CENTRAL BANK OF MONTENEGRO

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1. INFLATION INDICATORS

Consumer prices uptrend continued in the second quarter of 2022, primarily as a result of the global developments, i.e. imported inflation. The situation in Ukraine further pushed the prices of food and energy generating products in the world markets. This trend has not bypassed Montenegro either due to its high import dependence. In the reporting period, consumer prices rose 4.5%, primarily owing to price increase in the categories of *food and non-alcoholic beverages* of 6.1% and *housing, water, electricity gas and other fuels* of 5.6% (table 2). Observation of consumer prices monthly trends shows that the price increase was recorded in all three months of the second quarter: 1.9% in April, 0.8% in May, and 1.8% in June. In the first half of 2022, compared to the same period of the previous year, consumer prices were 9.8% higher, while the year-on-year growth in June this year averaged at 13.5%.

Table 1

Inflation in Montenegro in the period March 2021 – June 2022, in %

	2021				2022	
	III	VI	IX	XII	III	VI
Change in relation to to the previous year-end	1.4	2.4	3.3	4.6	6.3	11.1
Annual change	0.8	2.4	2.9	4.6	9.7	13.5

Source: MONSTAT

During the second quarter of 2022, price growth in Montenegro was recorded in ten out of twelve categories that accounted for 93.31% of the consumer basket (table 2). The main contributor to the price growth with 2.15 pp was the category *food and non-alcoholic beverages* that rose 6.1%. Prices in this category were driven primarily by the growth in the prices of oil and fats of 16.4%, then fruit and the group sugar, jam, honey, chocolate and confectionery, each rising 11.3%, milk, sheese and eggs of 10.3%, fish and seafood of 6.6%, meat of 5.5%, non-alcoholic beverages of 3.5%, and vegetables of 3.1%. Due to the rise in the prices of food staples, the Law Amending the Value Added Tax Law which reduced the VAT rates on flour and sunflower oil (from 7% to 0%) and salt (from 21 % to 7%)[1] was adopted in May this year. However, as this VAT reduction had no effect on the prices of bread, another amendments of the VAT Law[2] were enacted in June that reduced VAT on bread from 7% to 0%. Also, the Law Supplementing the Law on Excise Duties[3] was passed and it abolishes excise duties on plastics used as packaging in the food and beverage industry, which is of great importance for domestic producers whose products would be more expensive due to the mentioned excise tax compared to the same products from imports.

Price growth in the category *housing, water, electricity gas and other fuels* of 5.6% contributed to total inflation increase with 0.76 pp, primarily as a result of growing prices of solid fuels (13.9%), and ser-

[1] Parliament of Montenegro session of 5 May 2022.

[2] Parliament of Montenegro session of 15 June 2022.

[3] Ibid.

vices for the maintenance and repair of the dwelling (22.1%). Price increase in the reporting period was also recorded with the following categories: *hotels and restaurants* of 13.0%, *furnishing, household equipment and routine household maintenance* of 3.7%, *transport* of 3.4%, *health* of 3.1%, *alcoholic beverages and tobacco* of 2.3%, *miscellaneous goods and services* of 1.6%, *clothing and footwear* of 1.1%, and *recreation and culture* of 0.7%. Price decline of 0.1% was registered in the category *education*, whereas *communications* saw no price changes in the second quarter of the current year.

Table 2

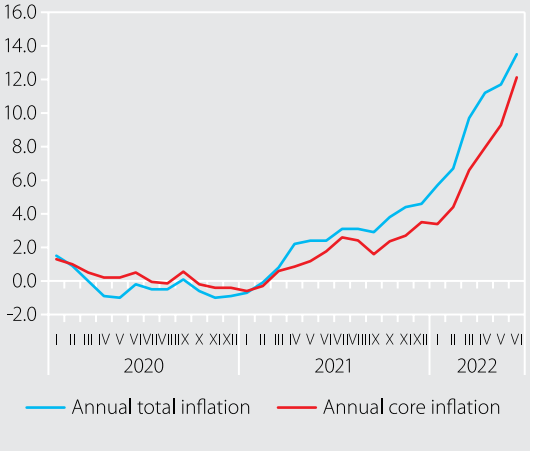
Growth rate and contribution of individual categories in total inflation (%)[4] in Montenegro

	Weights	VI 2022 / III 2022	Growth rate	Contribution
TOTAL	1,000.0	104.5	4.5	4.5
Food and non-alcoholic beverages	353.8	106.1	6.1	2.1
Alcoholic beverages and tobacco	39.8	102.3	2.3	0.1
Clothing and footwear	87.3	101.1	1.1	0.1
Housing, water, electricity gas and other fuels	135.0	105.6	5.6	0.8
Furnishing, household equipment and routine household maintenance	39.0	103.7	3.7	0.1
Health	40.3	103.1	3.1	0.1
Transport	117.7	103.4	3.4	0.4
Communications	48.5	100.0	0.0	0.0
Recreation and culture	32.3	100.7	0.7	0.0
Education	18.3	99.9	-0.1	0.0
Hotels and restaurants	46.5	113.0	13.0	0.6
Miscellaneous goods and services	41.4	101.6	1.6	0.1

Source: MONSTAT and CBCG calculations

Graph 1

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



Source: MONSTAT and CBCG calculations

The annual core inflation rate stood at 12.1% in June this year and it was 1.4 pp lower than total annual inflation. It was also lower than total inflation during the entire Q2 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, and the like. Graph 1 shows the trend of total and core inflation rates.

After a slight decline in April, geopolitical tensions continued to produce volatility in the energy market. Crude oil recorded price growth in May and June. EU sanctions against Russia due to the situation in Ukraine have affected the reduction of Russian production which, according

[4] It should be noted that, regardless of the index changes, the contribution of the share of certain categories is not recorded before the second and/or third decimal due to the weight structure.

to the International Energy Agency, accounted for about 14% of the global oil supply last year. The Organization of the Petroleum Exporting Countries and its OPEC+ allies, excluding Russia, decided to increase production in July and August to offset the impact of sanctions. However, many OPEC+ member countries have already reached the limits of their capacities, so the result of all the above remains to be seen. In the reporting quarter, the OPEC reference basket price averaged at 112.41 USD/barrel, which is 15.16% above the average price recorded in the first quarter of this year. The average price of Brent oil stood at 113.69 USD/barrel or 12,42% more than in the comparative period. The highest price since March 2012 was recorded in June this year (123.56 USD/barrel). The latest report of the European Commission[5] forecasts oil prices to average at 108 USD/barrel in 2022, whereas this average is expected to be around 96 USD/barrel in 2023.

