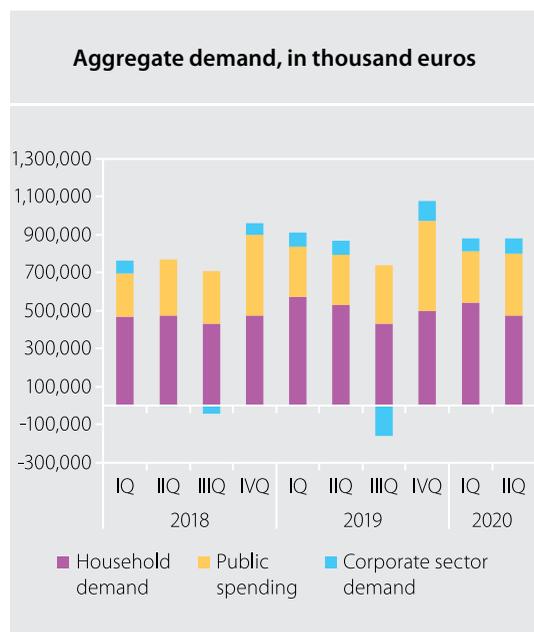


3. INFLATION DETERMINANTS

3.1. Demand

According to preliminary data, aggregate demand in Q2 2020 recorded an insignificant quarterly and a mild year-on-year growth. Compared to the previous quarter structure, the total demand structure in Q2 2020 shows increased public spending and corporate sector demand, while household demand in total demand declined.

Graph 24



Graph 25



Box 1 - Aggregate demand calculation methodology

For more complete monitoring of aggregate demand as an inflation determinant, the CBCG has developed the aggregate demand calculation methodology. The starting point of this methodology is that the aggregate demand represents the sum of the demand of three sectors: personal spending (households), investment spending (corporate sector), and public spending. Taking into account the

lack of numerous data necessary for calculating the aggregate demand, the existing data should not be treated as an indicator of the aggregate demand exact amount. Instead, it should be treated as an indicator showing the aggregate demand trend. In the existing methodology, a number of important data were not available, such as corporate investments, revenues from share sales, non-market income, non-observed economy revenues, and the like. The following equation expresses the methodology of aggregate demand calculation:

$$AD = C + I + G$$

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)

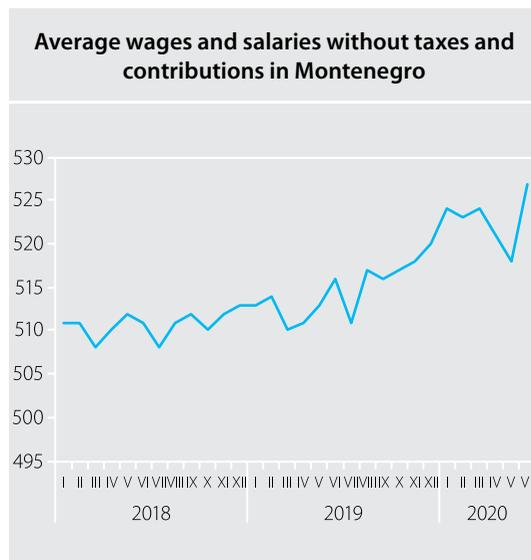
G = public spending – paid pensions – salaries paid from the budget – net Government savings (deposits – loans – Treasury bills)

