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Bulevar Svetog Petra Cetinjskog 6
81000 Podgorica
Telephone: +382 20 664 997, 664 269
Fax: +382 20 664 576

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

CENTRAL BANK COUNCIL: 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 increased by 0.4% during the third quarter of 2020, with the largest contribution to growth coming from prices in the categories of clothing and footwear, transport and housing, water, electricity, gas and other fuels. (Table 2) Monthly trend in consumer prices shows the highest increase recorded in August (0.1%) and September (0.7%), while monthly decline was recorded in July (-0.3%). Average consumer price rate in the first nine months of 2020 amounted to -0.1% in relation to the same period of 2019, while at the annual level, the prices recorded increase in September (0.1%).

Table 1

Inflation, %							
	2019				2020		
	III	VI	IX	XII	III	VI	IX
Change in relation to the end of the previous year	0.7	0.3	0.4	1.0	-0.4	-0.9	-0.5
Annual change	0.8	-0.1	-0.2	1.0	0.0	-0.2	0.1

Source: MONSTAT

In Q3, price growth in Montenegro was recorded in five out of twelve categories that comprise 42.9% of the consumer basket. (Table 2) The largest contribution to the growth (0.3 percentage points) was given by the growth of prices in the category of *clothing and footwear* (4%), due to the growth of prices of clothing by 6% and footwear by 1.7%. Contribution of 0.1 percentage points was recorded by the prices in the categories *transport* (1.3% growth) and *housing, water, electricity, gas and other fuels* (0.6%), mostly due to the growth of fuels and lubricants for personal transport equipment of 3% or the price of solid fuels of 2.7%. Prices also increased in the categories *furniture, household equipment and routine household maintenance* (0.6%) and *alcoholic beverages and tobacco* (0.2%). The largest decrease in prices in this period was recorded in the category *food and non-alcoholic beverages* (-0.5%), mostly due to the fall in prices of fruits (-5.8%) and vegetables (-1.5%). The decline was also recorded in the categories: *communications*, *recreation and culture* and *restaurants and hotels* by (-0.2%). Prices in the categories *health*, *education* and *miscellaneous goods and services* remained unchanged during the third quarter.

Table 2

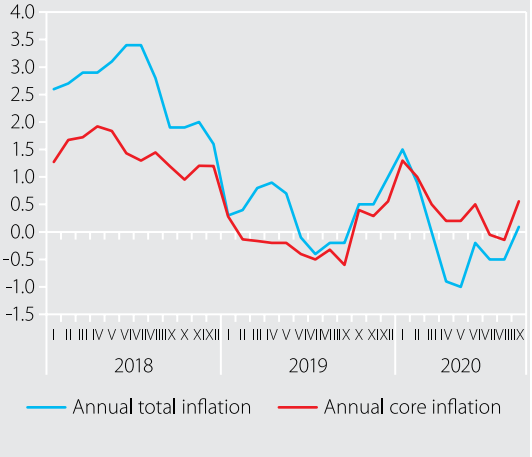
Share of selected categories in total inflation[1]

	Weights	IX 20 / VI 20	Rate	Contribution
TOTAL	1000	100.4	0.4	0.4
Food and non-alcoholic beverages	341.1	99.5	-0.5	-0.2
Alcoholic beverages and tobacco	40.4	100.2	0.2	0.0
Clothing and footwear	86.1	104.0	4.0	0.3
Housing, water, electricity gas and other fuels	154.0	100.6	0.6	0.1
Furnishing, household equipment and routine household maintenance	39.4	100.6	0.6	0.0
Health	40.8	100.0	0.0	0.0
Transport	109.4	101.3	1.3	0.1
Communication	48.5	99.8	-0.2	0.0
Recreation and culture	32.0	99.8	-0.2	0.0
Education	18.7	100.0	0.0	0.0
Restaurants and hotels	47.6	99.8	-0.2	0.0
Miscellaneous goods and services	42.0	100.0	0.0	0.0

Source: MONSTAT and CBCG calculations

Graph 1

Total and core inflation trends (%)



Source: MONSTAT and CBCG calculations

During the third quarter *the monthly base inflation* was lower in July and August 2020, while in September it was higher than the official monthly inflation.

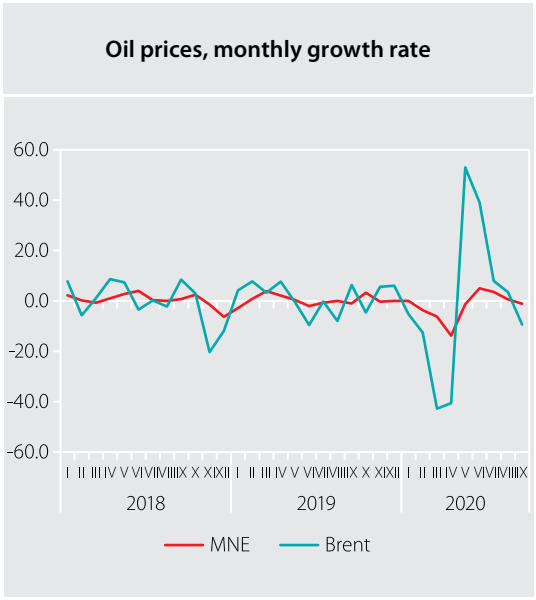
The annual core inflation rate in September 2020 stood at 0.6% or by 0.5 percentage points over the total inflation. Annual core inflation had a negative rate in July and August, and a positive rate in September, as did overall annual inflation, and was higher during all three months of the third quarter. (Graph 1)

After a sharp drop in oil prices in March and April, they recovered due to a significant reduction in OPEC countries production. However, prices remained a third lower than before the pandemic. Oil prices on world markets in the third quarter increased compared to prices in the second quarter. In the observed quarter, the OPEC reference basket price averaged 43.4 USD/barrel, being 62.9% higher than the aver-

[1] 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.

