Economic Review

2/2022

BULGARIAN NATIONAL BANK

ECONOMIC REVIEW

2/2022

BULGARIAN NATIONAL BANK

The BNB quarterly Economic Review presents information and analysis of balance of payments dynamics, monetary and credit aggregates, their link with the development of the real economy, and their bearing on price stability. External environment developments are also analysed since they directly affect the Bulgarian economy.

The Economic Review, issue 2/2022 was presented to the BNB Governing Council at its 25 August 2022 meeting. It employs statistical data published up to 5 August 2022. Expectations of economic trends in Bulgaria in the short term (until the fourth quarter of 2022), as described in this issue, are based on the BNB macroeconomic forecast prepared as of 24 June 2022. The estimates and projections published in this issue should not be regarded as advice or recommendation. Exclusively the information user is liable for any consequences thereof.

The Economic Review is available on the BNB website, Research and Publications menu, Periodical Publications sub-menu. Please address notes, comments and suggestions to the BNB Economic Research and Projections Directorate at 1000 Sofia, 1, Knyaz Alexander I Square.

1, Knyaz Alexander I Square
1000 Sofia, Bulgaria
Tel.: (+359 2) 9145-1317, 1744

Website: www.bnb.bg

This issue includes materials and data received up to 26 August 2022.

ISSN 2367 – 4962 (online)

Content

Charts

Tables

Abbreviations

APP	Asset Purchase Programme
APRC	Annual percentage rate of charge
b.p.	basis points
CEE	Central and Eastern European countries
CFP	Consolidated Fiscal Programme
CNY	Chinese Yuan
CPI	Consumer Price Index
EC	European Commission
ECB	European Central Bank
EIB	European Investment Bank
EONIA	Euro OverNight Index Average
EU	European Union
EURIBOR	Euro Interbank Offered Rate
EWRC	Energy and Water Regulatory Commission
FDI	Foreign Direct Investment
FOB	Free on Board
FOMC	Federal Open Market Committee
GDP	Gross Domestic Product
HICP	Harmonized Index of Consumer Prices
HPI	House Price Index
IBEX	Independent Bulgarian Energy Exchange
IEA	International Energy Agency
IMF	International Monetary Fund
ISM	Institute for Supply Management
LEONIA	LEv OverNight Index Average
LFS	Labour Force Survey
LIBOR	London Interbank Offered Rate
LNG	Liquefied natural gas
M3	broad money
MF	Ministry of Finance
MFIs	Monetary Financial Institutions
mt	metric tons
MMBtu	Metric Million British Thermal Unit
NPISHs	Non-profit institutions serving households
NRRP	National Recovery and Resilience Plan
NSI	National Statistical Institute
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of Petroleum Exporting Countries
PBoC	People's Bank of China
PCE	Personal Consumption Expenditures
PEPP	Pandemic Emergency Purchase Programme
PMI	Purchasing Managers' Index
p.p.	percentage points
PPI	Producer Price Index
PSPP	Public Sector Purchase Programme
SEBRA	System for Electronic Budget Payments
SITC	Standard International Trade Classification
SNA	System of National Accounts
TPI	Transmission Protection Instrument
VAT	Value Added Tax
€STR	Euro Short-Term Rate

Summary

In the April to July 2022 period global PMIs continued to decrease, signalling deterioration in the global economic activity, with global real GDP contracting on a quarterly basis in the second quarter, according to IMF estimates. The major factors contributing to the worsening economic situation worldwide are related to the negative effects of continued acceleration of global inflation in energy and food raw materials along with stringent anti-epidemic measures imposed in China, which led to a decline in its GDP over the second quarter of 2022 and prompted disruptions and delays in supply of Chinese goods to the rest of the world. In addition to the prolonged period of highly accommodative monetary and fiscal policies in previous years, the limited supply of energy and food raw materials caused by Russia's invasion in Ukraine was an additional factor for the surge in global inflation over the first half of 2022. In response to the accelerating inflation, the US Federal Reserve System and the ECB took measures to tighten their monetary policies. In the April to July 2022 period the US Federal Reserve System accelerated the process of raising the federal funds rate by a total of 200 basis points to 2.25–2.50 per cent and started reducing its balance sheet. ECB measures included discontinuation of net asset purchases at the end of June and an increase in the key interest rates by 50 basis points each at the end of July 2022. Both the US Federal Reserve System and the ECB signalled that the cycle of raising interest rates would continue over the second half of the year and probably in 2023 as well. These developments in the international environment suggest a quarter-on-quarter decline in external demand for Bulgarian goods and services and retention of favourable price terms of trade for Bulgaria in the second quarter of 2022, as well as deterioration in financing conditions for both the public and private sectors.

The current and capital account balance for January–May 2022 posted a deficit of 1.0 per cent of GDP, compared to a surplus of 0.6 per cent of GDP for the same period of 2021. The expansion of the trade balance deficit and formation of a low capital account deficit contributed essentially to changing from a positive to a negative balance. At the same time, Bulgaria was a net creditor to the rest of the world, with the financial account recording a positive balance to the amount of EUR 2.5 billion, driven mainly by the increase in foreign assets of the banks. Reflecting these circumstances, Bulgaria's gross international reserves accumulated in January–May 2022, according to the balance of payments, decreased by EUR 2.4 billion.

In the first half of 2022 the annual growth of the non-government sector's deposits in the banking system tended to accelerate slightly. This dynamics was entirely driven by acceleration of the annual growth in non-financial corporations' deposits, with an increased nominal gross operating surplus in the sector of industry contributing to this. In addition, the increased uncertainty in the economic environment was a factor behind weakening investment activity of firms, which stimulated maintenance of their free funds in the form of deposits. In the households sector, the downward trend in deposit growth was sustained. Strongly negative real deposit rates and the fees still applied by banks for cash availability above a certain amount are probably encouraging households to redirect their savings from deposits to alternative opportunities for investment or store of value.

Annual growth in credit to non-financial corporations and households continued to accelerate in the first half of 2022, and was more pronounced in the corporate sector. Expectations of a further increase in the prices of commodities and raw materials coupled with continued bottlenecks in global supply chains are likely to stimulate demand for loans for working capital and inventories by companies. The retained historically low nominal lending rates, which in the context of accelerating inflation are strongly negative in real terms, expectations of further rises in consumer prices and negative real deposit rates create prerequisites for higher demand for financial resources by households for purchasing real estate and durable goods as a store of value.

Economic activity growth in Bulgaria in the first quarter of 2022 slowed on both quarterly and annual basis to 0.8 per cent and 5.0 per cent, respectively, against 1.3 per cent and 5.6 per cent in the fourth quarter of 2021. Annual GDP growth by final demand component was largely driven by the increase in inventories in the economy and higher private consumption. Economic activity growth on an annual basis was recorded in all major economic sectors and most significantly in mining and manufacturing sub-sector. Labour market conditions remained favourable, with employment rising by 1.6 per cent on an annual basis, reflecting mainly the increases in the number of employed persons in the services sector. Compensation *per* employee accelerated significantly, supported by both economic activity growth and consumer price rises amid limited labour supply in the country.

Economic indicators in the second quarter of 2022 point to a slowdown in quarterly growth of real GDP. Adverse economic developments in the external environment, a further increase in commodity prices in international markets and tighter global financial conditions are expected to limit growth in the Bulgarian economy in the second half of 2022 and real GDP is projected to remain at a level close to that in the second quarter of the year.

Annual inflation, measured by the HICP, continued to accelerate, reaching 14.8 per cent in June 2022. Higher prices of main energy sources and agricultural goods in international markets, with their upward dynamics accelerating significantly since the beginning of the war in Ukraine, exerted the strongest pressure on consumer prices. The depreciation of the euro against the US dollar was another factor behind the higher prices of both imported commodities and raw materials, some of which are traditionally traded in US dollars in international markets, and finished consumer goods imported from non-euro area and non-EU countries. Continuing bottlenecks in global supply chains in the first half of 2022, sustained high prices of international transport and accelerating inflation in durable goods in the EU were additional factors with a pro-inflationary effect in terms of imports. As regards the internal macroeconomic environment, strong consumer demand and rising unit labour costs still exerted an upward pressure on prices.

On the basis of these developments along with the assumptions about changes in international prices of commodities and raw materials and their pass-through to administratively regulated prices, inflation is expected to pick up slightly in the second half of 2022 compared with June 2022. The projected strong increase in unit labour costs, strengthening of the link between price dynamics and wages in the economy, as well as private consumption growth are also expected to be factors with a pro-inflationary effect.

1. External Environment

1.1. Current Business Situation

Global Environment

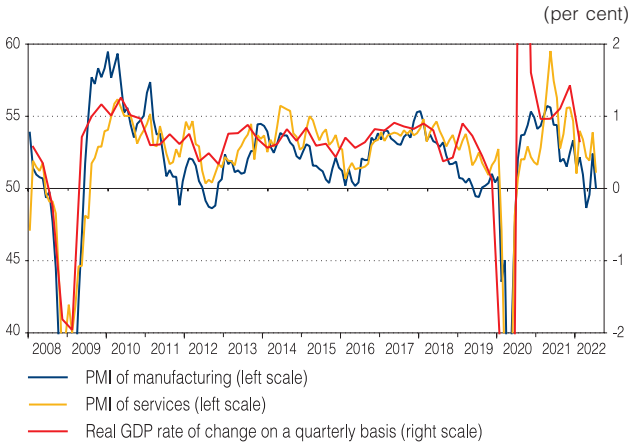
In the first quarter of 2022, global GDP growth slowed to 0.7 per cent on a quarterly basis compared to 1.4 per cent in the last quarter of 2021. Developments in the global economic indicator (global PMI) point to a further deterioration in global economic situation in the second quarter of 2022, with global real GDP declining on a quarterly basis over that period according to IMF estimates, mainly as a result of the significant economic downturn in China and Russia.[1]

PMI indices showed that the worsening of the global economic situation was largely due to the industrial production where new orders declined and finished goods inventories increased. Activity in the services sector remained close to its level of the first quarter of the year as the recovery of tourism following the easing of containment measures continued to have a positive impact on that sector. PMI data in July suggest a further deterioration of the global economic situation with a more significant decline observed in developed market economies.

Growth rates of the volumes of global industrial output and global trade slowed down on an annual basis between April and May compared to those recorded in the last quarter of 2022. All major regions reported annual growth, except for China and Japan where a decline was registered year on year in both industrial output and foreign trade.

In the second quarter of 2022, annual inflation continued to accelerate at a fast pace globally. Data for May 2022 show that global inflation rose to 8.1 per cent on an annual basis compared to 7.1 per cent in March 2022 and accelerated further, driven largely by the increases in energy product and food prices reflecting

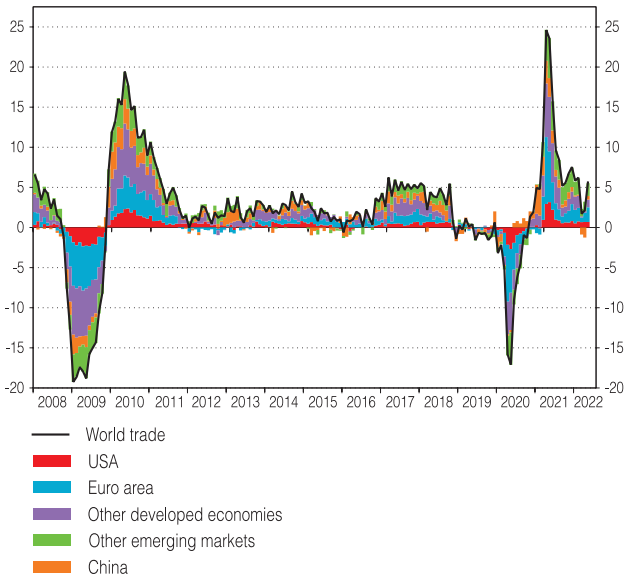
Manufacturing and Services PMIs and Change in World Real GDP



Sources: JP Morgan, the World Bank.

World Trade in Goods

(annual rate of volume change and contribution by region, per cent, percentage points)



Source: CPB Netherlands Bureau for Economic Policy Analysis.

[1] For details, see: IMF World Economic Outlook Update July 2022.

to a greater extent the persistent high demand globally and the effects of the military conflict in Ukraine. Monetary policy tightening which major central banks started in the last months has not yet had a dampening effect on global inflation.

International Commodity Prices

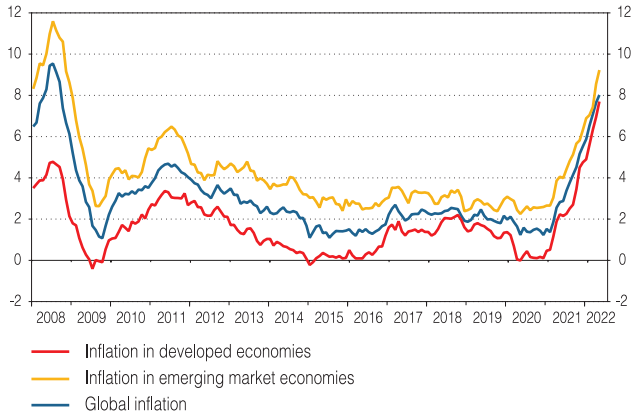
Energy commodity prices increased substantially in the second quarter of 2022. The average Brent price over the period reached USD 112.7[2] *per* barrel (EUR 105.9 *per* barrel), with a significant growth year on year in both US dollars (64.3 per cent), and euro (86.0 per cent). Annual growth in natural gas prices in the second quarter was again most pronounced in the European market (260.2 per cent in US dollars, 307.8 per cent in euro), with significant increase also in the US market (155.9 per cent in US dollars).

