



MACROECONOMIC FORECAST

MARCH 2022



BULGARIAN NATIONAL BANK

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The quarterly publication of the BNB *Macroeconomic Forecast* provides annual projections of key macroeconomic indicators for Bulgaria in the current and next two years. The macroeconomic forecast is prepared by the BNB Economic Research and Forecasting Directorate and does not necessarily reflect the views of the members of BNB's Governing Council about the prospects for the development of the Bulgarian economy. Information regarding the forecast preparation procedure, as well as technical details on the macroeconomic forecasting model can be found in *Economic Review*, *BNB Forecasting Function* section, issue 4 of 2015: https://www.bnb.bg/bnbweb/groups/public/documents/bnb_publication/pub_ec_r_2015_04_en.pdf.

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Please address notes, comments and suggestions to the Bulgarian National Bank, Economic Research and Forecasting Directorate at 1, Knyaz Alexander I Square, 1000 Sofia.

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1, Knyaz Alexander I Square
1000 Sofia, Bulgaria

Tel.: (+359 2) 9145 (extensions) 1351, 1209, 1806, 1227

Website: www.bnb.bg

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Abbreviations

BNB	Bulgarian National Bank
CPI	Consumer Price Index
EC	European Commission
ECB	European Central Bank
EU	European Union
EWRC	Energy and Water Regulatory Commission
GDP	Gross Domestic Product
IMF	International Monetary Fund
HICP	Harmonised Index of Consumer Prices
NRRP	National Recovery and Resilience Plan
NSI	National Statistical Institute

SUMMARY

The war in Ukraine, which began on 24 February 2022, led to a drastic increase in uncertainty about the prospects for economic activity and inflation in Bulgaria and significantly complicates their forecasting. The BNB forecast of key macroeconomic indicators is based on data published by 29 March 2022 and employs assumptions about global economic developments and price dynamics of main commodity groups in international markets as of 15 March 2022. Given the uncertainty about the future development of the military conflict, the presented forecast values should be considered as entirely dependent on the implementation of technical assumptions of the forecast about both the external demand for Bulgarian goods and services and price dynamics of main commodity groups in international markets. The main assumption in preparing the forecast is that the war would remain a local conflict in which there would be no further escalation or expansion of hostilities, including to other countries. In addition, the forecast does not envisage limiting or stopping the supply of natural gas, crude oil and nuclear fuel from Russia to Bulgaria, which would seriously affect the production side of the economy.

Technical assumptions about the dynamics of external demand for Bulgarian goods and services take into account the baseline scenario of the European Central Bank's (ECB) macroeconomic projection of March 2022, but are considerably more conservative, as they include an assumption that demand for Bulgarian goods and services by Russia, Ukraine and Belarus could be halted until the end of the forecast horizon, as well as assumed lower demand from euro area countries. As a result, technical assumptions suggest a decline of -0.4 per cent of external demand for Bulgarian goods and services in 2022 followed by a gradual increase for the rest of the forecast horizon, but the level of external demand will remain persistently lower than projected in the December 2021 forecast. The assumptions about major raw material price movements have been compiled after the outbreak of the war and include data on futures contracts concluded in international markets by 15 March 2022, which are characterised by high volatility and a significant rise in price levels. Market expectations of euro prices of petroleum products and natural gas are to continue rising significantly on an annual basis until the end of the first quarter of 2023, and of oil price until the end of 2022. Technical assumptions for the rest of the year suggest that prices of energy commodities in euro will fall on an annual basis, but will remain above their 2021 levels. The dynamics of euro price declines in natural gas, oil and electricity in 2023 and 2024 derived on the basis of futures contracts concluded by market participants may not take into account the objectives announced by the European Commission (EC) for joint European diversification of energy supplies to European Union (EU) countries, which should be seen as a factor for higher price levels of energy products in the medium to long term. Non-energy product prices and mostly food ones are assumed to grow more significantly in euro on an annual basis in 2022 and to rise further until the end of projection horizon, thought at a much lower annual rate.

On the basis of these assumptions, the forecast baseline scenario envisages Bulgaria's real GDP growth to moderate to 2.1 per cent in 2022. This will be mainly driven by the projected slowdown of private consumption growth and a stronger negative contribution of net exports. In 2023 GDP growth is expected to accelerate to 3.9 per cent, thereafter slowing down to 3.7 per cent in 2024. The dynamics of real GDP in 2023 and 2024 will be most significantly influenced by the expected profile of absorption of funds under the National Recovery and Resilience Plan (NRRP). Concurrently, the assumptions about growing external demand in 2023 and 2024 and the partial improvement in sentiment after the expected significant deterioration in 2022 are a prerequisite for accelerating growth of exports of goods and services and strengthening domestic demand by the private sector.

The enhanced volatility of raw materials' prices in international markets and the impossibility of market participants to determine their long-term equilibrium level given the structural changes resulting from the war in Ukraine, transition to the carbon neutrality in EU countries and their stated intentions to reduce their dependence on energy imports from Russia lead to a high degree of uncertainty to the inflation outlook. According to the baseline scenario, annual inflation is expected to continue increasing in 2022 to 9.6 per cent at the end of the year (compared to 6.6 per cent at the end of 2021). The constructed probability

distribution suggest that the actual value of inflation will lie in a comparatively wide range at the end of the year (from 6.4 per cent to 15.2 per cent, with 60 per cent estimated probability). Foods are expected to have the largest contribution to inflation at the end of 2022, followed by core components and energy products. This will be driven by emerging direct and indirect effects of higher international prices of primary agricultural products and energy commodities (oil, natural gas and electricity), which will continue exerting an upward pressure on firms' production costs. Other factors with a pro-inflationary effect are expected to be the projected increase in unit labour costs as well as assumptions of consumer price growth of industrial goods in major trading partners of Bulgaria. The growth rate of the Harmonised Index of Consumer Prices (HICP) is expected to slow down to 3.9 per cent by end-2023 (and to lie within the range of -0.2 per cent to 10.3 per cent with a probability of 60 per cent, according to constructed probability distribution) and 3.1 per cent by end-2024 (range of 1.8 per cent to 11.7 per cent with a probability of 60 per cent, according to constructed probability distribution), with this slowdown being mainly a function of the trajectory set by the technical assumptions about international price declines in energy commodities.