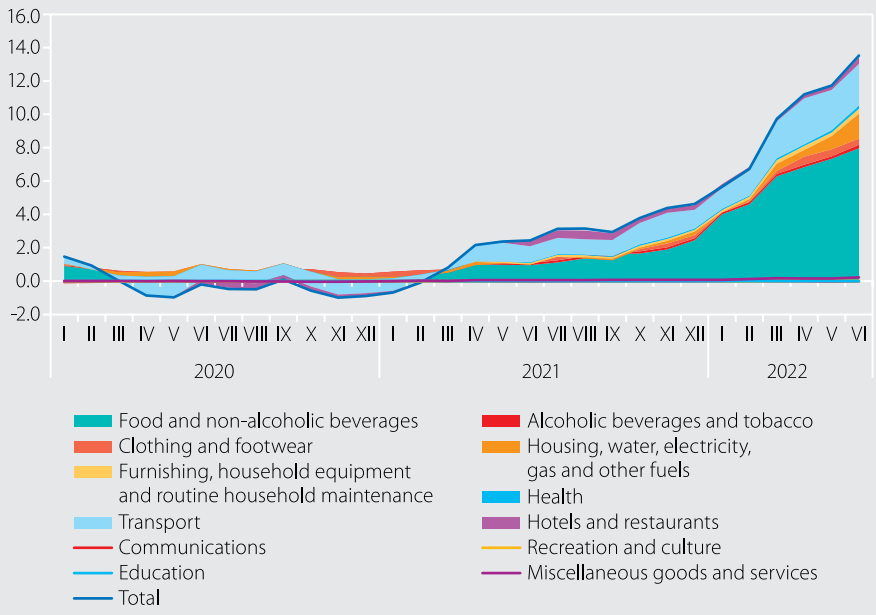
Graph 2

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

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

Graph 3

Consumer prices' components: contribution to annual growth rate



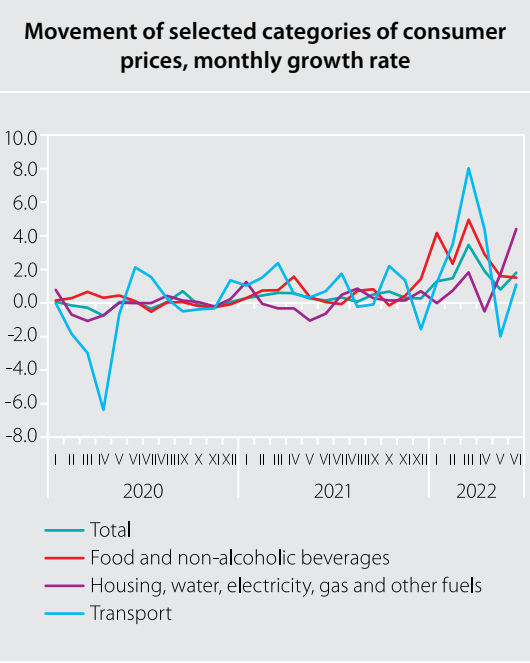
Source: MONSTAT and CBCG calculations

[5] Source: European Commission: *European Economic Forecast - Spring 2022*, July 2022.

Graph 4

Source: MONSTAT

Graph 5



Source: MONSTAT

According to MONSTAT data, the annual price growth of 22.5% in the *food and non-alcoholic beverages* category was the biggest contributor (with 7.87 pp) to total annual inflation growth of 13.5% (graph 3). Annual price growth was also seen in the following categories: *transport* (21.1%), *housing, water, electricity gas and other fuels* (11.2%), *hotels and restaurants* (8.4%), *furnishing, household equipment and routine household maintenance* (7.5%), *alcoholic beverages and tobacco* (5.5%), *miscellaneous goods and services* (5.2%), *health* (4.9%), *clothing and footwear* (4.1%), and *recreation and culture* (0.3%). Annual price decline was recorded in the categories *communications* and *education*, each dropping by 0.2%.

In June this year, **producers` prices of manufactured products** recorded a 9.1% growth in relation to December 2021 due to the price growth recorded in manufacturing industry and the mining and quarrying sector of 15.5% and 6.5%, respectively, while the prices in the sector electricity, gas and steam supply remained unchanged. At the annual level, producers' prices rose by 11.1% in June.

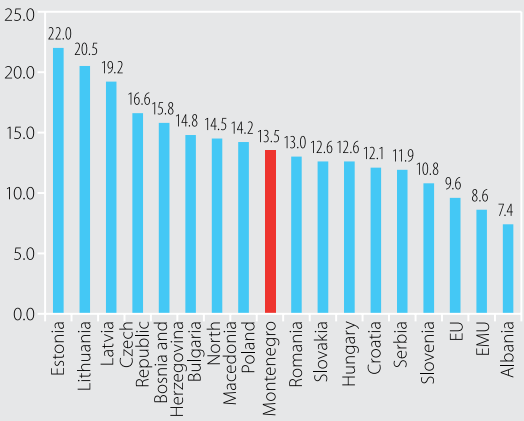
Inflation growth was recorded in all countries of the region and the EU in June this year. The highest annual rate of consumer prices among countries in the region was recorded in Bosnia and Herzegovina (15.8%), followed by North Macedonia (14.5%), Serbia (11.9%), and the lowest being in Albania (7.4%). The highest annual inflation in the EU was registered in Estonia and Lithuania of 22.0% and 20.5%, respectively (graph 6).

The annual HCPI inflation recorded in the euro area was 8.6%. With the growth of 42.0, energy generating products were the main contributor to the annual growth of inflation with 4.19 pp. CPI inflation in Montenegro stood at 13.5%, while the annual HCPI amounted to 11.9% in June this year. In its July report[6], the European Commission forecasted inflation in the euro area of 7.6% in 2022 and 4.0% in 2023.

[6] Source: European Commission: *European Economic Forecast - Summer 2022*, July 2022

Graph 6

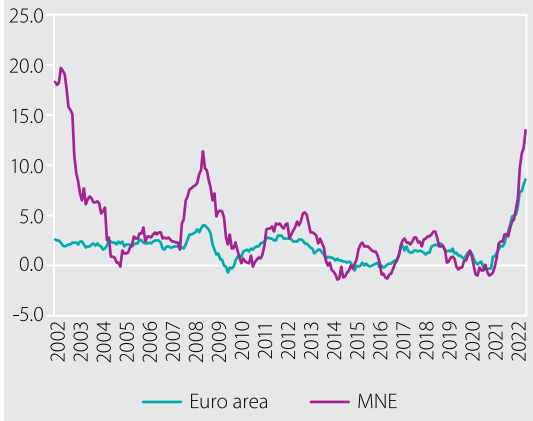
Annual inflation rate in selected countries, June 2022



Source: National statistical offices and Eurostat

Graph 7

Inflation in the euro area (HICP) and Montenegro (CPI)[7] since the introduction of the euro (annual rate, %)



Source: MONSTAT and Eurostat

[7] Cost of living has been used for measuring inflation in Montenegro until 2009, after which consumer prices were introduced.

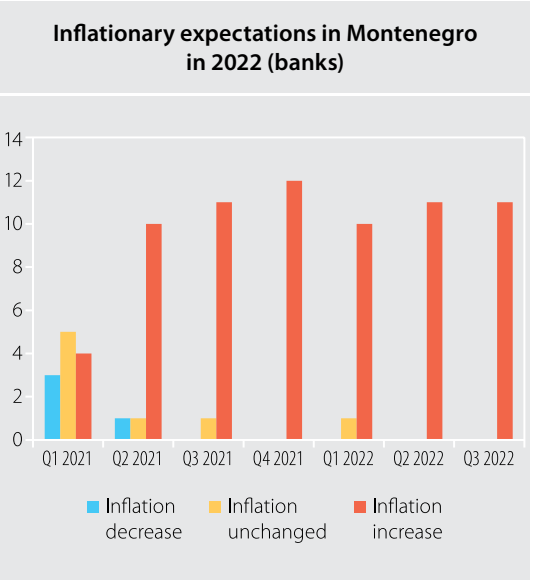
2. INFLATIONARY EXPECTATIONS

2.1. Banks' expectations

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

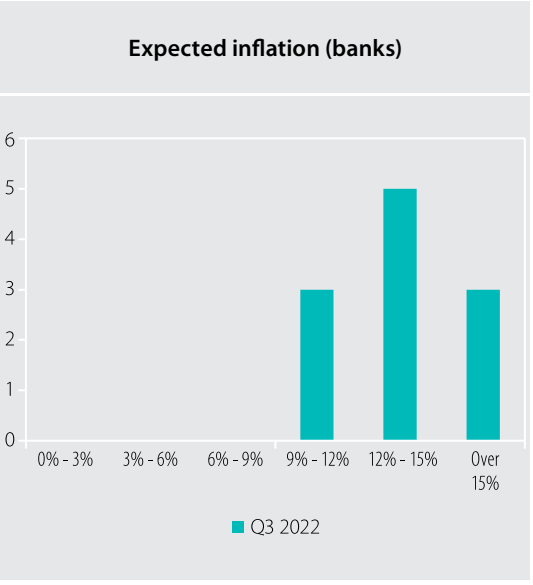
When it comes to banks' expectations regarding inflation levels, five banks expect inflation to range between 12% and 15%, three banks expect it to be between 9% and 12%, and three banks believe it would exceed 15% (graph 9).