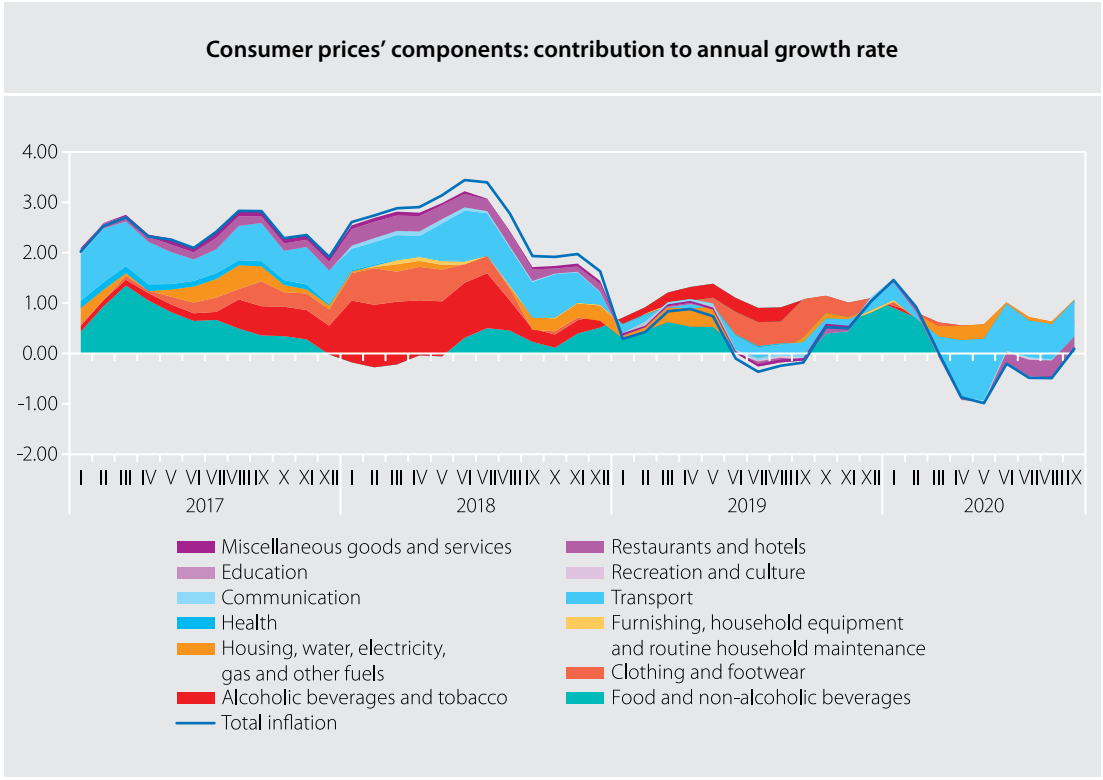
age price seen in the previous quarter. The average price of Brent in the same period was 42.9 USD/barrel, or 46.6% higher than the average price from the previous quarter. According to the World Bank forecasts[2] average oil prices in 2020 will be 41 USD/barrel, and in 2021 44 USD/barrel, as the slow recovery of demand will go hand in hand with the expected easing of restrictions in production. According to the same forecasts, the demand for oil will remain at a lower level than before the pandemic, until 2023.

Graph 2



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

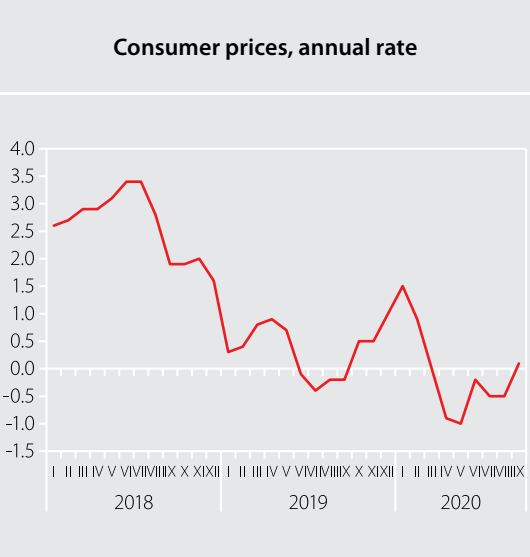
Graph 3



Source: MONSTAT and CBCG calculations

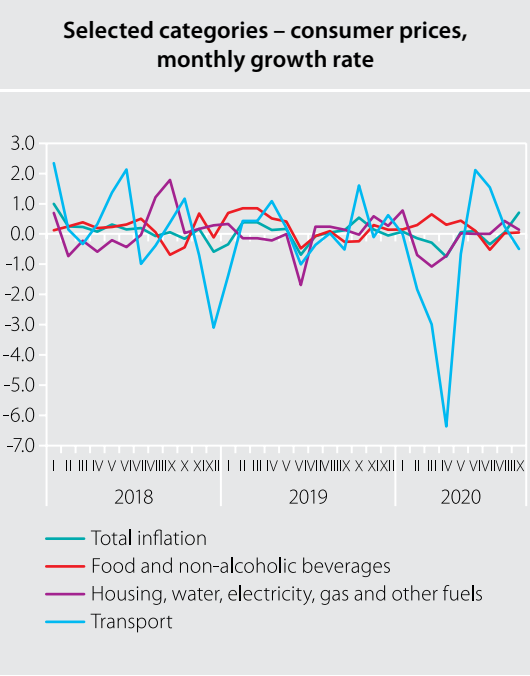
[2] Source: „Commodity Markets Outlook", October 2020

Graph 4



Source: MONSTAT

Graph 5



Source: MONSTAT

Prices growth in September of 1.7% in in the *food and non-alcoholic beverages* category gave the largest contribution to the increase (0.6 percentage points) in the total annual inflation rate of 0.1%. Annual price growth was also recorded in the following categories: *clothing and footwear* (4.3%), *alcoholic beverages and tobacco* (3%), *health* (1.6%) and *education* (0.1%). Annual price decline was recorded in the following categories: *transport* (-6.4%), *restaurants and hotels* (-4.3%), *miscellaneous goods and services* (-0.8%), *furniture, household equipment and routine household maintenance* (-0.7%) and *communications* and *housing, water, electricity, gas and other fuels* (-0.3%), while prices in the category *recreation and culture* remained unchanged compared to September 2019.

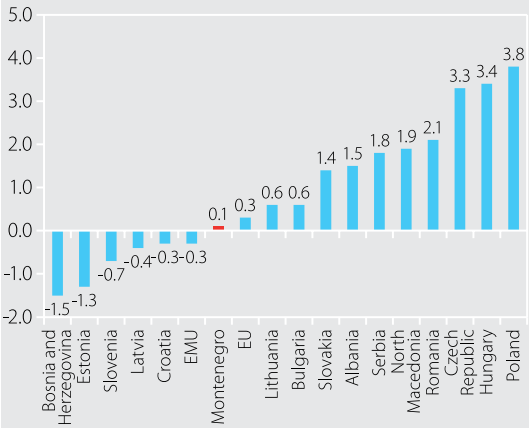
In September 2020, **producers` prices of manufactured products** recorded 0.8% fall in relation to December 2019. This was due to the decline recorded in the mining and quarrying sector (-2.2%) and manufacturing industry (-0.7%). In the electricity, gas and steam supply sector, prices remained unchanged. At the annual level, producer prices of industrial products decreased by 0.9%.

Comparing the annual inflation recorded in Montenegro and the inflation in selected countries, it can be seen that the negative annual rate in September was recorded in Bosnia and Herzegovina, Estonia, Slovenia, Latvia and Croatia. Montenegro has the lowest positive annual rate, while Poland has the highest annual inflation rate (3.8%).

The annual HICP inflation rate reported in the euro area amounted to -0.3%, while the CPI inflation in Montenegro amounted to 0.1%, and the annual HICP inflation in Montenegro was -0.9% in September.

