CENTRAL BANK OF
MONTENEGRO

INFLATION REPORT
QUARTER I, 2022

Year XVIII, Number 54

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 price growth trend recorded in the previous year extended over the first months of 2022. The situation in Ukraine led to restrictions on the supply side, which resulted in a significant increase in the price of a whole range of products at the global level, primarily food and energy prices. In Montenegro, as a small, highly open, euroized economy, a significant increase in inflation was recorded, which was largely imported. Everything points to the fact that in 2022 the inflation rate will be highest since the independence. According to MONSTAT data, consumer prices in March 2022, in relation to December 2021, recorded an average growth of 6.3%. An increase in prices in *transport* of 13.2% and *food and non-alcoholic beverages* of 11.9% made the largest contribution to growth (Table 2). In the first three months of 2022, compared to the same period of the previous year, consumer prices were 7.4% higher, while prices in March compared to the same month of the previous year were 9.7% higher on average.

Table 1

Inflation in Montenegro in the period March 2021 - March 2022, in %

	2021				2022
	III	VI	IX	XII	III
Change in relation to the previous year-end	1.4	2.4	3.3	4.6	6.3
Annual change	0.8	2.4	2.9	4.6	9.7

Source: MONSTAT

In March this year compared to December 2021, prices in Montenegro recorded growth in seven out of twelve categories that make up 76.70% of the total consumer basket (Table 2). The main contributor to price growth with 4.20 pp was the category *food and non-alcoholic beverages* that rose 11.9%. This growth was mainly a result of an increase in the prices of bread and cereals (28.6%), oil and fats (13.6%), milk, cheese and eggs (10.7%), fruits (10.6%), vegetables (8.7%), meat (7.1%), and non-alcoholic beverages (5.0%). Due to the rise in the prices of basic groceries, the Law Amending the Value Added Tax Law was adopted in May, which reduced the VAT rates on flour and oil obtained from sunflower (from 7% to 0%) and on salt (from 21 % to 7%). Price growth in the *transportation* of 13.2% contributed to the growth of total inflation of 1.55 pp, mostly as a result of the increase in the prices of fuels and lubricants for motor vehicles of 21.7%. This is expected given the significant increase in oil prices on the international market. With the aim of ensuring the protection of citizens` standard of living and creating conditions for preserving the stability of the prices of oil derivatives, the Law Amending the Law on Excise Duties was adopted in May, which allows for a reduction of excise duties by up to 50% on fuel for a period of 3 months. Growth was also registered in the following categories: *furnishing, household equipment and routine household maintenance* (3.2%), *miscellaneous goods and services* (3.1%), *alcoholic beverages and tobacco* (2.7%), *housing, water, electricity gas and other fuels* (2.6%), and

health (1.0%). The decline in prices was recorded in *hotels and restaurants* (1.4%), *clothing and footwear* (1.1%), *recreation and culture* (0.6%), and *communications* (0.1%). In March this year, prices under *education* remained unchanged relative to December 2021.

Table 2

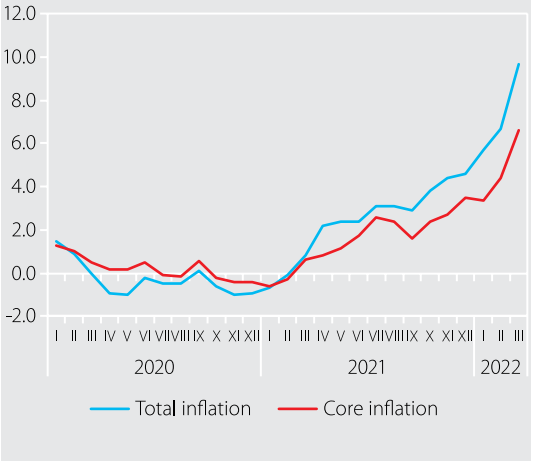
Annual growth rate and contributions of individual categories in total inflation[1] (%)

	Weights	III 22 / XII 21	Growth rate	Contribution
TOTAL	1000.0	106.3	6.3	6.3
Food and non-alcoholic beverages	353.8	111.9	11.9	4.2
Alcoholic beverages and tobacco	39.8	102.7	2.7	0.1
Clothing and footwear	87.3	98.9	-1.1	-0.1
Housing, water, electricity, gas and other fuels	135.0	102.6	2.6	0.3
Furnishing, household equipment and routine household maintenance	39.0	103.2	3.2	0.1
Health	40.3	101.0	1.0	0.0
Transport	117.7	113.2	13.2	1.6
Communication	48.5	99.9	-0.1	0.0
Recreation and culture	32.3	99.4	-0.6	0.0
Education	18.3	100.0	0.0	0.0
Hotels and restaurants	46.5	98.6	-1.4	-0.1
Miscellaneous goods and services	41.4	103.1	3.1	0.1

Source: MONSTAT and CBCG calculations

Graph 1

Annual rate of total and core inflation in Montenegro, January 2020 – March 2022, in %



Source: MONSTAT and CBCG calculations

The annual core inflation rate stood at 6.6% in March this year and it was 3.1 pp lower than total inflation. Annual core inflation was lower than the total inflation during the entire Q1 2022. The largest spread between total annual and core inflation was recorded in March due to price changes of certain products that are included in the annual calculation, but not included in the core inflation calculation, such as prices of a large number of agricultural products, tobacco, fuel and lubricants, etc. Graph 1 shows the trend in the total and core inflation rate.

The rise in oil prices from the previous year continued in the first months in 2022. The situation in Ukraine affected the exports of this energy generating products from Russia, which forced many countries to look for alternative suppliers.

[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.

The supply issues and further uncertainty in solving this problem contributed the most to the price increase. The average price of the OPEC reference basket amounted to 97.6 USD/barrel in Q1 this year, which is an increase of 23.63% in relation to Q4 2021. In this period, the average price of Brent stood at 101.1 USD/barrel or 26.93% more compared to the average price in Q4 2021. The highest price (118.75 USD/barrel) since April 2012 was recorded in March this year. The latest World Bank report[2] forecasts average crude oil prices to rise by some 42% relative to 2021.

According to MONSTAT data, annual prices growth of 17.8% in the *food and non-alcoholic beverages* category in March gave the largest contribution to the increase (6.14 pp) in the total annual inflation rate of 9.7% (Graph 3). Annual price growth was also seen in the following categories: *transport* (18.9%), *furnishing, household*

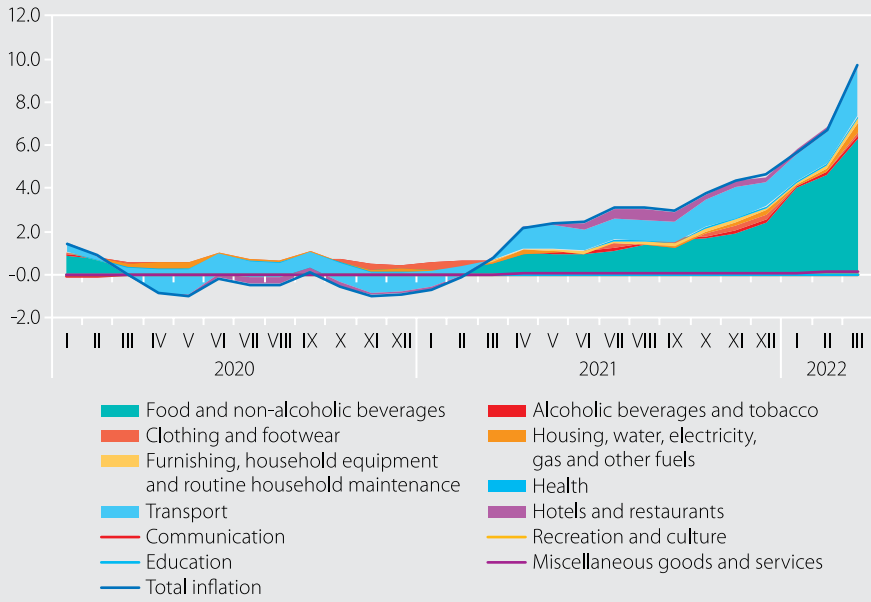
Graph 2

Fuel and lubricant prices and OPEC oil prices, January 2020 – March 2022, monthly rate, in %