Given the technical assumptions in the baseline scenario, there are risks of lower real GDP growth in Bulgaria over the entire forecast horizon. These risks are mainly associated with a possible escalation of the military conflict in Ukraine and the emergence of additional disruptions in the supply of prime and raw materials from the countries involved in the war. Another significant risk involves a likelihood of a slower absorption rate of EU programme funds and implementation of investment projects under the NRRP against the time profile set in the baseline scenario.

There are risks to the inflation forecast of a stronger increase in prices *vis-à-vis* the baseline scenario for the whole forecast horizon. These risks are associated mainly with international commodity price dynamics compared with the external assumptions technically set in the current forecast. Other risks stem from possible changes in the regulated prices of electricity, water and sewerage services, and heating for household consumers in line with substantial rise in energy prices, which has not yet been reflected in these prices.

FORECAST OF KEY MACROECONOMIC INDICATORS FOR 2022–2024

External Environment

The war in Ukraine, which started on 24 February 2022, led to a drastic increase in uncertainty about the prospects for economic activity and inflation in Bulgaria and significantly complicates their forecasting. Bulgaria has the most material exposure to the conflict in terms of both imports of crude oil, natural gas and nuclear fuel from Russia¹ and price rises in primary commodities after the outbreak of the war. At the same time, Bulgarian exports of goods and services to Russia, Ukraine and Belarus is relatively limited, accounting for 2.1 per cent of GDP in 2021, or 3.3 per cent of the total exports of Bulgarian goods and services.

The BNB forecast of key macroeconomic indicators is based on data published by 29 March 2022 and employs assumptions about global economic developments and price dynamics of main commodity groups in international markets as of 15 March 2022. Given the uncertainty about the future development of the military conflict, the presented forecast values should be considered as entirely dependent on the implementation of the technical assumptions of the forecast about both the external demand for Bulgarian goods and services and price dynamics of main commodity groups in international markets. The main assumption in preparing the forecast is that the war would remain a local conflict in which there would be no further escalation or expansion of hostilities, including to other countries. In addition, the forecast does not envisage limiting or stopping the supply of natural gas, crude oil and nuclear fuel from Russia to Bulgaria, which would seriously affect the production side of the economy.

¹ In 2021 Russia was the Bulgaria's fourth largest trading partner in terms of imports of goods. In 2021 Bulgaria had goods trade deficit with Russia, amounting to 3.5 per cent of GDP and reflecting almost entirely the trade in natural gas and crude oil.

Technical assumptions about the dynamics of external demand for Bulgarian goods and services take into account the baseline scenario of the ECB's macroeconomic projection of March 2022, but are considerably more conservative, as they include an assumption that demand for Bulgarian goods and services by Russia, Ukraine and Belarus could be halted until the end of the forecast horizon, as well as assumed lower demand from euro area countries². As a result, technical assumptions suggest a decline of -0.4 per cent of external demand for Bulgarian goods and services in 2022 followed by a gradual increase for the rest of the forecast horizon (3.4 per cent in 2023 and 4.8 per cent in 2024), but the level of external demand will remain persistently lower than projected in the December 2021 forecast.

The assumptions about major raw material price movements have been compiled after the outbreak of the war and include data on futures contracts concluded in international markets as of 15 March 2022, which are characterised by high volatility and a significant rise in price levels. Following the inclusion of natural gas and electricity prices in order to explicitly reflect them in the BNB macroeconomic model in the previous forecast, the current forecast expands the scope of the considered non-energy commodities, including the prices of the individual subcomponents of the groups that are important for the Bulgarian economy: 'metals'³, 'food'⁴ and 'other commodities'⁵. Energy products price dynamics in the assumptions reflects

² The demand for Bulgarian goods and services by euro area countries in 2022 was decreased in line with the adverse GDP growth scenario of the ECB's projection of March 2022. For details, see: https://www.ecb.europa.eu/pub/pdf/other/ecb.projections202203_ecbstaff~44f998dfd7.en.pdf

³ Including ferrous metals, copper, aluminium, lead and zinc weighted in accordance with the Bulgaria's foreign trade flows.

⁴ Including pigmeat, coffee, wheat, maize, rice, soybeans, sugar and cocoa weighted in accordance with the Bulgaria's foreign trade flows.