Graph 6

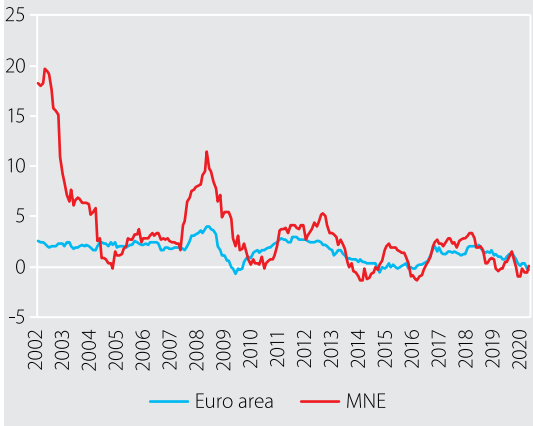
Annual inflation in selected countries, September 2020



Source: Statistical offices of the selected countries and Eurostat

Graph 7

Inflation in the euro area (HICP) and Montenegro (CPI)[3] since the introduction of the euro (annual rates)



Source: MONSTAT and Eurostat

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

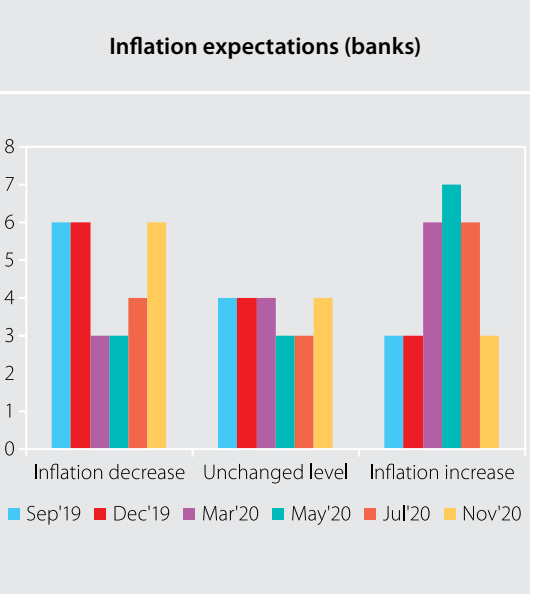
2. INFLATIONARY EXPECTATIONS

2.1. Banks' expectations

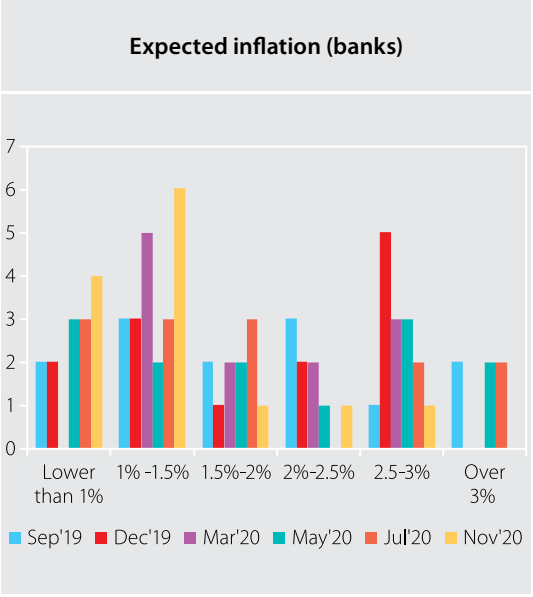
When it comes to inflation expectations of banks, according to a survey conducted in early November this year, six banks expect a decline, four banks expect the same level of inflation as in the previous year, while three banks expect an increase in inflation compared to 2019.

When it comes to inflation levels, expectations varied among banks. Six banks expect the level of inflation in the range of 1% and 1.5%, four banks expected inflation lower than 1%, while one bank each expected respective inflation between 1.5% and 2%, between 2% and 2.5% and between 2.5% and 3%. No bank expects an inflation rate higher than 3%. (Graph 9)

Graph 8



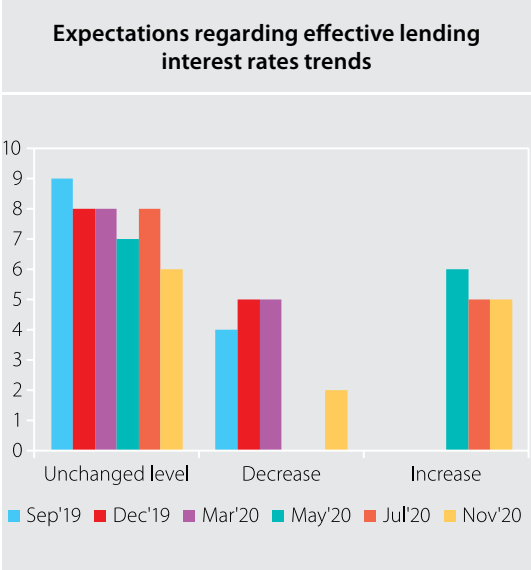
Graph 9



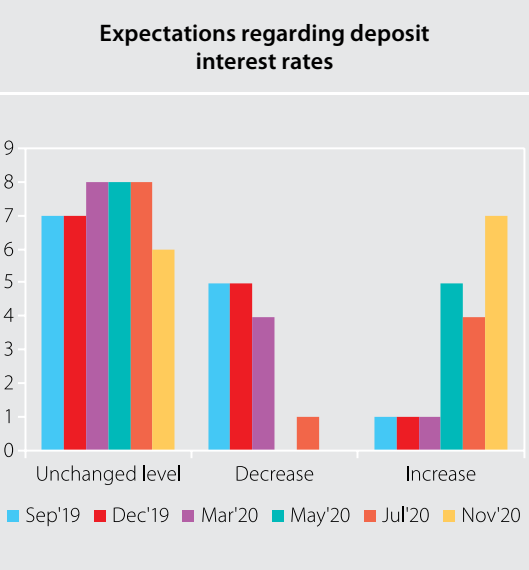
Concerning the expectations on the nominal lending interest rate trends, two banks expect this rate to decline, five banks expect the increase, and six banks expects the nominal lending interest rate to remain the same. The expectations are the same when it comes to effective lending interest rates (Graph 10).

Regarding the expectations on the trends of deposit interest rates, six banks believe that they will remain at the same level, seven banks expect growth, while no bank expects a decline in deposit interest rates (Graph 11).

Graph 10

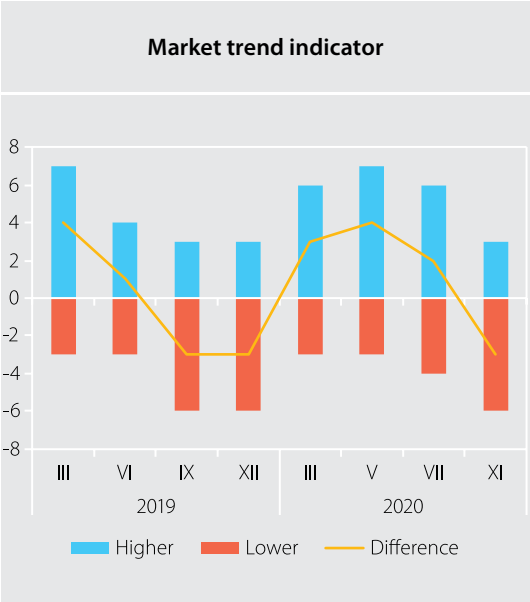


Graph 11



For the purpose of calculating 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. 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 at a higher level for most of 2020, while according to the latest survey, they are falling.