Source: MONSTAT and "Monthly Oil Market Reports", OPEC
(*North Sea Dated)

Graph 3

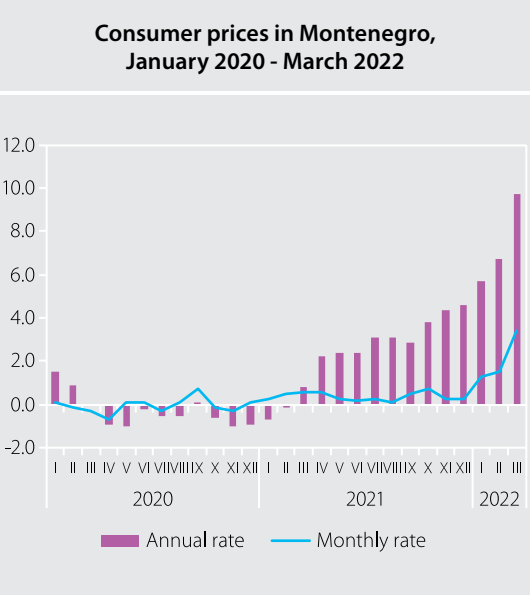
Consumer prices components: contribution to annual growth rate



Source: MONSTAT and CBCG calculations

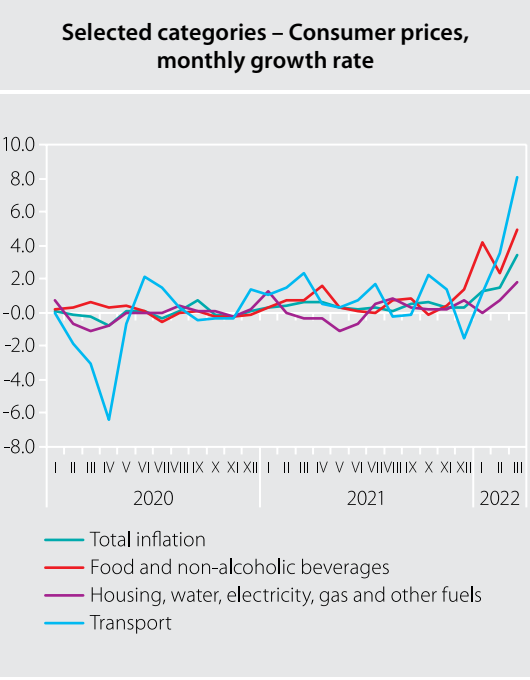
[2] Source: World Bank: "Commodity Markets Outlook", April 2022.

Graph 4



Source: MONSTAT

Graph 5



Source: MONSTAT

equipment and routine household maintenance (5.6%), *miscellaneous goods and services* (4.3%), *alcoholic beverages and tobacco* (3.5%), *housing, water, electricity, gas and other fuels* (3.2%), *health* (2.5%), *clothing and footwear* (2.1%), *restaurants and hotels* (3.4%), and *recreation and culture* (0.2%). Annual decline was recorded by the prices under the categories *communications* (0.3%), and *education* (0,1%). Observation of consumer prices monthly trends shows that the price increase was recorded in January (1.3%), February (1.5%), and in March (3.4%) (Graph 4).

The producers` prices of manufactured products recorded a 4.8% growth in March this year in relation to December 2021 due to price increase in the manufacturing industry (of 10.6%). Prices in mining and quarrying sector recorded decline of 3.4%, while prices in electricity, gas and steam supply remained the same. At the annual level, producers' prices of manufactured products rose by 6.5%.

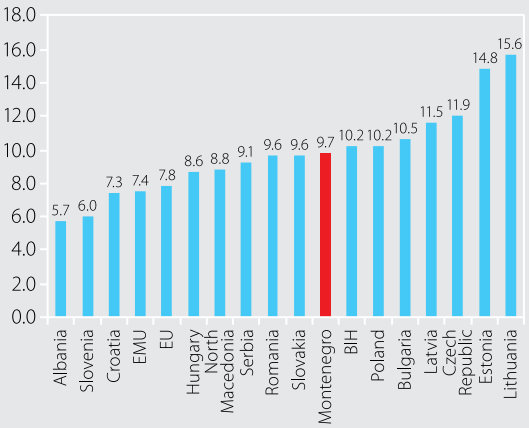
Inflation growth in the first months of 2022 was recorded in all countries of the region and the EU. The highest annual rate of consumer prices among countries in the region in March was recorded in Bosnia and Herzegovina (10.2%), followed by Serbia (9.1%), North Macedonia (8.8%), and Albania (5.7%). The highest annual inflation was registered in Lithuania (15.6%), and Estonia (14.8%) (Graph 6).

The annual HCPI inflation recorded in the euro area was 7.4%. The energy generating product prices had the greatest impact on inflation with an annual growth of 44.4%. The CPI inflation in Montenegro stood at 9.7%, while the annual HCPI amounted to 8.7% in March this year. In its May report[3], the European Commission forecast inflation in euro area of 6.1% in 2022 and 2.7% in 2023.

[3] Source: *European Commission: European Economic Forecast, Spring 2022*, May 2022.

Graph 6

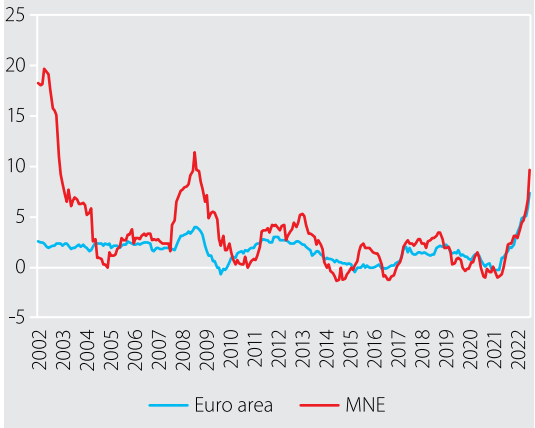
Annual inflation rate in selected countries, March 2022



Source: National statistical offices and Eurostat

Graph 7

Inflation in the euro area (HICP) and Montenegro (CPI)[4] since the introduction of euro (annual rates, %)



Source: MONSTAT and Eurostat

[4] Cost of living was used for measuring inflation in Montenegro until 2009, after which consumer prices have been introduced.

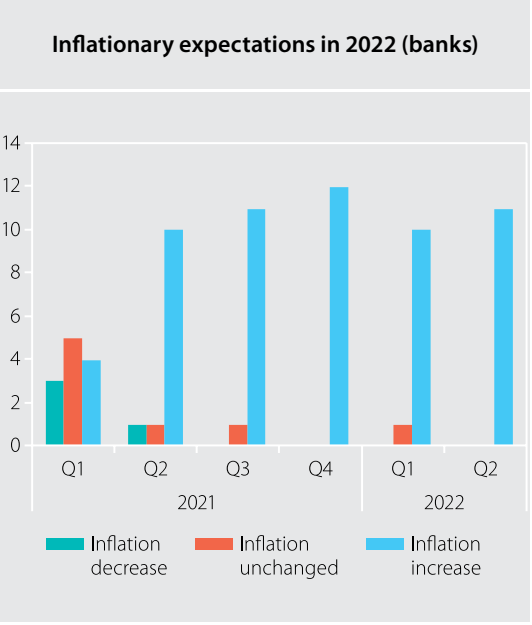
2. INFLATIONARY EXPECTATIONS

2.1. Banks' expectations

As for inflation expectations of banks, based on the survey conducted in May this year, all eleven banks expect inflation to grow, while none of those expects the same or lower level of inflation compared to 2021 (Graph 8).