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

3.1.1. Salaries and other available demand determinants

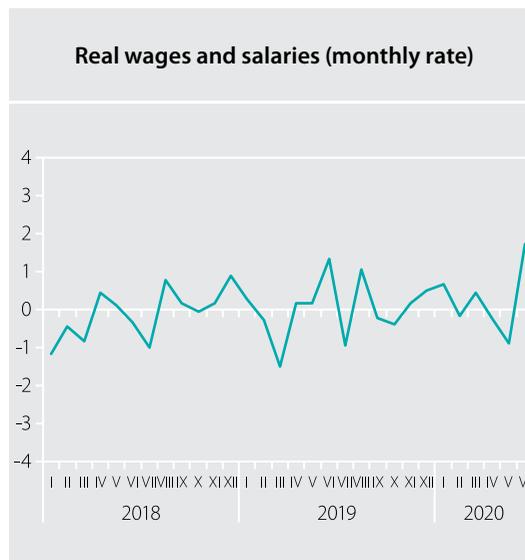
In Q2 2020, an average gross salary in Montenegro amounted to 780 euros, while an average salary without taxes and contributions amounted to 522 euros. Compared to Q1 2020, the average gross and net wages and salaries decreased by 0.8% and 0.3%, respectively. Compared y-o-y, the average salary and the average salary without taxes and contributions rose by 1.2% and 1.7%, respectively.

Graph 26



Source: MONSTAT

Graph 27



Source: MONSTAT

The consumer prices trend - i.e. the wages and salaries observed in real terms - shows that Q2 2020 real wages and salaries increased in June³. Yet, they declined in April and May.

Borrowing to the household sector⁴ was marked by a positive trend in the six months of 2020. Loans granted to this sector grew at the average monthly rate of 0.2%, while their y-o-y growth was 0.1%. At the end of Q2 2020, total household sector loans amounted to 1,391 million euros, or by 33.3 million euros or 2.5% more than at the end of 2019, i.e. by 95.7 million euros or 7.4% more than in the same period of 2019 (Graph 28).

At end-June 2020, debt per capita⁵ amounted to 2,236.8 euros, recording a 53.5 euros increase compared to end-2019, and a y-o-y increase of 153.8 euros.

Total MFIs loans disbursed to households amounted to 66.9 million euros at end-June 2020. This was 1.3 million euros or 2% more than at the end of 2019, and 1.4 million euros or 2.1% higher compared y-o-y.

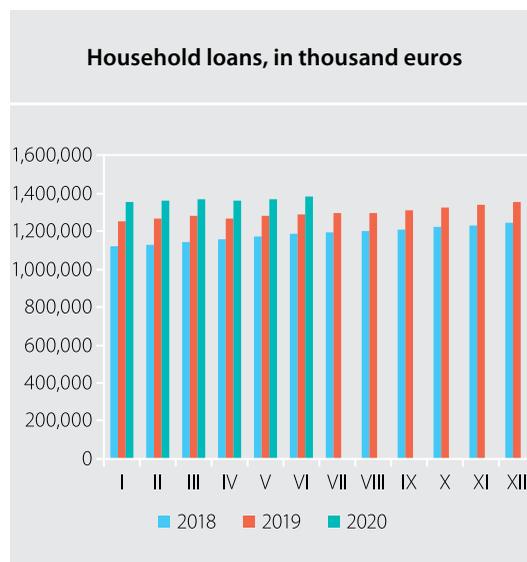
At end-June 2020, household deposits amounted to 1,242.4 million euros, which is by 74.1 million euros or 5.6% less than at the end-2019, or by 26.9 million euros (2.2%) more than in the same period of the previous year.

At end-June 2020, loans to deposits ratio for this sector amounted to 1.12 being higher compared to end-2019 when it stood at 1.03, as well as compared y-o-y when it amounted to 1.07.

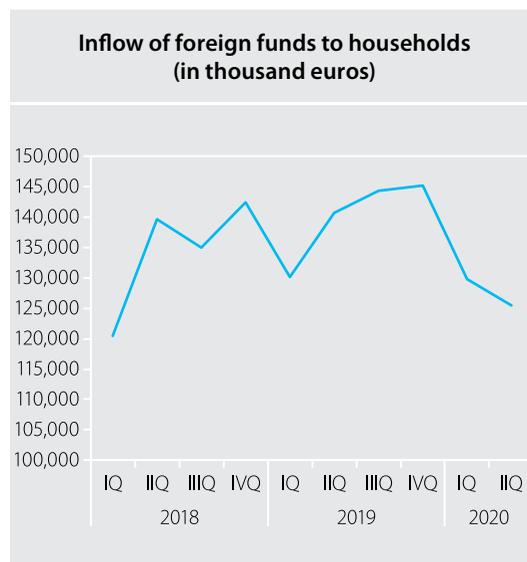
At the end of Q2 2020, the household sector had a net debt to banks of 148.6 million euros.