Graph 12



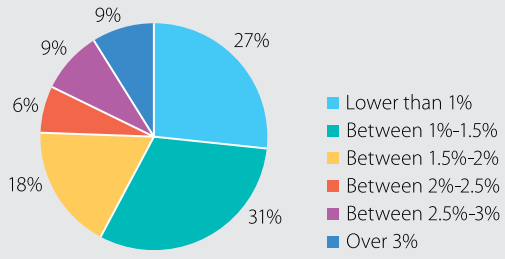
2.2. Expectations of economy (except banks)

Inflation

In the total number of surveyed companies, majority (31%) expected the inflation in 2020 to range between 1% and 1.5%. Inflation under 1% was expected by 27% of companies, while 18% of surveyed companies expected the inflation to range between 1.5% and 2%. Some 9% of respondents expect inflation between 2.5% and 3% and higher than 3%, while 6% of them believe that inflation in 2020 will be between 2% and 2.5%. (Graph 13)

Graph 13

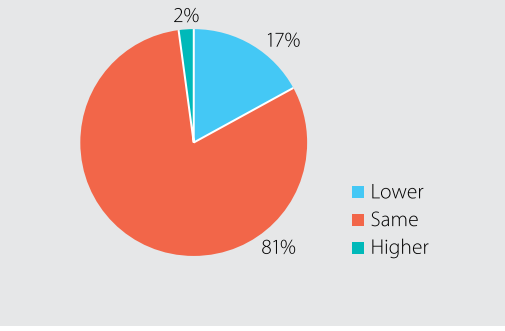
Expected inflation in 2020 in relation to 2019



As much as 81% surveyed companies expect wages and salaries to remain unchanged in 2020, 17% of the surveyed companies expect them to decline, while 2% expect wages and salaries to increase. (Graph 14) With regard to the number of employed persons, 55% of surveyed companies expected it to remain unchanged, 26% expected this number to decrease, and 19% expected it to decrease in relation to the previous year. (Graph 15)

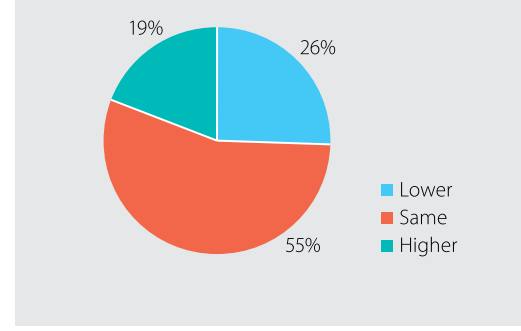
Graph 14

Expected wages and salaries in 2020 in relation to 2019



Graph 15

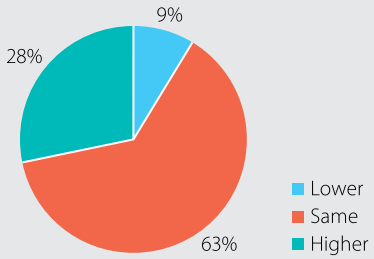
Expected number of employees in 2020 in relation to 2019



The majority of surveyed companies (63%) did not expect changes in the prices of production inputs (Graph 16), whereas 81% did not plan to change the prices of their products (services) in 2020. (Graph 17)

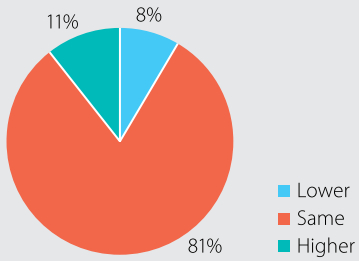
Graph 16

Expected level of production inputs in 2020 in relation to 2019



Graph 17

Expected prices of their products (services) in 2020 in relation to 2019



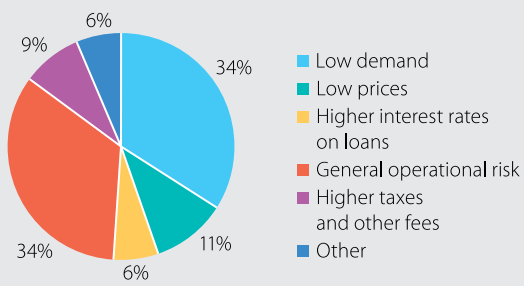
Business Environment

The results of the survey show that the largest number of surveyed companies see weak demand and general business risks as an obstacle in the area of business barriers, 34% each. (Graph 18)

At the same time, 61% of surveyed companies expect the same level, 26% lower, while 13% of surveyed companies expect a higher level of lending interest rates in 2020 compared to the end of 2019. (Graph 19)

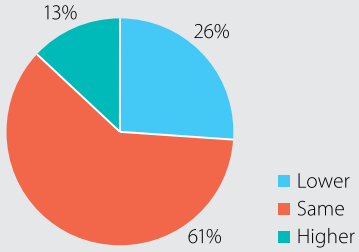
Graph 18

Business barriers



Graph 19

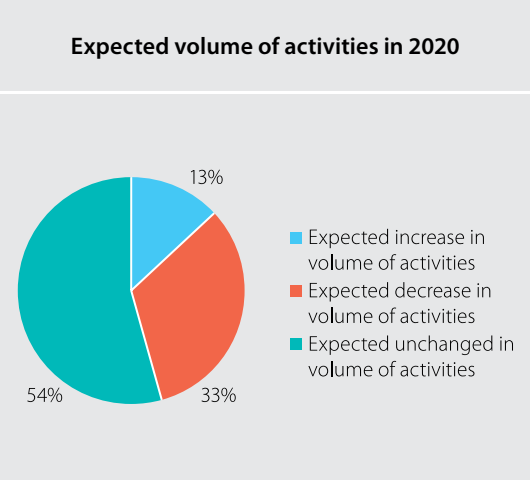
Expected lending interest rates in 2020 in relation to 2019



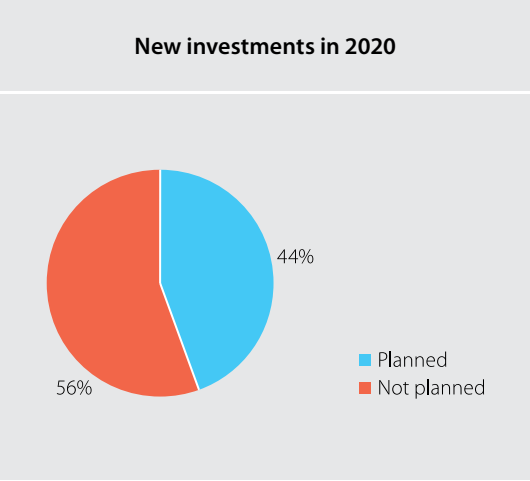
Investments

Out of a total number of surveyed companies, 13% planned the increase in the volume of activities by the end of 2020 (Graph 20), while 44% planned new investments. (Graph 21). Most investments (72%) referred to the increase in fixed assets, while high interest rates (Graph 22) and the biggest obstacles to new investments are low demand, insufficient utilization of existing capacities and other barriers. (Graph 23)