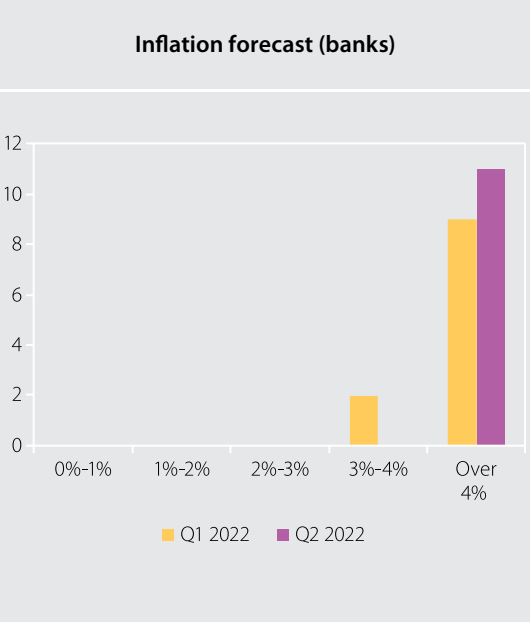
When it comes to banks' expectations regarding inflation levels, all banks expect inflation to rise above 4% (Graph 9).

Graph 8



Source: Central Bank Survey

Graph 9

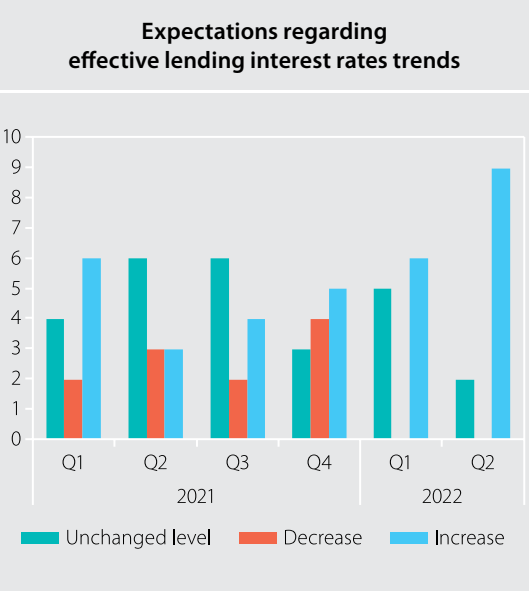


Source: Central Bank Survey

When it comes to expectations regarding the nominal lending interest rates trends, nine banks expect they will rise, two banks expect this rate to remain at the same level, while none believe they will decline. The banks expected the same regarding the effective lending interest rate (Graph 10).

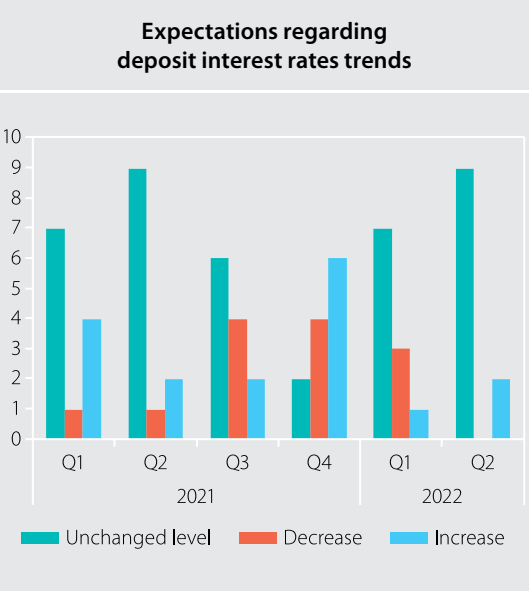
In reference to deposit interest rates` trends, nine banks expect no change, two banks expect their increase, while none expect a decline in deposit interest rates (Graph 11).

Graph 10



Source: Central Bank Survey

Graph 11



Source: Central Bank Survey

For the purpose of calculating inflation forecasts we use the market trend indicator (horizontal line in Graph 12). It is calculated as the difference between the number of banks expecting inflation growth and those 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. The survey conducted in the first two quarters in 2022 indicate an increase in banks' inflation expectations in 2022.

Graph 12

Source: Central Bank Survey

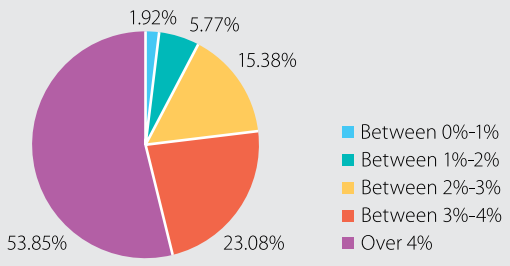
2.2. Expectations of the economy (except banks)

Inflation

Of total surveyed economic entities, the largest number (53.85%) expect inflation to exceed 4% in 2022. Inflation in the range 3% - 4% is expected by 23.08%, while 15.38% of the surveyed economic entities expect inflation to range between 2% and 3% (Graph 13).

Graph 13

Expected inflation in 2022 in relation to 2021 (responses based on percentage share)

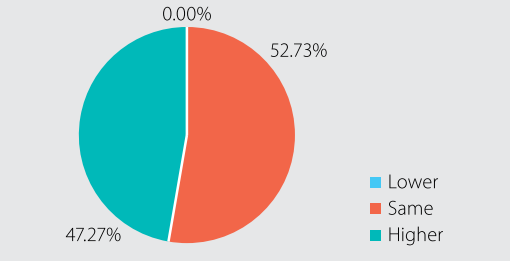


Source: Central Bank Survey

As much as 52.73% respondents expect earnings to remain the same in 2022, while 47.27% of the surveyed companies expect them to rise in relation to the previous year (Graph 14). With regard to the number of employed persons, 65.45% of the respondents expect it to remain unchanged, 25.45% expect this number to increase, and 9.10% expected it to decline in relation to the previous year (Graph 15).

Graph 14

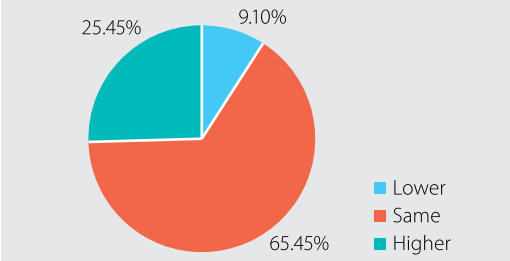
Expected earnings in 2022 in relation to 2021



Source: Central Bank Survey

Graph 15

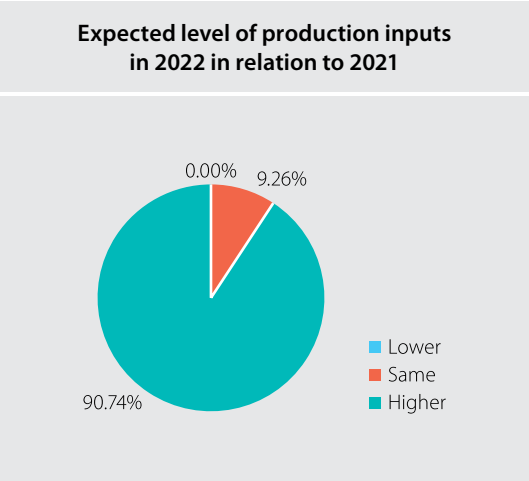
Expected number of employed persons in 2022 in relation to 2021