In the period January - June 2020, the balance of payments statistics reveals a y-o-y decline in the

Graph 28



Graph 29



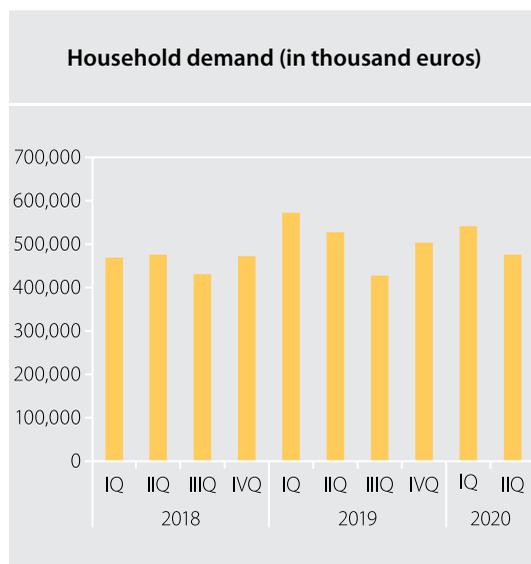
Source: CBCG

³ The increase in the average salary in June was conditioned by a one-time refund, i.e. the payment of the amount by which the salary was reduced in 2018, in accordance with Article 48a paragraph 1 of the Law on Salaries of Employees in the Public Sector. Source: MONSTAT

⁴ The retail sector includes resident natural persons and entrepreneurs.

⁵ Population estimate for 2020. Estimate as at 1 January 2020 amounts to 621,873. Source: MONSTAT

Graph 30



inflow of monetary resources arising from compensations to employees and from remittances.

Observation of the total retail sector demand by quarters shows that household demand in Q2 2020 was lower compared to the previous quarter and lower compared y-o-y.

3.1.2. Budgetary analysis

According to the Ministry of Finance preliminary data, total revenues⁶ of the Budget of Montenegro amounted to 1.16 billion euros in Q2 2020.

Source revenues amounted to 747.8 million euros or 16.2% of estimated GDP⁷. They increased by 0.4% in relation to the plan, and showed a year-on-year decrease of 9.3%, as the result of the declining activity due to COVID-19 pandemic. The source revenues structure reveals that tax revenues accounted for the main share of 64.4%, followed by contributions with 29.5%, other revenues with 1.8%, fees and donations with respective 1.6%, duties with 0.6%, and receipts from loan repayment and funds transferred from the previous year with 0.5%.

Tax revenues amounted to 481.9 million euros, recording a year-on-year decrease of 9.1%, and were by 0.4% below the plan. All taxes except corporate income tax recorded a decrease compared to the six months of 2019. In nominal terms, VAT recorded the highest revenues decline of 44.6 million euros compared to the previous year.

Revenues from contributions amounted to 220.4 million euros being 1.7% above plan and recording year-on-year decline of 5.2%.

In the six months of 2020, *budget expenditure* amounted to 962.7 million euros or 20.9% of GDP. The expenditures were lower by 0.9% compared to the plan for the six months of the current year, yet higher compared year-on-year by 8.4% or 74.7 million euros. This was the result of the increased cur-

⁶ Revenues include source revenues (direct and indirect taxes and non-tax revenues), borrowings and loans from domestic and foreign sources, and revenues from sale of property.

⁷ Source: Ministry of Finance; Estimated GDP for 2020 amounts to 4.61 billion euros.

rent budget reserve used to finance the costs for assistance to the economy affected by the coronavirus. It was also due to the increase of transfers to institutions, individuals, NGOs and the public sector, where most funds were allocated to the Health Insurance Fund.

