



MACROECONOMIC FORECAST DECEMBER 2022



BULGARIAN NATIONAL BANK

MACROECONOMIC FORECAST

DECEMBER 2022



BULGARIAN NATIONAL BANK

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.

The *Macroeconomic Forecast* publication (December 2022) was presented to the BNB Governing Council at its 24 January 2023 meeting. It employs statistical data and information available as of 30 December 2022. The estimates and projections published in this issue should not be regarded as advice or recommendation. The information in the publication should be used exclusively at the user's risk.

The Bulgarian National Bank, the members of BNB's Governing Council and the BNB staff involved in the preparation of this publication shall not be liable whatsoever for any use of the projections, estimates and all other information in this publication by any other person.

The *Macroeconomic Forecast* is available at the BNB website, Research and Publications section, Periodical Publications sub-section. Reproduction of parts of this publication is permitted provided that the source is acknowledged.

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

© Bulgarian National Bank, 2023

1, Knyaz Alexander I Square
1000 Sofia, Bulgaria

Website: www.bnb.bg

This issue includes materials and data received up to 25 January 2022.

The contents of the BNB *Macroeconomic Forecast* may be quoted or reproduced without further permission. Due acknowledgment is requested.

ISSN 2738-7666 (online)

CONTENTS

SUMMARY.....	5
FORECAST OF KEY MACROECONOMIC INDICATORS FOR 2022–2024	7
External Environment	7
Economic Activity in Bulgaria	8
Balance of Payments	10
Labour Market	10
Monetary Sector	11
Inflation	11
FORECAST REVISIONS	13
RISKS TO THE FORECAST.....	15

CHARTS

- Fan Chart of the Expected Annual Rate of Change in Real GDP..... 16
- Fan Chart of the Expected Annual Inflation at the End of the Period

TABLES

- GDP and Inflation Forecast Revisions (12 January 2023 *vis-à-vis* 30 September 2022)
- Forecast of Key Macroeconomic Indicators for 2022–2024

Abbreviations

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

SUMMARY

The BNB forecast of key macroeconomic indicators is prepared as of 12 January 2023 on the basis of assumptions about global economic developments and price dynamics of main commodity groups in international markets as of 15 December 2022, while assumptions of interest rate developments in the euro area are made as of 30 December 2022. This forecast does not reflect the potential effects of the political uncertainty in Bulgaria on economic activity and inflation.

At the end of 2022 and early 2023, signs of deterioration in the external economic environment were observed, with ECB's December 2022 macroeconomic projections showing a short-lived and shallow recession in the euro area early this year. Technical assumptions underlying the current forecast imply that growth in external demand for Bulgarian goods and services will slow down to 2.1 per cent in 2023 (from 5.8 per cent in 2022) and will accelerate to 3.4 per cent in 2024. According to the forecast assumptions, the international commodity prices will remain highly volatile and most of them will stay persistently above their 2021 levels over the entire forecast horizon. The technical assumptions on the price of crude oil in euro show a decline for the whole projection horizon, with this decline being most pronounced in 2023. The euro prices of natural gas and electricity in the European market are assumed to increase somewhat in 2023 compared with 2022, followed by a stabilisation at their end-2023 levels. The assumptions about non-energy product prices in euro point to a moderate decline in 2023 and a rise in 2024 in line with global economic activity developments. Market expectations for short-term interest rates in the euro area, as set in the forecast, suggest that their increase will continue until the third quarter of 2023, followed by a gradual slight decline over the rest of the forecast horizon.

In 2022 Bulgaria's real GDP is expected to have grown by 3.4 per cent, mainly driven by the increase in private consumption and accumulated stocks of commodities, raw materials and finished products in the economy. In 2023 real GDP growth is expected to slow down significantly to 0.4 per cent, reflecting primarily a transition from a positive to a negative contribution of changes in inventories. Other factors that will limit the growth of Bulgaria's economic activity in 2023 are the projected significant slowdown in government consumption growth, as well as the expected decline in goods exports. The expected decrease in goods exports is determined by the lower growth of external demand, as well as by factors specific to Bulgaria, such as the ban on exports to countries other than Ukraine of petroleum products made from Russian oil, along with planned maintenance works in some of the largest enterprises in Bulgaria. At the same time, we forecast high growth in investment activity for 2023 in line with the projected technical assumption for the funds absorption profile under the National Recovery and Resilience Plan (NRRP) by both private and public sectors. Economic growth is expected to accelerate to 3.2 per cent in 2024, mainly due to the formation of a low positive contribution of net exports as a result of the rebound in goods export growth.

Annual inflation measured by the Harmonised Index of Consumer Prices (HICP) is projected to decelerate to 4.2 per cent at the end of 2023 under the influence of assumed downward dynamics in euro oil and food prices in international markets. On average, inflation is expected to reach 7.0 per cent for the year, and the pressure on production prices in the short run stemming from factors such as already increased commodity prices, supply and labour shortages will have a further impact on consumer prices. Administered prices are also expected to have a comparatively high positive contribution to headline inflation at the end of 2023, mainly due to the projected price increases in sewerage services and natural gas along with the increases in the excise duty on tobacco products. Inflation is projected to slow down to 3.3 per cent at the end of 2024, following downward dynamics in food and energy commodity prices in international markets.