⁵ Including rubber, timber and cotton weighted in accordance with the Bulgaria's foreign trade flows.

mainly market expectations measured by futures contracts concluded in international markets.⁶ With regard to the assumptions on prices of individual non-energy products, the methodology introduced by the December 2021 forecast has been applied.⁷

Based on these assumptions, the prices of crude oil, electricity and natural gas in euro are suggested to report a significant rise in 2022: on a quarterly basis, annual growth in oil prices will continue until the fourth quarter of 2022, and electricity and natural gas will grow further on an annual basis until the end of the first quarter of 2023. In 2023 and 2024 technical assumptions suggest that energy product prices in euro will fall on an annual basis, but will remain above their 2021 levels. The downward slope of the curve of natural gas and oil futures contracts⁸ showing some signs of deceleration of these commodity prices may not take into account the objectives announced by the EC for joint European actions for more secure and sustainable energy at affordable prices⁹, which should be seen as a factor for higher price levels of energy products in the medium to long term. Non-energy product prices and mostly

⁶ The assumption about the price of petroleum products for the whole projection horizon is based on the dynamics of futures contracts traded in international markets. As regards natural gas, prices of futures contracts for delivery until the first quarter of 2023 are also used. Due to the lack of public information on sufficient volumes and number of futures contracts for the period after this date, natural gas prices are assumed to follow the price dynamics of oil futures contracts. Assessments of electricity price trajectory are based on market information from futures contracts concluded in the German market until the third quarter of 2023, followed by a technical assumption that prices will remain unchanged at the level attained until the end of 2024.

⁷ Futures contracts for the respective commodities in international markets are used, with available data on 'food' and 'other commodities' groups until the end of the first quarter of 2023, and on 'metals' – until the end of the second quarter of 2023. No public information is available on sufficient volumes and number of such futures contracts for these commodities in international markets for the remainder of the projection horizon. Therefore, their price dynamics is assessed by taking into account the historical correlation with global trade dynamics in line with forecast's external assumptions.

⁸ The downward slope of the price curve of futures contracts for commodities can be explained by a market condition called *backwardation*, meaning the implicit benefit of owning a physical commodity for future use compared to being available for use after the implementation of the contract. This means that at the time of concluding a futures contract, economic agents tend to discount the value of the commodity to be delivered in a more distant future and thus, the futures price signals a commodity price decline in the long run, although this price dynamics may not materialise in the spot market and the price commodity may rise.

⁹ For details, see: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022DC0108>.

food are assumed to grow more significantly in euro on an annual basis in 2022, thereafter rising further at a much slower rate until the end of projection horizon.¹⁰

In addition, technical assumptions include also the expectations of short-term interest rates in the euro area money market based on futures contracts, posting a strong growth over the whole projection horizon compared to the previous forecast and turning positive from 2023.

Economic Activity in Bulgaria

Available economic indicators¹¹ for January and February 2022 show continued improvement of economic activity in Bulgaria over that period. However, Russian invasion of Ukraine at the end of February is a prerequisite for halting these trends. Factors behind this include heightened uncertainty and deterioration in economic agents' sentiment, deepening of supply chain bottlenecks due to sanctions against Russia and the associated significant increase in commodity prices, of which Bulgaria and its main trading partners are net importers.

As a result of these developments, and based on the technical assumptions described above, economic activity growth in the country is projected to slow to 2.1 per cent in 2022. By final use component, the slowdown compared with 2021 will reflect a weaker private consumption growth and a stronger negative contribution of net exports. The moderation in private consumption growth to 2.7 per cent in 2022 forecast will be attributable to both the high base of 2021 (a growth of 8.0 per cent) and the negative effects on real disposable income of households¹² and consumer sentiments by the projected

¹⁰ The forecast of euro commodity prices is based on a technical assumption about the euro/US dollar exchange rate, which is fixed for the whole forecast horizon at its average value for January and February 2022 and for the last ten days prior to 15 March 2022, the date when the external environment assumptions were made. Reflecting this technical assumption, in 2022 the euro will depreciate against the US dollar by 5.2 per cent.

¹¹ This refers to the indicators tracking consumer confidence, business climate, indices in industry production, manufacturing and retail trade turnover indices.

¹² The macroeconomic forecast predicts a rise in nominal household income in 2022, driven by higher labour income and net fiscal transfers. Nevertheless, households' purchasing power as measured by real disposable income is expected to remain close to the previous year's level, reflecting the projected increase in consumer prices.

higher inflation. Moreover, the war in Ukraine is expected to have a negative impact on consumer sentiment and, hence, on household propensity to consume. The negative contribution of net exports is projected to increase compared to 2021 driven by higher growth of goods imports than of exports. Exports of goods will be limited in 2022 by the assumptions of lower external demand for goods and services, while import growth will be supported by stronger domestic demand. The forecast of government consumption reflects an increase in intermediate consumption and healthcare expenditure as well as higher remuneration costs for public sector employees¹³ with the result that government consumption growth in real terms is expected to accelerate to 4.1 per cent in 2022. As regards corporations, the negative shock on the supply side, prompted by higher commodity prices and worsened managers' sentiment about future production activity, is expected to limit further private sector investment activity. Concurrently, the projected 5.6 per cent increase in total investment in the economy in 2022 will be driven entirely by government investment as a result of the expected higher pace of absorption of EU funds in the last phase of the 2014–2020 programming period, gradual recovery of national investment, and to a lesser extent, absorption of funds under the National Recovery and Resilience Plan (NRRP)¹⁴ given the ongoing process of its coordination with the European Commission.

In 2023 GDP growth is expected to accelerate to 3.9 per cent, before slowing to 3.7 per cent in 2024. Over the projected horizon, real GDP growth profile will mainly reflect the technical assumption of funds allocation over time, which are expected to be granted under the NRRP (mainly in the form of public and, to a lesser extent, private investment). The macroeconomic forecast assumes that the

¹³ The forecast of government consumption is based on the information provided in the Updated Medium-Term Budgetary Forecast (UMBF) for the period 2022–2024 of 10 March 2022, and on BNB staff assumptions.