Graph 8



Source: Central Bank Survey

Graph 9

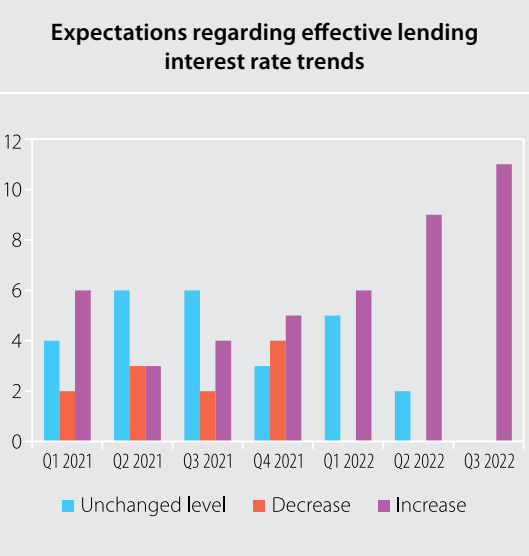


Source: Central Bank Survey

When it comes to expectations regarding the nominal lending interest rates trends, all banks expect they will rise and none believe they will decline or stay at the same level. Expectations are the same regarding the effective lending interest rate (graph 10).

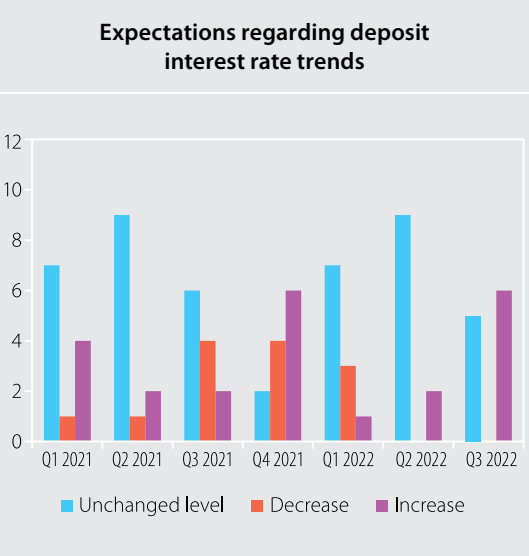
As for deposit interest rates` trends, six banks expect their increase, five banks expect no change, while none expect their decline (graph 11).

Graph 10



Source: Central Bank Survey

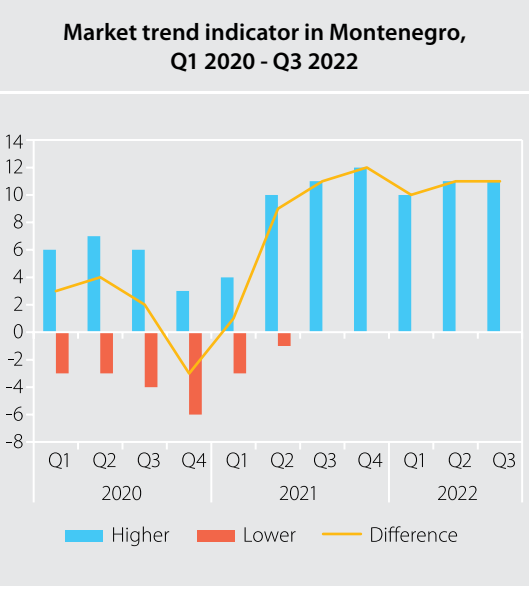
Graph 11



Source: Central Bank Survey

For the purpose of calculating inflation forecasts we use the market trend indicator (horizontal line in graph 12) that is calculated as the difference between the number of banks expecting inflation growth and those expecting inflation decline. If the market trend indicator has a negative value, a decrease in the inflation rate is expected in the upcoming period. However, 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 value of the market trend indicator, the lower the inflation expectations, and vice versa, higher positive value means higher inflation level expectations. The surveys conducted in the first three quarters in 2022 indicate an increase in banks' inflation expectations in 2022.

Graph 12



Source: Central Bank Survey

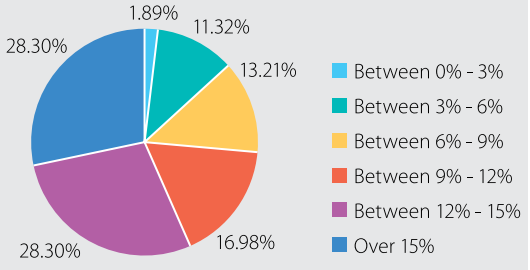
2.2. Expectations of economy (banks excluded)

Inflation

Of the total number of surveyed companies, the same percentage (28.30%) expect the inflation to range between 12% and 15% and to exceed 15% in 2022. Inflation in the range between 9% - 12% is expected by 16.98% of comapanies, while 13.21% expect it to range between 6% and 9% (graph 13).

Graph 13

Expected inflation in Montenegro in 2022 (responses based on percentage share)

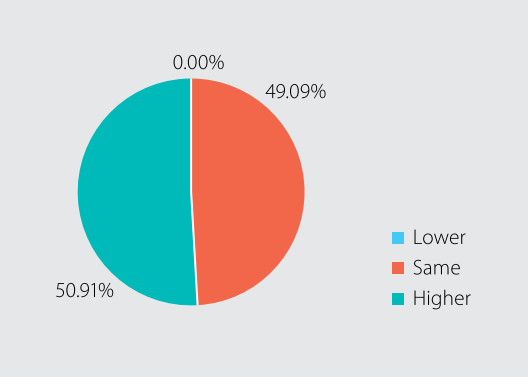


Source: Central Bank Survey

As much as 50.91% respondents expect earnings to rise in 2022 in relation to the previous year, while the remaining 49.09% expect them to remain the same (graph 14). With regard to the number of employed persons, 72.73% of the respondents expect it to remain unchanged, 20.0% expect this number to increase, and 7.27% expected it to decline in relation to the previous year (graph 15).