Risks to the forecast of real GDP growth are assessed as balanced for 2022 and 2023, while risks of lower growth than that in the baseline scenario prevail for 2024. In the short-run, real GDP growth in Bulgaria may be higher in case of more favourable economic developments in our main trading partners or more prolonged maintenance of high stocks by firms compared to the baseline scenario. Risks of lower economic activity stem mainly from the ongoing military conflict in Ukraine and elevated global economic uncertainty, as well as from possible faster and higher interest rate increases by the leading central banks

compared to the baseline scenario, combined with the strengthening of the pass-through effect on interest rates in Bulgaria. In addition, there are significant risks of slower than projected implementation of investment projects under the NRRP and absorption of funds under European programmes. Risks related to potential natural gas shortages in Bulgaria and our main trading partners appear limited for the current winter, but are likely to increase again in the winter period of 2023–2024.

Prevailing risks to the inflation forecast suggest a stronger increase in prices vis-à-vis the baseline scenario for the whole forecast horizon. These risks relate to developments in international energy commodity and food prices, as well as to the likelihood of more significant than projected carry-over of higher unit labour costs on consumer prices in an environment of historically low unemployment, which is a prerequisite for higher than projected core inflation. Risks of higher than projected inflation stem also from the possibility of stronger increases in regulated prices over the forecast horizon compared to the baseline scenario.

FORECAST OF KEY MACROECONOMIC INDICATORS FOR 2022–2024

External Environment

The BNB forecast of key macroeconomic indicators is prepared as of 12 January 2023 on the basis of assumptions about global economic developments and price dynamics of main commodity groups in international markets as of 15 December 2022, while assumptions of interest rate developments in the euro area are based on data available as of 30 December 2022. The uncertainty in projected values exceeds normal ranges, with developments in key macroeconomic indicators largely dependent on the forecast's technical assumptions. The forecast does not take into account the potential impact of the political uncertainty in Bulgaria on economic activity and inflation.

The forecast is based on assumptions for the evolution of external demand for Bulgarian goods and services based on the most recent projections of the European Central Bank, which include information as of 23 November 2022. Growth in external demand from Bulgaria's main trading partners and data on Bulgarian exports in the first nine months of 2022 were stronger than expected, despite the negative effects stemming from the war in Ukraine. However, signs of deterioration in the external economic environment at the end of 2022 and early 2023 are increasing, with the ECB forecasting a short-lived and shallow recession in the euro area at the beginning of 2023. The war in Ukraine, high commodity and material prices, interest rate increases and worsening sentiment of economic agents are among the main factors contributing to this outlook. In addition to the euro area, economic activity weakening in 2023 is also expected in other major developed economies, such as the United States and the United Kingdom, as well as in China, which will contribute to significantly lower historical global GDP growth in 2023, followed by a gradual rebound in the next years. The technical assumptions underlying the forecast suggest that external demand for Bulgarian goods and services will

grow by 5.8 per cent in 2022, followed by a significant slowdown to 2.1 per cent in 2023 and an acceleration to 3.4 per cent in 2024.

The assumptions for the price change in energy commodities (crude oil, natural gas, electricity)¹ and non-energy commodities (metals², food³ and "other commodities"⁴)⁵ take into account the prices of futures contracts in the international markets as of 15 December 2022, with these prices showing high volatility since the beginning of the war in Ukraine. The assumptions imply that for the entire forecast horizon euro prices⁶ of most commodities (in particular energy and food) will remain persistently above their 2021 levels. The technical assumptions for crude oil euro prices suggest a decline over the whole projection horizon and this decline will be most pronounced in 2023. The downward

¹ The assumption about price dynamics of petroleum products for the whole projection horizon is based on data on futures contracts traded in international markets. As regards natural gas, prices of futures contracts for delivery until the fourth quarter of 2023 (inclusive) are also used, after which a technical assumption is made that prices will remain unchanged at the attained level until the end of 2024. Assessments of electricity price movements are based on market information from futures contracts concluded in the German market, encompassing the period until the fourth quarter of 2023 (inclusive), followed by a technical assumption that prices will remain unchanged at the attained level until the end of 2024.

² Including steel, copper, aluminium, lead, zinc, nickel and tin weighted in accordance with Bulgaria's foreign trade flows.

³ Including pigmeat, coffee, wheat, maize, rice, soybeans, sugar, cocoa, milk and livestock weighted in accordance with Bulgaria's foreign trade flows.

⁴ Including rubber, timber and cotton weighted in accordance with Bulgaria's foreign trade flows.

⁵ The analysis employs futures contracts concluded for trading of relevant commodities in international markets and data available until the end of the fourth quarter of 2023. For the rest of the forecast horizon, no public information is available on a sufficient volume and number of futures transactions for these commodities in international markets. Price dynamics is therefore assessed by taking into account the historical correlation with the global trade dynamics underlying the external assumptions of the forecast.

⁶ 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 October and November 2022, and for the last ten days as of the date of preparing external environment assumptions (15 December 2022). Reflecting this technical assumption, in 2023 the euro would depreciate against the US dollar by 1.5 per cent.

slope of the futures contracts curve, indicating price declines of crude oil, may not fully take into account the long-term effects on this prices stemming from structural changes, a result of the war in Ukraine,⁷ which could be considered as a factor for maintaining higher price levels of energy products in the medium run. Euro prices of natural gas and electricity in the European market are assumed to increase somewhat in 2023 compared with 2022, followed by a stabilisation at their end-2023 levels. Assumptions about non-energy product prices in euro point to a moderate decline in 2023, probably reflecting mainly historically high price levels attained in 2022 and market concerns about significant deterioration in the global economic environment, which would limit demand for such commodities. Prices of non-energy products are assumed to rise in line with the growth in global economic activity and trade for 2024.