During the reporting period, current budget expenditures amounted to 420.8 million euros and were slightly lower than planned. Compared y-o-y, they increased by 7.3% or 28.7 million euros due to increased gross wages, contributions paid by the employer, and expenditures for services.

Capital expenditures⁸ amounted to 84.5 million euros or 1.8% of GDP.

Montenegro's fiscal deficit for the first six months of 2020 was estimated at 214.9 million euros or 4.7% of GDP.

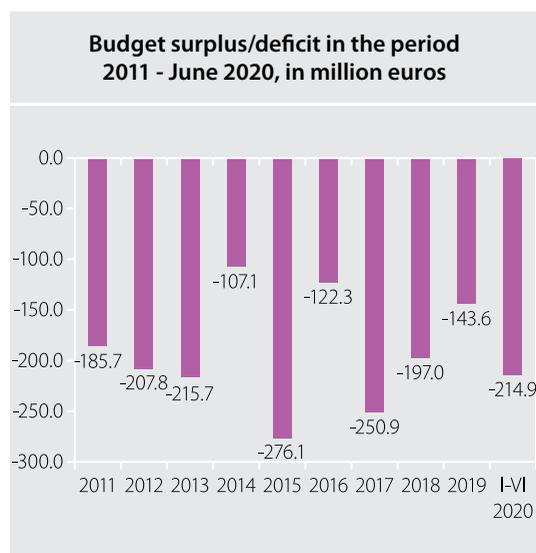
3.1.3. Non-financial sector⁹

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

At end-June 2020, loans to the non-financial sector were higher than this sector's deposits. At end-Q2 2020, net savings of the non-financial sector amounted to 166 million euros (Graph 32).

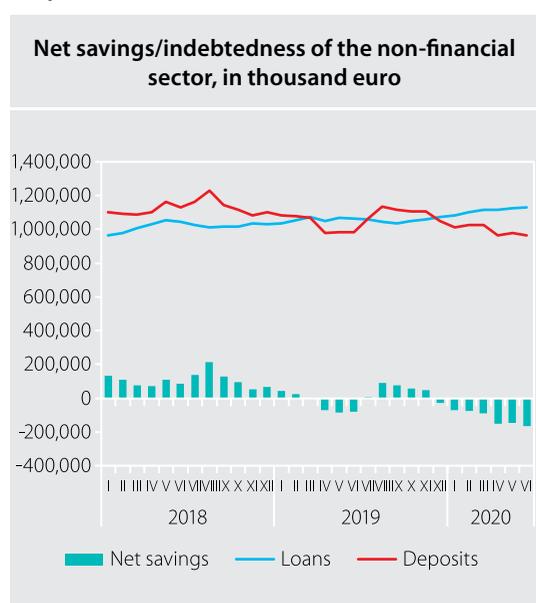
At end Q2 2020, long-term loans accounted for the main share of 76.9% in the structure of corporate sector loans. This indicates that loans to this sector were mainly used for increasing economic activity volume.

Graph 31



Source: Ministry of Finance

Graph 32



⁸ Capital expenditures include capital expenditures in current budget and capital budget.

⁹ The non-financial sector includes state companies and private companies.

3.1.4. External demand and the current account

Preliminary data show that the current account deficit in Q2 2020 amounted to 638.4¹⁰ million euros, which is a y-o-y decrease of 1%. The current account deficit increase resulted from a decreased foreign trade deficit and increased surplus in the primary income account.

The deficit in the commodity account stood at 827.9 million euros, decreasing by 16.5% compared y-o-y, resulting from a more significant decrease in commodity import due to the Covid-19 pandemic. Total visible exports stood at 182.4 million euros, decreasing by 15.3%. At the same time, the value of visible imports amounted to 1,010.3 million euros, which represents a 16.3% decrease year-on-year. The services account recorded a 48 million euros surplus, which was 77.2% less compared y-o-y. Such a trend was the result of a significant revenues decrease (a 45.2% decline).