¹⁴ Information on the amount of expected EU grants and private national co-financing under the NRRP, used in preparing the macroeconomic forecast, is based on the October 2021 version of the plan, whereas the assumptions on the implementation of the plan over the projection horizon have been made by the BNB on an annual basis. For further details, see the BNB Macroeconomic Forecast of December 2021.

most significant growth in public and private investment financed under the NRRP over the forecast horizon will take place in 2023. Based on information provided in the Updated Medium-Term Budgetary Forecast (UMBF) for 2022–2024, government's gross fixed capital formation in 2023–2024 is expected to be further supported by national investments in infrastructure projects and by investment projects for modernizing the Bulgarian army.¹⁵ Private sector investments other than those under the NRRP are expected to remain low, but on a gradual upward trend. This will be driven by the projected growth of domestic and external demand, the partial improvement in managers' sentiment as foreseen in the baseline scenario after the expected significant deterioration in 2022, as well as structural factors related to negative demographic trends in the country, which imply the replacement of the labour factor by capital. In 2023 and 2024 household consumption is projected to accelerate consistent with the dynamics of households' real disposable income, which will increase mainly as a result of the expectations of nominal wages growth ahead of inflation. Reduction of uncertainty compared to 2022 will be another factor supporting household final consumption expenditure. The negative contribution of net exports is expected to contract in 2023 and to turn slightly positive in 2024, in line with assumptions of external demand for Bulgarian goods and services dynamics. Government consumption growth rate is expected to slow from the 2022 rates, largely reflecting the assumption of a relatively lower increase in intermediate consumption expenditure and expenditures related to health insurance payments.

Balance of Payments

The balance of payments current account is projected to report a deficit of -5.4 per cent of GDP in 2022 (-0.4 per cent of GDP in 2021). The increased deficit in 2022 will mainly reflect the higher trade balance deficit, driven by

¹⁵ The macroeconomic forecast assumes a decline in the funds which Bulgaria expects to receive from the EU in 2024, other than those under the National Recovery and Resilience Plan, due to the initial phase of the Multiannual financial framework for the 2021–2027 period.

both stronger growth in real volumes of goods imports compared with exports and unfavourable terms of trade for Bulgaria in 2022. Other driving factors, though to a lesser extent, will be the increasing negative balance on 'net primary income' and the projected lower exports of travel services, which in turn are expected to be strongly impacted by the war between Russia and Ukraine over the whole projection horizon.¹⁶ In 2023 and 2024 the current account deficit is expected to decrease gradually to -1.6 per cent of GDP, which will be triggered mainly by the projected decline in the trade balance deficit in line with the recovery of external demand growth as well as a gradual rise in services trade surplus. In 2022–2024 the capital account surplus is projected to increase on an annual basis, with a stronger rise compared to 2021 expected mainly due to transfers under the NRRP.

Labour Market

The number of employees is foreseen to grow by 0.5 per cent in 2022 with this dynamics being limited by the uncertain external environment and slowing economic growth in Bulgaria. Employment growth is expected to accelerate to 0.9 per cent in 2023 in line with the strengthening economic activity, thereafter slowing to 0.3 per cent in 2024 due to continuing adverse demographic trends in Bulgaria. Concurrently, the unemployment rate will moderately decline from 5.2 per cent in 2022 to 4.7 per cent in 2024. Real labour productivity growth is anticipated to slow down to 1.4 per cent in 2022, thereafter accelerating to 3.4 per cent in 2024, underpinned by the expected increase in GDP. Compensation *per* employee is projected to rise by 9.6 per cent in 2022, with accelerated increase in private sector wages resulting from the higher inflation and growing labour shortages having the main contribution to this growth. The increase in domestic economic activity amid limited labour growth opportunities will exert an upward

pressure on wages, but projected gradual slowdown of inflation in the coming years is expected to have a stronger effect and to limit growth of compensation *per* employee to 7.9 per cent in 2023 and 7.4 per cent in 2024. The higher rate of increase in income during 2022 compared to that of labour productivity will be seen as accelerating growth in nominal unit labour costs to 8.1 per cent, but growth will slow down to 3.8 per cent at the end of the projection horizon in line with the expected dynamics of compensation *per* employee and labour productivity.

Inflation

The increased volatility of major raw materials' prices in international markets and the impossibility of market participants to determine their long-term equilibrium level given the structural changes resulting from the war in Ukraine, transition to the carbon neutrality in EU countries and their stated intentions to reduce their dependence on energy imports from Russia are the reasons for inflation outlook to be subject to a high degree of uncertainty.

According to the baseline scenario, annual inflation measured by HICP changes is expected to continue increasing in the first nine months of 2022, thereafter slowing slightly to 9.6 per cent at the end of the year (compared to 6.6 per cent at the end of 2021).¹⁷ Based on the constructed probability distribution, the actual value of inflation is expected to be in a comparatively wide range at the end of the year (from 6.4 per cent to 15.2 per cent, with 60 per cent estimated probability). The upward dynamics in consumer prices is expected to be broad-based across HICP components, mainly driven by emerging direct and indirect effects on the supply side related to assumptions about significant rises in food, oil and natural gas prices in international markets as well as assumed continuous year-on-year growth in electricity prices for busi-

¹⁶ This projection includes a technical assumption about exclusion of tourism revenue from Russia, Belarus and Ukraine from total revenue of Bulgaria from exports of services over the whole projection horizon. In 2022 earnings from visits of foreign nationals to Bulgaria are anticipated to be partially limited by the expenses that the refugees from the war in Ukraine made in Bulgaria.