Source: Central Bank Survey

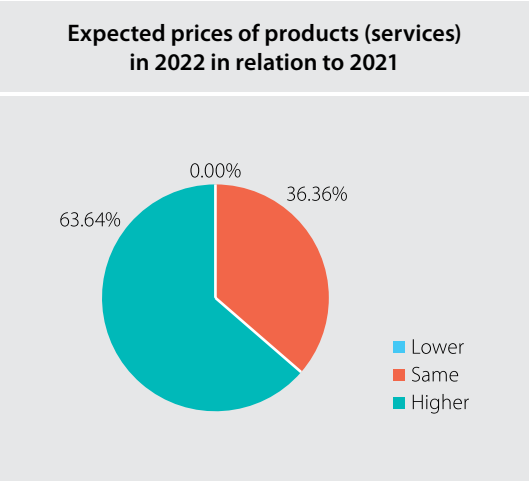
The majority of surveyed economic entities (90.74%) expect higher prices of production inputs they use (Graph 16), whereas 63.64% plan to increase the prices of their products and/or services in 2022 (Graph 17).

Graph 16



Source: Central Bank Survey

Graph 17



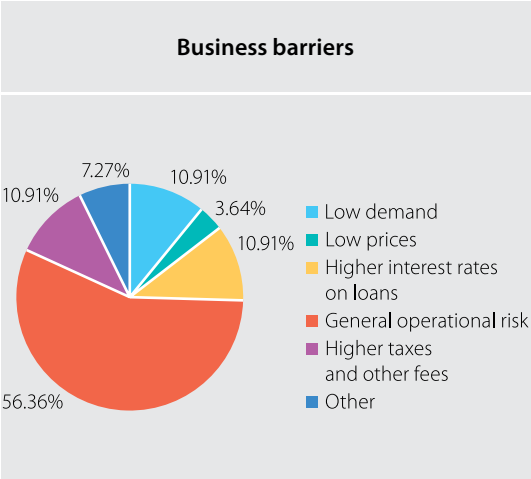
Source: Central Bank Survey

Business Environment

In the area of business barriers, the survey results show that most of the surveyed companies (56.36%) see general operational risks as the major obstacles, followed by high taxes and other forms of duties, as well as poor demand and high interest rates on loans (10.91% each) (Graph 18).

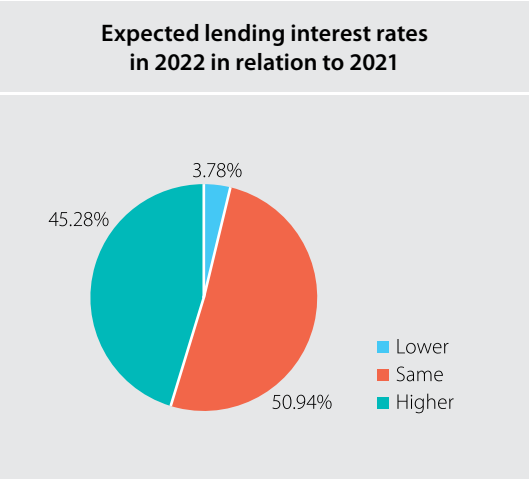
With regard to lending interest rates, 50.94% of the respondents expect unchanged levels, 45.28% expect them to increase, while 3.78% believe they will decline in the current year relative to 2021 (Graph 19).

Graph 18



Source: Central Bank Survey

Graph 19

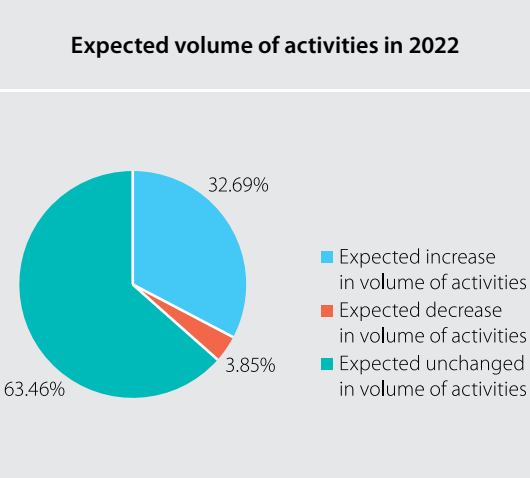


Source: Central Bank Survey

Investments

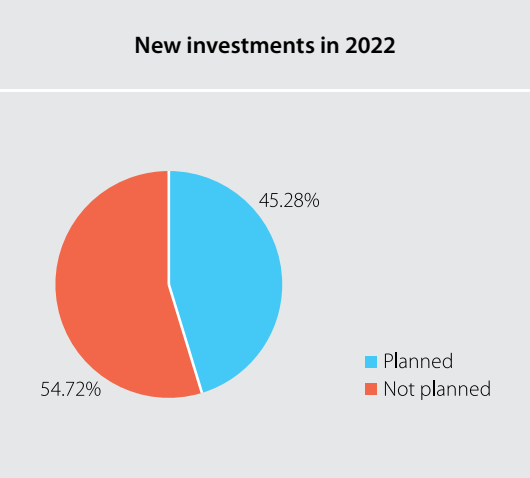
Of the total number of surveyed companies, 32.69% plan to increase the volume of their activities by end-2022 (Graph 20), while 45.28% plan new investments (Graph 21). Most of the new investments (76.67%) will be to increase fixed assets (Graph 22), with low demand, insufficient exploitation of existing capacities, and other being indicated as the main barriers (Graph 23).

Graph 20



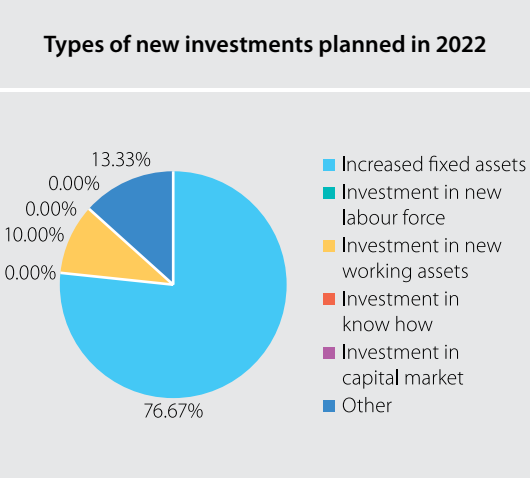
Source: Central Bank Survey

Graph 21



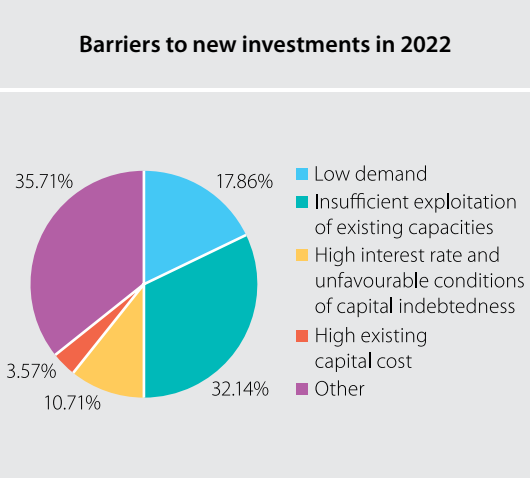
Source: Central Bank Survey

Graph 22



Source: Central Bank Survey

Graph 23



Source: Central Bank Survey

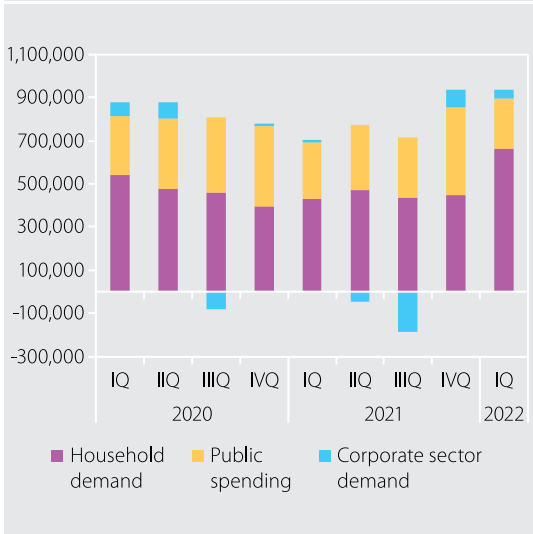
3. INFLATION DETERMINANTS

3.1. Demand

As per preliminary data, in Q1 2022, the aggregate demand recorded a significant year-on-year increase, yet a slight decline in relation to the previous quarter. Observing the structure of total demand in the reporting period, compared to the previous quarter, the share of household demand increased, while corporate sector demand and public spending component in total demand declined (Graph 24).