Forecast assumptions include market expectations as of 30 December 2022 of a continued strong increase in short-term interest rates in the euro area money market until the third quarter of 2023, followed by a gradual slight decline over the rest of the forecast horizon.

Economic Activity in Bulgaria

In the first nine months of 2022 annual growth of real GDP reached 3.7 per cent, according to non-seasonally adjusted data of the NSI.⁸ Available economic indicators⁹ for the fourth quarter of 2022 signal continuous growth of real GDP on a quarterly basis at a rate similar to that of the previous quarter. Overall for 2022,

economic activity in Bulgaria is expected to increase by 3.4 per cent, with changes in inventories and private consumption having the largest positive contribution to real GDP growth, while net exports and investment will contribute negatively. The accumulation of stocks of commodities, raw materials, and finished products in 2022 is likely to reflect firms' expectations of continuing price increases and disruptions in the functioning of global supply chains, as well as the higher amount of work in progress (e.g. in construction and manufacturing).

In 2023, real GDP growth is expected to slow down significantly to 0.4 per cent, mainly as a result of the decline in inventories accumulated in the economy due to weaker incentives for firms to maintain high stocks of commodities, raw materials and finished products. The change in firms' behaviour will reflect assumptions of a year-on-year decline in euro prices of most of the commodities in international markets and deterioration in the outlook for economic activity in Bulgaria and globally, as well as the expected rise in banks financing costs. The negative contribution of net exports is expected to increase slightly in 2023 due to a decrease in exports of goods. Exports of goods in 2023 will be constrained by both the assumed weakening of economic activity of Bulgaria's main trading partners and factors specific to Bulgaria related to the prohibition on exports to countries other than Ukraine of oil and oil products produced from Russian oil¹⁰, as well as planned maintenance works in some of the largest

⁷ 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 commodity prices may rise.

⁸ The NSI published on 19 October 2022 revised annual and quarterly data on GDP and its components by final consumption expenditure component, production approach and income approach. GDP revision according to non-seasonally adjusted data covers the period after the fourth quarter of 2007. For further information, see highlights entitled *Revision of GDP Data*, published in the BNB [Economic Review](#), issue 3/2022.

⁹ This refers to the indicators tracking consumer confidence, business climate, production indices in industry, manufacturing and retail trade turnover indices.

¹⁰ The prohibition is expected to come into force on 5 February 2023. For further details, see [Official Journal of the European Union \(L 322\) of 16 December 2022](#). According to BNB estimates, oil products falling under the prohibition on exports to countries other than Ukraine, account for 3.1 per cent of total Bulgarian exports of goods in nominal terms in the January–September 2022 period, this share being relatively constant between 2014 and 2022. The forecast includes a technical assumption that the prohibition on exports would not affect the production process in Bulgaria and the exports of oil products, not subject to sanctions. In addition, the forecast does not envisage any further redirection of Bulgarian exports of oil products subject to sanctions to Ukraine. From January to September 2022, exports of Bulgarian oil products included in the export prohibition list to Ukraine increased significantly, accounting for 1.2 per cent of total exports of goods from Bulgaria, against 0.1 per cent on average between January 2014 and September 2022.

enterprises in manufacturing¹¹ and electricity generation sectors.¹² These factors are projected to have an adverse effect also on imports of goods, as Bulgarian exports of oil products and base metals are characterised by a high share of imported value added¹³. In addition, the projected decline in inventories accumulated in the economy, which are also characterised by a high import component, is another factor that is expected to limit the growth of real imports of goods and thus to restrict the increase in the negative contribution of net exports to the GDP change in 2023. At the same time, domestic demand growth is projected to accelerate in 2023, which will be entirely driven by the strong increase in fixed capital investment, reflecting the projected technical assumption about funds absorption profile under the NRRP by both private and public sectors. Concurrently, private sector investments that are not linked to co-financing and NRRP grants are projected to decline slightly in 2023 amid a heightened uncertainty, increased production costs and deterioration of financing conditions. The positive contribution of final consumption expenditure to domestic consumption growth is projected to contract in 2023, due to a larger extent, to the stabilisation of government consumption at its 2022 level, and to a lesser extent, to the weaker increase in private consumption compared to the previous year. The forecast of government consumption uses an assumption of a time-limited duration of validity of the Law on the Implementation of Provisions of the State Budget

¹¹ In the second quarter of 2023, processed copper volumes are expected to decline in one of the largest metallurgical plants in Bulgaria *due to repairs*. This will result in a decrease in the production on an annual basis, as in 2022 the plant operated at full capacity without interruption. BNB estimates show that company's share in total Bulgarian exports of goods in nominal terms accounts for nearly 8 per cent in the period January–September 2022.

¹² In 2023, Kozloduy nuclear power plant *is expected* to operate at reduced capacity for 70 days (compared to 50 days in 2022) due to planned repairs. This will lead to a decline in production, especially in the second quarter of 2023, as part of the repair works (35 days) are planned for the end of April and May 2023, while in those two months of 2022 the plant operated at full capacity. Electricity represents 3.3 per cent of total Bulgarian exports of goods in nominal terms from January to September 2022, with Kozloduy NNP being the largest electricity producer nationwide, providing more than a third of the national annual electricity production.