Graph 14

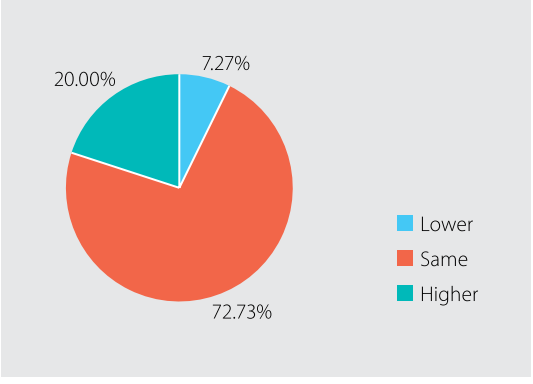
Expected earnings in 2022 in relation to 2021



Source: Central Bank Survey

Graph 15

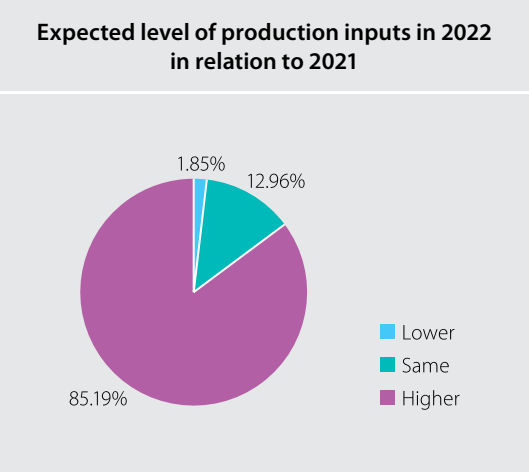
Expected number of employed persons in 2022 in relation to 2021



Source: Central Bank Survey

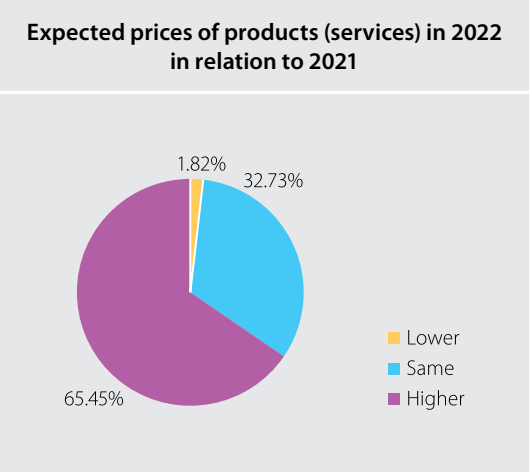
The majority of surveyed companies (85.19%) expect higher prices of production inputs they use (graph 16), whereas 65.45% plan to increase the prices of their products and/or services in 2022 (graph 17).

Graph 16



Source: Central Bank Survey

Graph 17



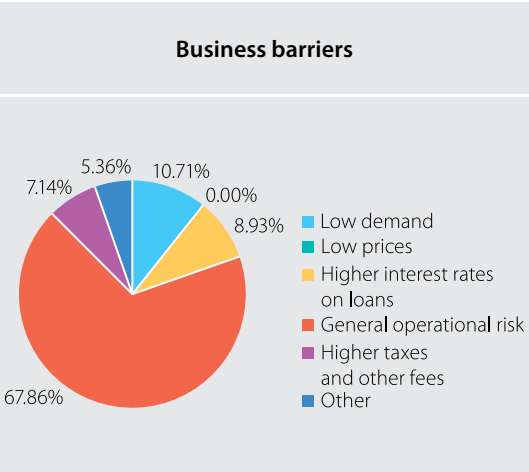
Source: Central Bank Survey

Business Environment

In the area of business barriers, the survey results show that most of the surveyed companies (67.86%) see general operational risks as the major obstacles, followed by poor demand (10.71%) and high lending interest rates (8.93%), and too high taxes and other forms of duties (7.14%) (graph 18).

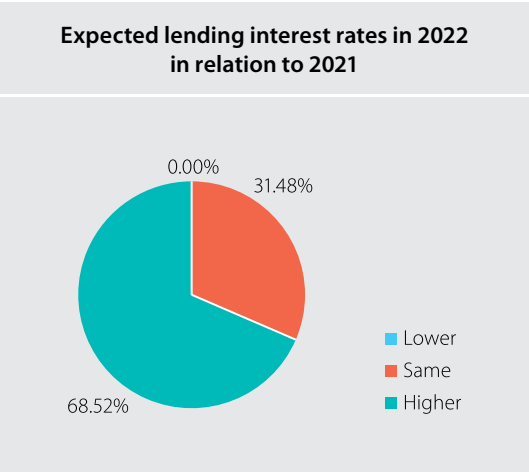
With regard to the lending interest rates, 68.52% of the respondents expect them to increase, 31.48% expect unchanged levels, while none expect them to decline in the current year relative to 2021 (graph 19).

Graph 18



Source: Central Bank Survey

Graph 19

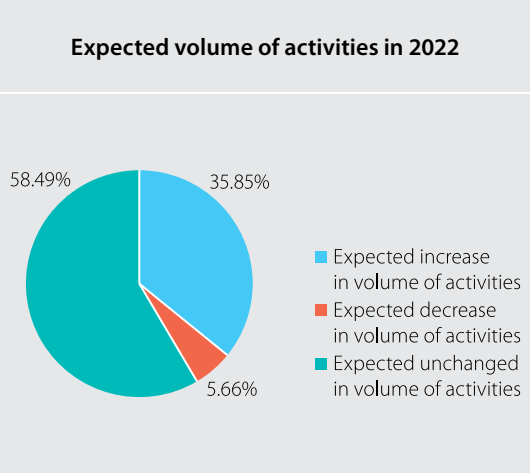


Source: Central Bank Survey

Investments

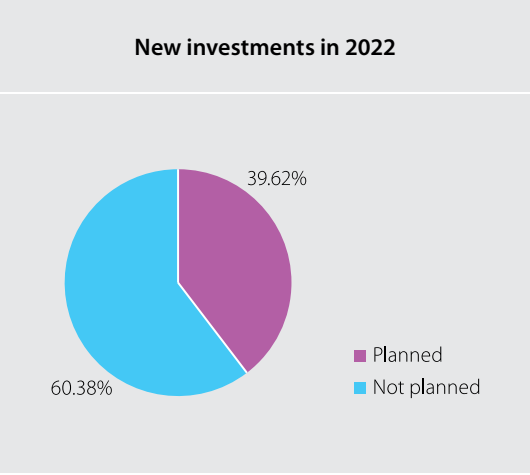
Of the total number of surveyed companies, 58.49% do not plan to change the volume of their activities by end-2022 (graph 20), and 60.38% do not plan new investments (graph 21). Most of the new investments (68.97%) will be used to increase fixed assets (graph 22), and low demand, insufficient exploitation of existing capacities and other were indicated as the main barriers (graph 23).