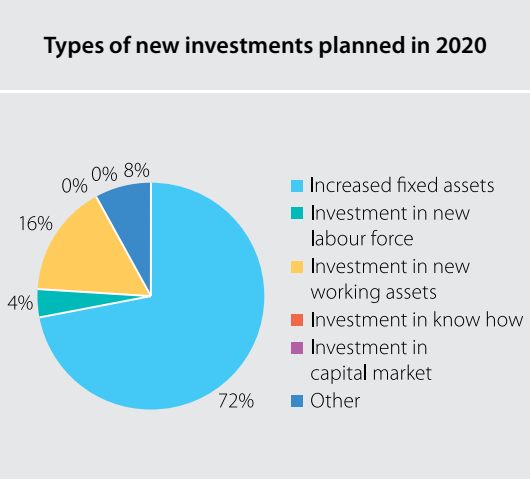
Graph 20



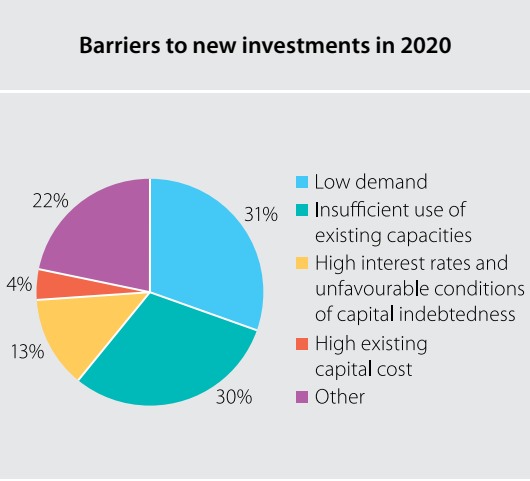
Graph 21



Graph 22



Graph 23



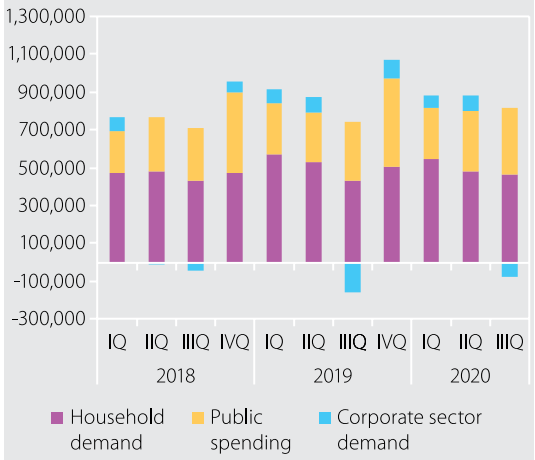
3. INFLATION DETERMINANTS

3.1. Demand

According to preliminary data, aggregate demand recorded quarterly decline but year-on-year growth in Q3 2020. Observing the structure of total demand in the third quarter of 2020, in relation to the structure from the previous quarter, the share of household demand and public spending increased, while the share of the corporate sector in total demand decreased. (Graph 24)

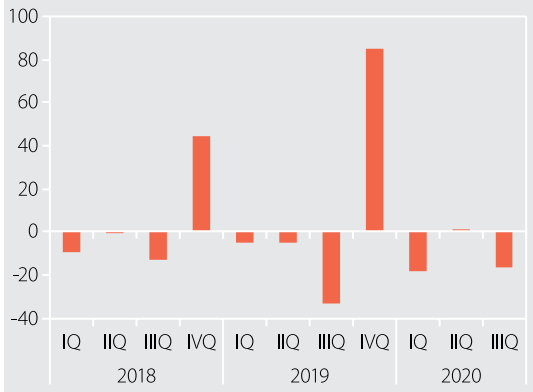
Graph 24

Aggregate demand, in thousand euros



Graph 25

Quarterly aggregate demand rates



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

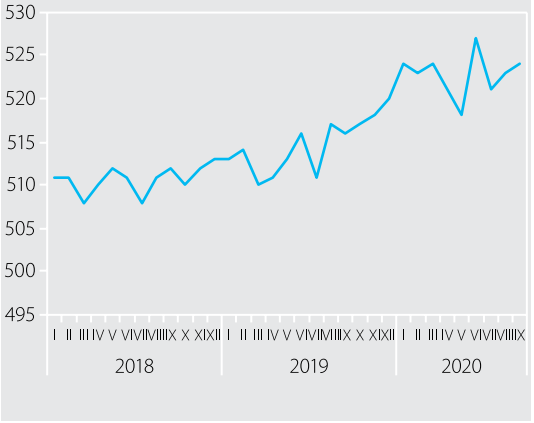
3.1.1. Salaries and other available demand determinants

In Q3 2020, an average salary without taxes and contributions in Montenegro amounted to 781 euros, while an average salary without taxes and contributions amounted to 523 euros. If compared to the previous quarter, average gross and net salaries increased by 0.2% and 0.1%, respectively. If compared to the third quarter of the previous year the average salary increased by 1.1%, and the average salary without taxes and contributions by 1.6%.

Taking into account the consumer prices, i.e. trends in wages and salaries in real amounts, it can be concluded that in Q3, the real wages and salaries grew in August, while they declined in July and September.

Graph 26

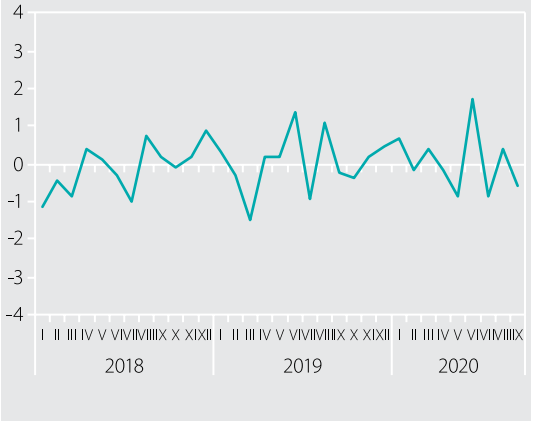
Average wages and salaries without taxes and contributions in Montenegro



Source: MONSTAT

Graph 27

Real wages and salaries (monthly growth rate)



Source: MONSTAT

Retail loans[4] were marked by a positive trend in Q3 2020. The average monthly growth of loans granted to this sector was 0.3%, while the growth at the average rate of 0.6% was recorded in the same period of 2019. At the end of the observed period, total retail loans amounted to 1,395.7 million euro, or by 38 million euros or 2.8% more than at the end-2019, i.e. by 76.7 million euro or 5.8% more than in same period of 2020. (Graph 28)

At end-September 2020, debt per capita[5] amounted to 2,243.2 euros, rising by 61 euros in relation to end-2019, and by 123.3 euros y-o-y.

Total MFIs loans disbursed to the retail sector amounted to 65.5 million euros at end-September 2020 which was by 137,000 euros or 0.2% more than at end-2019, and by 959,000 euros or 1.5% higher compared y-o-y.

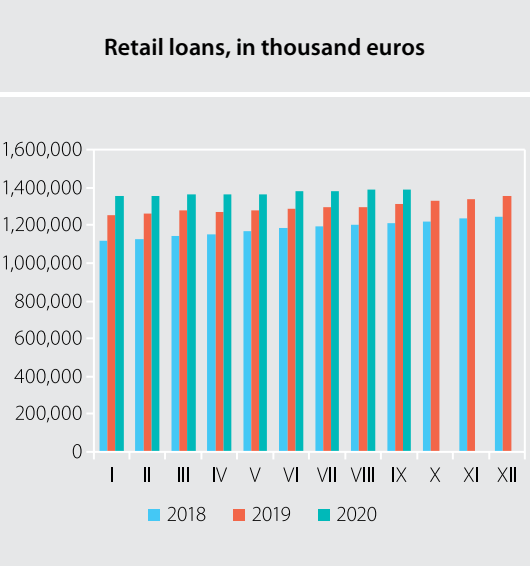
At end-September 2020, retail sector deposits amounted to 1,224.5 million euros, which is by 92 million euros or 7% less than at end-2019, or by 75.4 million euros or 5.8% less than in the same period of the previous year.