¹⁷ At the end of 2022 inflation measured by consumer price index is likely to be higher than HICP inflation. For more information, see the highlights *Comparison of Inflation According to the CPI and the HICP* published in the BNB Macroeconomic Forecast, September 2021.

ness customers.¹⁸ Other factors with a pro-inflationary effect are expected to be the projected accelerated increase in unit labour costs as well as assumptions of consumer price growth of industrial goods in major trading partners of Bulgaria. In 2022 consumer demand is expected to continue exerting an upward pressure on core HICP component prices, albeit with a decreasing intensity, which is consistent with the projected slowdown in private consumption growth. By HICP component, foods are expected to have the largest contribution to inflation at the end of 2022, followed by non-food goods and services. Although prices of transport fuels are expected to remain comparatively high, their contribution to the headline inflation at the end of the year will decrease as a result of a base effect of their significant rise at the end of 2021. The group of administratively controlled prices is expected to have a low positive contribution to inflation.¹⁹ Despite the increased costs of producing electricity, water and sewerage services and heating, the baseline scenario of the forecast does not include price increases of these services for household consumers due to the lack of official information on pending changes of these prices by regulatory authorities as of the cut-off date of the forecast.

The growth rate of consumer prices is projected to slow down to 3.9 per cent by end-2023 (within the range of -0.2 per cent to 10.3 per cent with a probability of 60 per cent, according to constructed probability distribution) and 3.1 per cent by end-2024 (within the range of 1.8 per cent to 11.7 per cent with a probability of 60 per cent, according to constructed probability distribution) under the main influence of the technical assumptions about international price declines in energy products (oil, natural gas, electricity). These assumptions are characterised by a considerable uncertainty due to the increased volatility of market commodity prices

¹⁸ Assessments of electricity price dynamics in Bulgaria are made on the basis of technical assumptions, while taking into account measures announced by the government to compensate domestic firms until the end of April 2022.

¹⁹ The forecast includes a technical assumption that the price of central gas supply will follow the dynamics of the price at which Bulgargas EAD sells natural gas to final suppliers. Prices of the services supplied by Bulgargas EAD are based on the assumptions about natural gas and oil prices in international markets and the currently used pricing formula set out in the contract between Bulgargas EAD and Gazprom Export.

after the outbreak of the war in Ukraine and the limited possibility of markets to determine their equilibrium level due to structural changes resulting from the war in Ukraine, transition to the carbon neutrality in EU countries and stated intentions of these countries to reduce their dependence on energy imports from Russia. At the time of preparing the forecast, market participants expect a decrease in energy product prices in euro in 2023 and 2024, which may not reflect the ongoing structural changes in the EU energy market and thus the inflationary pressure might be underestimated. It is expected that the groups of core components and food products will continue to have the highest positive contribution to inflation in 2023 and 2024 in line with the projected growth in unit labour costs and private consumption, as well as with the assumptions about a further increase in international food prices. Although by the time of preparing the forecast no information on the level of administratively controlled prices in 2023–2024 was available, the baseline scenario assumes that in the medium run these prices will increase in line with the projected labour cost dynamics of firms producing such goods and services.²⁰

Monetary Sector

Growth of credit to the private sector is expected to slow down in 2022 and to reach 6.8 per cent at the end of the year (8.8 per cent in December 2021), reflecting mainly a lower rate of growth in household credit in the context of an increased uncertainty in the economic environment and essential slowdown in private consumption growth. At the same time, projected high inflation during the current year coupled with still low lending rates are likely to stimulate further demand for housing loans. The annual growth rate of credit to non-financial corporations in 2022 is expected to remain close to that at the end of 2021. The considerable price increase in energy products and various

²⁰ Adopting an approach to keep administratively controlled prices unchanged throughout the whole projection horizon is a prerequisite to underestimating the headline inflation, especially in periods of a steady increase in nominal labour income in the economy, accounting for a significant part of firms' production costs. Information at micro level from Orbis database of Bureau van Dijk and NSI Supply-Use tables have been used in identifying the production costs structure of these firms.

raw and prime materials will probably continue to support demand for bank resources for working capital and inventories throughout the year, while demand for investment purpose loans will be strongly subdued. Additional factors that are expected to have a potential dampening effect on credit growth on the supply side include BNB increases in the countercyclical buffer rate from 0.5 per cent to 1.0 per cent, effective as of 1 October 2022 and from 1.0 per cent to 1.5 per cent, effective as of 1 January 2023, and retention of 1.5 per cent in the second quarter of 2023, as well as the introduction of new regulatory measures related to the minimum requirements for own funds and eligible liabilities (MREL) of credit institutions. In 2023–2024 period certain acceleration in credit activity is expected which will reflect mainly the gradual increase in private sector investments and

accelerating growth of household consumption. The forecast includes information about strong upward dynamics in short-term interest rates in the interbank money market in the euro area, including their movement to a positive territory from 2023, according to available data on market expectations. Due to the currency board arrangements, interest rates in the euro area have a significant effect on interest rates in Bulgaria, so that we can expect rates on new deposits and loans to begin to rise from the current very low historical levels. Over the projection horizon, non-government sector's deposits in the banking sector are expected to increase further, though tending to slow down gradually. This dynamics will continue to reflect retention of negative real deposit rates as well as the projected slowdown in wage growth.

F FORECAST REVISIONS

Compared with the December 2021 [macroeconomic forecast](#), our current expectations are for lower growth in real GDP in 2022 and 2023, but for higher growth in 2024. Accordingly, cumulative GDP growth for 2022–2024 in the current forecast is lower than that in the December 2021 forecast.