Graph 20



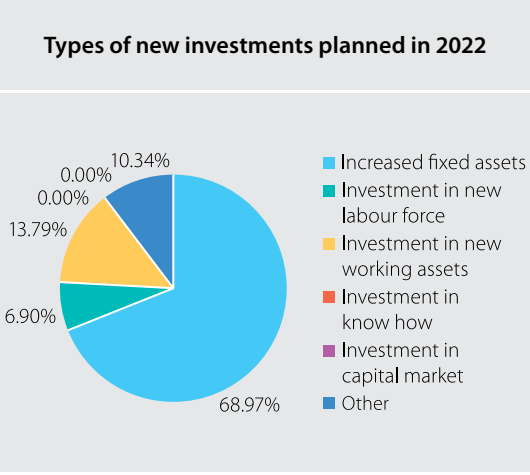
Source: Central Bank Survey

Graph 21



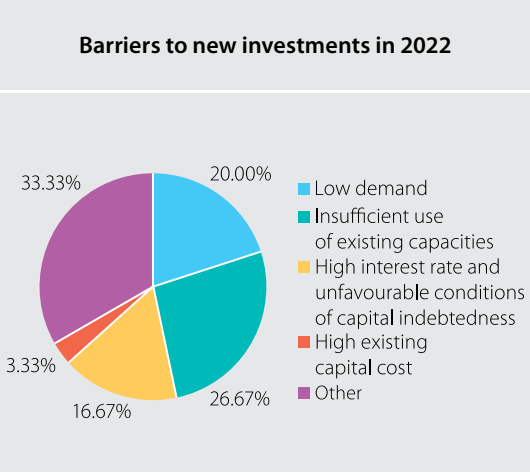
Source: Central Bank Survey

Graph 22



Source: Central Bank Survey

Graph 23



Source: Central Bank Survey

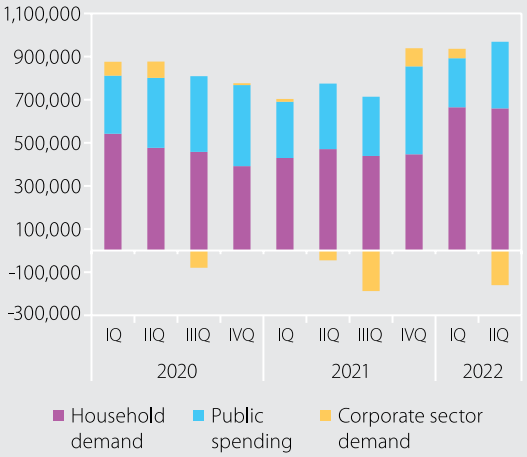
3. INFLATION DETERMINANTS

3.1. Demand

According to preliminary data, aggregate demand recorded quarterly decline in Q2 2022 but also the year-on-year increase. Observing the structure of total demand in the reporting period, the share of retail demand and public spending increased compared to the previous quarter, while wholesale demand declined (graph 24).

Graph 24

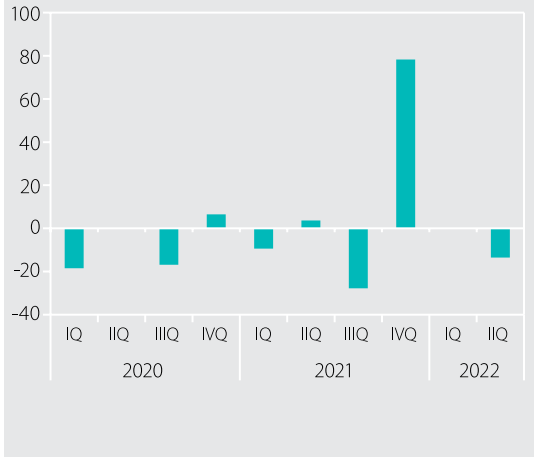
Aggregate demand in Montenegro, Q1 2020 - Q2 2022, in thousand euros



Source: Central Bank calculations

Graph 25

Aggregate demand in Montenegro, Q1 2020 - Q2 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 Central Bank has developed the aggregate demand calculation methodology. The starting point of this methodology is that the aggregate demand represents the sum of the demand of three sectors: personal spending (households), investment spending (corporate sector), and public spending. 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

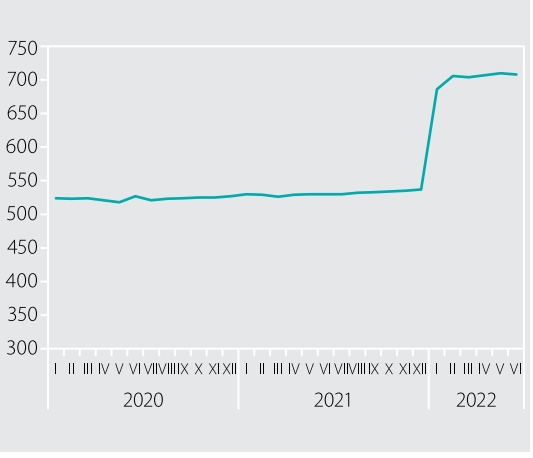
3.1.1. Earnings and other available demand determinants

In Q2 2022, an average gross earnings in Montenegro amounted to 874 euros, while an average earnings without taxes and contributions amounted to 708 euros. In relation to the previous quarter, the average gross earnings dropped by 0.42% and and net earnings rose 1.38%. Compared to Q2 2021, average earnings increased by 10.45% and average earnings without taxes and contributions rose by 33.73%, as a result of the implementation of the Government programme "Europe Now!".

If we take into account consumer prices, i.e. earnings trend observed in real terms, it is concluded that real earnings fell in all three months of the reporting quarter.

Graph 26

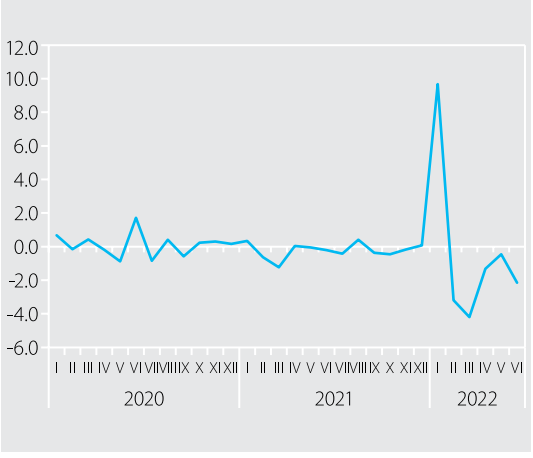
Average earnings without taxes and contributions in Montenegro, January 2020 - June 2022, in euros



Source: MONSTAT

Graph 27

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



Source: MONSTAT

Retail loans[8] recorded positive trends during the first half of 2022. Loans to this sector grew at a monthly average rate of 0.92% during the reporting period, while this rate was 0.26% during the comparative period of the previous year.

At end-June 2022, retail loans amounted to 1,512.12 million euros, which is 96.19 million euros or 6.79% more than in same month last year, and 80.61 million euros or 5.63% more than in December 2021 (graph 28).

Debt *per capita*[9] amounted to 2,448.05 euros at end-June this year, recording an increase of 167.01 euros year-on-year and a 141.91 euro increase in relation to end-2021.

At end-June this year, total MFI loans granted to the retail sector amounted to 64.28 million euros, which is 1.1 million euros or 1.72% more than in same period of the previous year, and 1.25 million euros or 1.99% more than at the end-2021.

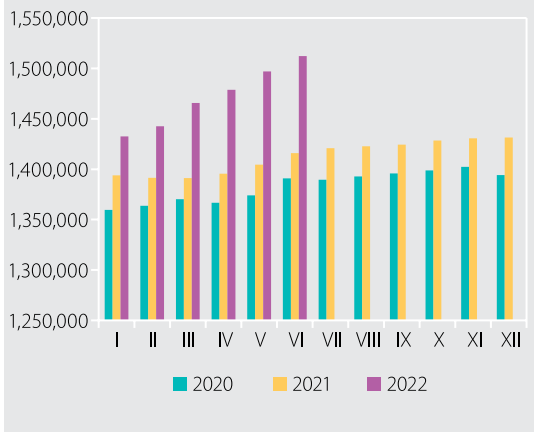
Retail deposits amounted to 1,508.90 million euros at end-June this year, being 229.05 million euros or 17.90% higher than at end-June last year and 66.41 million euros or 4.60% higher than at end-2021.