At end-September 2020, loans to deposits ratio for this sector amounted to 1.14 being higher compared to end-2019 (1.03), and compared y-o-y (1.01).

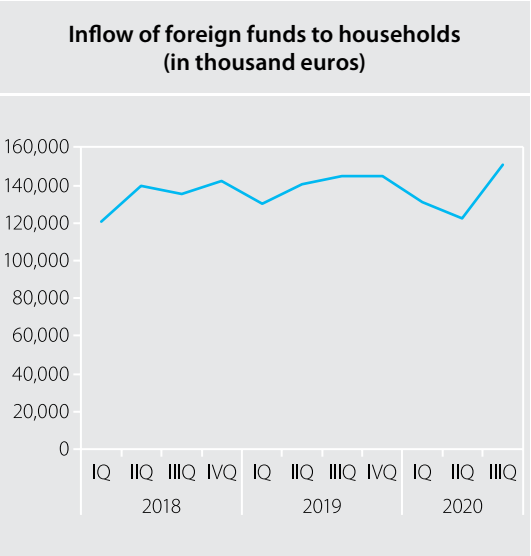
At the end of the third quarter of 2020, the household sector realized a net debt in the total amount of 171.2 million euros.

In the period January-September 2020, compared to the same period in 2019, the balance of payments statistics recorded a decline in cash inflows based on employee compensation, as well as inflows based on total remittances from abroad. (Graph 29)

Graph 28



Graph 29

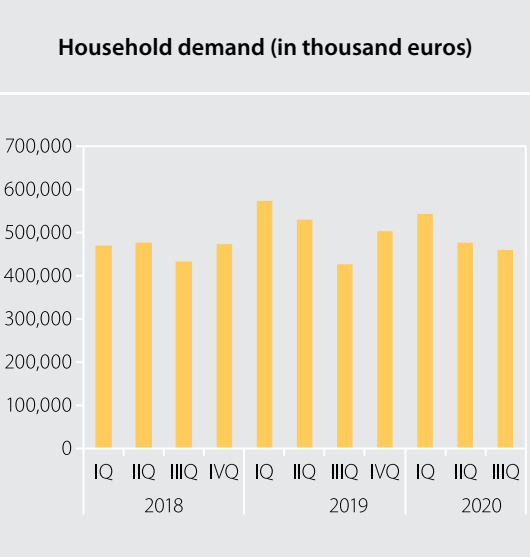


Source: CBCG

[4] The retail sector includes resident natural persons and entrepreneurs.

[5] Population estimate for 2020: Estimate as at 1 January (2020), Source: MONSTAT.

Graph 30



Observation of the total retail sector demand by quarters shows that household demand in Q3 2020 recorded quarterly decline and a year-on-year increase. (Graph 30)

3.1.2. Budgetary analysis

According to Ministry of Finance preliminary data, total revenues[6] of the Budget of Montenegro amounted to 1.67 billion euros in the period January-September 2020.

Source revenues amounted to 1.17 billion euros or 25.3% of estimated GDP[7], and they decreased by 5%in relation to the plan, and they showed a y-o-y decrease of 12.9%, resulting from a decline in economic activity due to the COVID-19 virus epidemic. In the structure of source revenues, tax revenues accounted for the main share of 62%, followed by contributions with 30.9%, other revenues with 2.5%, fees with 1.6%, donations with 1.9%, duties with 0.7%, and receipts from loan repayment with 0.4%.

Tax revenues amounted to 723.3 million euro, recording a year-on-year decrease of 17.7%, and 7.8% below the plan. All taxes, except corporate income tax, decreased compared to the same period last year. Nominally, the largest decline in taxes compared to the comparable period last year was recorded in VAT in the amount of 128.9 million euros.

Revenues arising from contributions amounted to 359.9 million euro being 9.2% above planned, and recording a y-o-y fall of 2.9%.

During nine months of 2020, *total budget expenditures* amounted to 1.50 billion euros or 32.5% of estimated GDP. Compared to the plan for the first nine months of the current year, expenditures were higher by 1.3%, and compared to the comparable period of the previous year, they were higher by 8.9% or 123.1 million euros, which contributed to the increase in the current budget reserves, which fi-

[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.

nanced the costs of helping the economy affected by the coronavirus, as well as increasing transfers to institutions, individuals, non-governmental and public sector, where most funds are allocated to the Health Insurance Fund.

Current budget expenditures in the observed period amounted to 611.9 million euros and were lower than planned by 1.3%, while compared to the first nine months of the previous year they increased by 5.3% or 30.7 million euros, mostly due to increases in gross wages and salaries and employers' contributions.

Capital expenditures[8] amounted to 148.9 million euros or 3.2% of GDP.

For the first nine months of 2020, Montenegro's fiscal deficit was estimated at 333.6 million euros, or 7.2% of GDP. (Graph 31)

Graph 31

Source: Ministry of Finance

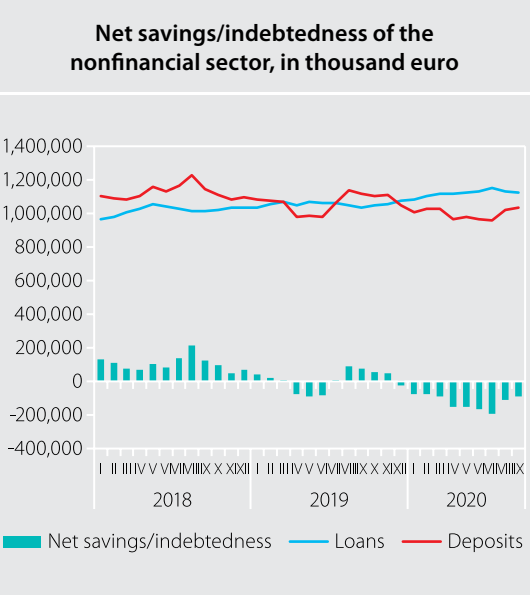
3.1.3. Non-financial sector[9]

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-September 2020, loans to non-financial sector were higher than this sector's deposits. At end-Q3 2020, the net savings of the non-financial sector amounted to 86.1 million euros. (Graph 32)

Long-term loans accounted for the main share of 78.6% in the structure of loans to the corporate sector, which indicates that loans to this sector were mainly used for the increase in the volume of economic activity.

Graph 32



[8] Capital expenditures represent capital expenditures in the current budget and the capital budget.