¹³ The foreign value added used in exports of oil products and metals from Bulgaria is assessed at 81.1 and 58.5 per cent against 36.8 per cent on average for exports of goods and services. The estimate uses OECD Supply and Use tables data (TIVA database 2021) for 2018.

Law for 2022¹⁴ in the current year, with additional technical assumptions about the dynamics of individual components of consumption. The forecast envisages a decline in government's intermediate consumption expenditure following the significant increase in 2022. At the same time, public sector wage growth is expected to accelerate, but this is partly reflected in the forecast of annual growth of government consumption deflator as well, and therefore higher wages contribute to a limited extent to the government consumption growth in 2023. Factors that will contain private consumption growth include the projected moderation in real disposable household income growth amid persistently high inflation, the expected slowdown in consumer credit growth, as well as the increased incentives for savings in the context of rising interest rates.

Economic activity growth is projected to accelerate to 3.2 per cent in 2024, mainly reflecting a low positive contribution of net exports due to the recovery in the growth of goods exports in line with the technical assumption about the dynamics of external demand and completion of maintenance works limiting the exports of the Bulgarian economy in 2023. Domestic demand will continue to grow at a relatively high pace, driven by the projected acceleration in the growth of final consumption expenditure. Labour market developments have a leading role in the projected upward dynamics of private consumption, as the expected further increase in labour shortages will put pressure on labour income growth at a rate, which is higher than that of labour productivity and inflation. At the same time, government consumption is expected to grow in 2024, assuming that the decline in intermediate consumption projected in 2023 would end and that this component would increase at a rate close to the projected inflation for 2024. Fixed capital investment is expected to grow further in 2024, albeit at a slower pace than that in 2023, supported by both projects financed by national funds and continued absorption of NRRP funds. Changes in inventories in 2024 are projected to continue

¹⁴ This refers to the Law on the Implementation of Provisions of the State Budget Law for 2022, the Law on the Budget of Public Social Security for 2022 and the Law on the Budget of the National Health Insurance Fund for 2022 published in the *Darjaven Vestnik*, issue 104 of 30 December 2022.

to contribute negatively to the GDP growth, but this contribution will shrink significantly from the previous year.

Balance of Payments

The BOP current account is expected to have recorded a low deficit as a percentage of GDP at the end of 2022, driven by the negative balance on trade in goods. The current account deficit is projected to widen to -1.7 per cent of GDP in 2023, then to contract slightly in 2024. This dynamics is mainly driven by the forecast for the balance of trade in goods, whose deficit is projected to expand significantly as a percentage of GDP in 2023 and then to contract in 2024. At the same time, we expect the surplus on trade in services to increase gradually as a percentage of GDP over the forecast horizon, mainly due to the more robust growth in services exports compared to that in imports, reflecting the continued recovery of tourist visits to the country following the COVID-19 pandemic and the strong growth in computer and information services exports. The subdued economic activity in Bulgaria in 2023 is expected to result in a comparatively low historical deficit as a percentage of GDP on the 'primary income, net' item as a consequence of a decrease in dividends paid to non-residents for both 2023 and 2024. According to the forecast, the surplus on the 'secondary income, net' item will increase as a percentage of GDP in 2022–2024, mainly due to higher incoming transfers to the general government sector. In the first ten months of 2022, a deficit was recorded on the capital account of the balance of payments due to an increase in the funds paid for purchase of greenhouse gas emission allowances. However, a gradually increasing surplus as a percentage of GDP is expected over the forecast horizon owing to the assumption of higher incoming capital transfers under the NRRP.

Labour Market

In the first nine months of 2022, the number of employees rose by 1.4 per cent year-on-year as a result of the growth recorded in the services sector, in particular in the 'wholesale and retail trade, repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities'.

This sub-sector was among the most severely hit by the COVID-19 pandemic in 2020, and employment in it has not yet reached its pre-pandemic levels. Overall for 2022, employment is expected to have increased by 1.2 per cent. In 2023, employment is projected to decline slightly by 0.2 per cent in line with the anticipated slowdown in domestic economic activity. The expected improvement in the external environment and increase in real GDP growth in Bulgaria over 2024 will be reflected in employment growth, though limited to 0.3 per cent as a result of unfavourable demographic trends in the country. Concurrently, the decline in working age population will be a factor for a gradual decrease in the unemployment rate from 4.3 per cent in 2022 to 4.0 per cent in 2024. Real labour productivity growth is expected to reach 1.9 per cent in 2022 and to moderate to 0.5 per cent in 2023 in line with weaker economic activity in Bulgaria. According to the forecast, labour productivity will increase by 2.9 per cent in 2024, driven by the expected increase in GDP, with a limited increase in the number of employed persons. Tight labour market conditions coupled with strong consumer price increases and inflation expectations contributed to the significant rise in compensation per employee of 17.5 per cent over the period from January to September 2022. The growth of compensation per employee is expected to reach 17.7 per cent on average in 2022 and to decelerate to 10.7 per cent in 2023 and to 9.1 per cent in 2024 in line with the projected slowdown in inflation. At the same time, deepening of labour shortages in the country will continue to exert pressure for higher real wage growth compared to labour productivity growth throughout the projection horizon, which will support the growth of real household disposable income. The increase in nominal unit labour costs is expected to have reached 15.5 per cent in 2022. Nominal unit labour cost growth is expected to slow down over the rest of the projection horizon due to lower labour income growth, remaining, however, at a comparatively high historical level (10.1 per cent in 2023 and 6.0 per cent in 2024) as a result of country's limited labour supply. These developments are likely to result in reduced

price competitiveness of Bulgarian firms and, hence, to begin to limit Bulgaria's exports in the long run.