In the context of continued relatively strong demand, the main factor for price hikes of oil and natural gas, as well as of all other energy sources, is still the significantly lower supply of energy products and raw materials from Russia following the international trade and financial sanctions imposed on Russia related to the invasion of Ukraine. The decision of OPEC+ taken in June[3] to increase oil production in July and August did not have a significant impact on oil prices since some countries were not able to comply with the agreed production quotas. A slow rate of increase in production capacity was also registered in other non-OPEC+ major oil producers. Concurrently, the deterioration in economic activity in China in the second quarter of 2022 resulting from the imposition of stringent containment measures contributed to some weakening of demand and consequently to limiting the rate of increase in oil prices.

Since mid-June crude oil prices tended to decrease amid increasing concerns among market participants that monetary policy tightening measures by both the Federal Reserve and the other central banks will result in a significant slowdown in economic activity and thus in a decline in oil demand.

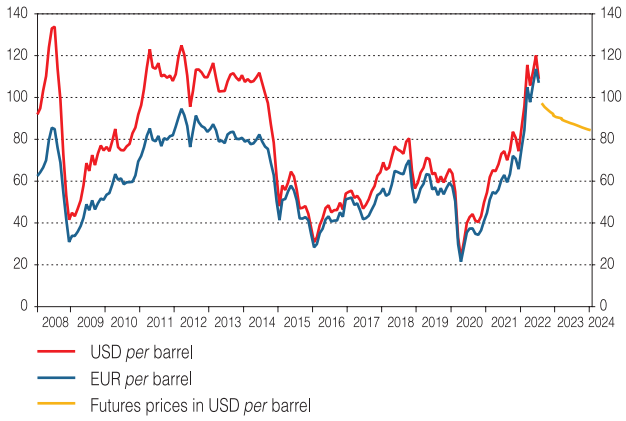
Inflation Measured through CPI

(per cent, on an annual basis; seasonally adjusted data)



Source: the World Bank.

Prices and Futures of Brent Crude Oil



Note: Futures prices are average prices of the first week of August 2022 contracts, USD *per* barrel.

Sources: the World Bank, the ECB, JP Morgan and BNB calculations.

[2] Referred to as the US dollar below.

[3] On 2 June 2022 OPEC+ countries agreed to temporarily increase monthly crude oil production to 648,000 barrels *per* day in July and August 2022 compared to the regular monthly increase of 432,000 barrels *per* day.

An important determinant of the natural gas price in the second quarter was the disruption of a large part of US exports in early June[4]. Following the imposition of sanctions against Russia, the US has significantly increased its LNG exports, mostly directed to countries in Europe and thus partially offset falling supplies from Russia. Therefore, the cut-off of US gas exports contributed to the price rises in this raw material in Europe and Asia. The additional demand for natural gas to accelerate the filling of gas storage facilities before the winter season in the region also exerted an upward pressure on the natural gas price in Europe.

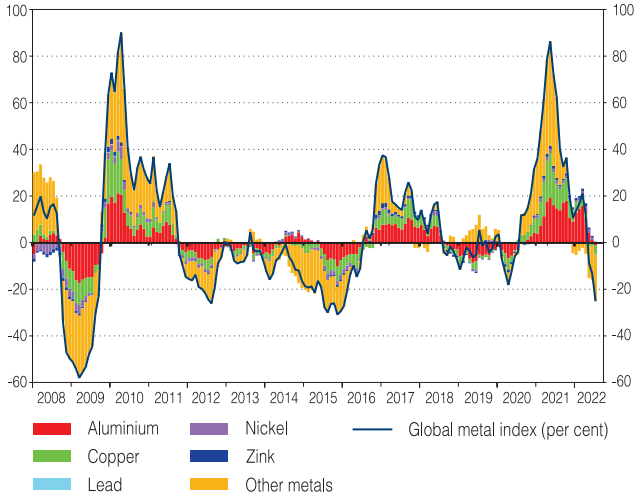
In July 2022, except for the price in Europe, natural gas prices remained close to the average level in the second quarter. In Europe, the price of natural gas in July reached its historically highest monthly average of 51.3 USD/MMBtu[5] (170 EUR /MVh). The price increase was triggered by both the cut-off of exports from the US and the decrease in natural gas supplies from Russia along the Nord Stream-1 pipeline.

From April to June 2022 the average metal price index declined by 3.6 per cent in US dollars on an annual basis (up 9.0 per cent in euro). In July the decline continued to deepen and reached -24.6 per cent in US dollars and -12.4 per cent in euro. This reflected the increasing concerns among market participants about a further deterioration in global activity in the manufacturing sector. Iron ore and iron scrap made the largest negative contribution to the annual change in metal index. The fall in the price of copper, which is essential for Bulgarian exports, was driven by the significant deterioration in economic activity in China, which is the largest user of the metal.

In the second quarter of 2022, the food price index recorded an annual growth of 23.5 per cent on an annual basis in US dollars and 39.8 per cent in euro, with growth rate slow-

Metal Price Indices

(per cent; percentage points)

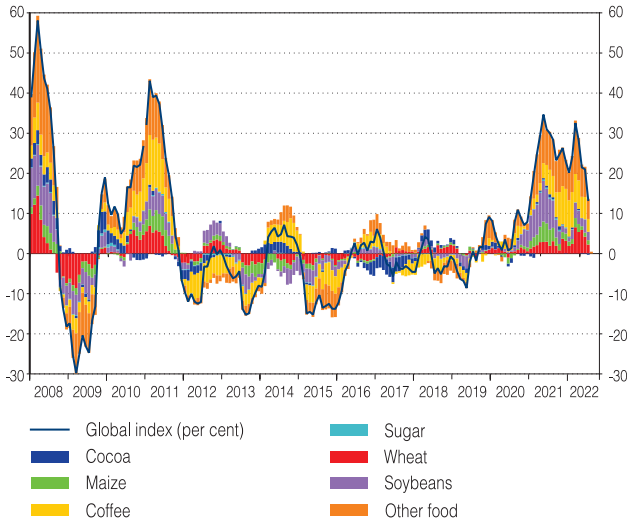


Note: Annual rate of change (per cent) and contribution by subcomponent (percentage points) of relevant price indices measured in US dollars.

Sources: the ECB and BNB calculations.

Food Price Indices

(per cent; percentage points)



Note: Annual rate of change (per cent) and contribution by subcomponent (percentage points) of relevant price indices measured in US dollars.

Sources: the ECB and BNB calculations.

[4] On 8 June an incident was registered in one of the plants of Freeport LNG, which is the second largest exporter of liquefied natural gas in the USA, with a share of 20 per cent of total US exports of LNG. According to the company's estimates, a partial recovery of activity is expected by September 2022 and a full normalisation of activity by the end of the year.

[5] Based on World Bank data and Intercontinental Exchange. Natural gas price is reported in US dollars *per* million British thermal unit (MMBtu).

ing from the previous quarter. This trend continued in July, as annual growth rate of food prices slowed to 13.5 per cent in dollars and to 31.7 per cent in euro. Except for rice, all index sub-components continued to increase on an annual basis. Coffee, wheat and palm oil had the largest positive contribution to the annual growth of food price index. Wheat, which is essential for Bulgarian food exports, also rose in price significantly over the quarter as a result of Ukraine's inability to export cereals in times of war. Another factor for wheat price increase was India's decision to limit wheat exports. In June, wheat price started to decrease quarter on quarter driven by positive data on new harvest in the Northern hemisphere.[6]

The United States

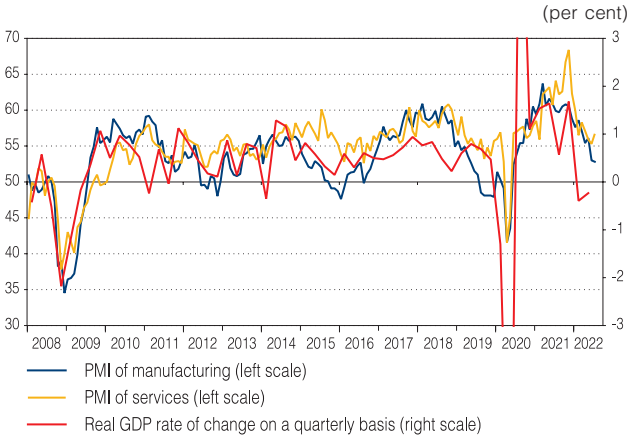
In the second quarter of 2022, the US real GDP posted a fall of 0.2 per cent on a quarterly basis from 0.4 per cent in the first quarter. Major negative contributions to the quarter-on-quarter change in GDP came from the decline in inventories and investment, in particular in the housing sector. Net exports and private consumption contributed most positively to the change in GDP. Household consumption growth moderated over this period as food consumption weakened.

Between April and June 2022 leading economic indicators signalled a slowing trend in US economic activity. PMI indices fell in both manufacturing and services sectors, however the indices for both sectors remained above the neutral limit of 50 percentage points. Consumer confidence indicators underwent mostly a downward change, with the University of Michigan consumer confidence index reaching its historical low in June, largely as a result of high inflation. Overall, data available as of the beginning of August 2022 point to some recovery in quarterly growth of real GDP in the third quarter of 2022.

Between April and July 2022, US labour market conditions improved further, reaching levels close to pre-COVID-19 crisis. Employment in the non-agricultural sector continued to grow at a robust pace, with the ratio of offered new jobs to the number of unemployed increasing further to 1.9

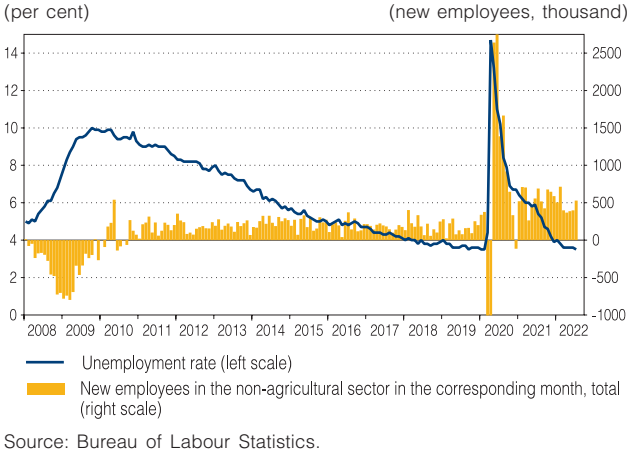
[6] For details, see the regular publication of the Food and Agriculture Organization of the United Nations, July 2022. BulletinFPMA.

Manufacturing and Services PMIs and Change in US Real GDP



Sources: Institute for Supply Management (ISM), Bureau of Economic Analysis.

US Unemployment Rate and a Monthly Change in Number of New Employees in the US Non-agricultural Sector



Source: Bureau of Labour Statistics.

on average in the second quarter, from 1.8 in the first quarter of 2022. The unemployment rate declined to 3.6 per cent in the second quarter of 2022 from 3.8 per cent in the previous quarter, falling to 3.5 per cent in July. Concurrently, the imbalance between labour force supply and demand continued to contribute to accelerating private sector wage growth in the private sector, reaching 5.7 per cent year on year in the second quarter of 2022.

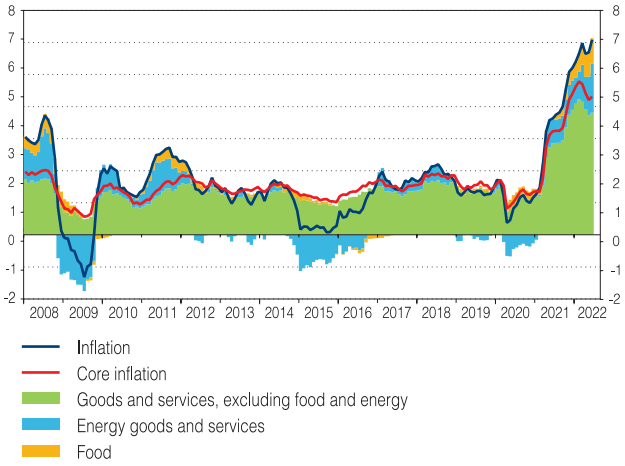
Over the same period consumer price inflation remained at elevated levels, significantly above the 2 per cent target level set by the US Federal Reserve System. In June, the annual rate of change of the price index of personal consumption expenditure accelerated to 6.8 per cent, from 6.6 per cent on average in March 2022. High inflation was driven by rising energy and food prices, as well as the temporary shutdowns of firms in China related to the spread of COVID-19, disrupting global supply chains of goods and raw materials. The annual growth rate of the core PCE price index (excluding food and energy products) slowed to 4.8 per cent in June, from 5.2 per cent in March. The decline in underlying inflation was largely due to lower annual inflation in second-hand cars.

Between April and July 2022, in response to the rapid rate of increasing inflation in the United States, the Federal Reserve adopted measures to accelerate the monetary tightening process. At its three meetings held in this period the Federal Open Market Committee (FOMC) raised the federal funds rate corridor by a total of 200 basis points, to a range of 2.25–2.50 per cent, *i.e.* by 50 basis points in May and 75 basis points in June and July. At its May meeting the FOMC announced Federal Reserve's balance sheet shrinkage plan, according to which maturing securities will be reinvested from 1 June 2022 only if they exceed certain monthly limits[7].