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

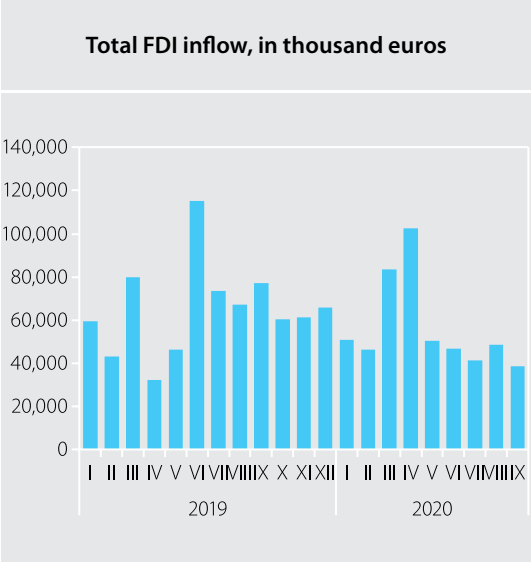
3.1.4. External demand and the current account

According to preliminary data, in the period January - September 2020, the current account deficit amounted to 857.1[10] million euros and was higher by 111.8% compared to the same period in 2019, which is the result of a decline surplus on the services account and the secondary income account.

In the period January-September 2020, there was a reduction in the imbalance in international visible trade due to a larger decline in visible imports than exports. Total visible exports amounted to 279.9 million euros, recording a 16.8% y-o-y fall, while total visible imports amounted to 1,522.6 million euros recording a 19.8% y-o-y fall. In the observed period, a decrease in the surplus on the services account was recorded by 85.6% (to 138.2 million euros). This trend in the services account is a consequence of a significant drop in revenues of 66.2% compared to the same period last year. Primary income account ran a 62.2 million euros surplus, while in the same period of 2019 this account recorded a deficit of 12.7 million euros. This trend is the result of smaller outflows based on employee compensation and income from international investment. In the secondary income account there was a surplus in the amount of 185.2 million euros, which represents decrease of 11.6% in relation to 2019.

Preliminary data indicate that net FDI inflow between *January and September 2020* amounted to 345.4 million euros, which is a y-o-y increase of 52.2%. This trend is the result of higher inflows based on intercompany debt while reducing FDI outflows. The total inflow of FDI amounted to 506.8 million euros, of which equity investments amounted to 164.3 million euros (a decrease of 51.1%), while the inflow in the form of intercompany debt amounted to 311.9 million euros or 32.7% more compared to the same period in 2019. In the structure of equity investments, investments in companies and banks amounted to 91.9 million euros (a decrease of 55.4%), while investments in real estate amounted to 72.4 million euros (a decrease of 44.1%). The inflow from the withdrawal of investments from abroad amounted to 30.6 million euros. In the structure of total FDI inflow, inflow based on intercompany debt amounted to 61.5% of total FDI inflow, followed by investments in companies and banks 18.1% and real estate investments 14.3%. The total outflow of FDI in the period January - September 2020 amounted to 161.4 million euros, which is 55.8% less compared to the same period in 2019. In the outflow structure, outflow from residents' investments abroad amounted to 19.7 million euros, while withdrawal of non-residents' funds invested in Montenegro amounted to 141.7 million euros.

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).

The portfolio investment account in the observed period recorded a net outflow of 275.8 million euros, while the other investment account recorded a net inflow in the amount of 392.5 million euros. Movements on this account are characterized by higher borrowing by the state and banks on the basis of loans taken, while at the same time other sectors borrowed less compared to the same period in 2019.

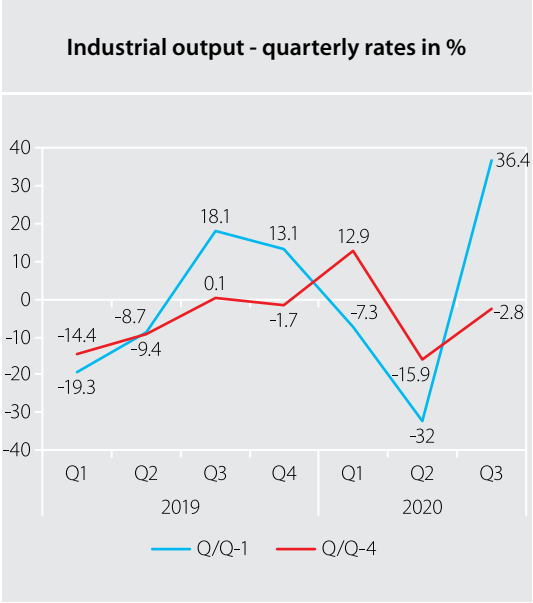
3.2. Supply and demand

In Q3 2020, total industrial production decreased by 1.5% compared to the same period last year. Electricity, gas and steam supply recorded output decline of 7.2%, while mining and quarrying and manufacturing industry and mining and quarrying sector recorded output increase of 8.1% and 0.5%, respectively.

During the first nine months of this year, a total of 240,395 tourists stayed in collective accommodation establishments, which is a significant decrease of 77.7% y-o-y. The number of domestic tourists' arrivals in collective accommodation establishments decreased by 20.6%, while the number of foreign tourists fell by 83.5%. Tourist overnights amounted to only 848,372, which is a y-o-y decrease of 79.7%.

Some 200,250 m³ of wood products were produced in the first nine months of 2020, which is a y-o-y increase of 10.7%.[11]

Graph 34



Source: MONSTAT

According to preliminary Monstat data, construction recorded decline of value of executed construction works (7.9%), and fall of effective working hours of 3.8%, compared to the first quarter of 2019.

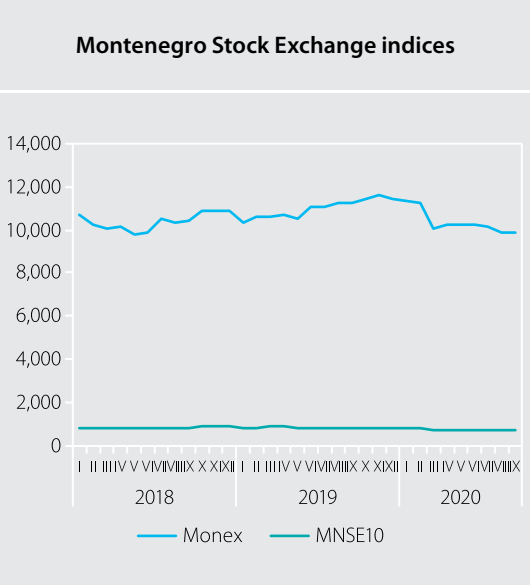
According to preliminary data from MONSTAT, passenger transport in the first nine months of 2020, compared to the same period last year, recorded a significant decline in all means of transport: rail by 51.7%, road by 63.4% and passenger transportation at airports 80.4%. In the first nine months of 2020, compared to the same period of the previous year, rail transport increased by 9%, while road transport decreased by 8.1% and goods turnover at airports by 65.5%.

[11] Expressed by weighted index, while expressed by non-weighted index production increased by 9.8% over the same period.

3.3. Stock exchange indices

At end-Q3 2020, the MNSE10 and MONEX indices recorded fall in relation to end-2019. Year-on-year comparison reveals a decline in both indices (Graph 35).

Graph 35



Source: Montenegro Stock Exchange

At end-September 2020, Monex[12] SE index amounted to 9,880.81 recording a decrease of 1.522,80 index points or 13.4% in relation to end-2020, and a y-o-y decrease of 1,327.38 index points or 11.8%.

MNSE10[13] index stood at 655.94 at end-Q3, and recorded a decrease of 121.67 index points or 15.6% compared to end-2019, while it was also lower y-o-y by 143.89 index points or 18%.