Monetary Sector

The currency board arrangements in Bulgaria implies a comparatively rapid transmission of the ECB's monetary policy to monetary conditions in the country. The ECB's increase in key interest rates in the euro area in the second half of 2022 resulted in a substantial rise in the interbank money market interest rates in Bulgaria since the close of the third quarter of the year. At the same time, against the backdrop of ample liquidity in the banking system, deposit and lending rates in Bulgaria increased only slightly. Based on market expectations of further monetary tightening in the euro area, the upward trend in lending and deposit rates is expected to intensify and to reach its peak in late 2023 and in early 2024, and then to stabilise at the attained levels.

In line with the expected rise in lending rates, credit growth for both households and non-financial corporations is expected to moderate over the forecast horizon compared with the relatively high rates observed in 2022. The slowdown in private sector credit growth in 2023 will be influenced by both the projected weakening of inflationary pressure, and the moderation in private consumption growth and weak investment activity of firms that is not linked to co-financing and NRRP grants. The increase in the countercyclical capital buffer to 1.5 per cent, effective from 1 January 2023, and to 2.0 per cent, effective as of 1 October 2023, announced by the BNB is expected to have a potential limited effect on lending activity in Bulgaria. The projected increase in the deposit rates and the continued growth of households' real disposable income will contribute to the retention of the relatively high growth rate in non-government sector's deposits in the banking system over the forecast horizon. At the same time, the expected slowdown in the growth rate of profits of corporations in sectors related to the production and distribution of energy products

will contribute to a slower growth of deposits of non-financial corporations.¹⁵

Inflation

In 2022 the annual rate of change in consumer prices tended to accelerate, peaking at 15.6 per cent in September 2022. Subsequently, the HICP inflation rate moderated to 14.3 per cent in December 2022 as a result of the downward trend in energy commodity prices (natural gas, electricity and oil) in international markets.¹⁶

Over the forecast horizon, inflation dynamics is largely driven by the underlying technical assumptions about both the trajectory of international commodity prices and the effects of the currently implemented fiscal measures intended to support households and firms. When preparing the forecast, data available as of 30 December 2022 have been used on the measures adopted by the government, which include: the suspension of the fuel price compensation scheme for individuals (end-users, at the rate of BGN 0.25 *per* litre of fuel) as of 1 January 2023¹⁷; the increase in the excise duty rates on tobacco products according to the Law on Excise Duties and Tax Warehouses¹⁸; the extension of the reduced tax rates on the supply of bread and flour (zero per cent) and on restaurant and catering services (9 per cent) until 31 December 2023¹⁹. As regards the National Assembly decisions on the extension of the programme for providing compensation to business electricity consumers in the amount of 100 per cent of the difference between the

¹⁵ The forecast does not reflect the effects of the possible introduction of the euro in Bulgaria in 2024 on the banknotes in circulation which are expected to decrease prior to the adoption of the euro as a result of their translation into deposits with a view to facilitating the currency conversion. Concurrently, non-government sector's deposits can be expected to increase at an accelerated pace. The forecast also does not include potential effects of Bulgaria's accession to the euro area on the entire monetary sector, which are projected to be more substantial in terms of the BNB's balance sheet.

¹⁶ Average annual inflation reached 13.0 per cent in 2022 compared to 2.8 per cent in 2021.

¹⁷ The compensation for transport fuels for end-users was extended to the end of 2022 by the [Decree on the approval of additional expenses under the 2022 budget of the Ministry of Finance](#) (available in Bulgarian only) for the allocation of additional BGN 38 million to the original BGN 150 million budgeted for the financing of the measure.

¹⁸ The excise duty calendar was adopted by the [Law on Amendment to the Tax and Social Insurance Procedure Code](#) (available in Bulgarian only).

¹⁹ The period for the reduced VAT rate was extended to the end of 2023 by the [Law on Amendment of the Law on the Value Added Tax](#) (available in Bulgarian only).

price of electricity on the Bulgarian Independent Energy Exchange and the revised threshold of BGN 200 (BGN 250 in the second half of 2022)²⁰ until 31 December 2023, the forecast includes an assumption that the measure will remain in place throughout the forecast horizon in line with the external assumptions of sustained high electricity prices. Annual inflation is expected to moderate to 4.2 per cent at the end of 2023 (within the range of 0.0 per cent to 9.5 per cent with a 60 per cent probability, according to the constructed probability distribution) and to 3.3 per cent at the end of 2024 (within the range of -1.4 per cent to 10.1 per cent with a 60 per cent probability, according to the constructed probability distribution). The expected downward dynamics is due to the deflationary external environment, consistent with the assumptions for a decrease in international markets of oil and food prices in euro. Despite the substantial deceleration observed in late 2023, inflation is expected to remain high (at 7.0 per cent) on average in 2023, as pressures on production prices, including due to past increases in commodity prices, limited supply and labour shortages, will continue to weigh on consumer prices in the short run.