In June 2022, the median of FOMC members' individual forecasts about the federal funds rate showed expectations of increasing by additional 100 basis points until the end of 2022, corre-

US Inflation Rate

(per cent; percentage points; on an annual basis)



Notes: Inflation is measured by personal consumption expenditure index. Core inflation is measured by personal consumption expenditure index, excluding food and energy expenditure.

Source: Bureau of Economic Analysis.

[7] For US government securities, the limit is projected to be USD 30 billion *per* month for the period June–August 2022 and USD 60 billion thereafter, and for agency debt securities and agency mortgage-backed securities, USD 17.5 billion and USD 35 billion respectively.

sponding to a corridor of 3.25–3.50 per cent of the federal funds rate.

China

In the second quarter of 2022, China's real GDP fell by 2.6 per cent on a quarterly basis. The contraction in economic activity largely reflected the stringent containment measures taken in response to the new wave of SARS-CoV-2 spread in the country.

Over the second quarter of 2022, economic indicators also recorded a slowdown in economic activity in the country, with a slight rebound in June and July. PMI indices declined both in manufacturing and services sector compared to the previous quarter's average levels. In June, containment measures in most regions of China, notably Shanghai, were eased and partly lifted, with positive effects on services sector activity and employment.

Annual inflation in China accelerated in the second quarter, standing at 2.5 per cent by June, from 1.5 per cent in March. Inflation developments continued to be driven mainly by rising food prices. At the same time, China's core inflation remained relatively low and stable, standing at 1.0 per cent year on year in June, compared with 1.1 per cent in March 2022.

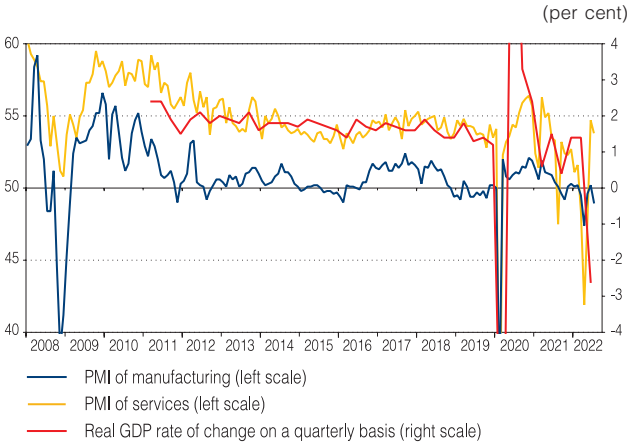
During the period from April to June 2022, the People's Bank of China made no changes to its monetary policy stance.

Euro Area

According to Eurostat preliminary data, euro area quarterly real GDP growth accelerated to 0.7 per cent in the second quarter of 2022, from 0.5 per cent in the previous quarter. The acceleration in growth is likely due to the removal of containment measures, which boosts household consumption and exports of tourist services. Over this period, Spain, Italy and France recorded a relatively higher growth, while in Germany, Bulgaria's largest trading partner, real GDP remained unchanged compared to the previous quarter.

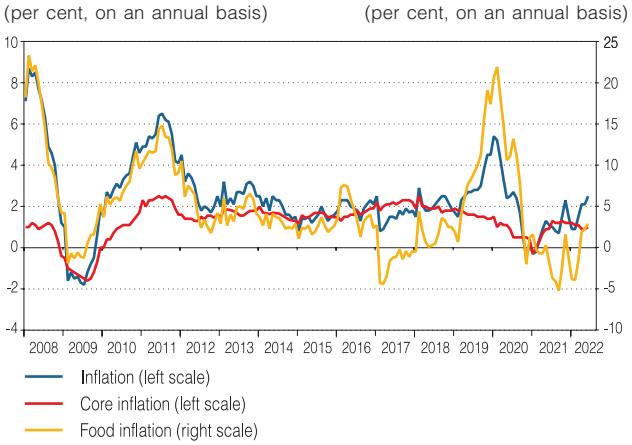
PMI indices in the euro area followed a downward trend in the second quarter of 2022, signalling a decline in economic activity in the region in July. Significant decrease in indices was reported in both manufacturing and ser-

Manufacturing and Services PMIs and Change in China's Real GDP



Sources: National Bureau of Statistics of China and China Federation of Logistics and Purchasing.

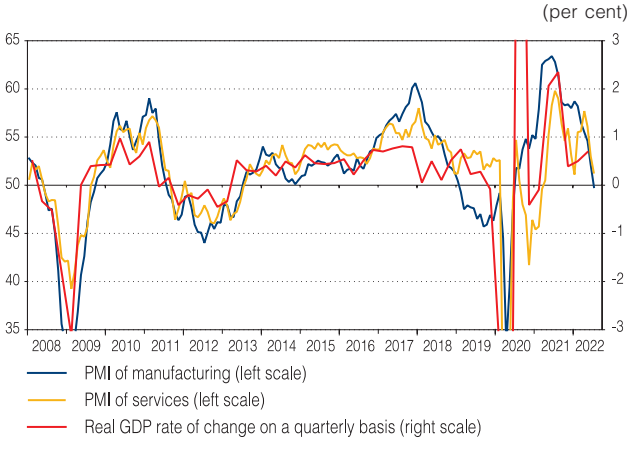
China's Inflation Rate



Notes: Inflation is measured by consumer price index. Core inflation is measured by consumer price index, excluding food and energy expenditure.

Source: National Bureau of Statistics of China.

Manufacturing and Services PMIs and Change in Euro Area Real GDP



Source: Eurostat.

vices sectors. Between April and July, euro area households' confidence indicator continued to fall, reaching historical lows in July.[8] Overall, data available by the beginning of August 2022 indicated a quarterly decline in euro area real GDP in the third quarter of 2022.

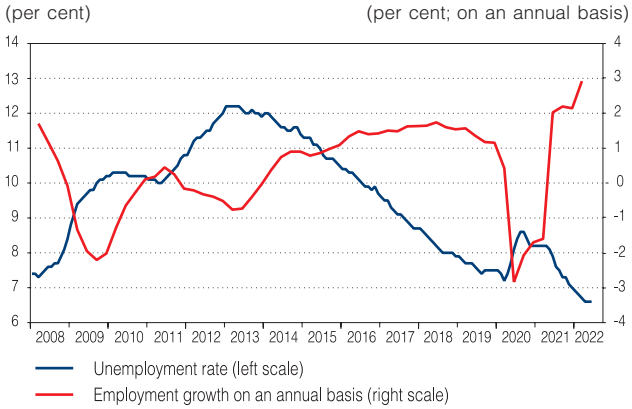
Labour market conditions in the euro area continued to improve. The unemployment rate declined to 6.6 per cent in the second quarter of 2022, from 6.8 per cent in the first quarter, while the employment growth rate increased further.

Between April and July 2022 annual consumer price inflation in the euro area increased further. According to preliminary data, inflation reached 8.9 per cent year on year in July, from 7.4 per cent in March. Persistent high demand, supported by strongly accommodative monetary and fiscal polices, as well as continued bottlenecks in the supply chains of raw materials and commodities, were the main drivers behind the upward inflation dynamics in the euro area. By commodity group, the acceleration of annual inflation in the second quarter compared to the previous quarter was mainly driven by higher prices of energy sources and food, and, to a lesser extent, by price rises in catering and accommodation services. Energy source prices continued to contribute most to overall inflation (4.2 percentage points in June), largely reflecting higher prices of natural gas and liquid fuels as a result of disrupted supplies of energy products and raw material from Russia. Food price rise was largely attributable to the trade and financial sanctions imposed against Russia and the cut-off of supplies of cereals and vegetable fats from Ukraine. Core euro area inflation, excluding food and energy products, also accelerated to 4.0 per cent on an annual basis in July against 3.0 per cent in March.

Despite the accelerating inflation, which deviates significantly from ECB's 2 per cent target, the ECB Governing Council left unchanged the reference interest rates in the second quarter of 2022, announcing in June that it intended to raise them by 25 basis points at its July meeting. Over the quarter, the ECB ended net asset purchases under the pandemic emergency purchase programme (PEPP) at the end of March,

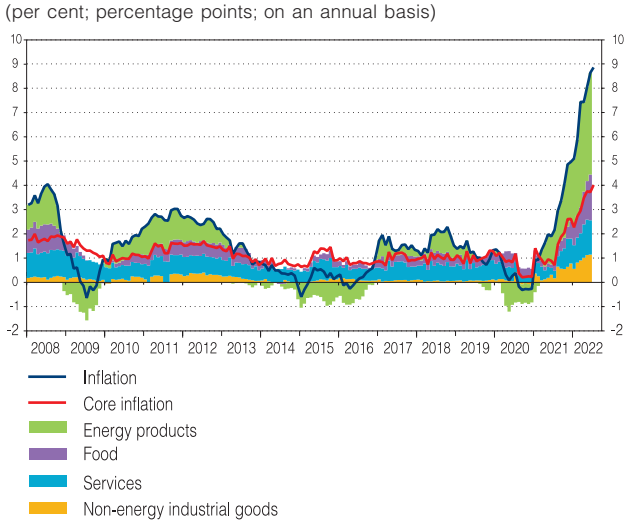
[8] Historical data for this indicator are available since 1985.

Euro Area Unemployment Rate and Employment Growth



Source: Eurostat.

Euro Area Inflation Rate



Notes: The inflation is measured by HICP. Core inflation is measured by HICP, excluding energy products, food, alcohol and tobacco products.

Source: Eurostat.

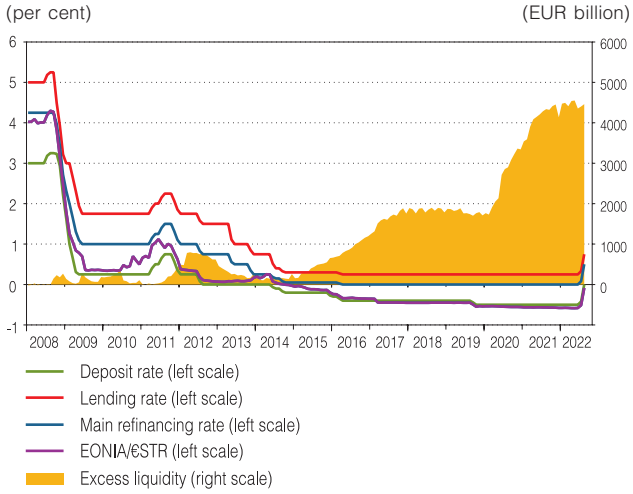
as well as net purchases under asset purchase programme (APP) at the end of June, continuing, however, to reinvest maturing assets under these programmes. At its June meeting, the ECB Governing Council put an end to the favourable terms for the third series of targeted longer-term refinancing operations (TLTRO III) as from 23 June 2022.

The expected tightening of the ECB's monetary policy and the end of net asset purchases raised concerns among market participants about the sustainability of the government debt of some countries in the so-called euro area periphery, in particular that of Italy. This resulted in a widening of spreads between the yields of the periphery countries and Germany's government bond yields. This process required an ad hoc meeting of the Governing Council of the ECB to be held on 15 June, where it decided to apply flexibility in reinvesting redemptions coming due in the PEPP portfolio and announced that a new anti-fragmentation instrument will be developed.

At its meeting in July 2022, the ECB's Governing Council raised key interest rates by more than announced in June. Interest rates on main refinancing operations, marginal lending facility and deposit facility were raised by 50 basis points to 0.50 per cent, 0.75 per cent and 0.00 per cent. At the same time, the ECB's Governing Council introduced a new monetary policy instrument called the Transmission Protection Instrument (TPI).[9]

Over the second quarter of 2022, the average value of the €STR, the overnight euro area's money market rate, remained almost unchanged, coming to -0.58 per cent. The average value of this index rose to -0.51 per cent in July, after increasing by 50 basis points on 27 July following the entry into force of the decision to raise the ECB's deposit facility rate. Unsecured deposit rates in the interbank money market in the euro area (EURIBOR) increased between April and July 2022, more strongly in long-term maturity sectors. A key factor for the increase in EURIBOR was market participants' growing expectations for a more significant increase in

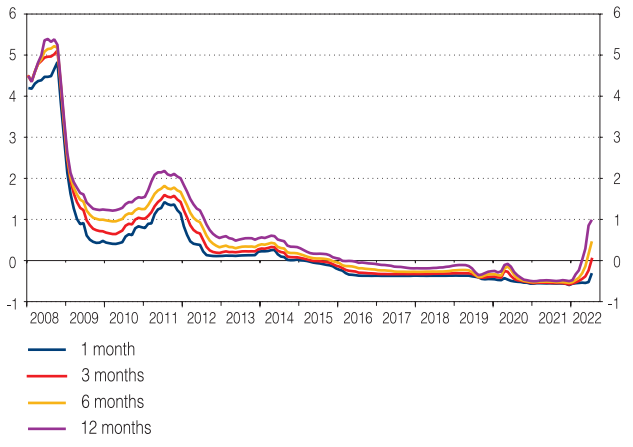
ECB Interest Rates, EONIA, €STR and Excess Liquidity in the Euro Area Banking System



Note: The EONIA/€STR time series is composed of: EONIA between 2008 and 14 March 2017; pre-€STR between 15 March 2017 and 30 September 2019; €STR in the period after 30 September 2019.