[12] MONEX is a benchmark Montenegro SE index aimed at describing the trends in prices of stocks at the stock exchange and free market of the Montenegro SE as precise as possible. MONEX index is the successor of MONEX20 which with the new methodology has more companies in its index basket.

[13] MNSE10 represents a leading (blue-chip) index of Montenegro Stock Exchange, aimed at precisely describing developments of prices of shares at the Stock Exchange and Free market of "Montenegro Stock Exchange" AD Podgorica. It includes the "best" companies from the Montenegrin market.

4. MONETARY POLICY

In Q3 2020, 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 2020 AND THREE QUARTERS OF 2021

5.1. Model assessment

Montenegro's inflation fan chart is a graphic representation of 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 movement in the following period. The Fan Chart is aimed 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).

Fan Chart graph for 2020 and three 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 degree of uncertainty ratios are obtained through analytical assessment and calculation of a relative impact of potential internal and external shocks that are possible in Montenegrin economy during 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 are "overestimated" or "underestimated" inflation rates. This will also influence the position of the mean value of inflation distribution.

Central projection of Fan inflation chart - ARIMA model for the last quarter of 2020 and three quarters of 2021

With a view to developing a Fan Chart, an ARIMA (AutoRegressive Integrated Moving Average) model was developed of time series of inflation of Montenegro showed through the Consumer Price Index[14].

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.

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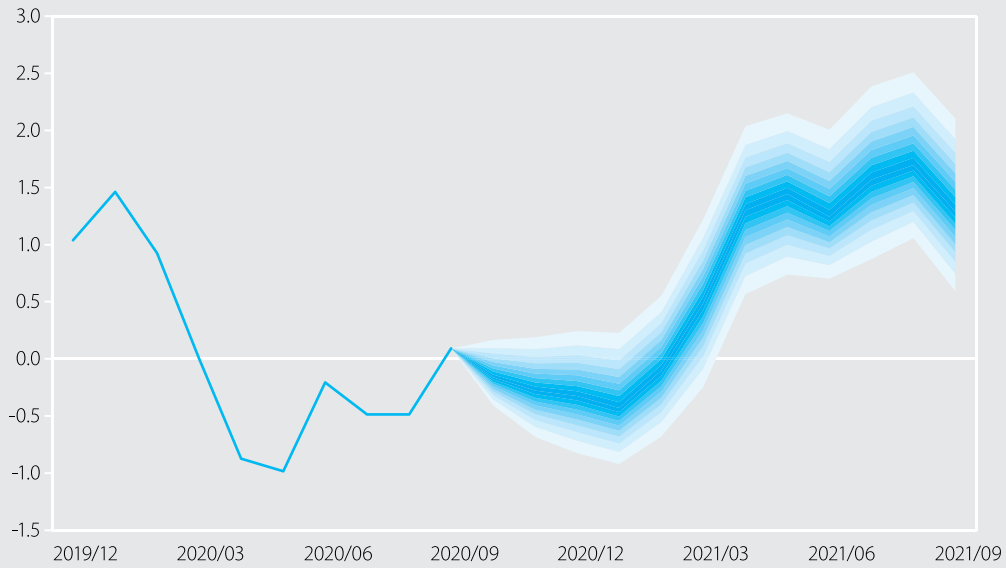
[14] A detailed explanation of the ARIMA model of Montenegro was presented in the working study of the Central Bank No. 11 *"Inflation Forecast: Empirical research on the retail price index trend of Montenegro for 2007 - applying the ARIMA model"*.

[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 forecast value was used as the value of central projection of the CPI graph for 2020 and three quarters of 2021. The obtained values represent the distribution mode, i.e. values with the highest frequency in the distribution of this time series.

Graph 36

CPI projections of Montenegro for the last quarter of 2020 and three quarters of 2021



Source: CBCG, 2020

The mean value of the given model is 0,6. The value of the coefficient of asymmetry varies in the range of 0.5 to 1, and the relative standard deviation is 0.25. The model-based inflation projection is located in the central part of the distribution. This indicates that the corresponding range of uncertainty of future inflation is symmetrically placed. 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 whereby every 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 the subsequent mitigation measures of this pandemic, also had an impact on the forecasts of inflation and economic growth. The average inflation rate in 2020, according to the model projection, will be -0.1%. At the same time, inflation at the end of 2020 is forecasted to range between -0.8% and 0.2%, with the central trend of -0.3%. The

[16] The mode value (central projection) is, by construction, always in the deepest band shade, but in case of a heavily unbalanced risk, the central projection may not cover either of these values. *(Britton, E, Fisher, P.G. and Whitley, J.D. (1998), 'The Inflation Report projections: Understanding the Fan Chart', Bank of England, Quarterly Bulletin, 38, pp. 30–37)*

fan chart of inflation in Montenegro, based on the ARIMA model assessment for Q4 2020 and Q1-Q3 2021, indicates that there is a 90% probability that the CPI inflation will range between -0.9% and 2.4%, depending on the month, with the central projection of 0.6%. The Fan Chart central projection (the darkest part) represents a 10% probability span (Graph 36).

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

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

The projection was based on the following assumptions:

1. Inflationary 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 projected in March this year. According to the latest ECB forecasts[17] , inflation will be 0.3% this year, while inflation is expected to be 1% in 2021.
2. After a sharp drop in oil prices on the international market in the first quarter, the price of oil improved slightly in the second and third quarter, but is still significantly lower compared to the same period last year. The expectations of international institutions indicate that oil prices will remain low this year, due to expressed imbalance between high supply and significantly reduced demand. For next year, according to the ECB's professional forecasters[18], oil demand and prices should recover and increase, despite weakening of inflationary pressures stemming from the supply-side adverse effects of the pandemic and despite the appreciation of the euro.
3. It is assumed that food prices on the international market will increase slightly this year. The ECB predicts that food price inflation will be high in the short term, but that it should decrease during the year. Food prices in 2021 and 2022, according to the ECB's expectations, will be lower than the prices recorded in 2020.
4. In our projection, we assumed an increase in the prices of domestic food and agricultural products up to 5%.

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

[17] Source: ECB (2020.): Euro system staff macroeconomic projections for the euro area, September 2020

[18] Source: ECB (2020.): Euro system staff macroeconomic projections for the euro area, September 2020

6. EXPECTED INFLATION IN 2020

The level of aggregate demand in the third quarter is significantly below the demand in the previous quarter. Inflationary expectations of banks and corporate sector are quite diverse, given the situation they have not encountered before.

There is a recessionary environment at the global level, thus, also in Montenegro. The production and employment record a declining trend. In such an environment, inflationary pressures are very low, and it is not uncommon that there is a negative inflation rate, as it is the case with the average inflation in Montenegro for the first nine months.

All factors indicate that we will have a low inflation rate this year. *For 2020, Arima model projects inflation between -0.8% and 0.2% with a central tendency of -0.3%.* Our expert estimate is similar to the model estimate, and our expectation is that at the end of the year inflation will range from -0.5% to 0.5% with a zero rate as the central projection.

Table 3

Estimated inflation rate		
Optimistic assessment	Realistic assessment	Pessimistic assessment
-0.5%	0%	0.5%

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 a revision of the estimate.