The loan to deposit ratio for this sector was 1.00 at end-June, and it deteriorated in relation to the same month of the previous year when it amounted to 1.11, while it rose relative to end-2021 when it equalled 0.99.

At end-Q2 2022, the retail sector had a net debt of 3.21 million euros, which is far more favourable than in the comparative period of the previous year when this debt stood at 136.07 million euros. At end-December 2021, the retail sector recorded net savings in the amount of 10.99 million euros.

Graph 28

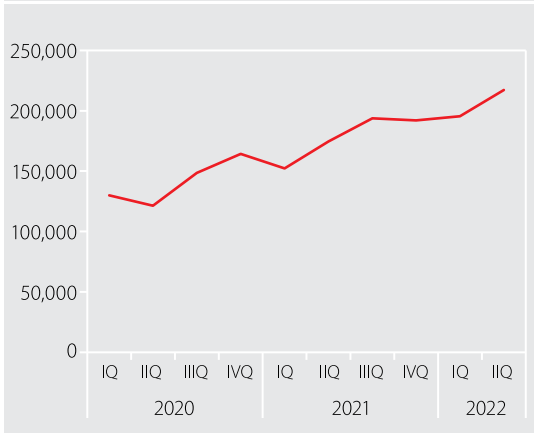
Retail loans, in thousand euros, 2020 - 2022, end-month balance



Source: CBCG calculations

Graph 29

Inflow of foreign funds to households, in thousand euros

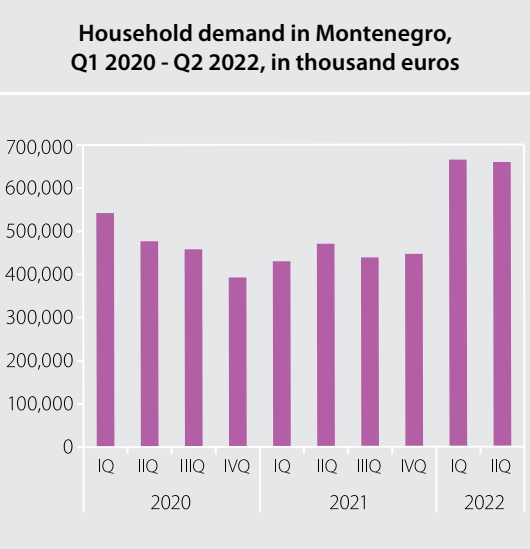


Source: Central Bank

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

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

Graph 30



Source: Central Bank calculations

In the first half of 2022, the balance of payments statistics recorded the year-on-year increase in the inflow of monetary resources arising from compensations to employees as well as remittances (graph 29).

The comparison of the total retail sector demand by quarters shows that it was lower in Q2 this year than in the previous quarter but higher than in Q2 2021 (graph 30).

3.1.2. Budget analysis

Budget of Montenegro

According to the Ministry of Finance preliminary data, total revenues[10] of the Budget of Montenegro amounted to 978.47 million euros in the first half of 2022.

Current revenues amounted to 922.46 million euros or 17.21% of the projected GDP[11] and they were 10.84% higher in relation to the plan, and 17.05% higher year-on-year, which is the result of greater tax discipline and the growth of citizens' disposable income through the implementation of the "Europe Now!" programme and the increase in consumer prices. In the structure of current revenues, tax revenues accounted for the main share of 71.80%, followed by contributions with 20.88%, fees with 3.00%, other revenues with 1.54%, donations with 1.43%, receipts from loan repayment and funds transferred from the previous year with 0.73%, and duties with 0.62%.

Tax revenues amounted to 662.30 million euros, recording a 17.57% increase relative to the plan and a 31.32% increase year-on-year. Other than personal income tax, all taxes increased compared to the first half of the previous year. The highest nominal increase of 121.98 million euros was recorded in VAT collection.

Revenues arising from contributions amounted to 192.63 million euros or 5.41% less than planned and 18.56% less than in the comparative period in 2021.

[10] Revenues include current revenues (direct and indirect taxes and non-tax revenues), borrowings and loans from domestic and foreign sources, as well as revenues from property sale.

[11] Source: Ministry of Finance; estimated GDP for 2022 amounts to 5,360.7 million euros.

Consolidated budget expenditure amounted to 967.51 million euros or 18.05% of GDP in the first half of the year. Recorded expenditures were 6.78% lower than planned and 2.06% higher year-on-year.

Current budget expenditures amounted to 399.82 million euros and they were 2.58% lower in relation to the plan and they also recorded the year-on-year drop of 3.61%, whereby the largest decrease of 20.01 million euros or 33.86% was seen with interests, this owing to the reduction of obligations arising from interests on issued Eurobonds that were repaid in March 2021.

Capital expenditures amounted to 103.39 million euros or 1.93% of GDP. Compared to the plan, they were 18.97% lower, while compared to the same period of the previous year, capital expenditures rose 65.45%, as a result of interest payment in January this year for the loan taken from the Chinese EXIM bank for the highway construction.

In H1 2022, *cash deficit* of the Budget of Montenegro is estimated at 45.05 million euros or 0.84% of GDP.

3.1.3. Non-financial sector

Lending to the non-financial sector[12] during the first half of 2022 saw positive trends, albeit with certain fluctuations. Loans to this sector grew at a monthly average rate of 1.99% during this period, while they recorded the average monthly growth of 0.80% during the same period of the previous year.

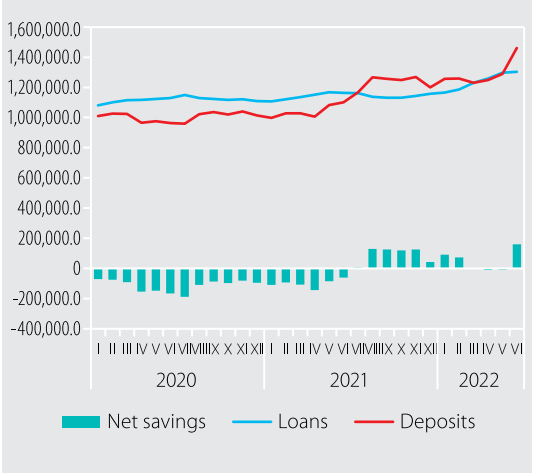
At end-June 2022, total loans extended to the non-financial sector amounted to 1,302.23 million euros, which is 138.79 million euros or 11.93% more year-on-year and 144.77 million euros or 12.51% more compared to end-2021.

Long-term loans accounted for the main share in the structure of loans to the sector with 78.60%, which indicates that loans to the corporate sector were mainly used for increasing the volume of economic activity.

Deposits of the non-financial sector stood at 1,461.41 million euros at end-June this year, recording an increase of 359.42 million euros or 32.62% in relation to the comparative period last year, while they were 261.64 million euros or 21.81% higher than in December 2021.

Graph 31

Net savings/indebtedness of the non-financial sector, in thousand euros, 2020 - 2022, end-month balance



Source: CBCG calculations

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

The loans to deposits ratio of the non-financial sector was 0.89 at end-June this year and it decreased year-on-year when it was 1.06 and compared to the end of the previous year when it stood at 0.96.

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-June 2022, net debt of the non-financial sector amounted to 159.18 million euros, which is more favourable compared to comparative period of the previous year when it was 61.46 million euros and compared to end-December 2021 when it amounted to 42.30 million euros (graph 31).