Graph 24

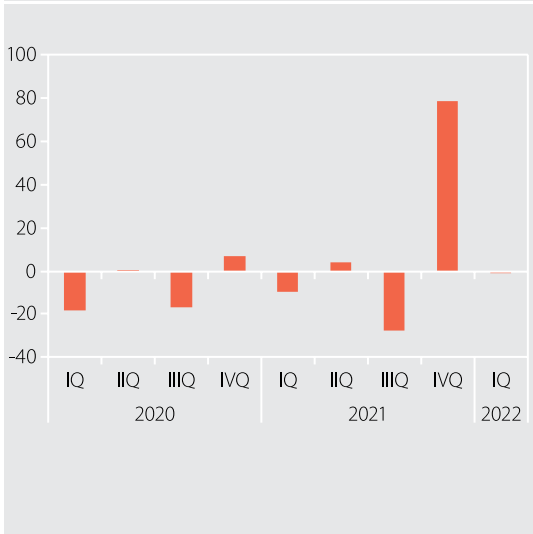
Aggregate demand in Montenegro, Q1 2020 - Q1 2022, in thousand euros



Source: Central Bank calculations

Graph 25

Aggregate demand in Montenegro, Q1 2020 - Q1 2022, quarterly change, in %



Source: Central Bank calculations

Box 1 - Aggregate demand calculation methodology

For the purpose of a more complete monitoring of aggregate demand as a determinant of inflation, the CBCG 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 indica-

tor showing the aggregate demand trend. A number of substantial data are not available in the existing methodology such as corporate investments, revenues from share sales, non-market income, non-observed economy revenues, and the like. Methodology of aggregate demand calculation is shown in the following equation:

$$AD = C + I + G$$

C = sum of paid salaries + sum of paid pensions + paid frozen foreign currency deposits + net compensations to households – net 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

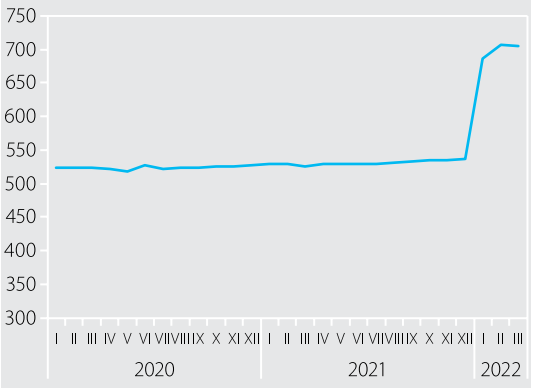
3.1.1. Salaries and other available demand determinants

In Q1 2022, an average gross earnings in Montenegro amounted to 877 euros, while an average earnings without taxes and contributions amounted to 699 euros. In relation to the previous quarter (Q4 2021), the average gross and net earnings rose by 9.63% and 30.41%, respectively. Compared to Q1 2021, average earnings and average earnings without taxes and contributions rose by 11.29% and 32.39%, respectively.

If we take into account consumer prices, i.e. the earnings` trend observed in real terms, then real earnings recorded a significant increase in the first month, while they declined in the second and third month in Q1.

Graph 26

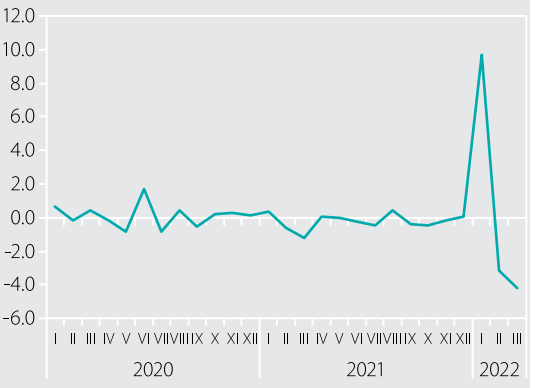
Average earnings without taxes and contributions in Montenegro January 2020 - March 2022, in euros



Source: MONSTAT

Graph 27

Real earnings in Montenegro, January 2020 - March 2022 (monthly change, in %)



Source: MONSTAT

Retail loans[5] reported positive trend during Q1 2022. Loans to this sector grew at a monthly average rate of 0.79% during the reporting period, while they recorded the average monthly decline of 0.07% during the same period of the previous year.

At end-March 2022, retail loans amounted to 1,465.58 million euros, which is 74.38 million euros or 5.35% more than in same period of the previous year, i.e. 34.08 million euros or 2.38% more than at the end of the previous year (Graph 28).

Debt *per capita*[6] amounted to 2,372.71 euros at end-March 2022, recording an increase of 131.51 euros compared year-on-year, while it rose by 66.58 euros in relation to end-2021.

At end-Q1 this year, total MFI loans granted to the retail sector amounted to 62.97 million euros, which is 460,000 million euros or 0.74% more than in same period of the previous year, and 61,000 euros or 0.10% less than at the end of the previous year.

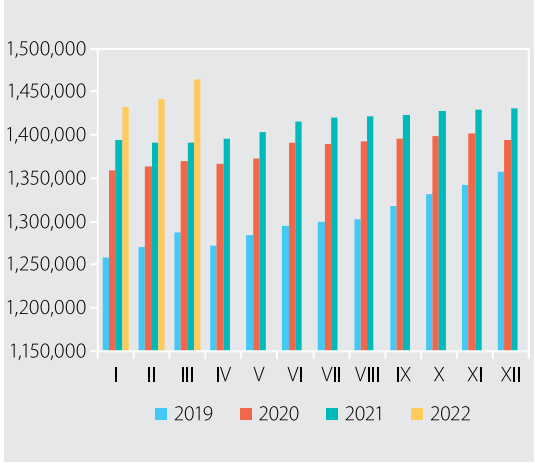
Retail deposits amounted to 1,450.28 million euros at end-March this year, being 186.85 million euros or 14.79% higher than at end-March 2021 and 7.79 million euros or 0.54% higher than at end-2021.

The loan to deposit ratio for this sector was 1.01 at end-March this year, and it deteriorated relative to the same period of the previous year when it amounted to 1.10, while it rose relative to end-2021 when it equalled 0.99.

At end-Q1 2022, the retail sector had a net debt of 15.30 million euros, which is significantly less than at the end of the previous year when the retail sector net debt amounted to 127.77 million euros. At end-December 2021, the retail sector recorded net savings in the amount of 10.99 million euros.