Source: the ECB.

EURIBOR



Source: the ECB.

[9] For more information on TPI, see https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220721~973e6e7273.en.html.

the ECB key interest rates in the second half of 2022.

In the second quarter of 2022, German sovereign bond yields rose significantly. Compared to the end of March 2022, two-year bond yields grew by 72 basis points to 0.65 per cent, with ten-year yields rising by 79 basis points to 1.34 per cent. A key factor behind the price decrease in German government securities was the publication of euro area HICP data over the quarter, which reinforced market participants' expectations of a tightening of the ECB's monetary policy. Higher yields on US government bonds over the period was another factor behind the depreciation of German government securities. In late June and in July, German government bond yields followed a downward trend, as concerns among market participants about a forthcoming economic recession in the United States and the euro area increased.

1.2. Impact on the Bulgarian Economy

The downward trend in global economic indicators and expectations of a quarter-on-quarter decline in global economic activity in the second quarter of 2022[10], as well as the slowdown in real GDP growth on a quarterly basis as reported in the second quarter in Bulgaria's major trading partners in the euro area, imply weakening of the external demand for Bulgarian goods and services on a quarterly basis over the review period. The deteriorating economic outlook for euro area countries in the third quarter of 2022, including with regard to the availability of natural gas supplies[11], contributed to the increased uncertainty among economic agents and will likely accelerate the decline in external demand for Bulgarian goods and services over that period. Given the high degree of openness in the Bulgarian economy and the high share of exports in GDP, a significant pass-through of the external demand decline to Bulgaria's real economic activity may be expected.

Commodity price developments in international markets in the second quarter of 2022 continued to be driven by a number of factors, including

[10] For details, see: IMF World Economic Outlook Update July 2022.

[11] For details, see: The Federal Network Agency and EC Press release of 20 July 2022.

the war in Ukraine and persistent bottlenecks in supply chains amid weakening but still strong global demand with prices of energy raw materials and food rising significantly on an annual basis. The high share of foreign value added in firms' final output and final household consumption expenditure in Bulgaria, coupled with high energy-intensive economy, implies that import price increases can be passed through relatively quickly to domestic producer and consumer prices. The structure of Bulgaria's economy and foreign trade, as well as the price developments in commodity groups in international markets point to continued favourable trade terms for Bulgaria in the second quarter of 2022.[12]

The tightening of the Federal Reserve's monetary policy, the increase in key interest rates and the end of net asset purchases by the ECB as well as signals of a subsequent further tightening of the monetary policy in view of the rising inflation in the euro area may result in deterioration in financing conditions for the Bulgarian government and private sector. According to the currency board principles, the upward trend in interbank money market rates in the euro area may be expected to be quickly transmitted to the interest rates in Bulgaria resulting in an increase in deposit rates.

[12] Favourable terms of trade refer to a stronger annual increase in the deflator of exports of goods than that of imports of goods.

2. External Financial Flows

2.1. Balance of Payments and Foreign Trade

Between January and May 2022, according to Bulgaria's balance of payments data gross international reserves fell by EUR 2.4 billion over the review period. Banks that increased their foreign assets in foreign currency and deposits contributed most to this decline. In May 2022, the international reserve coverage of the nominal imports of goods and non-factor services remained high at 8.0 months (9.8 months in December 2021). The excess of Bulgaria's international reserves[13] to short-term external debt remained also high, reaching 4.4 times in May 2022 (5.0 times in December 2021).

Current Account and Capital Account

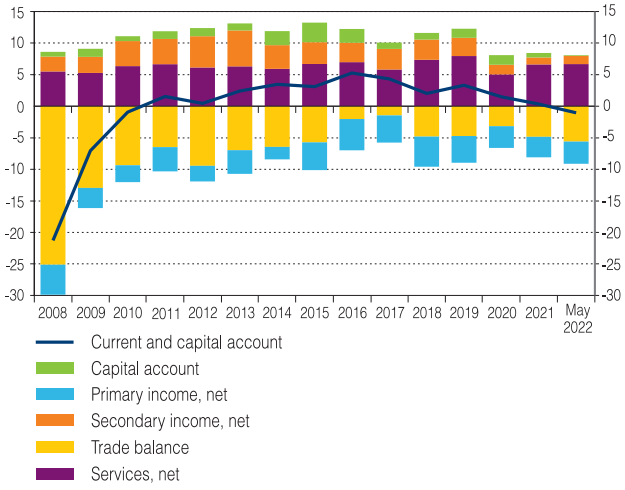
Between January and May 2022 current and capital account accumulated a negative balance of EUR -578.5 million (1.0 per cent of GDP) compared to a positive balance of EUR 379.4 million (0.6 per cent of GDP) for the same period of 2021. The expansion of the trade balance deficit and formation of a low capital account deficit contributed essentially to changing from a positive to a negative balance. Trade balance was driven by a larger increase in imports than in exports of goods, while the capital account reflected an increase in the funds paid for purchase of greenhouse gas emission allowances and a decline in capital transfers received by the general government sector in the form of investment subsidies.

Trade Balance and Foreign Trade in Goods

In the first five months of 2022, trade balance deficit expanded from the corresponding period of 2021. This reflected largely the stronger year-on-year growth in real imports of goods (12.7 per cent) compared to that in exports (5.8 per cent)[14] in the first quarter of 2022. Concurrently, favourable terms of trade for Bulgaria

Current and Capital Account Flow Dynamics and Contribution by Components

(per cent of GDP)



Note: May 2022 data on the balance of payments current and capital account flows are accumulated for the last 12 months. Nominal GDP data for the last four quarters, including the first quarter of 2022, are used in calculating direct investment liabilities to GDP ratio for May 2022.

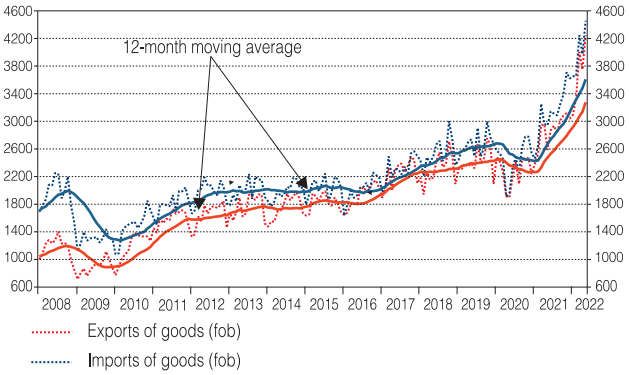
Sources: the BNB, the NSI, BNB calculations.

[13] The analysis is based on gross international reserves on the BNB Issue Department balance sheet. The market value of international reserves includes changes stemming from transactions, valuation adjustments and price revaluation.

[14] Non-seasonally adjusted national account GDP data.

Nominal Exports and Imports of Goods Dynamics

(EUR million)



Note: According to Balance of Payments Statistics.

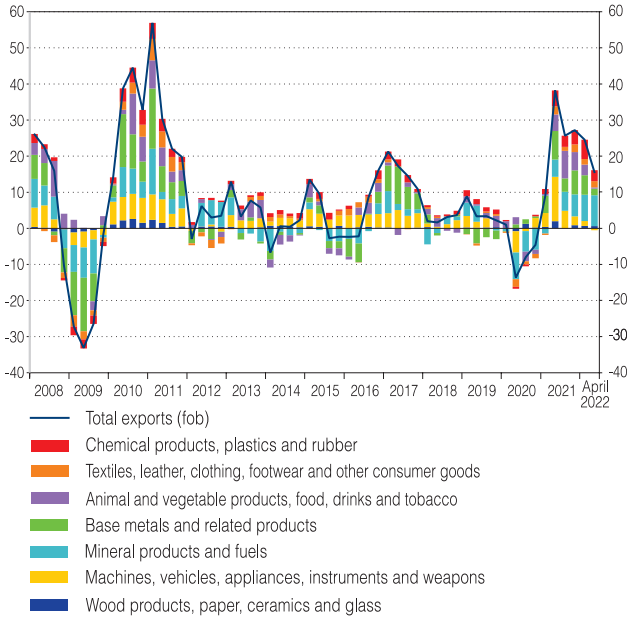
Source: the BNB.

partially limited the increase in the trade deficit. The upward dynamics in imports was influenced by a substantial rise in final household consumption, which is characterised by a relatively strong import component. Real growth in exports in the first quarter of the year was due to both the overall increase in external demand, still reflecting to a lower extent the adverse effects of the military conflict in Ukraine, and the favourable commodity composition of exported products[15].

By commodity group, foreign trade data show that exports recorded a nominal growth on an annual basis in all commodity groups in the first four months of 2022, with mineral products and fuels[16], followed by food[17] making the major positive contribution over the period. According to BNB calculations, both real volumes and price components contributed positively to the dynamics of mineral products and fuels[18] and food[19].

Exports by Commodity Group under the Combined Nomenclature, Contribution to the Overall Rate of Change by Sub-components

(per cent of GDP)

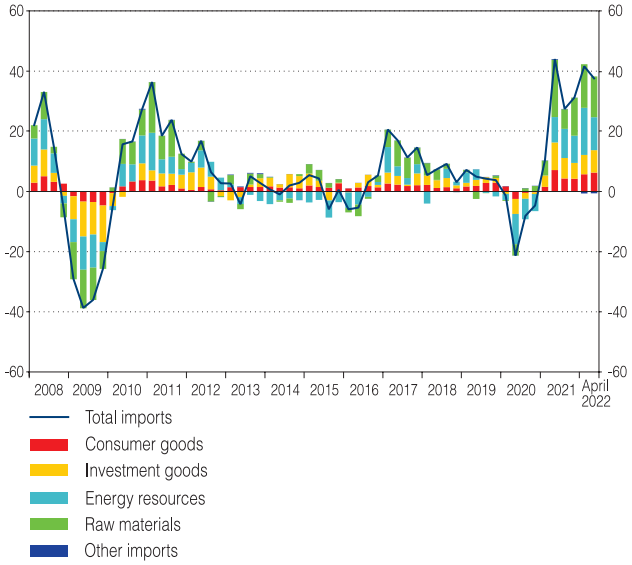


Note: Data on foreign trade flows for April 2022 have been compared with the respective data for April 2021.

Source: the BNB.

Imports of Commodity Groups by Use, Contribution to the Overall Rate of Change by Sub-components

(per cent, percentage points)



Note: Data on foreign trade flows for April 2022 have been compared with the respective data for April 2021.

Source: the BNB.

[15] A favourable commodity composition refers to the high share in total Bulgarian exports of goods whose global demand is growing at higher rates than those of total global trade over the review period.

[16] In this Chapter, it should read the mineral products and fuels group under the Combined Nomenclature.

[17] In this chapter, it should read the animal and vegetable products, food, drinks and tobacco group under the Combined Nomenclature.

[18] Real volumes of exports of the mineral products and fuels group have been constructed by using NSI data on export prices of the mineral fuels, oils and related products group under the Standard International Trade Classification (SITC) and Eurostat data on nominal values of exports of this commodity group under the SITC available by March 2022.

[19] Real volumes of exports of the animal and vegetable products, food, drinks and tobacco group have been constructed, including the commodity groups under the SITC of food and live animals, soft and alcohol beverages, and tobacco, and animal and vegetable fats, oils and waxes. The analysis employs NSI data on export prices of the relevant commodity groups and Eurostat data on nominal values of exports of the relevant commodity groups under SITC, available by March 2022.

Both commodity groups reported higher increase in the price component than in real volumes. This is likely to be significantly influenced by year-on-year price rises in these commodities in international markets.

Between January and April 2022, nominal imports of goods registered a significant growth on an annual basis. By use[20], the groups of energy resources and raw materials were the key contributors to this dynamics. According to BNB calculations, the upward dynamics in the imports of raw materials groups was ascribable to a combination of higher real volumes and prices[21]. Nominal growth in energy resources was mainly driven by higher import prices, while real volumes declined slightly on an annual basis[22].

Balance on Trade in Services

In the first five months of 2022, the surplus in services trade rose on the corresponding period of 2021, with services exports increasing year on year in nominal terms by 19.4 per cent and imports by 22.1 per cent. According to non-seasonally adjusted national account data for the first quarter of the year this reflects mainly the favourable terms of trade, while in real terms the imports of services grew at a faster pace than that of exports.

By service type, from January to May 2022 exports annual growth in nominal terms was primarily driven by the increase in revenue from travel. NSI data for the first five months of 2022 indicate that the number of foreign nationals' visits to Bulgaria rose by 106.7 per cent on an annual basis. June 2022 data point to a further increase in the number of visits to the country,

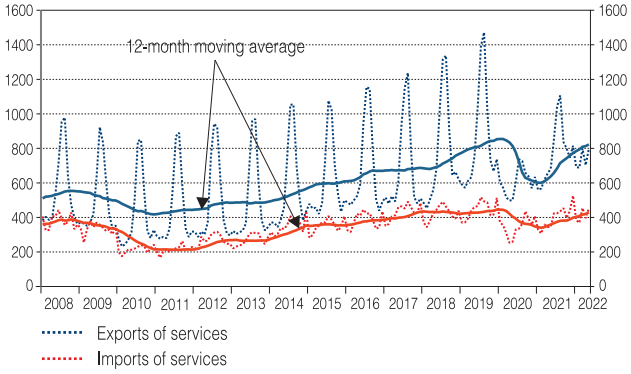
[20] Foreign trade data published by the BNB.