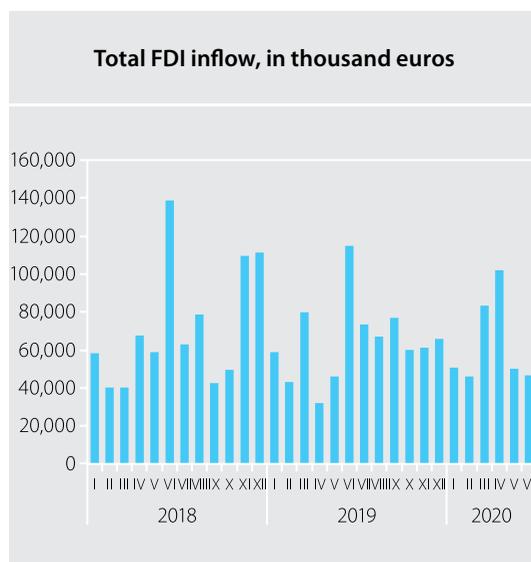
Primary income account ran a surplus of 25.6 million euros, showing a significant y-o-y increase when it stood at 6.8 million euros. Such a trend resulted from a decrease in revenues from compensations to employees and revenues from international investments. Secondary income account ran a surplus of 115.9 million euros or 10.8% less y-o-y.

Preliminary data show that net foreign direct investments (FDIs) inflow for the period January-June 2020 amounted to 259.2 million euros, which is a year-on-year growth of 14.1%. Such a trend was the result of a lower FDI outflow with a simultaneously increased inflow from intercompany debt compared y-o-y. Total FDI inflow stood at 378.8 million euros, with equity investments amounting to 112.9 million euros (54% decline) and the inflow in the form of intercompany debt adding up to 247.8 million euros or 108.6% more y-o-y.

The inflow from the withdrawal of investments from abroad amounted to 18.1 million euros. In the structure of equity investments, investments in companies and banks amounted to 69.3 million euros (a 58.2% decline). In comparison, real estate investments amounted to 43.6 million euros (a 45.1% decline). The total FDI outflow in the period January-June 2020 amounted to 119.6 million euros, which is 18.9% less compared y-o-y. Outflow from residents' investments abroad amounted to 13 million euros, while the withdrawal of non-residents' funds invested in Montenegro amounted to 106.6 million euros.

In H1 2020, portfolio investments account recorded net outflow of 252.2 million euros, while the net inflow in the other investments account amounted to 478.7 million euros. The trends in this account are characterised by a higher in-

Graph 33



Source: CBCG

¹⁰ Montenegro's balance of payments data published in accordance with the new IMF methodology (IMF Balance of Payment Manual, sixth edition - BMP 6).

crease in liabilities of the state and banks based on borrowings, with a simultaneous lower borrowings in other sectors compared y-o-y.

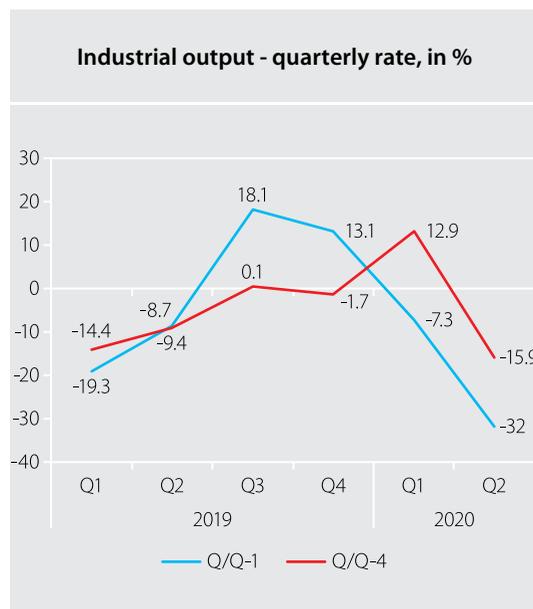
3.2. Supply and demand

Total industrial output recorded a 0.8% y-o-y decrease in H1 2020. Electricity, gas and steam supply sectors recorded output decline of 10.2%. In comparison, mining and quarrying and manufacturing industry sectors recorded respective output growth of 12.9% and 3.4%.