The projected unit labour cost growth and private consumption growth are expected to be the domestic pro-inflationary factors throughout the forecast horizon. In line with the latter, core inflation is expected to continue to have a significant positive contribution to headline inflation until the end of the forecast horizon, with average annual core inflation expected to accelerate in 2023 compared with its 2022 rates and to remain still high in 2024. In the current forecast, it is assumed that the administratively controlled prices will increase proportionally to firms' labour costs, with the exception of the prices for central gas and water supply and sewerage services. As regards the price of central gas supply, a technical assumption has been made that it will follow international natural gas price dynamics. The projected water supply and sewerage services price rises are in line with the business plans for the development of water supply and sewerage companies in Bulgaria approved by the Energy and Water Regulatory Commission (EWRC) in 2022 and the estimated water supply and sewerage services prices for household consumers set out therein.²¹

²⁰ For more information, see the following two National Assembly decisions: <https://dv.parliament.bg/DVWeb/showMaterialDV.jsp?sessionId=C9CBE963EA64B1DEB25B614E75BCD7BB?idMat=180034>; <https://dv.parliament.bg/DVWeb/showMaterialDV.jsp?idMat=181202> (available in Bulgarian only).

²¹ For further information, see the EWRC [press release of 30 December 2022](#) (available in Bulgarian only).

FORECAST REVISIONS

Compared with the September 2022 macroeconomic forecast, our current expectations are for higher real GDP growth in 2022 and in 2023, and for lower growth in 2024. The NSI revision of 19 October 2022 of GDP historical time series and the reporting information received for the third quarter of 2022 have contributed significantly to the revisions in the GDP and its components' forecast for 2022 and 2023 compared to the September 2022 forecast, particularly with regard to private consumption and changes in inventories.

Real GDP growth for 2022 has been increased by 0.6 percentage points to reflect the upward revisions in terms of net exports and private consumption. These revisions in the GDP components are only partly offset by the projected lower positive contribution of the changes in inventories and the more pronounced decline in fixed capital investment as compared to the September 2022 macroeconomic forecast. The lower fixed capital investment level in the current forecast is due largely to the government sector and reflects both the downward revision in the reporting data for 2021 made by the NSI in October 2022 and the weaker than expected, according to the BNB's September 2022 forecast, performance of capital expenditure, including that under the NRRP.

The upward revision of real GDP growth by 0.3 percentage points in 2023 is mainly due to the projected stronger private consumption growth and, to a lesser extent, higher fixed capital investment. The main driver behind the stronger private consumption growth in 2023 is the projected increase in households' purchasing power (as compared to the slight decline expected in the September 2022 macroeconomic forecast) due to an upward revision in private and public sector wage growth in 2023, as well as to a projected stronger increase in net fiscal transfers to households. The revision in investments is the result of the expected higher gross fixed capital formation in the general government sector, which is due to the downward revision

of their base level for 2022 and to the expectations about the performance of investment under the NRRP which did not materialise in 2022. Net exports revision is for higher negative contribution to the change in real GDP, largely due to the projected fall in exports of goods in 2023 (compared with growth in the September 2022 forecast). These changes reflect the adjustment in the assumptions about the external environment developments and the inclusion in the forecast of specific factors expected to exert a limiting effect on exports of goods in 2023.

Economic activity growth for 2024 has been revised downwards by 0.2 percentage points from the September 2022 macroeconomic forecast mainly due to the projected lower growth of fixed capital investment for both private and public sectors. These developments are in line with the assumed lower absorption rate under the Multiannual Financial Framework (MFF) for 2021–2027 in the beginning of the programme period, as well as with the expected further tightening of financing conditions for the private sector. Private consumption growth is expected to be higher as a result of the upward revision of households' real disposable income in the current forecast vis-à-vis the September 2022 forecast. Net exports have also been revised to a stronger positive contribution due to the projected higher growth of exports of goods and services in 2024 than in the previous forecast.

The end-2023 inflation forecast has been revised by 0.1 percentage points towards higher consumer prices, resulting from administratively controlled prices, tobacco products and core inflation sub-components. The end-2024 inflation forecast has been revised by 0.1 percentage points towards a lower price rise, due to downward revisions in food and energy price inflation. Inflation in the food group over the 2023–2024 period has been revised downwards due to changes in assumptions about price developments in international commodity markets. Energy product prices (excluding those with administratively controlled prices) are expected

to post a more significant year-on-year decline at the end of 2023 and a less significant one at the end of 2024 vis-à-vis the September 2022 forecast, reflecting the revised assumptions about international oil prices in euro. The pro-

jected higher unit labour cost growth is a key factor behind the upward revision of the annual growth rate of prices in the services and non-food groups over the whole forecast horizon.