Graph 28

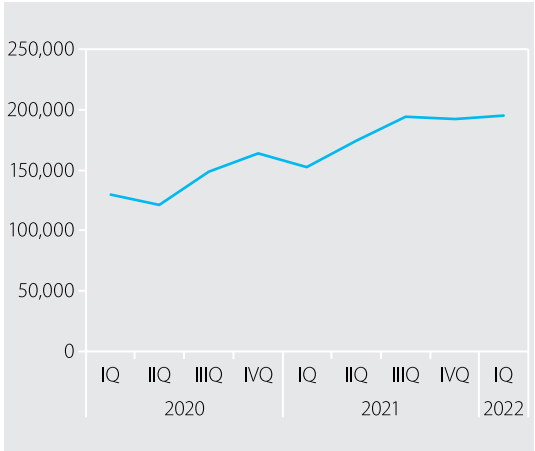
Retail loans, in thousand euros, 2019 - 2022, monthly rate



Source: Central Bank calculations

Graph 29

Inflow of foreign funds to households (in thousand euros)

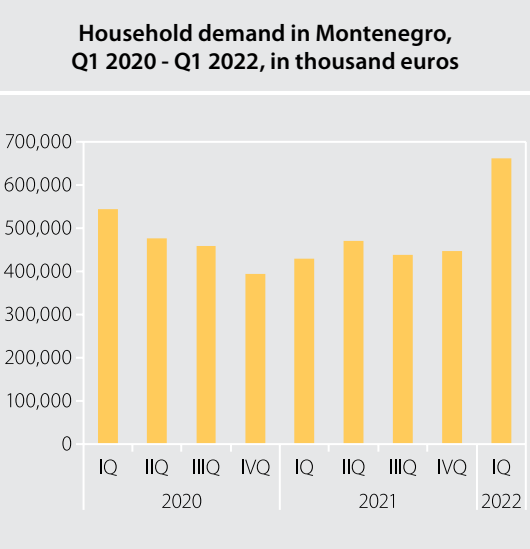


Source: Central Bank

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

[6] Population estimate for 2022: Estimate as at 1 January 2022 amounts to 617,683, Source: MONSTAT.

Graph 30



Source: Central Bank calculations

In Q1 2022, the balance of payments statistics revealed the year-on-year increase in the inflow of monetary resources arising from compensations to employees and remittances (Graph 29).

Observation of the total retail sector demand by quarters shows that household demand in Q1 this year was higher both compared to the previous quarter and year-on-year (Graph 30).

3.1.2. Budget analysis

Budget of Montenegro

According to Ministry of Finance preliminary data, total revenues[7] of the Budget of Montenegro amounted to 442.22 million euros in Q1 2022.

Source revenues amounted to 416.56 million euros or 7.85% of the estimated GDP[8], and they increased by 13.78% in relation to the plan, showing the year-on-year increase of 19.55%, which is the result of greater tax discipline and the growth of citizens' disposable income through the implementation of the „Europe Now!" programme. In the structure of source revenues, tax revenues accounted for the main share of 72.05%, followed by contributions with 20.11%, fees with 4.16%, donations with 1.68%, other income with 1.11%, duties with 0.56%, and receipts from loan repayment and funds transferred from previous year with 0.33%.

Tax revenues amounted to 300.14 million euros, recording a 19,37% increase relative to the plan and a 31.46% increase year-on-year. All taxes other than personal income tax increased in the reporting quarter compared to the first quarter of the previous year. The highest nominal increase of 46.84 million euros was recorded by VAT collection.

Revenues arising from contributions amounted to 83.78 million euros or 2.03% less than planned yet 16.76% less than in the comparative period in 2021.

[7] The revenues include source revenues (direct and indirect taxes and non-tax revenues), borrowings and loans from domestic and foreign sources, and revenues from the sale of property.

[8] Source: Ministry of Finance; estimated GDP for 2022 amounts to 5,306.4 million euros.

In Q1 2022, *consolidated budget expenditure* amounted to 441.24 million euros or 8.32% of GDP. Recorded expenditures were 12.32% lower than planned for the reporting quarter, and 2.30% lower year-on-year.

Reported current budget expenditures amounted to 175.05 million euros and they were 7.74% lower in relation to the plan, recording a year-on-year drop of 7.43% with the largest decrease of 18.26 million euros or 75.05% recorded under interest due to the reduction of obligations arising from interest on issued Eurobonds repaid in March 2021.

Capital expenditures amounted to 35.66 million euros or 0.67% of GDP. Compared to the plan, they were 33.11% lower, while compared to the same period of the previous year, capital expenditures were 31.44% higher.

In Q1 2022, *cash deficit* of the Budget of Montenegro is estimated at 24.68 million euros or 0.47% of GDP.

3.1.3. Non-financial sector

Lending to the non-financial sector[9] during the Q1 2022, with certain fluctuations, had a positive trend. Loans to this sector grew at a monthly average rate of 2.06% during the reporting period, while they recorded the average monthly growth of 0.80% during the same period of the previous year.

At end-March 2022, total loans to non-financial sector amounted to 1,230.25 million euros, which is 94.28 million euros or 8.30% more than at end-March 2021, that is 72.79 million euros or 6.29% more compared to end-2021.

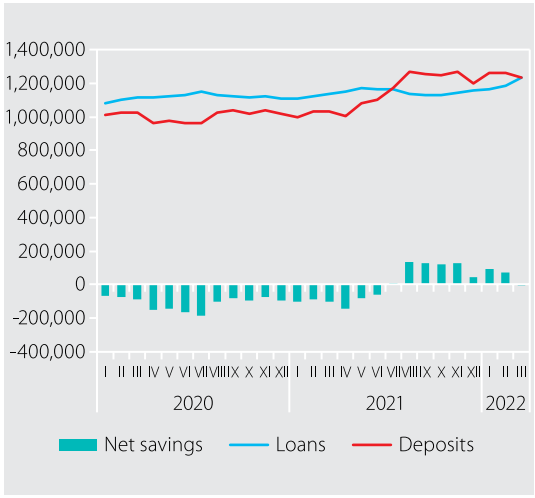
Long-term loans accounted for the main share in the structure of loans to the sector (78.91%), which indicates that the loans to corporate sector were mainly used for the increase in the volume of economic activity.

Deposits of the non-financial sector amounted to 1,229.39 million euros at end-March this year, recording an increase of 200.31 million euros or 19.46% in relation to March 2021, while they were 29.62 million euros or 2.47% higher than in December 2021.

The loans to deposits ratio of the non-financial sector was 1.00 at end-March 2022 and it decreased compared year-on-year when it was 1.10, while it rose compared to the end of the previous year when it stood at 0.96.

Graph 31

Net savings/indebtedness of the non-financial sector, in thousand euros, end of month



Source: Central Bank calculations

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

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

At end-March 2022, the net debt of the non-financial sector was recorded in the amount of 861,000 euros, which is more favourable compared to corresponding period of the previous year when the net debt was recorded in the amount of 106.89 million euros, while the recorded net savings amounted to 42.30 million euros at end-December 2021 (Graph 31).

3.1.4. External demand and the current account

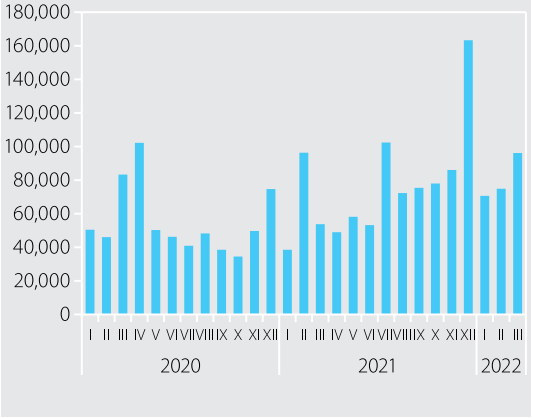
Preliminary data show that the current account deficit amounted to 183.80 million euros in the first three months of 2021, which is the year-on-year increase of 12.97%. This deficit increase is a result of an increased deficit on the goods account, partially mitigated by the increase of the surplus on the services account as well as on primary and secondary income accounts.