[21] Real volumes of imports of raw materials have been constructed based on commodity groups data under the SITC of products and manufactured goods classified chiefly by materials, inedible (crude) materials (excluding fuels), chemicals and chemical products. Real volumes of imports of energy resources group have been constructed based on mineral fuels, oils and related products group under the SITC. The estimates employ NSI data on import prices of the relevant commodity groups and Eurostat data on nominal values of imports of the relevant commodity groups under the SITC, available by March 2022.

[22] Real volumes of imports of energy resources group have been constructed by using NSI data on import prices of mineral fuels, oils and related products group under the SITC and Eurostat data on nominal values of imports of this commodity group under the SITC available by March 2022.

Exports and Imports of Services Dynamics

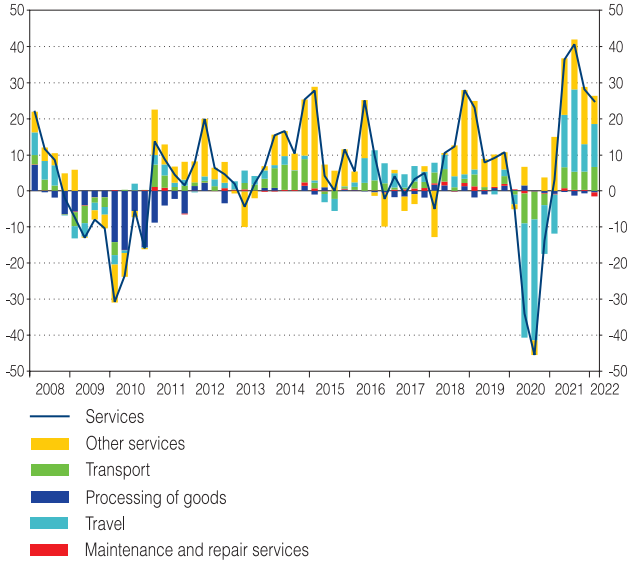
(EUR million)



Source: the BNB.

Annual Change of Exports of Services and Contribution by Sub-components

(per cent, percentage points)



Trade flow data used in the chart are quarterly and the last observation refers to the first quarter of 2022.

Source: the BNB.

however slowing significantly from previous months.

Expenditure of Bulgarian nationals on travel abroad, followed by transport services were the main contributors to the growth of services imports on an annual basis from January to May 2022.

Net Primary Income Account and Net Secondary Income Account

The deficit under the net primary income item increased year on year from January to May 2022[23], mainly as a result of lower inflows on an annual basis on other primary income. The deficit increase was partially limited by the annual decline, registered in outflows on investment income despite the significant distribution of dividends by foreign banks following the removal of some of BNB's macroprudential measures.[24]

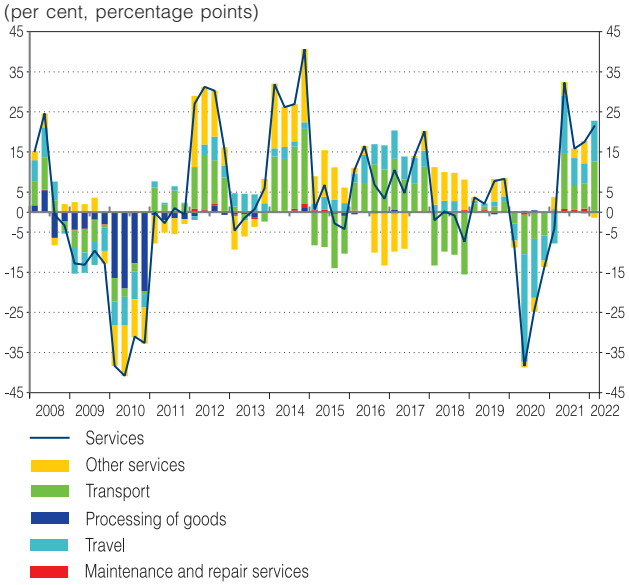
In the first five months of 2022, net secondary income surplus rose on the same period of 2021. This reflected mainly the lower outflows of non-life insurance claims of other sectors[25].

Financial Account and International Investment Position (IIP)

In the first five months of 2022, Bulgaria was a net creditor to the rest of the world, with the financial account recording a positive balance to the amount of EUR 2523.2 million. The increase in banks' foreign assets over the period contributed most[26]. Cumulatively over the last 12 months as of May 2022, the financial account balance remained negative at EUR -2569.8 million or 3.6 per cent of GDP (against a negative balance of 0.4 per cent of GDP as at the end of 2021), largely driven by lower foreign assets of banks, which recorded a significant fall in June, September and December 2021. The declines registered in these three months of 2021 are higher than the increase in foreign assets observed in the first five months of 2022.

Annual Change of Imports of Services and Contribution by Sub-components

(per cent, percentage points)

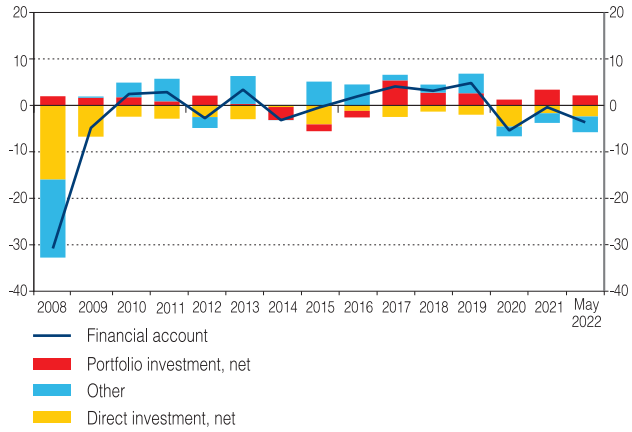


Trade flow data used in the chart are quarterly and the last observation refers to the first quarter of 2022.

Source: the BNB.

Financial Account Flow Dynamics and Contribution by Components

(per cent of GDP)



Notes: The Other item includes Other Investments, Net, and Financial Derivatives (Other than Reserves) and Employee Stock Options, Net. May 2022 data on financial account flows are accumulated for the last 12 months. Nominal GDP data for the last four quarters, including the first quarter of 2022, are used in calculating the GDP ratio for May 2022.

Sources: the BNB, the NSI, BNB calculations.

[23] Preliminary data subject to revision; revisions usually show an increase in outflows to non-residents.

[24] The BNB's macroprudential measures related to the restrictions on profit distribution in the banking sector remained in force until 24 February 2022. After the restrictions were lifted some foreign banks in Bulgaria announced dividend distributions.

[25] Preliminary data subject to revision.

[26] The measure limiting foreign exposures of banks, which was introduced in March 2020, was suspended on 1 April 2022.

Between January and May 2022, the inflow of attracted direct investment rose substantially year on year to EUR 1572.5 million (EUR 686 million in January–May 2021)[27], and total direct foreign investment stood at 72.4 per cent of GDP at the end of the first quarter of the year. The inflows of funds on debt instruments and equity in other sectors contributed most to the annual growth registered in the first five years of 2022.[28] Concurrently, the growth was partially limited by a decrease in reinvested profit in the country, mostly in the banking sector, which results to a larger extent from the removal of BNB's macroprudential measures related to restrictions on banks' profit distribution.

As a result of balance of payments developments and changes due to valuation adjustments and price revaluations, as of the end of the first quarter of 2022 the negative value of the international investment position declined slightly from the end of 2021 to -18.6 per cent of GDP (-19.8 per cent of GDP at the end 2021). These developments were largely due to nominal GDP growth, but also to the decline in non-residents' long-term debt securities and to other sectors' debt liabilities to non-residents.

2.2. BNB International Reserves

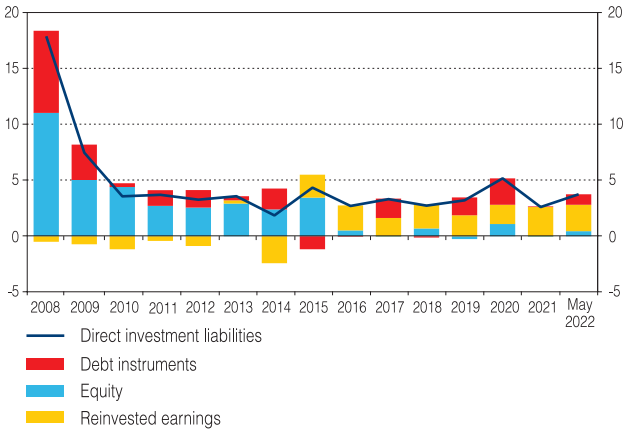
By the end of June 2022, the market value of Bulgaria's international reserves (including valuation adjustments and price revaluations) was EUR 33.5 billion (BGN 65.5 billion), decreasing by EUR 1.1 billion (BGN 2.2 billion) from the end of 2021. The amount of gross international reserves reflects the dynamics of financial flows generated in the process of external and internal economic factors interaction and corresponds to the BNB Issue Department balance sheet liabilities, according to the currency board principles. The decrease in Issue Department liabilities in the first six months of 2022 was largely driven by a reduction of liabilities of BGN 2.1 billion to banks, entirely due to a decline in bank excess reserves (see Chapter 3, Monetary and Credit Aggregates).

[27] Preliminary data subject to revision.

[28] It should read sectors other than general government, banks and the central bank.

Direct Investment Liabilities by Type of Investment

(per cent of GDP)

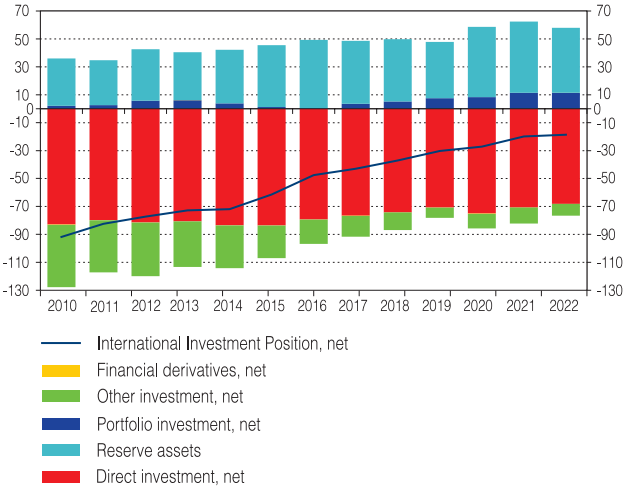


Notes: May 2022 data on direct investment liabilities flows are accumulated for the last 12 months. Nominal GDP data for the last four quarters, including the first quarter of 2022, are used in calculating the GDP ratio for May 2022.

Sources: the BNB, the NSI, BNB calculations.

Bulgaria's International Investment Position

(per cent of GDP)



Sources: the BNB, the NSI, BNB calculations.

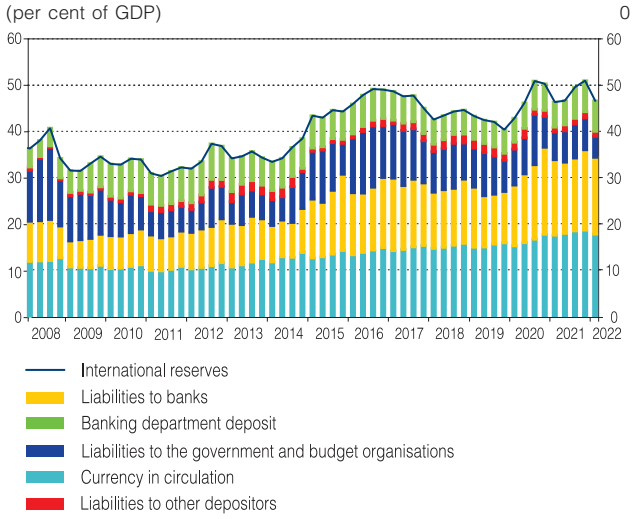
In March 2022, the BNB international reserves picked up by EUR 4.3 billion on an annual basis, accounting for 46.6 per cent of GDP (46.3 per cent of GDP at the end of March 2021). The growth in Issue Department's liabilities on an annual basis largely reflects the increase in banknotes and coins in circulation, higher liabilities to banks and the increase in Banking Department deposit mainly as a result of the additional SDR allocated to Bulgaria in August 2021 as part of total SDR allocated to IMF member. At the same time, liabilities to the government and budget organisations decreased as a percentage of GDP, mainly attributable to the repayment in March of Eurbond issue on international capital markets in the amount of EUR 1.25 billion.

2.3. External Debt

In May 2022, Bulgaria's gross external debt amounted to EUR 41.3 billion (58.3 per cent of GDP), a fall of EUR 648.1 million compared to December 2021 (61.8 per cent of GDP). The decline in gross external debt from end-2021 mainly reflected the reduction in the liabilities of general government sector. It was partially offset by the increase in banks' short-term liabilities in the form of currency and deposits, and in intercompany lending in connection with direct investment in Bulgaria. In May 2022 the share of long-term debt in Bulgaria's total gross external debt declined from end-2021 to 82.3 per cent (83.6 per cent in December 2021).