GDP and Inflation Forecast Revisions (12 January 2023 vis-à-vis 30 September 2022)

Annual rate of change, per cent	Forecast as of 12 January 2023				Forecast as of 30 September 2022				Revision (percentage points)			
	2021	2022	2023	2024	2021	2022	2023	2024	2021	2022	2023	2024
GDP at constant prices	7.6	3.4	0.4	3.2	4.2	2.8	0.1	3.4	3.4	0.6	0.3	-0.2
Private consumption	8.8	4.0	3.3	4.4	8.0	3.4	1.7	3.6	0.8	0.6	1.6	0.8
Government consumption	0.4	6.5	0.0	1.9	4.0	6.0	0.1	2.0	-3.6	0.5	-0.1	-0.1
Gross fixed capital formation	-8.3	-4.6	11.1	1.8	-11.0	-1.5	7.2	4.8	2.7	-3.1	3.9	-3.0
Exports of goods and services	11.0	8.4	-0.4	4.8	9.9	8.9	1.5	4.2	1.1	-0.5	-1.9	0.6
Imports of goods and services	10.9	11.1	2.9	4.0	12.2	13.6	2.2	3.7	-1.3	-2.5	0.7	0.3
HICP at end of period	6.6	14.3	4.2	3.3	6.6	14.9	4.1	3.4	0.0	-0.6	0.1	-0.1
Core inflation	3.2	11.6	7.9	5.5	3.2	11.8	7.8	5.3	0.0	-0.2	0.1	0.2
Energy products	35.0	17.5	-5.8	-0.3	35.0	25.5	-5.5	-1.1	0.0	-8.0	-0.3	0.8
Food	8.1	25.9	2.0	2.1	8.1	23.1	3.4	3.6	0.0	2.8	-1.4	-1.5
Goods and services with administratively controlled prices and tobacco products	3.0	6.0	2.9	1.6	3.0	7.6	0.8	0.7	0.0	-1.6	2.1	0.9

Note: Following the forecast preparation, on 16 January 2023, the NSI published the reporting data on the HICP for December 2022, which show 14.3 per cent inflation. Across HICP sub-components, some differences between actual and projected inflation with mutually offsetting effects are observed.

Source: BNB.

RISKS TO THE FORECAST

The baseline scenario of the forecast is characterised by a very high uncertainty about external environment developments even in the short run due to the ongoing military conflict between Russia and Ukraine. Additional uncertainty to the current forecast arises from the political situation in Bulgaria, which is reflected in the absence of adopted state budget for 2023 and a medium-term budgetary forecast. Therefore, the government expenditure dynamics over the projection horizon could be mainly based on technical assumptions. Taking into account the assumptions in the baseline scenario, risks to the real GDP growth forecast are assessed as balanced for 2022 and 2023, while risks of lower growth in Bulgaria's real GDP prevail for 2024.

In the short run, real GDP growth in Bulgaria may be higher if economic developments in Bulgaria's main trading partners are more favourable or if corporations maintain high inventories for a longer time than in the baseline scenario. As a result of the ongoing military conflict in Ukraine, the external environment will continue to be a source of risks to the outlook due to a possibly stronger and longer than expected rise in international commodity prices, heightened uncertainty and deepening of constraints to the functioning of global supply chains. Risks related to potential natural gas shortages in Bulgaria and in Bulgaria's main trading partners appear to be limited for this winter, but are likely to increase again in the 2023–2024 winter period. Another risk to lower growth stems from potentially faster and higher interest rate increases in the USA, the UK and the euro area compared to the technical assumptions used in the baseline scenario combined with the strengthening of the pass-through effect on interest rates in Bulgaria. A significant risk to the economic activity forecast arises also from a likelihood of slower implementation of investment projects under the NRRP and slower absorption of EU programme funds against the time profile set in the baseline scenario. Risks to the set profile of the implementation of NRRP projects by the government and private sectors

are assessed as high in view of the National Assembly decision of 12 January 2023 obliging the Council of Ministers to change the National Recovery and Resilience Plan in the part of the energy sector.²²

The uncertainty of the forecast for a particular indicator may be graphically illustrated by means of a fan chart. Chart bands coloured with specific colour set an interval in which with a certain probability the projected value is expected to fall²³ (for further details, see the note to the following chart). 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 colour includes the baseline scenario of the annual rate of change of real GDP, and the probability distribution shows a 20 per cent probability for the actual value to fall within this band in each of the quarters. Given the uncertainty surrounding developments of the war in Ukraine over time, the uncertainty interval under the current forecast is wider than usually even in the short term, which is evident by the profile of the fan chart since the fourth quarter of 2022. According to the probability distribution for 2023 with a 60 per cent probability, the annual rate of

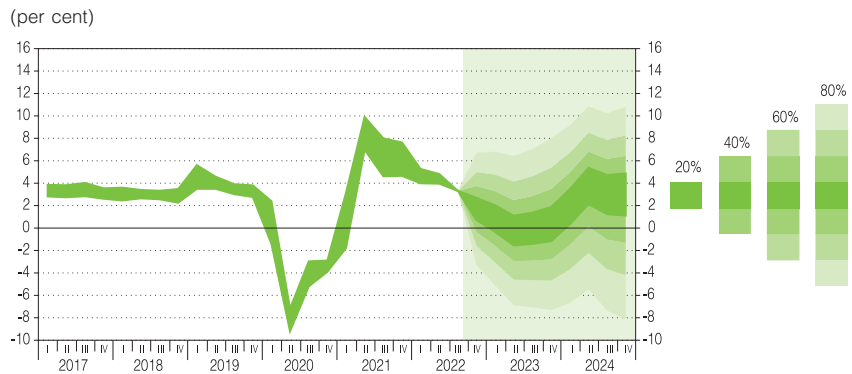
²² For more details, see [the draft decision](#) (available in Bulgarian only), deposited in the National Assembly.

²³ 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 normal. For further details on producing the fan chart, see the highlight entitled *Measurement and Presentation of Uncertainty in Forecasting Economic Indicators*, [Economic Review](#), issue 1 of 2012.

change of real GDP is expected to be in the range of -4.3 per cent to 4.8 per cent.