In Q1 2022, the goods account saw a deficit increase of 413.55 million euros or 28.37% more in relation to a comparative period. Total visible exports amounted to 216.06 million euros, recording an increase of 99.95%, whereas total visible imports amounted to 629.61 million euros, being 46.35% higher. The services account recorded a surplus of 79.34 million euros, being 40.63% higher than in Q1 2021. The primary income account surplus amounted to 56.84 million euros, which is the year-on-year increase of 117.81%. This trend is the result of larger inflow based on compensations to employees. The secondary income account ran a surplus of 93.57 million euros, which is the year-on-year increase of 21.61%.

Preliminary data suggests that net foreign direct investments (FDIs) inflow for the period January-March 2022 amounted to 162.94 million euros, which is a year-on-year increase of 94.79%. Total FDI inflow stood at 241.79 million euros, recording an increase of 27.96% (Graph 32). Equity investments amounted to 129.51 million euros (78.61 increase), while the inflow in the form of intercompany debt added up to 82.24 million euros or 28.08% less y-o-y. In the structure of equity investments, investments in companies and banks amounted to 45.16 million euros (27.64% increase), while real estate investments reached 84.35 million euros (127.19% increase). The inflow arising from the withdrawal of funds invested abroad amounted to 30.04 million euros. In the structure of the total inflow of FDI, the share of inflows from investments in real estate amounted to 34.89%, inflows arising from intercompany debt accounted for 34.01%, while 18.68% were investments in companies and banks. Total FDI outflow in the reporting period reached 78.85 million euros, which is the year-on-year decline of 25.13%. The outflow from residents' investments abroad amounted to 33.97 million euros, while the withdrawal of non-residents' funds invested in Montenegro amounted to 44.88 million euros.

Graph 32

Total FDI inflow in the balance of payments in Montenegro, January 2020 - March 2022, in thousand euros



Source: Central Bank

In Q1 2022, portfolio investments account recorded a net outflow of 59.61 million euros, while the net outflow in the other investments account amounted to 6.82 million euros.

3.2. Supply and production

Preliminary MONSTAT data indicate that industrial output declined by 15.2% in Q1 this year as compared to the same period of the previous year (Graph 33). Output decline was recorded in electricity, gas and steam supply sector (33.4%), and in the mining and quarrying (7.4.%), while the manufacturing industry recorded output growth (11.2%).

A total of 83,872 tourists stayed in collective accommodation establishments, which is an increase of 117.47% year-on-year. The number of domestic tourists arrivals in collective accommodation establishments increased by 102.47%, while the number of foreign tourists grew by 123.25%. Tourist overnights amounted to 227,907, which is the year-on-year increase of 137.87%.

Some 9,344 m³ of wood products were produced in state-owned forests in Q1 2022, which is 200%[10] more than in the same period of the previous year.

Graph 33

Source: MONSTAT

According to preliminary MONSTAT data, construction recorded a 5.24% decline measured by the value of executed construction works and a 6.10% decline in effective working hours.

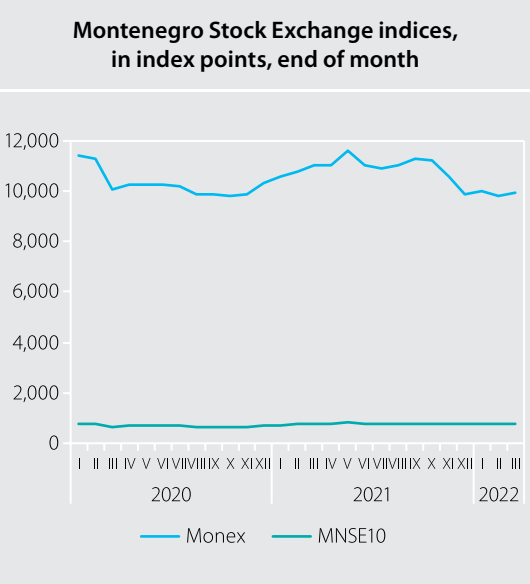
According to preliminary MONSTAT data, passenger transport in Q1 2022, compared to the same quarter of the previous year, recorded a significant growth in all types of transport: railway transport by 85.29%, road transport by 47.10% and air passenger transport by 158.97%. Growth was also recorded in freight transport, namely: railway by 80.42%, road by 0.51% and cargo transport at airports by 9.20%.

[10] Presented through weighted index.

3.3. Stock exchange indices

At end-March 2022, the Monex[11] index recorded a decline compared to the same period of the previous year, while it recorded growth compared to the end of the previous year. The MNSE10[12] index recorded a growth in relation to both comparative periods (Graph 34).

Graph 34



Source: Montenegro Stock Exchange and the Central Bank

At end-March this year, the SE index Monex amounted to 9,912.38, recording a decline of 1,102.80 index points or 10.01% in relation to same period of the previous year, and the year-on-year growth of 45.01 index points or 0.46%.

At end-March 2022, the SE index MNSE10 reached 778.83, recording a growth of 18.07 index points or 2.38% year-on-year, while compared to the end of the previous year it recorded growth of 14.11 index points or 1.85%.

[11] The MONEX is the Montenegro Stock Exchange benchmark index aimed at providing a more precise description of share prices trends in the official and free market of Montenegro Stock Exchange AD Podgorica. With the new Methodology, the successor of the MONEX20 index - MONEX index - contains more companies in its index basket.

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

4. MONETARY POLICY

During Q1 2022, there were no changes to the existing monetary policy instruments nor were any new decisions made regarding the Central Bank of Montenegro`s monetary policy instruments.

5. INFLATION FORECAST FOR THREE QUARTERS OF 2022 AND THE FIRST QUARTER OF 2023

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 trend in the following period. The very 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 three quarters of 2022 and the first quarter of 2023 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 could hit the Montenegrin economy over a 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 three quarters of 2022 and the first quarter of 2023

With a view to developing a fan chart, an ARIMA (Autoregressive Integrated Moving Average) model of time series of inflation of Montenegro presented via the Consumer Price Index[13] was developed.

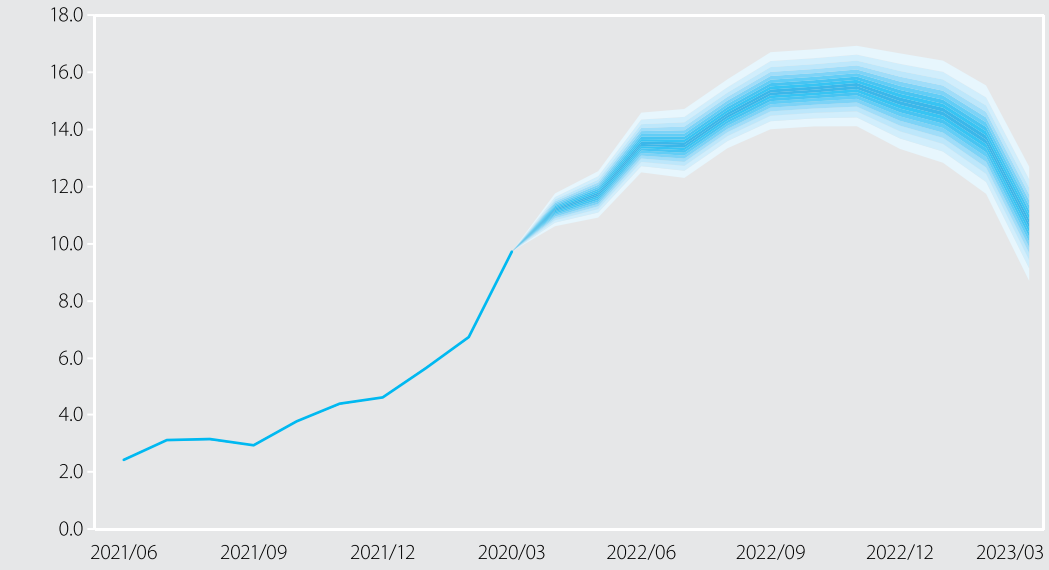
[13] A detailed explanation of the ARIMA model of Montenegro was presented in the working study of the Central Bank No.11 *"Inflation Forecasting". Empirical research on the retail price index trend of Montenegro in 2007 - applying the ARIMA model."*

The ARIMA model was used for short term forecasts (12 months), whereby iteration of ARIMA models was made, which were ranked based on their efficiency and diagnostics quality. The selected ARIMA model, ARIMA (3,1,2)[14] has sufficient confidence level for forecasts.