During the first six months of 2020, some 108,320 tourists stayed in collective accommodation establishments, which is a decrease of 78.5% y-o-y. The number of domestic and foreign tourists arrivals in collective accommodation establishments decreased by 53.2% and 81.6%, respectively. Tourist overnights amounted to 255,155, which is a y-o-y decrease of 83.3%.

In the first six months of 2020, the total output of forest assortments amounted to 102,672 cubic metres, which represents a year-on-year growth of 36.9%¹¹.

Graph 34



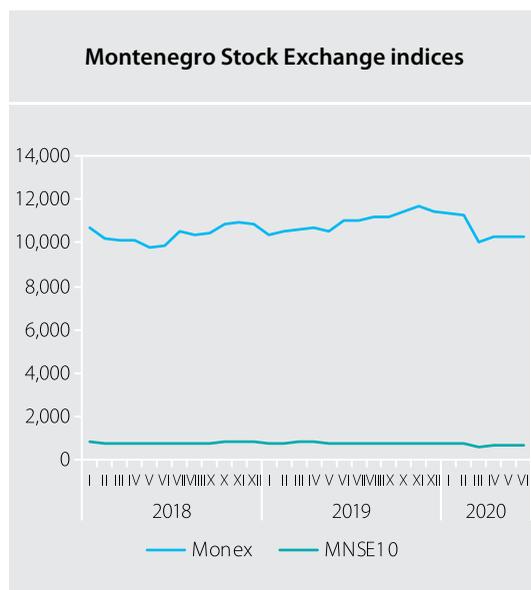
Source: MONSTAT

¹¹ Expressed by weighted index, while expressed by non-weighted index production increased by 39.5% over the same period.

3.3. Stock exchange indices

At end-Q2 2020, the Monex and MNSE10 indices recorded a decline in relation to end-2019. The year-on-year comparison reveals a decline in both indices (Graph 35).

Graph 35



Source: Montenegro Stock Exchange

At end-June 2020, Monex SE index¹² amounted to 10,259.15 recording decline of 1,144.46 index points or 10% in relation to end-2019, and a year-on-year decrease of 778.81 index points or 7.1%.

MNSE10 index¹³ stood at 710.19 at end-June 2020 and recorded a decline of 67.42 index points or 8.7% compared to end-2019, while it was lower by 99.40 index points or 12.3% y-o-y.

¹² The MONEX is a benchmark Montenegro Stock Exchange index aimed at providing a more accurate 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.

¹³ The MNSE10 is the leading blue-chip index at the Montenegro Stock Exchange, and it aims at providing a more precise description of the price trends of the most representative shares in the official and the Montenegro Stock Exchange AD Podgorica free market. It includes the top ten companies in the Montenegrin market.

4. MONETARY POLICY

To increase the banking sector's liquidity and the banks' lending activity, the CBCG adopted a Decision amending the Decision on bank reserve requirement to be held with the Central Bank of Montenegro (OGM 43/20) in Q2 2020. This is a part of the measures aimed at mitigating the adverse coronavirus effects of the financial system. The decision reduced reserve requirements from 7.5% to 5.5% (on the part of the base comprised of demand deposits and deposits with contractual maturity up to one year, or up to 365 days), and from 6.5% to 4.5% (on the part of the base comprised of deposits with contractual maturity over one year, or over 365 days).

Moreover, the CBCG passed a decision reducing the fee that banks pay for the use of the prescribed required reserves amount they do not return on the same day. The decision provides for a temporary reduction of the annual interest rate from the previous 12% to 6%.

5. INFLATION FORECAST FOR TWO QUARTERS OF 2020 AND TWO QUARTERS OF 2021

5.1. Model assessment

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

Montenegro's fan chart for two quarters of 2020 and two quarters of 2021 is based on three estimated constituent parts:

1. **Central projection values** – the values of the Fan Chart central projection are derived from the ARIMA 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 skewness 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. The position of the mean value of inflation distribution will depend on this.