Liabilities Structure of the BNB Issue Department Balance Sheet

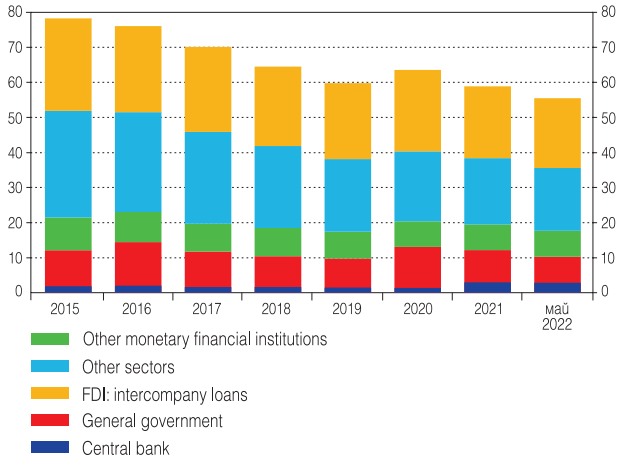
(per cent of GDP)



Sources: the BNB, the NSI, BNB calculations.

Gross External Debt

(per cent of GDP)



Note: Nominal GDP for the last four quarters, including the first quarter of 2022, is used in calculating the gross external debt to GDP ratio for May 2022.

Sources: the BNB, the NSI, BNB calculations.

3. Money and Credit

3.1. Monetary and Credit Aggregates

Deposits of the Non-government Sector

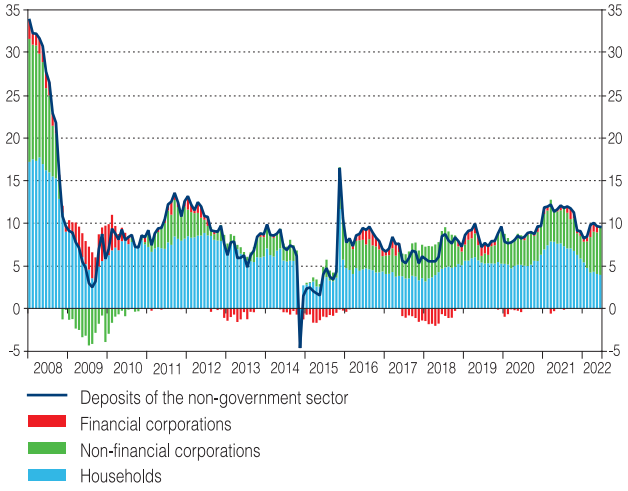
In the first half of 2022 annual growth of the non-government sector's deposits[29] in the banking system tended to accelerate slightly: to 9.6 per cent at the end of June 2022 (9.1 per cent in December 2021). This dynamics was entirely driven by acceleration of annual growth in non-financial corporations' deposits, reaching 18.6 per cent in mid-year (8.5 per cent at the end of 2021).

The acceleration in corporate deposit growth was driven by an increase in the nominal gross operating surplus in the industry sector, most likely reflecting an increase in the profits of corporations producing and distributing energy products[30], the prices of which have risen significantly since the outbreak of the war in Ukraine. In addition, the increased uncertainty in the economic environment was a factor behind weakening investment activity of corporations (see Behaviour of Firms in Chapter 4), which stimulated maintenance of their free funds in the form of deposits.

In the household sector, the downward trend in the growth rate of deposits observed since the beginning of the second quarter of 2021 was sustained (to 6.0 per cent in June 2022 compared to 9.0 per cent in December 2021).

Annual Growth of Non-government Sector's Deposits and Contribution by Sector

(per cent, percentage points)



Note: The annual growth rate of non-government sector's deposits in November 2015 reflects the exhausted base effect of KTB removal as a reporting unit from the monetary statistics in November 2014.

Source: the BNB.

[29] Non-government sector's deposits include deposits of households, non-financial corporations and financial corporations. Deposits of households and non-financial corporations (96.2 per cent on average for the last 12 months as of June 2022) comprise the major share of all non-government sector's deposits, and the analysis therefore is focused on these two sectors.

[30] In the fourth quarter of 2021 and the first quarter of 2022 the nominal gross operating surplus increased significantly in manufacturing (excluding construction) to 185.5 per cent on an annual basis in March 2022, possibly reflecting the strong electricity price rises and nominal turnover growth of firms in the Production and distribution of electricity, heat and gas and energy products sub-sectors. The Production and distribution of electricity, heating, and gaseous fuels contributed most strongly to annual growth of non-financial corporation deposits in March 2022.

Strongly negative real deposit rates and the fees still applied by banks for cash availability above a certain amount[31] by end-June 2022 are likely to continue encouraging households to redirect their savings from deposits to alternative opportunities for investment or store of value.

In the first six months of the year overnight deposits remained the main contributor to the growth of the M3 broad money aggregate. This dynamics continued to reflect close-to-zero rates and in the non-financial corporations sector negative nominal deposit rates, which continued to encourage households and firms to keep their free funds in overnight deposits. Over the same period non-MFI money had a much weaker impact on M3 growth, while the contribution of deposits with an agreed maturity of up to two years continued to be negative. In the first six months of 2022 corporations and households continued to save mostly in national currency. Concurrently, from the end of the first quarter of the year the non-financial corporations sector reported also a stronger increase of savings in foreign currency mainly in the form of overnight deposits.[32]

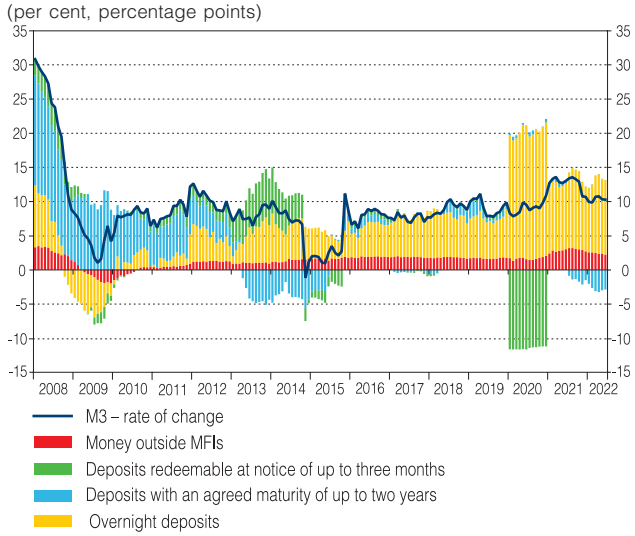
Reserve Money

At the end of the second quarter of 2022 reserve money grew by 11.4 per cent on an annual basis (9.1 per cent in December 2021). Money in circulation and, to a lesser extent, bank reserves contributed more to the reserve money growth in June.

Between April and June 2022 banks' deposits with the BNB posted a stronger decline reflecting entirely lower excess reserves of banks. This dynamics was influenced by the removal of some of the macroprudential measures introduced by the BNB in March 2020 to limit banks' foreign exposures and to limit the sector's profit distribution for 2019 and 2020.[33] In addition, the negative interest rate on banks' excess

Annual Rate of Change in M3 and Contribution by Components

(per cent, percentage points)

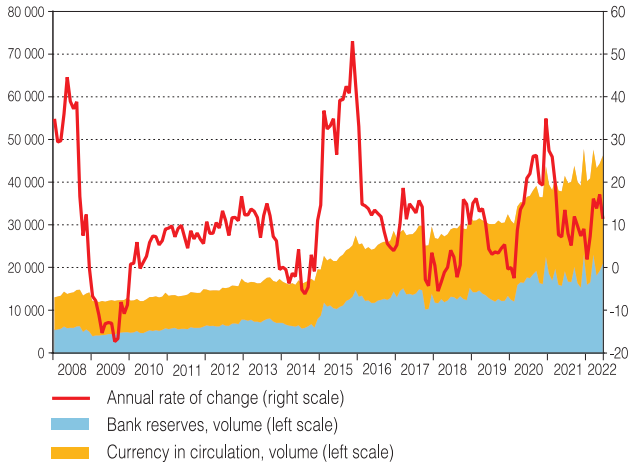


Notes: In view of the analysis of the banking products and in line with the methodological requirements, transferable savings deposits have been reclassified from the Deposits redeemable at notice of up to three months indicator to the Overnight deposits of the household sector indicator with the January 2020 data.

Source: the BNB.

Reserve Money

(BGN million) (per cent)



Source: the BNB.

[31] As of 1 August 2022 some of the major commercial banks in Bulgaria have removed the fee for cash availability above a certain amount.

[32] This dynamics is likely to reflect the fact that a portion of the nominal gross operating surplus of the energy sector firms has been kept in currencies other than levs.

[33] For further details, see the BNB press release of 24 February 2022.

reserves[34] retained until end-June is likely to further stimulate banks to look for higher earning opportunities to invest the free liquid funds in the banking system. In June 2022 excess funds over the required minimum of reserve assets under Ordinance No 21 was 26.8 per cent of minimum required reserves on an average daily basis, from 52.2 per cent in December 2021.[35] In the first six months of 2022 minimum required reserves continued growing under the influence of the rising deposit base. As of June the effective implicit rate of minimum required reserves[36] remained broadly unchanged at 9.37 per cent compared with December 2021. Commercial banks' deposits with the BNB comprised 8.21 percentage points in minimum reserve requirements and the remaining 1.16 percentage points were in the form of recognised cash balances.

In the first half of 2022 annual growth of currency in circulation which started to slow down in the third quarter of 2021, continued and reached 13.2 per cent in June 2022 (16.3 per cent in December 2021). This dynamics continued to reflect mainly the effect of the high base of last year's same period, while the acceleration in consumer price inflation resulted in progressively rising demand for money in circulation for transaction purposes.

Reserve currency (euro) trading with the BNB is the main lev liquidity management instrument of banks under the currency board arrangement. In the first six months of 2022 BNB sales (net) to banks amounted to EUR 2.0 billion. Concurrently, as of June 2022 BNB purchases amounted to EUR 1.1 billion for the last 12 months.

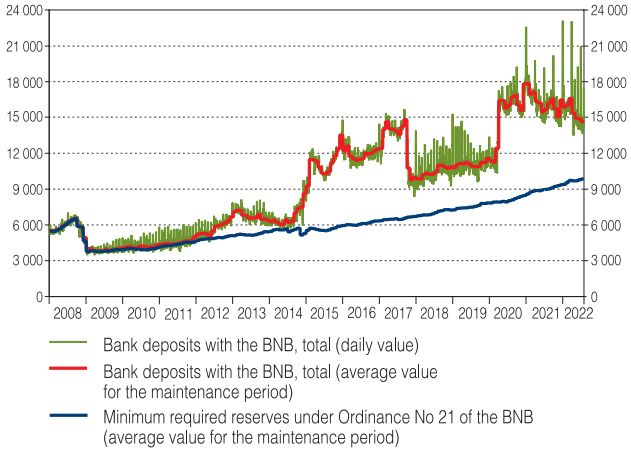
[34] By a decision of the Governing Council of the ECB, effective from 27 July 2022, the interest rate on the ECB deposit facility was increased to 0.00 per cent (previous value: -0.50 per cent). As a result, the interest rate on banks' excess reserves with the BNB was 0.00 per cent (previous value: -0.70 per cent).

[35] The amendments to Ordinance No 21 of the BNB on the Minimum Required Reserves Maintained with the Bulgarian National Bank, effective from 4 June 2021 changed the definition of banks' excess reserves. According to the new definition, excess reserves shall be the excess of the holdings in reserve assets over the required amount of minimum reserves.

[36] Under Article 3 of BNB Ordinance No 21, the rate of minimum required reserves for the funds attracted from residents is 10 per cent of the reserve base, from non-residents 5 per cent and from the state and local government budgets 0 per cent.

Bank Deposits with the BNB

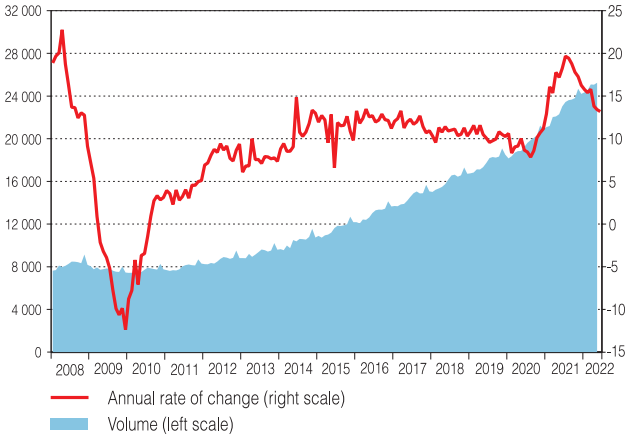
(BGN million)



Source: the BNB.

Currency in Circulation

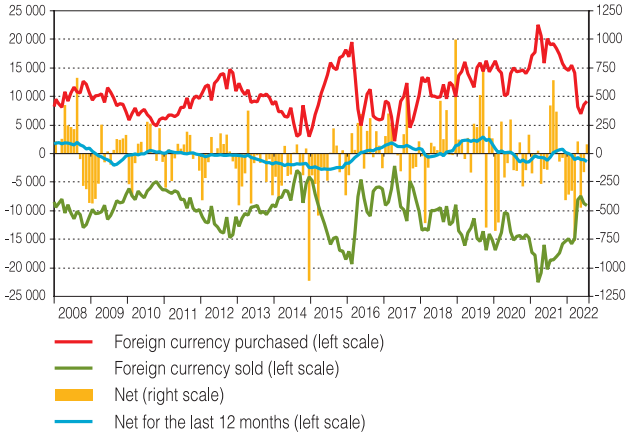
(BGN million) (per cent)



Source: the BNB.