The downward revision of real GDP growth for 2022 compared to the December 2021 forecast is -1.5 percentage points, reflecting formation of a negative contribution of net exports as well as lower growth of investments and private consumption compared to the indicators in the previous forecast. The negative contribution of net exports in the current forecast is a result of lower growth of exports in line with the assumptions about external demand for Bulgarian goods and services. Fixed capital investment growth in 2022 is revised downwards, which is due to the private component and reflects both projected deterioration of the macroeconomic environment and the increased uncertainty, and obtained additional information on their amount by end-2021 which was not available in preparing the December 2021 forecast. The downward revision of private consumption growth in 2022 *vis-à-vis* the December 2021 forecast is due to an expected weaker increase in real disposable income of households along with an additional effect of projected slowdown of household credit growth and rising lending interest rates. Within components of domestic demand, only government consumption has been revised upward from the December 2021 forecast, reflecting the information from the updated medium-term budget forecast for the 2022–2024 period, which projects significant growth in intermediate consumption expenditure and, to a lesser extent, healthcare expenditure in the current year.

Real GDP growth in 2023 has been revised downward by -0.6 percentage points attributable mainly to lower growth in fixed capital investment and, to much lesser extent, to the downward revision of private and government consumption compared with the December 2021

forecast. The revision in investment is due to the expected lower gross fixed capital formation of the government and reflects the assumption of shifting the time of delivery of the fighter planes paid in 2019 at a total of BGN 2.1 billion beyond the forecast horizon, while in the December 2021 BNB forecast was assumed the fighter planes to be delivered in 2023 and 2024. The major factor behind the revision in private consumption is projected slower growth in real disposable income, reflecting both the downward revision in nominal household income and projected higher inflation, while the anticipated lower government consumption is ascribable mainly to the projected higher level of this component over 2022. The downward revision in components of domestic demand and exports implies weaker growth in imports of goods and services, making the contribution of net exports less negative compared with the December 2021 forecast.

In 2024 economic activity growth is expected to increase by 0.3 percentage points compared with the December macroeconomic forecast. All components of domestic demand except private consumption will contribute to this. The upward revision of fixed capital investment is due to both government investment associated with the implementation of infrastructure projects and investment projects for modernising the Bulgarian army. The forecast is based on information from the updated medium-term budget forecast for the 2022–2024 period and additional expert assumptions. Government consumption growth has also been revised upward based on the budgetary parameters under the updated medium-term budget forecast for the 2022–2024 period and BNB expert assumptions. The contribution of net exports to real GDP growth remains almost unchanged from the previous forecast.

The forecast of inflation dynamics has been revised significantly upward for the whole projection horizon, reflecting mainly the revision of technical assumptions about basic raw mate-

rials' price developments in international markets. Inflation in the groups of energy products (excluding those with administratively controlled prices) and of food have been most substantially revised upward for 2022. Given a weaker than projected in December 2021 pass-through of firms' higher production costs to core HICP components at the end of 2021 and in the first two months of 2022, the current forecast envisages a more gradual acceleration in core inflation. This is the reason for core inflation at the end of 2022 to be close to that of the pre-

vious macroeconomic forecast irrespective of the stronger increase in basic commodity prices. Concurrently, core inflation for the end of 2023 and 2024 has been revised upward. Inflation in administratively controlled prices is lower compared with the previous forecast for the end of 2022 and higher for the end of 2023 and 2024, which is due to both new information received in the 13 January 2022 – 28 March 2022 period and the technical assumptions made for the change in these prices in the medium run.

GDP and Inflation Forecast Revisions (29 March 2022 *vis-à-vis* 13 January 2022)

Annual rate of change, per cent	Forecast as of 29 March 2022				Forecast as of 13 January 2022				Revision (percentage points)			
	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
GDP at constant prices	4.2	2.1	3.9	3.7	3.7	3.6	4.5	3.4	0.5	-1.5	-0.6	0.3
Private consumption	8.0	2.7	3.0	3.5	7.5	2.8	3.1	3.6	0.5	-0.1	-0.1	-0.1
Government consumption	4.0	4.1	0.1	2.0	4.1	-1.7	0.2	1.0	-0.1	5.8	-0.1	1.0
Gross fixed capital formation	-11.0	5.6	12.8	4.7	-7.8	8.9	17.7	3.1	-3.2	-3.3	-4.9	1.6
Exports of goods and services	9.9	0.4	4.9	5.3	8.6	7.3	6.5	3.6	1.3	-6.9	-1.6	1.7
Imports of goods and services	12.2	2.5	5.1	4.6	10.8	6.0	7.2	3.1	1.4	-3.5	-2.1	1.5
HICP at end of period	6.6	9.6	3.9	3.1	7.7	7.5	3.4	2.6	-1.1	2.1	0.5	0.5
Core inflation	3.2	9.4	5.7	4.4	5.6	9.2	4.0	3.1	-2.4	0.2	1.7	1.3
Energy products	35.0	8.0	-0.7	-1.8	35.0	-6.6	0.8	0.4	0.0	14.6	-1.5	-2.2
Food	8.1	18.3	4.8	4.7	9.0	14.1	4.7	3.2	-0.9	4.2	0.1	1.5
Goods and services with administratively controlled prices and tobacco products	3.0	1.5	0.9	0.8	2.9	1.4	1.2	1.2	0.1	0.1	-0.3	-0.4

Source: the BNB.