Central projection of fan chart - ARIMA model for two quarters of 2020 and two quarters of 2021

To develop a Fan Chart, an ARIMA (AutoRegressive Integrated Moving Average) model was developed of time series of Montenegro's inflation showed through the Consumer Price Index¹⁴.

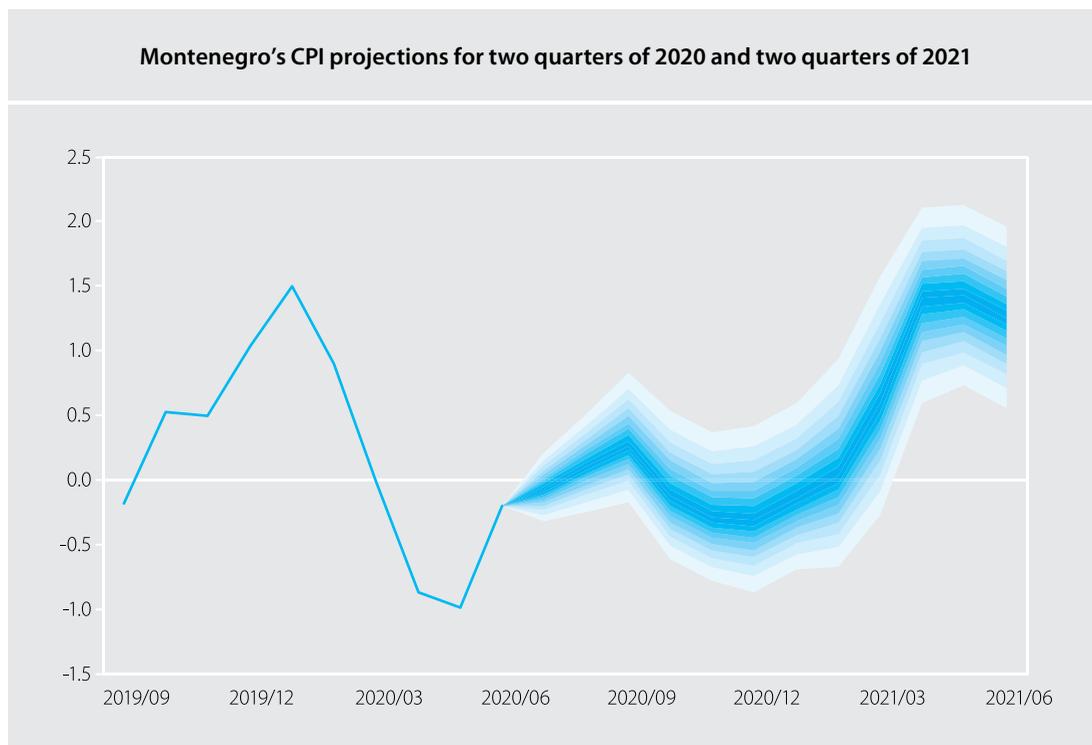
ARIMA model was used for short term forecasts (12 months), whereby iteration of several ARIMA models was made, which were ranked based on their efficiency and quality of diagnostics. The selected ARIMA model, ARIMA (2,1,3)¹⁵, has sufficient confidence level for forecasts.

¹⁴ More detailed explanation of ARIMA model of Montenegro was presented in the Central Bank Working Paper 11 “Inflation forecasting: Empirical research of retail price index of Montenegro for 2007 – implementation of ARIMA model”, 2007.

¹⁵ 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.

The monthly forecasts value was used as the value of the central projection of the CPI graph for two quarters of 2020 and two quarters of 2021. Obtained values represent the distribution mode, i.e. values with the highest frequency in the distribution of this time series.

Graph 36



Source: CBCG, 2020

Mean value of the obtained model is 0.3. 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. This indicates that the corresponding range of uncertainty of future inflation is symmetrical. 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.¹⁶ The fan chart has an equal number of bands (eight) on either side of the central band. Each band of the same colour, both above and below the central band, cumulatively describes the next 10% of inflation trend probability. As the degree of uncertainty grows over time, so the fan chart spreads.