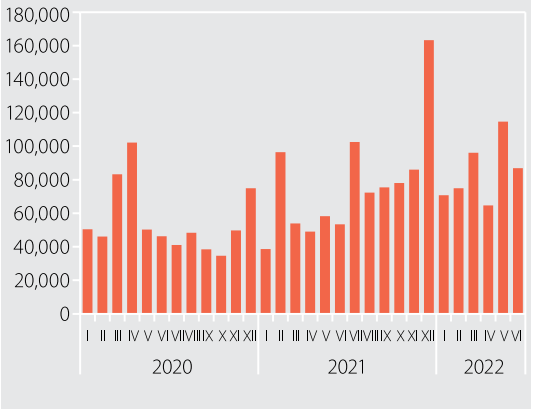
3.1.4. External demand and the current account

Preliminary data show that the current account deficit amounted to 539.64 million euros in the first six months of 2021, which is the year-on-year increase of 30.87%. This deficit increase is a result of an increased deficit on the goods account and it was partially offset by an increase in surpluses on the services account and primary and secondary income accounts.

The goods account recorded a deficit of 1,150.96 million euros or 40.21% more than in the comparative period last year. Total visible exports amounted to 412.87 million euros, recording an increase of 70.89%, whereas total visible imports amounted to 1,563.83 million euros, being 47.17% higher year-on-year. The services account recorded a surplus of 315.55 million euros, which is 72.42% more than in the same period last year. The surplus in the primary income account amounted to 78.08 million euros, which is the year-on-year increase of 110.86%. This trend is the result of a higher inflow based on compensations to employees. The secondary income account ran a surplus of 217,69 million euros, which is the year-on-year increase of 15.51%.

Graph 32

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



Source: Central Bank

Preliminary data suggests that net FDI inflow amounted to 355.87 million euros in H1 2022, which is the year-on-year increase of 73.05%. Total FDI inflow stood at 508.03 million euros, recording an increase of 45.30% (graph 32). Equity investments amounted to 296.02 million euros (a 73.35% increase), while the inflow in the form of intercompany debt added up to 164.55 million euros and it showed no significant change when looking at the comparative period last year. In the structure of equity investments, investments in companies and banks amounted to 94.47 million euros (a 17.74% increase), while real estate investments reached 201.55 million euros (a 122.65% increase). The inflow arising from the withdrawal of funds invested abroad amounted to 47.46 million euros. In the structure of total FDI inflow, the share of real estate investments amounted to 39.67%, followed by intercompany debt with 32.39%, while 18.60% were investments in com-

panies and banks. Total FDI outflow in the observed period reached 152.16 million euros, which is the year-on-year increase of 5.66%. The outflow from residents' investments abroad amounted to 59.90 million euros, while the withdrawal of non-residents' funds invested in Montenegro amounted to 92.26 million euros.

In the first two quarters of 2022, the portfolio investments account recorded a net outflow of 68.53 million euros, while the net outflow from the other investments account amounted to 186.02 million euros.

3.2. Supply and production

Preliminary MONSTAT data indicate that industrial production dropped 2.3% in H1 this year compared to the same period of the previous year (graph 33). Electricity, gas and steam supply sector recorded a decline of 21.3%, while the mining and quarrying sector and manufacturing industry recorded respective output growths of 12.9% and 11.9%.

During the observed period, total of 413,987 tourists stayed in collective accommodation establishments, which is an increase of 137.43% year-on-year. The number of domestic tourists arrivals in collective accommodation establishments increased by 89.84%, while foreign tourist arrivals grew by 148.62%. Tourist overnights amounted to 1.3 million, which is the year-on-year increase of 138.34%.

Some 66,302 m³ of forest assortments were produced in the state-owned forests in H1 2022, which is over 200.0%[13] more than in the same period last year.

Graph 33

Industrial production, Q1 2020 - Q2 2022, quarterly rates, in %

Source: MONSTAT

According to preliminary MONSTAT data, construction recorded a 1.83% year-on-year decline in the value of executed construction works and a 3.21% decline in effective working hours.

Preliminary MONSTAT data also indicate that passenger transport recorded a significant year-on-year growth in all types of transport: railway transport rose by 67.49%, road transport by 72.41%, and passenger transport at airports by 136.37%. Growth was also recorded in railway and road freight transport of 88.68% and 4.82%, respectively, while cargo transport at airports dropped by 9.0%.

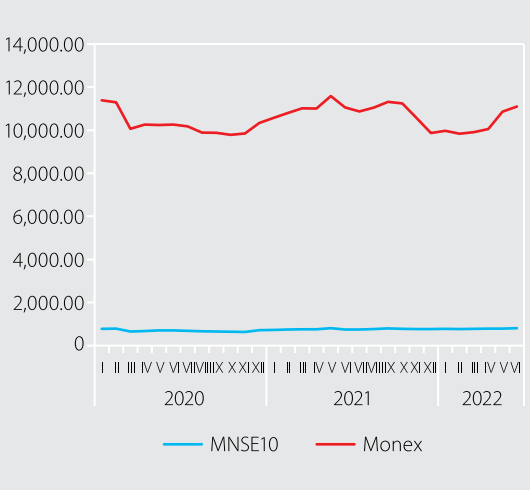
[13] Presented through weighted index.

3.3. Stock exchange indices

At end-June 2022, the Monex[14] and MNSE10[15] indices rose compared to the same period last year as well as compared to end-2021 (graph 34).

Graph 34

Movement of Montenegro Stock Exchange indices, in index points, 2020 - 2022, end-month



Source: Montenegro SE calculations

At end-June 2022, the SE index Monex reached 11,098.25, recording a growth of 41.54 index points or 0.38% year-on-year, while compared to the end of the previous year it recorded a growth of 1.230,88 index points or 12.47%.

At end-March 2022, the SE index MNSE10 reached 806.57, recording a growth of 62.49 index points or 8.40% year-on-year, while compared to the end of the previous year it recorded growth of 41.85 index points or 5.47%.

[14] The MONEX is a benchmark Montenegro Stock Exchange index aimed at providing a more precise description of the share price trends in the official and in the free market of Montenegro Stock Exchange AD Podgorica. The MONEX index is the successor to the MONEX20 and, according to the new methodology, it contains more companies in its index basket.

[15] MNSE10 is the blue-chip index of the Montenegro SE that describes the movement of prices of shares at the Stock Exchange and Free market of "Montenegro Stock Exchange" AD Podgorica. It includes the top ten companies from the Montenegrin market.

4. MONETARY POLICY

During the first half of 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 THE LAST TWO QUARTERS OF 2022 AND THE FIRST TWO QUARTERS OF 2023

5.1. Model assessment

Montenegro's inflation fan chart is a graphic representation of inflation 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 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 the last two quarter of 2022 and the first two quarters of 2023 is based on three estimated constituent parts:

1. **Central projection values** – the values of the fan chart central projection derived from the ARIMA model.
2. **Degree of uncertainty** – determines the Fan Chart width. The uncertainty degree ratios are obtained through analytical assessment and calculation of the relative impact of potential internal and external shocks that are possible in the Montenegrin economy over the one-year period and which are reflected through the "thickness" of the band around the central projection.
3. **Fan chart skewedness** –based on the level of 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 the inflation rates. The position of the mean value of inflation distribution will also depend on this.

Central projection of fan chart - ARIMA model for the last two quarters of 2022 and the first two quarters 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[16] was developed.