RISKS TO THE FORECAST

The baseline scenario of the forecast is characterised by very high uncertainty about external environment developments even in the short run due to the ongoing military conflict between Russia and Ukraine. Given the technical assumptions in the baseline scenario, there are risks of lower real GDP growth in Bulgaria over the entire forecast horizon. These risks are mainly associated with a possible escalation or expansion of the military conflict in Ukraine and the emergence of additional disruptions in the supply of prime and raw materials from the countries involved in the war, including the shut-off of crude oil, gas and nuclear fuel supplies by Russia. Under such a scenario stronger negative shocks can be expected in terms of both external and domestic demand for the Bulgarian economy and its production capacity. Major internal risks for Bulgaria over the projection horizon include a possible postponing of the implementation of investment projects financed by national funds, a slower absorption rate of funds under EU programmes as well as a delayed implementation of investment projects under the NRRP against the time profile set in the baseline scenario.

The uncertainty of the forecast for a particular indicator may be graphically illustrated by means of a fan chart. Chart bands coloured in a specific tone set an interval in which with a certain probability the projected value is expected to fall²¹ (for further details see the

note to the chart above on the next page). Usually, each interval widens with the increase in the forecast horizon, reflecting the increasing uncertainty further into the future. The middle band of the chart depicted in the darkest tone, includes the baseline scenario about the annual rate of change of real GDP and the constructed probability distribution shows a 20 per cent probability for the actual value to fall within this band in each of the quarters. Given the nature of the severe shock caused by the war in Ukraine and the uncertainty surrounding its development over time, the uncertainty interval under the current forecast is wider than usual even in the short term, which is evident by the profile of the fan chart since the first quarter of 2022. According to the probability distribution for 2022 the annual rate of change of real GDP is expected to be in the range of 2.0 to 5.0 per cent with 60 per cent probability.

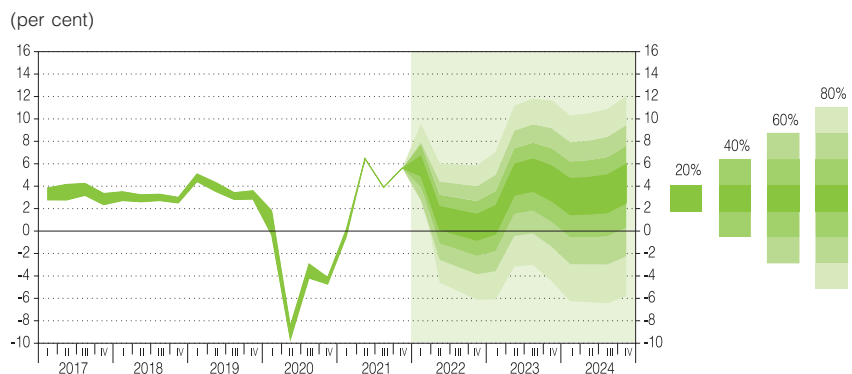
The forecast of inflation dynamics is characterised by heightened uncertainty due to increased volatility of international commodity prices since the outbreak of the war in Ukraine.

There are risks of a stronger increase in prices *vis-à-vis* the baseline scenario in realising the inflation forecast for the whole projection horizon. Such risks are likely to materialise in case of a more prolonged and/or stronger commodity price increases in international markets as a result of a possible escalation of the military conflict between Russia and Ukraine and if Russia stops supplies of commodities, including gas, oil and nuclear fuel to Bulgaria and Bulgaria's main EU trading partners. Another major pro-inflationary risk is the likelihood that energy prices will not fall in 2023 and 2024, as seen from the market expectations at the time of preparing the forecast, due to structural changes prompted by the war in Ukraine, the transition to carbon neutrality in EU countries and the plans declared by these countries to reduce the energy dependency from Russia. Under such a scenario, a change in firms' pricing behaviour (including in the speed and extent of pass-through of their increased production costs to

²¹ The fan chart is constructed on the basis of the so-called asymmetric exponential distribution. To present the forecasting team's estimate of the uncertainty of projected values, it is necessary to estimate *the general uncertainty of the forecast* (by determining the dispersion σ of the distribution) and the so-called *balance of risks* (by determining the asymmetry parameter ν of the distribution), indicating in which direction the realised value is more likely to deviate from the projected value. The balance of risks is determined subjectively by the forecasters on the basis of possible changes in the structure of the economy, inaccuracies in the information available at the time of the forecast production, imperfections in forecasting methods employed, forthcoming economic policy decisions, etc. Historical data on the average forecast error made by the BNB experts when preparing previous forecasts are used to determine the general uncertainty to the forecast. In the currently constructed fan charts the forecast error is overestimated by 40 per cent for the first two years and by 50 per cent for the third year relative to the normal one. For further details on producing the fan chart, see the box entitled Measurement and Presentation of Uncertainty in Forecasting Economic Indicators, [Economic Review, issue 1 of 2012](#).

final consumer prices) could be expected compared to current estimates based on the macro-econometric model used to produce the forecast. An additional risk to the forecast arises from the expiry of Bulgargas EAD contract with Gazprom Export for the supply of natural gas at the end of 2022 and uncertainty about the price of the commodity after that period. Another risk of higher inflation compared to the baseline scenario stems from possible changes in the regulated prices of electricity, water and sewerage services, and heating for household consumers in the following months due to steadily increased production costs. On the other hand, the extension of the time frame and/or the scope of the government measures to compensate firms for energy prices after the first quarter of 2022 is a precondition for lower inflation in the short run compared with that projected in the baseline scenario of the forecast.²² A stronger than projected slowdown in household final consumption expenditure growth due to worsened macro-economic environment is also a precondition for lower inflation. The balance of risks regarding inflation is graphically shown in the second fan chart. It suggests that with a probability of 60 per cent, annual inflation in consumer prices will range between 6.4 and 15.2 per cent at the end of 2022.