Foreign Currency Purchases and Sales between the BNB and Banks (on a Monthly Basis)

(EUR million) (EUR million)



Note: Net means currency purchased minus currency sold by the BNB. Data refer to all bank transactions in foreign currency including liquidity management operations related to the transfer of own funds from lev accounts with the BNB to own accounts with the BNB in euro and *vice versa*.

Source: the BNB.

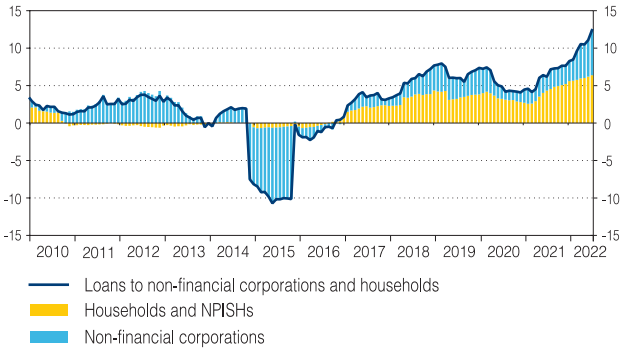
Credit to the Non-government Sector

In the first half of 2022 annual growth of credit to non-financial corporations and households[37] continued to accelerate, reaching 12.4 per cent in June (8.3 per cent at the end of 2021). Growth accelerated in both the households and non-financial corporations sectors, with a stronger acceleration recorded in corporate credit.

In the first six months of 2022 annual credit growth to non-financial corporations accelerated markedly from the end of the previous year to 10.6 per cent as of June (4.6 per cent as of December 2021). This dynamics was almost entirely driven by the growth in overdrafts, which accelerated to 22.8 per cent in the middle of the year (5.6 per cent in December 2021), while loans, excluding overdrafts, accelerated only marginally. Expectations of a further increase in the prices of commodities and raw materials coupled with the continuing bottlenecks in global supply chains are likely to stimulate demand for loans for working capital and inventories by companies. Historically low nominal lending rates, which are strongly negative in real terms in the context of accelerating inflation, are an additional factor behind the increased demand for corporate loans. Similarly, the sizeable increase in the price of electricity has created an incentive for corporations to use credit for financing the construction of independent power systems such as photovoltaic power plants, which is probably contributing to the growth in loans, excluding overdrafts. The volume of new corporate loans followed an upward trend since early year[38], with the share of new corporate loans in national currency posting a slight increase at the expense of those in euro. In June 2022 lev-denominated loans comprised 58.6 per cent of total new corporate loans, euro-

Annual Growth of Credit to Non-financial Corporations and Households and Contribution by Sector

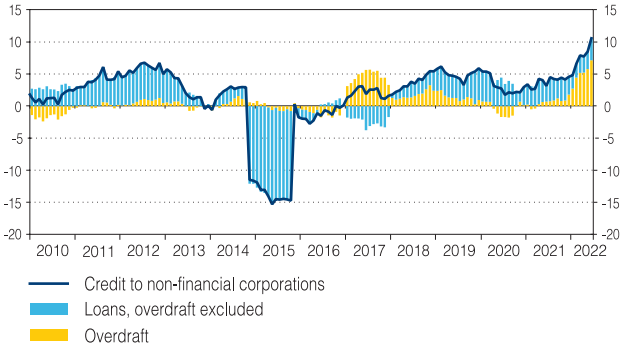
(per cent, percentage points)



Source: the BNB.

Annual Growth of Credit to Non-financial Corporations and Contribution by Loan Type

(per cent, percentage points)

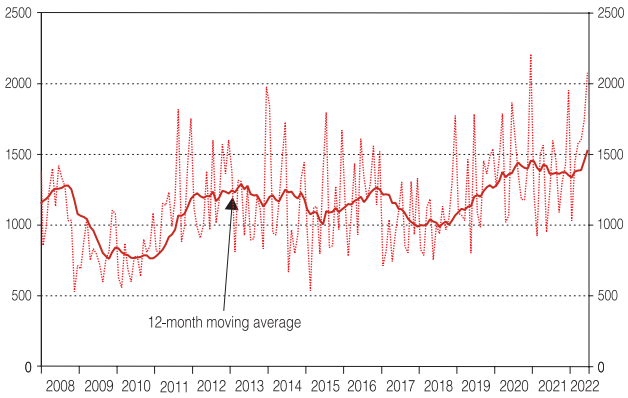


Note: The annual growth rate of loans to non-financial corporations in November 2015 reflects the exhausted base effect of KTB removal as a reporting unit from the monetary statistics in November 2014.

Source: the BNB.

New Loans to Non-financial Corporations (Monthly Volumes)

(BGN million)



Source: the BNB.

[37] Loans comprised the bulk of banks' claims on the non-government sector, with an average share of 97.1 per cent over the last 12 months by June 2022. Therefore, the analysis is focused on these loans. In addition to loans, claims include also repurchase agreements, securities other than shares, and shares and other equity instruments. Loans to the non-government sector, in turn, include loans to households, to non-financial corporations and to financial corporations. The share of loans to households and non-financial corporations in total loans to the non-government sector averaged 93.1 per cent over the last 12 months by June 2022, and therefore, developments in these two sectors are considered.

[38] Based on 12-month moving average.

denominated loans occupied 40.3 per cent and those in US dollars 1.1 per cent.[39]

In June 2022 the annual growth of credit to households accelerated to 14.7 per cent (13.4 per cent as of December 2021). This dynamics was mainly driven by the accelerating growth in housing loans: 18.2 per cent at the end of June (16.5 per cent in December 2021). Correspondingly, acceleration in consumer loans was 13.0 per cent at end-June 2022 (12.2 per cent in December 2021). An upward trend in volumes of newly[40] granted consumer and housing loans was observed over the first half year.[41] In addition to low interest rate levels, rising households' demand for loans was probably driven by expectations of further increases in consumer prices and negative real interest rates on deposits. These factors create prerequisites for higher demand for financial resources by households for purchasing real estate and durable goods as a store of value.

Bank Lending Survey

On the supply side, summarised weighted results of the BNB bank lending survey[42] for the first quarter of 2022 suggest tightening of bank standards[43] in extending corporate and housing loans, as compared to the last quarter of 2021, and slight easing in consumer loans. Banks reported the strongest tightening of credit conditions[44] for firms in terms of the premium for riskier loans. As regards household loans, banks tightened their conditions for fees and commissions accrued and collateral requirements. Tightened lending policy (credit standards and conditions) was mainly driven by the increased risk

[39] The share of loans in national currency, euro and US dollars for the last 12 months as of June 2022.

[40] The terms 'new' and 'newly extended' are hereinafter referred to as the statistical category 'new business'.

[41] Based on 12-month moving average.

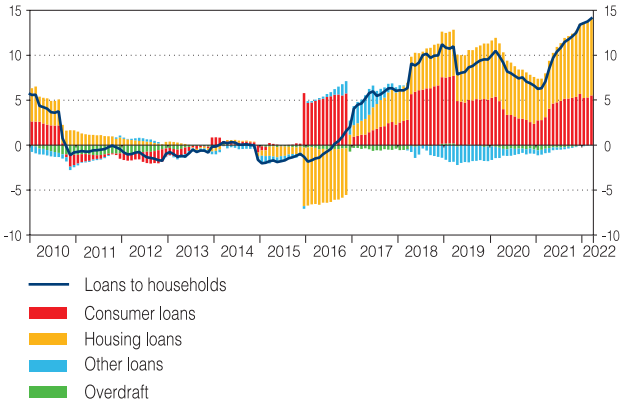
[42] Bank Lending Survey in Bulgaria is carried out by the BNB on a quarterly basis. Summarised results of the survey are presented through weighting bank responses by their market share in the relevant credit segment.

[43] Credit standards are understood as internal bank guidelines or criteria for loan approvals established prior to negotiating the terms of extended loans. Credit standards determine the type of the loan and collateral considered admissible by banks, taking into account specific priorities by sector, *etc*. Credit standards specify also all relevant conditions to be met by a borrower.

[44] Credit conditions typically involve the reference interest rate surcharge, the loan amount, conditions for its utilisation and other conditions, fees and commissions, collateral or guarantees to be provided by a borrower.

Annual Growth of Household Credit and Contribution by Loan Type

(per cent, percentage points)

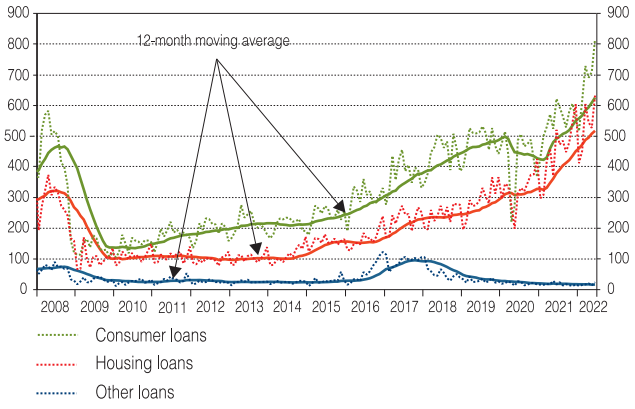


Note: Based on additional information received from reporting units, a revision of household loans was carried out according to their purpose of use in the period December 2015 – August 2019.

Source: the BNB.

New Loans to Households (Monthly Volumes)

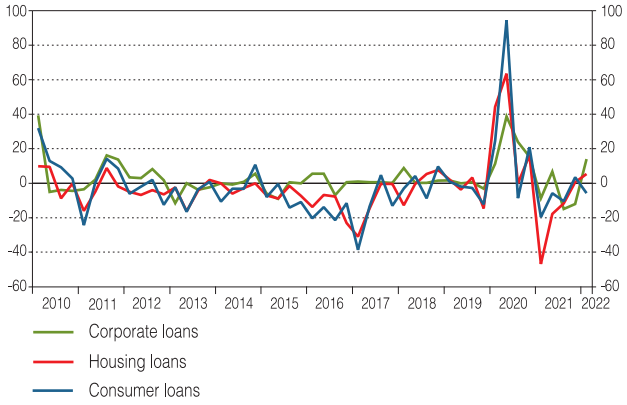
(BGN million)



Source: the BNB.

Changes in Credit Standards

(balance of opinions)



Source: the BNB.

assessment and banks' lower risk appetite. The decreased borrower solvency assessment, the overall macroeconomic environment along with the business climate in industrial sectors with a high share in credit portfolio and the higher collateral risk were essential for the risk assessment. Concurrently, high liquidity and competition in the banking sector, as well as significant volumes and low costs of attracted funds continued to exert a strong pressure for easing bank credit policies.

Over the first quarter of 2022 banks reported a continuing increase in demand for corporate and household loans, with consumer loans recording the most significant growth. The necessity of financial resources for working capital and accumulation of inventories was considered by banks to be the main factor behind stronger demand for corporate loans over the quarter. Factors behind the increased demand for consumer loans included low interest rates, demand for financial resources for purchasing durable goods and goods intended for current consumption and the desire of certain households to finance their consumer expenditure by loans secured by real estate. In addition to low interest rates, households' needs of funds for purchasing first home and especially additional residence, for refinancing, restructuring or renegotiating debts and housing market prospects contributed essentially to the higher demand for housing loans over the quarter.

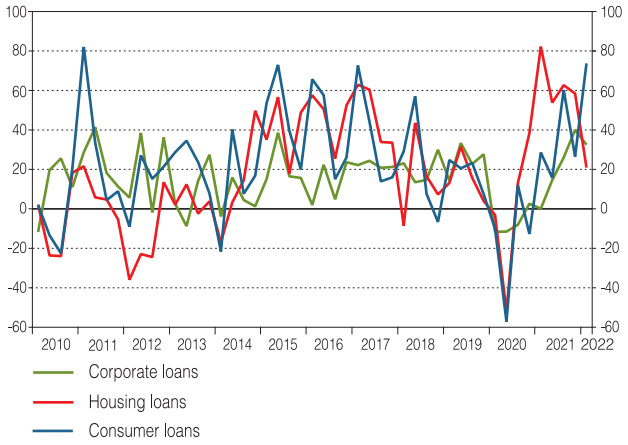
3.2. Interest Rates

Interbank Money Market Interest Rates

Since the beginning of the second quarter of 2022 trading volumes in the interbank lev money market exhibited an increase. Overnight unsecured lending transactions in levs concluded between April and June 2022 amounted to BGN 1334 million (against BGN 166 million for the first quarter of the year). There were no concluded transactions only in 13 days of the quarter. Trading volumes in the interbank money market were probably affected by the removal of the BNB measure to limit banks' foreign exposures from 1 April 2022 and correspondingly the decrease in banks' excess reserves in the second quarter of 2022. LEONIA Plus index accounted for -0.64 per

Changes in Credit Demand

(balance of opinions)

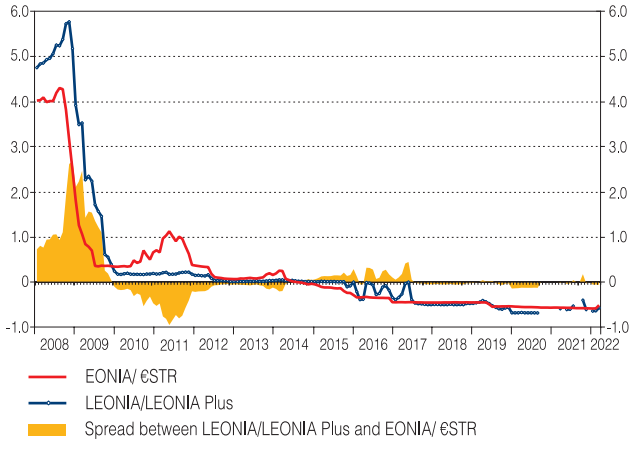


Notes: As regards credit standards, charts present banks' balance of opinions defined as a difference in percentage points between the percentage of banks responding 'tightened' ('considerably' and 'somewhat'), and the percentage of banks responding 'eased' ('considerably' and 'somewhat'). As regards credit demand, the balance of opinions is defined in percentage points as a difference between the percentage of banks responding 'increased' ('considerably' and 'somewhat') and the percentage of banks responding 'reduced' ('considerably' and 'somewhat'). All opinions are weighted by the bank's market share in the relevant credit segment. Data presented in the chart show the change from the previous quarter.