The expected effects of the coronavirus pandemic (COVID-19) and of subsequent mitigation measures for this pandemic also had an impact on inflation and economic growth forecasts. The average inflation rate in 2020 decreased compared to the previous projection (from 0.4% to 0%). The Fan Chart of inflation in Montenegro, based on the ARIMA model assessment for two quarters of 2020 and two quarters of 2021, indicates that a 90% probability that the CPI inflation will range between -0.9% and

¹⁶ 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)

2.1%, depending on the month, with the central projection of 0.3%. At the same time, inflation at the end-2020 is forecasted to range between 0.9% and 0.4%, with the central projection of -0.3%. The Fan Chart central projection (the darkest part) represents a 10% probability span (Graph 36).

The risks related to the projected inflation rate shown on the fan chart are set symmetrically due to pressures from supply and demand. Leading central banks have already responded by significantly easing monetary policies. However, further measures to protect the population's health could lead to supply-side shocks and consequently to a number of disruptions in domestic and international production chains. On the other hand, an extension of the pandemic would harm demand due to reduced employment, income, and reduced demand for tourism, transportation and other services. Consequently, the prolonged impact of the pandemic, through the reduction of economic activity will have an effect on delaying the purchase of durable consumer goods.

The forecast is based on projections of energy and food prices, and inflation projections in the euro area. The most prominent risks relate to the prices of oil and food, which will be conditioned by the aggregate demand.

The starting assumptions for forecasting inflation are:

1. Inflation pressures from the euro area will remain low. The Governing Council of the ECB expects key interest rates to be at current or lower levels, until a strong convergence of expected inflation to a level close to, but below, 2% is observed. Inflation in the euro area will be lower than previously forecasted. According to the latest ECB forecasts¹⁷, inflation will be 0.3% this year and will reach 0.8% in 2021.
2. After a sharp drop in international oil prices in Q1, oil price recovered slightly in Q2. However, it is still significantly lower compared to year-on-year. Expectations of international institutions point to oil prices will remain low this year due to a pronounced imbalance between high supply and significantly reduced demand. On the other hand, mild growth may be expected next year.
3. Food prices on the international market are assumed to grow slightly this year. The ECB forecasted food price inflation to be high in the short term and its decrease during the year. According to the ECB's expectations, food prices in 2021 and 2022 will be lower than those recorded in 2020.
4. We forecasted food and agricultural products prices rise up to 5%.
5. The excise duties trend in 2020 determines the increase of excise duties on tobacco and those on coal. Excise duties on carbonated beverages and excise duties on ethyl alcohol remain at the 2019 level, according to the Law on Excise Duties. Consequently, the excise duties will be 3.9% higher compared to 2019.

Reasonably, the deviation of any of the abovementioned projections would require the forecast correction.

¹⁷ Source: ECB (2020): Eurosystem staff macroeconomic projections for the euro area, June 2020

6. EXPECTED INFLATION IN 2020

The aggregate demand in Q2 slightly exceeded the demand in the previous quarter. The expectations of banks and the real sector are quite diverse, given the situation they have not encountered before.

A recession environment with declining output and employment is present globally and in Montenegro. In such an environment, inflationary pressures are minimal, and a negative inflation rate not uncommon. This was the case with the annual inflation rate in Montenegro in June 2020 / June 2019.

All factors point to a low inflation rate this year. *For end-2020, our model assessment projected inflation in the range from -0.9% to 0.4%, with the central trend of -0.3%.* It is similar, or slightly higher, than our expert projection, which suggests inflation to range from -1% to 1%, with a central trend of 0%.

Table 3

Estimated inflation rate		
Optimistic assessment	Realistic assessment	Pessimistic assessment
-1%	0%	1%

This estimation is based on the assumptions as those on which the model estimation is based. Deviation of any of the mentioned parameters from the expected values would also require the estimation revision.