Monthly forecast values were used as the value of central projection of the CPI graph for three quarters of 2022 and the first quarter of 2023. Obtained values represent the distribution mode, i.e. values with the highest frequency in the distribution of this time series.

Graph 35

Montenegro's CPI projections for three quarters of 2022 and the first quarter of 2023



Source: CBCG, 2022

Mean value of the obtained model is 12.46. The value of the coefficient of asymmetry varies in the range of 0.5 to 1, and the relative standard deviation is 0.35. Model projection of inflation is located in the lower span of the distribution. This indicates that the corresponding range of uncertainty of future inflation is set towards higher levels. The fan chart explains 90% of inflation distribution probability. The central projection is usually in the deepest shade of the fan chart, i.e. in the central 10% of probability[15]. The fan chart has an equal number of bands (eight) on either side of the central band

[14] The ARIMA Model is generally referred to as 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.

[15] 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).*

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.

The fan chart of inflation in Montenegro, based on the ARIMA model assessment for three quarters of 2022 and the first quarter of 2023, indicates that there is a *90% probability that the CPI inflation will range between 8.7% and 16.94%, depending on the month, with the central projection of 12.46%. The model projection assumes an increase in inflation in 2022, while it indicates a gradual decrease starting next year.*

If the projected inflation for 2022 is analysed, inflation will range from 5.7% to 16.94%, with a central projection of 12.3%. *Inflation projected for end-2022 ranges between 13.3% and 16.68%, with the central projection of 15%.* The Fan Chart central projection (the darkest part) represents a 10% probability span (Graph 35).

The risks related to the projected inflation rate shown on the fan chart are asymmetric to the upside. Having in mind the high degree of uncertainty due to the geopolitical situation, it can be concluded that the inflation rate will be exposed to significant risks. Risks in terms of achieving the projected inflation rate relate to the oil and food prices trend. The situation in Ukraine increases supply-side constraints and further fuels inflationary trends. Long-term high energy costs alongside a loss of confidence could reduce demand more than expected and limit consumption and investment. The risks related to COVID-19 pandemic decreased.

The projection was based on the following assumptions:

1. High imported inflation - the situation in Ukraine intensified the previous inflationary risks, mostly in energy, raw materials and food prices. Their growth is the main reason for the growth of inflation, as it incites price growth in many other sectors. Also, this situation increases the pressure on global supply chains and contributes to price growth and uncertainty in the supply of commodity markets.
2. Food prices will remain high throughout 2022, due to high prices of raw materials, but also a sharp increase in gas and electricity prices, which account for some 90% of the total energy costs of the food industry and which are an important factor for fertilizers production. Also, the increase in food prices is influenced by the higher prices of food-based biofuels, which were stimulated by disruptions on the supply side as a result of the situation in Ukraine. Food prices are expected to start declining in 2023 as growth pressures from inputs ease, such as energy costs, fertilizer prices and food-based biofuel prices.
3. Based on futures contracts, it is assumed that the price of Brent crude oil will rise from around 71.1 USD/barrel, which was the average price in 2021, to 105.8 USD/barrel in 2022, due to the reduced oil supply as a result of sanctions against Russia. However, the contribution of fuels should slowly weaken in 2023, due to base effects, and the price of a barrel of Brent crude oil will decrease to 84.3 USD/barrel by 2024.
4. By reducing excise duties on fuel by 40% in May, with the additional cut of 10% from June to September 2022, the expected increase in the price of fuel, due to growth on the international market, will be mitigated.

5. According to the ECB[16] baseline scenario from June, the average inflation in the euro area will amount to 6.8% this year. Inflation growth in 2022 will, for the most part, be triggered by the rise in energy prices, primarily higher gas and electricity prices. According to the ECB baseline scenario, total inflation will remain at a high level throughout this year, and it will have a downward trend as of the next year, amounting to 3.5% and 2.1% in 2023 and 2024, respectively. Due to the increased uncertainty related to the situation in Ukraine, the basic scenario was supplemented with a negative scenario that assumes more serious disruptions in the supply of energy to the European market, which would lead to a further increase in energy prices. According to this scenario, inflation rate will amount to an average of 8.0% in 2022 and 6.4% in 2023, while declining to 1.9% in 2024.
6. The European Central Bank (ECB) will discontinue the stimulants from Q3 2022 and announces an increase in the reference interest rate in July (0.25 pp) and September. The continuous normalisation of monetary policy, which implies an increase in interest rates in line with market expectations, contributes to the reduction of inflation with, as stated by the ECB, the usual lag in transmission.

Finally, the Russian-Ukrainian conflict could trigger new inflationary trends that would take time and that are not covered by this projection. Deviation from any of the abovementioned parameters would require the forecast adjustment.

[16] Source: ECB (2021): *ECB staff macroeconomic projections for the euro area,* June 2022.

6. EXPECTED INFLATION IN 2022

Inflation became a global phenomenon since the mid-2021, and the conflict between Russia and Ukraine led to its acceleration during 2022. As we indicated in our Q3 2021 report, contrary to the expectation of the leading central banks that inflation will be a short-term phenomenon, our assumption about the longer-term nature of inflation was confirmed. It is certain that in 2022, Montenegro will have the highest inflation rate since gaining independence, but it is mostly imported inflation, and to a lesser extent the result of domestic imbalances.

The expectations of both surveyed businessmen and bankers also point to an increase in inflation. Also, the aggregate demand in Q1 this year was higher than the aggregate demand in Q1 of the previous year, which additionally indicates inflationary pressures.

The current year carries an extremely high degree of uncertainty, probably the highest since the Inflation Report is being published. The key uncertainties relate to the duration and impact of the situation in Ukraine and the related sanctions, the trend of prices of a whole range of products, such as energy, food, etc., the further course of the pandemic (although everything points to a decreasing risk of the pandemic), as well as whether it will come to recovery or further disruptions in global supply chains.

The expected decision of the ECB to increase the reference interest rates at the July meeting could also affect the containing of inflation. However, the announced measures of the key central banks in the fight against inflation carry the risk of slowing down economic growth or even entering a recession.

The Fan Chart of inflation in Montenegro, based on the ARIMA model assessment for end-2022, indicates that there is a 90% probability that the CPI inflation will range between 13.3% and 16.68%, with a central tendency of 15%. Also, the model projection clearly indicates significant risks towards higher levels of inflation. Our expert assessment forecasts an inflation rate ranging from 13% to 17%.

Table 3

Estimated inflation rate in 2022		
Lower threshold	Central projection	Upper threshold
13%	15%	17%

This assessment is based on the same assumptions as the model assessment and the deviation of any of the assumptions would require the forecast revision. Bearing in mind the high degree of uncertainty, the projected inflation rate will be revised during the year.