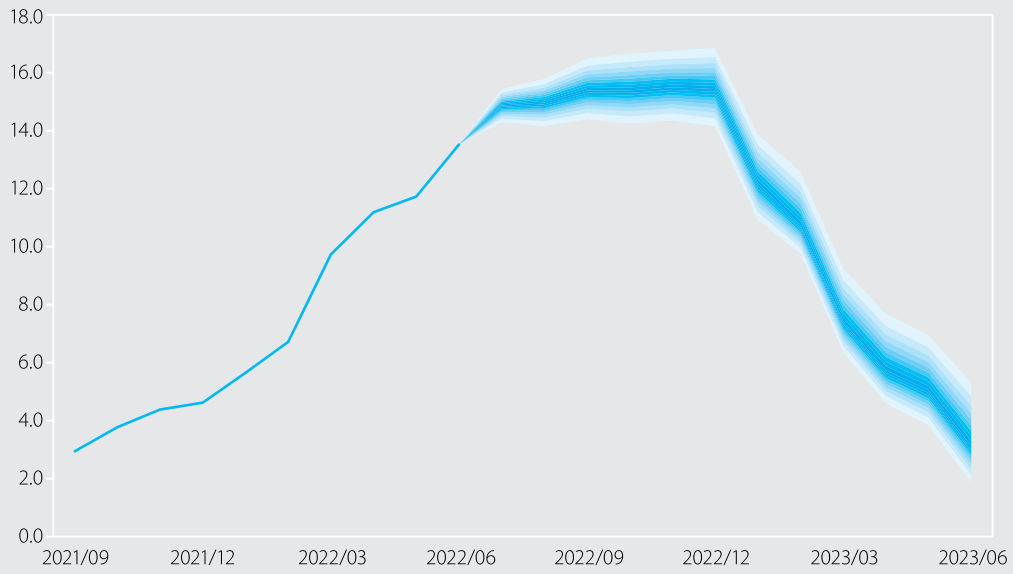
[16] A detailed explanation of the ARIMA model of Montenegro was presented in the working study of the Central Bank no. 11 "*Inflation Forecast: Empirical research on the retail price index trend of Montenegro for 2007 - applying the ARIMA model.*"

The 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 diagnostics quality. The selected ARIMA model, ARIMA (3,1,3)[17] has a sufficient confidence level for the forecast purposes.

Monthly forecast values were used as the value of central projection of the CPI graph for the last two quarters of 2022 and the first two quarters 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 the last two quarters of 2022 and the first two quarters of 2023



Source: CBCG, 2022

Mean value of the obtained model is 11.3. 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 band of the distribution. This indicates that the corresponding range of uncertainty of future inflation is set towards higher levels. 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.[18] The fan chart has an equal number of bands (eight) on either side of the central band whereby every band of the same colour, both above and below the central band, cumulatively describe

[17] ARIMA model is generally referred to as an ARIMA (p,d,q) where p represents the number of autoregressive variables, d refers to the level of dependent variable that needs to be made stationary, and q is the number of variables, moving averages, in the certain model.

[18] The mode values (central projection) are usually in the deepest band shade, but in case of a significant risk level, it can happen that the central projection does not cover either of these values. (*Britton, E, Fisher, P.G. and Whitley, J.D. (1998), 'The Inflation Report projections: Understanding the Fan Chart', Bank of England, Quarterly Bulletin, 38, pp. 30–37*).

the next 10% of inflation trend probability. As the degree of uncertainty grows over time, so the fan chart spreads.

The model projection assumes an increase in inflation in 2022, while it indicates a gradual decrease starting next year. The fan chart of inflation in Montenegro, based on the ARIMA model assessment for 2022, indicates that there is a 90% probability that the CPI inflation will range between 5.7% and 16.86%, depending on the month, with the central projection at 12.51%. Inflation projected for December 2022 ranges between 14.2% and 16.68%, with the central projection at 15.4%. The fan chart central projection (the darkest part) represents a 10% probability span (graph 36).

The fan chart of inflation, based on the ARIMA model assessment for the first two quarters of 2023 indicates that there is a 90% probability that the CPI inflation will amount to 7.5%.

High inflation will persist until the end of 2022, as a result of high global prices of energy and food raw materials, and their spillover to high input costs for a wider set of products and services. A gradual decrease in the prices of energy and other raw materials on the world market is expected in 2023 and, consequently, a decrease in overall inflation. Nevertheless, bearing in mind the emphasized geopolitical tensions and great uncertainty, the risks for the realisation of the inflation projection are also pronounced. The risks related to the projected inflation rate shown on the fan chart are asymmetric to the upside, indicating that inflation could exceed the projected rate. Inflation will largely depend on the situation in Ukraine and to a lesser extent on the epidemiological measures that are periodically introduced in certain Chinese cities, which could reflect on the mismatch between supply and demand.

The projection is based on the following assumptions:

1. High inflation in the countries that are the main foreign trade partners, mostly driven by the prices of energy, raw materials and food, which was fuelled by the developments in Ukraine. Their growth is the main reason for the growth of inflation because it encourages price growth in many other sectors. Also, this situation increases the pressure on global supply chains and contributes to price growth and growing uncertainty in the supply in commodity markets.
2. Food prices growth of around 15% in 2022 due to high prices of raw materials, but also an upsurge in gas and electricity prices, which account for some 90% of 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 raw materials that were driven by disruptions on the supply side as a result of the situation in Ukraine. Food prices are expected to start declining in 2023 with the loosening of growth pressures coming from the inputs such as energy costs, fertilizer prices, and food raw materials 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. Oil and other raw material futures in the world markets currently point to inflation slowdown in 2023. However, the contribution of fuels should slowly decline in 2023, due to base effects, and the price of a barrel of Brent crude oil will decrease to 83.6 USD/barrel by 2024.

4. According to the ECB[19] baseline scenario forecasts from September, the average inflation in the euro area will amount to 8.1% 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's baseline scenario, total inflation will remain at a high level during the current year, going on a downward trend as of next year to come down to 5.5% in 2023 and 2.3% in 2024. Due to the increased uncertainty related to the situation in Ukraine, the baseline scenario was supplemented with an adverse scenario that assumes more serious disruptions in the supply of energy generating products to the European market, which would lead to a further increase in energy prices. According to this scenario, the inflation rate would average at 8.4% in 2022 and 6.9% in 2023, declining to 2.7% in 2024.
5. The ECB has started with the normalization of its monetary policy, which implies an increase in the reference interest rates. After 11 years, the reference interest rate, the rate for main refinancing operations, was increased by 0.5 bp. It was increased by additional 0.75 bp in September. The ECB expects to continue raising interest rates because projections and market expectations indicate that inflation will remain high and is likely to remain above the target in the medium term.

Finally, the Russian-Ukrainian conflict could trigger new inflationary trends that would take time to materialise and that are not covered under the present projection. Changes of any of the abovementioned parameters would require the forecast correction.

[19] Source: ECB (2022): *ECB staff macroeconomic projections for the euro area*, September 2022.

6. EXPECTED INFLATION IN 2022

It is certain that in 2022, Montenegro will have the highest inflation rate since gaining independence, but this is for the most part an 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 Q2 this year was higher than in the same quarter last year, which additionally confirms inflationary pressures.

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

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

Our model estimate for end-2022 projects inflation within the range from 14.2% to 16.68%, with the central projection at 15.4%. Also, the model projection clearly indicates significant risks towards higher levels of inflation. Our expert assessment forecasts an inflation rate ranging from 14% to 18%.

Table 3

Projected inflation in 2022		
Lower inflation threshold	Central projection	Upper inflation threshold
14%	16%	18%

This assessment is based on the same assumptions as the model assessment and a change in 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.