Risks of a stronger increase in prices vis-à-vis the baseline scenario prevail in materialising the inflation forecast for the whole projection horizon. These risks are related to developments in international energy commodity and food prices, as well as to possibly stronger and frequent indexation of wages and social benefits to inflation compared with the baseline scenario, including due to labour shortages and the political cycle in Bulgaria, which will be a prerequisite for higher growth in private consumption and unit labour costs. 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 final consumer prices, should be expected. A prerequisite for higher inflation could also be the stronger increases in regulated prices of electricity for household consumers, heating and water and sewerage services compared to those projected in the baseline scenario due to steadily increased production costs. In addition, a possible withdrawal of the measure for compensation of firms for the high electricity prices, which was extended to the end of 2023 and which is set to be in force throughout the forecast horizon in the baseline scenario, would lead to higher than projected inflation in the medium term. The fan chart of inflation suggests that with a probability of 60 per cent, annual inflation in consumer prices is expected to range between 0.0 and 9.5 per cent at the end of 2023.

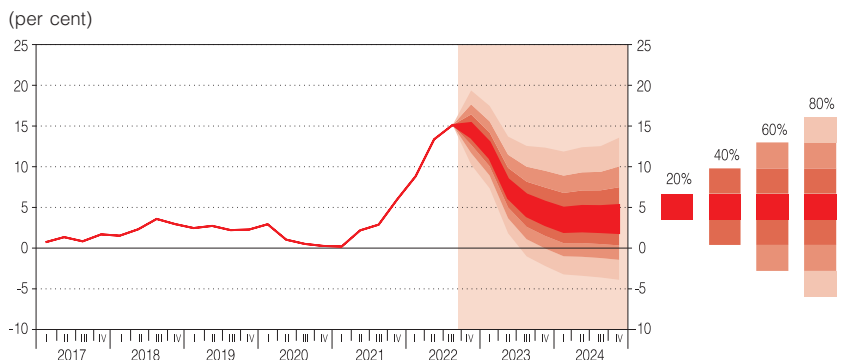
Fan Chart of the Expected Annual Rate of Change in Real GDP



Note: 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 colour, 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 colour) are added to the middle band, there would be a 40 per cent coverage of the probability mass. Thus, by adding each same colour 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: BNB.

Fan Chart of the Expected Annual Inflation at the End of the Period



Notes: The fan chart shows the 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 colour, includes the central projection and the probability distribution shows 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 colour) are added to the middle band, there would be a 40 per cent coverage of the probability mass. Thus, by adding each same colour 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.

Following the forecast preparation, on 16 January 2023, the NSI published the reporting data on the HICP for December 2022, which show 14.3 per cent inflation.

Source: BNB.

Forecast of Key Macroeconomic Indicators for 2022–2024

(per cent)

	2021	2022	2023	2024
Annual rate of change				
GDP at constant prices	7.6	3.4	0.4	3.2
Private consumption	8.8	4.0	3.3	4.4
Government consumption	0.4	6.5	0.0	1.9
Gross fixed capital formation	-8.3	-4.6	11.1	1.8
Exports of goods and services	11.0	8.4	-0.4	4.8
Imports of goods and services	10.9	11.1	2.9	4.0
HICP at end period¹				
HICP at end period ¹	6.6	14.3	4.2	3.3
Core inflation	3.2	11.6	7.9	5.5
Energy products	35.0	17.5	-5.8	-0.3
Food	8.1	25.9	2.0	2.1
Goods and services with administratively controlled prices and tobacco products	3.0	6.0	2.9	1.6
Employment				
Employment	0.2	1.2	-0.2	0.3
Unit labour costs	3.6	15.5	10.1	6.0
Labour productivity	7.4	1.9	0.5	2.9
Unemployment rate (share of labour force, %)	5.3	4.3	4.2	4.0
Claims on the non-government sector				
Claims on the non-government sector	8.8	13.1	5.6	5.0
Claims on corporations ²	4.7	10.7	4.1	3.7
Claims on households	13.4	15.6	7.3	6.8
Deposits of the non-government sector	9.1	14.0	9.3	8.1
Share of GDP				
Balance of payments current account	-0.5	-0.2	-1.7	-1.6
Trade balance	-4.1	-5.6	-7.4	-6.7
Services, net	5.7	6.3	6.5	6.6
Primary income, net	-3.3	-2.7	-2.4	-2.8
Secondary income, net	1.2	1.8	1.5	1.2
Annual rate of change				
External assumptions				
External assumptions				
External demand	10.7	5.8	2.1	3.4
Average annual Brent oil price (in USD)	66.5	42.6	-20.3	-4.3
Average annual price of non-energy products (in USD) ³	25.0	4.5	-2.6	3.2
Brent oil price at the end of period (in USD)	78.7	14.1	-13.3	-4.0
Prices of non-energy products at the end of period (in USD)	16.3	-1.4	3.8	3.4

¹ Following the forecast preparation, on 16 January 2023, the NSI published the reporting data on the HICP for December 2022, which show 14.3 per cent inflation. Across HICP sub-components, some differences between actual and projected inflation with mutually offsetting effects are observed.

² Data refer to non-financial corporations.

³ Prices of non-energy products are weighted against the structure of Bulgarian imports of goods.

Source: BNB.

ISSN 2738-7666 (ONLINE)

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.