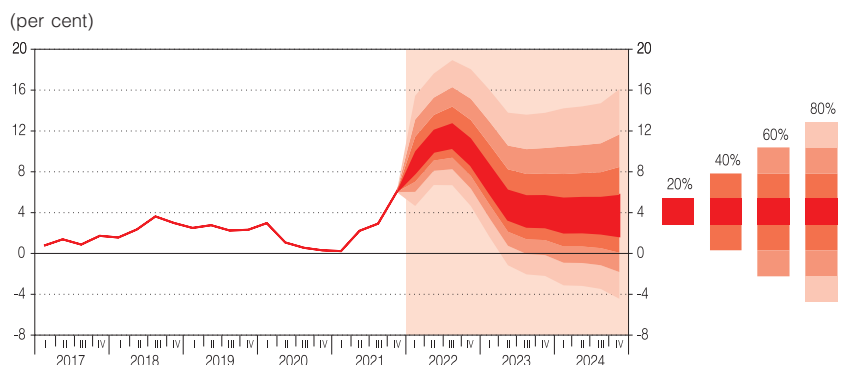
Fan Chart of the Expected Annual Rate of Change in Real GDP



Notes: The chart provides historical series and annual real GDP growth forecast according to non-seasonally adjusted data. The fan chart shows expert views of the forecasters on the uncertainty surrounding the projected value based on a probability distribution. The reporting period includes revised GDP growth estimates, with the latest reporting periods revised on fewer occasions, thus narrowing the band. The middle band of the projected horizon chart, depicted in the darkest tone, includes the central projection and the probability distribution shows a 20 per cent probability for the actual value to fall in this band in each of the quarters. If neighbouring bands (in the same brighter tone) are added to the middle band, there would be a 40 per cent coverage of the probability mass. Thus, by adding each same tone couple of bands, the probability for the value to fall there would be increased by 20 percentage points to reach 80 per cent. The probability for the value to remain outside the coloured part of the chart is 20 per cent based on the distribution chosen.

Source: the BNB.

Fan Chart of the Expected Annual Rate of Change in Inflation at the End of the Period



Note: The fan chart shows expert views of the forecasters on the uncertainty surrounding the projected value based on a probability distribution. The middle band of the chart, depicted in the darkest tone, includes the central projection and the probability distribution shows a 20 per cent probability for the actual value to fall in this band in each of the quarters. If neighbouring bands (in the same brighter tone) are added to the middle band, there would be a 40 per cent coverage of the probability mass. Thus, by adding each same tone couple of bands, the probability for the value to fall there would be increased by 20 percentage points to reach 80 per cent. The probability for the value to remain outside the coloured part of the chart is 20 per cent based on the distribution chosen.

Source: the BNB.

²² The HICP data released for December 2021 and the January–February 2022 period show lower propensity of retail trade firms to pass on their higher costs to sales prices in the current period, with this approach maintained in the following months posing risks of realising lower than projected inflation.

Forecast of Key Macroeconomic Indicators for 2022–2024

(per cent)

	2021	2022	2023	2024
Annual rate of change				
GDP at constant prices	4.2	2.1	3.9	3.7
Private consumption	8.0	2.7	3.0	3.5
Government consumption	4.0	4.1	0.1	2.0
Gross fixed capital formation	-11.0	5.6	12.8	4.7
Exports of goods and services	9.9	0.4	4.9	5.3
Imports of goods and services	12.2	2.5	5.1	4.6
HICP at end period	6.6	9.6	3.9	3.1
Core inflation	3.2	9.4	5.7	4.4
Energy products	35.0	8.0	-0.7	-1.8
Food	8.1	18.3	4.8	4.7
Goods and services with administratively controlled prices and tobacco products	3.0	1.5	0.9	0.8
Employment	0.2	0.5	0.9	0.3
Unit labour costs	5.4	8.1	4.7	3.8
Labour productivity	4.0	1.4	3.1	3.4
Unemployment rate (share of labour force)	5.3	5.2	4.9	4.7
Claims on the non-government sector	8.8	6.8	6.9	7.2
Claims on corporations*	4.7	4.6	5.1	5.4
Claims on households	13.4	9.5	9.3	9.5
Deposits of the non-government sector	9.1	7.2	7.0	6.6
Share of GDP				
Balance of payments current account	-0.4	-5.4	-2.8	-1.6
Trade balance	-4.9	-9.4	-8.2	-7.2
Services, net	6.6	6.6	7.0	7.3
Primary income, net	-3.3	-4.0	-3.0	-3.3
Secondary income, net	1.1	1.4	1.5	1.6
Annual rate of change				
External assumptions				
External demand	9.6	-0.4	3.4	4.8
Average annual Brent oil price (in USD)	66.5	44.9	-12.2	-7.9
Average annual price of non-energy products (in USD)	34.0	10.8	3.1	2.4
Brent oil price at the end of period (in USD)	78.7	22.1	-11.0	-6.7
Prices of non-energy products at the end of period (in USD)**	9.8	21.3	11.2	-6.1

*Data refer to non-financial corporations.

** Prices of non-energy products are weighted according to the structure of Bulgarian imports of goods.

Source: the BNB.

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THE SCULPTURAL COMPOSITION BY KIRIL SHIVAROV DEPICTING HERMES AND DEMETER ON THE SOUTHERN FAÇADE OF THE BULGARIAN NATIONAL BANK BUILDING IS USED IN COVER DESIGN