Source: the BNB.

Interbank Money Market Rates (Average Monthly Value) on Overnight Deposits

(per cent, percentage points)



Notes: The EONIA/€STR series is composed of: EONIA between 2008 and 14 March 2017; pre-€STR between 15 March 2017 and 30 September 2019; €STR in the period after 30 September 2019.

LEONIA Plus replaced LEONIA on 1 July 2017. LEONIA Plus monthly values are calculated as an arithmetic average for days when overnight unsecured lending transactions are concluded in the interbank market in levs.

Sources: the BNB, the ECB.

cent (-0.61 per cent in March 2022), and its spread with €STR was -5 basis points (-3 basis points in March 2022). The decision of the ECB Governing Council to raise reference rates by 50 basis points from 27 July 2022 led to a rise in interest rates on overnight unsecured lending transactions in levs concluded at the end of July. As a result, the LEONIA Plus monthly value in July rose to -0.57 per cent and its spread with €STR amounted to -6 basis points.

Interest Rates on Deposits

In the first half of 2022 the average weighted interest rate on new time deposits of non-financial corporations and households continued to slightly decrease to -0.13 per cent in June (0.02 per cent at the end of 2021). The downward dynamics continued to be driven by the ample liquidity and persistent comparatively high inflow of resources attracted from residents in the banking system. In the middle of the year the negative value of the average weighted interest rate on new time deposits of non-financial corporations went further down to -0.41 per cent (-0.19 per cent in December 2021), with negative interest rates recorded on both euro and lev deposits of corporations. Concurrently, the average weighted interest rate on new household deposits maintained its positive value during the half-year and recorded a slight increase compared to its level at the end of the previous year, reaching 0.12 per cent in June 2022 (0.09 per cent at the end of 2021).

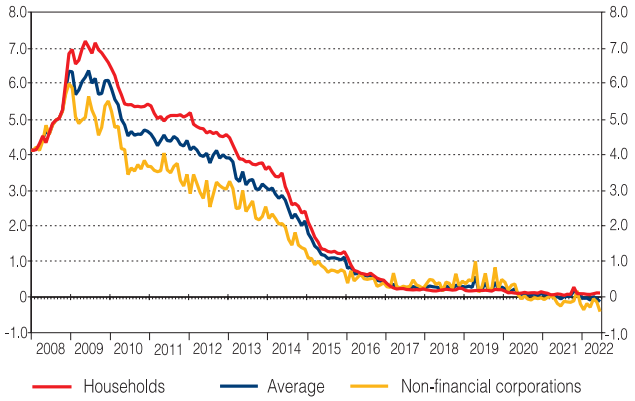
Interest Rates on Loans

Comparatively high volumes and still low cost of attracted resources, competition and high banking liquidity remained the factors responsible for the slight fall in interest rates on new loans to corporations and households in the first half of 2022.

The non-financial corporations sector posted a slight decline from the end of 2021 in loans both in levs and euro: by 9 basis points to 2.5 per cent and by 12 basis points to 2.3 per cent in June 2022 respectively. Simultaneously, interest rates on US-denominated loans rose slightly, probably reflecting the US Federal Reserve deci-

Interest Rates on New Time Deposits

(per cent)

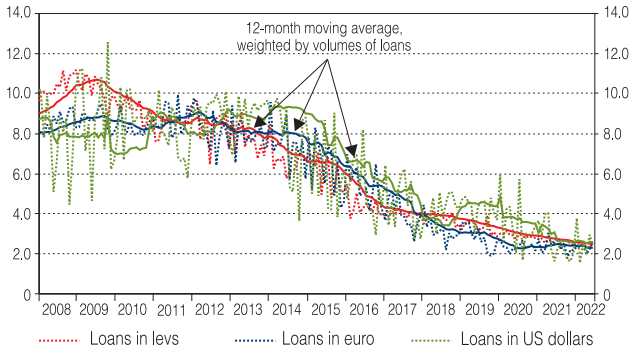


Notes: The average interest rate is calculated for all sectors, maturities and currencies weighted by the relevant volumes of new deposits. Average deposit rates for non-financial corporations and households are based on interest rates for all maturities and currencies weighted by relevant volumes of new deposits.

Source: the BNB.

Interest Rates on New Loans to Non-financial Corporations by Currency

(per cent)



Source: the BNB.

sions to increase the federal funds rate over the period (see Chapter 1).[45]

In the household sector, the gradual decrease in annual percentage rate of charge (APRC) on new housing loans was sustained (by 10 basis points from the end of 2021 to 2.9 per cent in June), with lower interest rates contributing most to this effect. The APRC on new consumer loans declined marginally from the end of the previous year to 8.5 per cent in June driven entirely by the implicit rate of non-interest service charges.

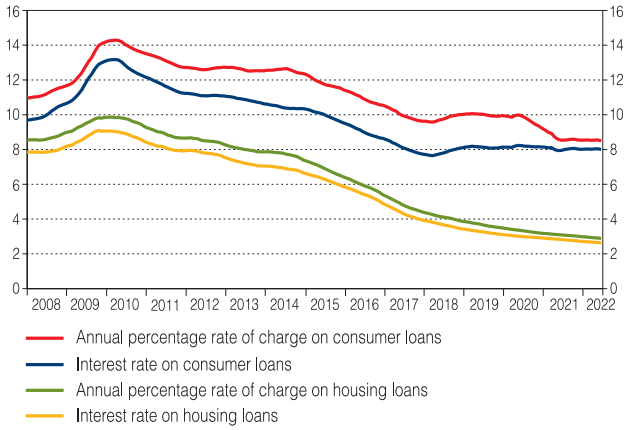
Government Securities Yields

By the end of the second quarter of 2022 yields on Bulgarian government securities issued and traded in international capital markets recorded a significant increase compared to the end of March 2022. Similar dynamics was also seen in the yields of German government bonds and other euro area countries, which was mainly shaped by market expectations of tightening the monetary policy by the ECB. The reference yield curve in Bulgaria showed that the increase was most pronounced in bonds in the maturity sectors from 6 to 10 years, where the yield rise in the second quarter exceeded 200 basis points. By the end of July the yield of Bulgaria's bonds fell somewhat, which was more clearly pronounced in the medium-term maturity sectors. This dynamics was mainly influenced by external factors, related to a certain decline in inflation expectations in the euro area, due to growing concerns among market participants about a forthcoming deterioration of the economic situation in the euro area and the US. By the end of July 2022 the yields between Bulgarian and German government bonds widened compared to the end of March 2022, with the widening being most pronounced for the bonds maturing in 2027 and 2028 (138 and 131 basis points, respectively). Internal factors such as Bulgaria's geographic proximity to the military conflict in Ukraine, Bulgaria's high reliance on energy imports from Russia and the political uncertainty in the country contributed probably to the widening of the spread.

[45] Indicated values of interest rates on loans to non-financial corporations and households are weighted averages on a 12-month basis.

Interest Rates and APRC on New Household Loans

(per cent)

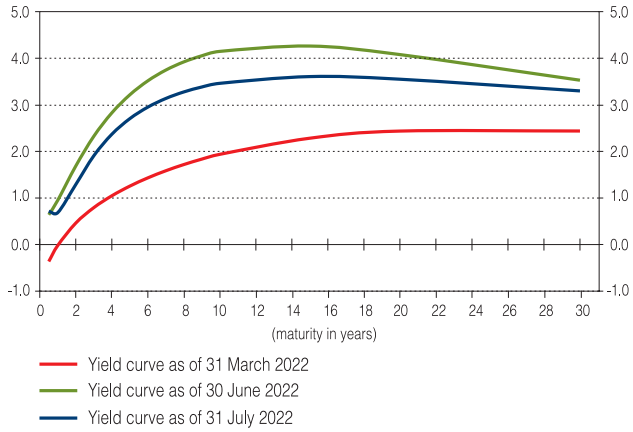


Notes: Interest rates in all maturities and currencies are weighted by the relevant volumes of new loans for a 12-month period. The difference between the APRC and the relevant interest rates reflects the approximate per cent of all non-interest service charges on loans (including fees and commissions).

Sources: the BNB, the ECB.

Bulgarian Government Bond Yield Curve

(per cent)

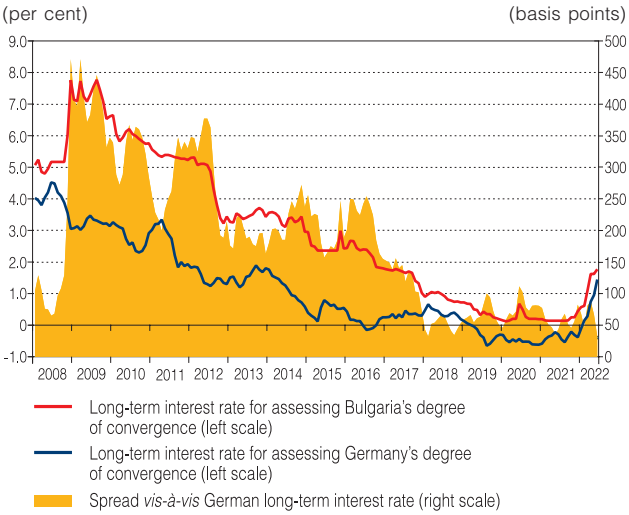


Notes: The reference yield curve of Bulgarian government securities is based on own calculations under the extended version of *Nelson–Siegel–Svensson* model (1994). The chart employs daily yield data on Bulgarian government securities issued and traded in international capital markets, published in the MF Central Government Debt and Guarantees Monthly Bulletin.

Sources: the MF, BNB calculations.

In line with the price dynamics of Bulgarian government securities traded in international markets, the upward trend in the long-term interest rate for assessing Bulgaria's degree of convergence, which started in the last quarter of 2021, intensified in the first half of 2022. In June the long-term interest rate reached 1.77 per cent (1.09 per cent in March 2022). In the second quarter on average, the spread *vis-à-vis* German long-term interest rate decreased by 3 basis points compared with the first quarter of 2022.

Long-term Interest Rate for Assessing Bulgaria's Degree of Convergence and Spread *vis-à-vis* German Long-term Interest Rate



Sources: the BNB, the ECB.

4. Economic Activity

4.1. Current Economic Environment

Gross Domestic Product

Over the first quarter of 2022 real GDP, seasonally adjusted by the NSI, slowed to 0.8 per cent on a quarterly basis (1.3 per cent in the fourth quarter of 2021), which could partially reflect the initial negative effects of the war in Ukraine. Economic activity growth reached 5.0 per cent on an annual basis according to non-seasonally adjusted data. By final consumption expenditure component, the year-on-year increase in real GDP in the January–March 2022 period was attributable to the strong rise of inventories in the economy and final consumption, while investment in fixed capital and net exports contributed negatively to GDP dynamics.

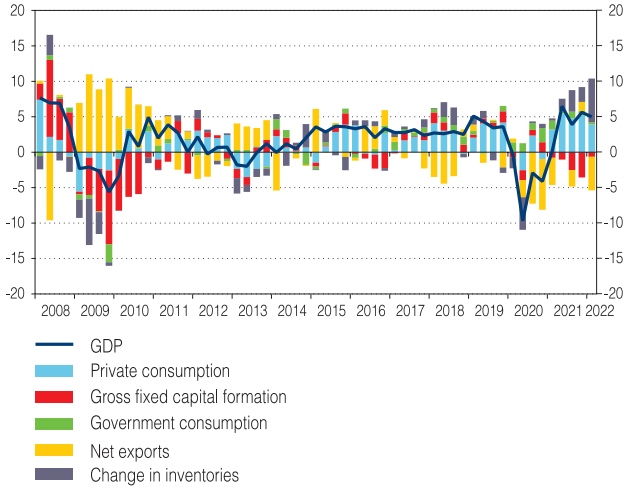
The nominal value of changes in inventories over the first quarter of 2022 amounted to 7.7 per cent of nominal GDP for the quarter, which is the historically highest level of the indicator. This can be explained by targeted accumulation of raw materials and goods due to expectations of a further increase in their prices amid continuing bottlenecks in global supply chains and work in progress (*e.g.* in construction and/or processing industry)[46].

Real household consumption rose by 6.4 per cent on an annual basis over the first three months of 2022 in the context of a strong growth in nominal labour income, exceeding consumer price growth. Other factors that boost private consumption were higher net fiscal transfers to households, lower savings rate[47], and increased employment and credit activity.

Government consumption growth slowed down on an annual basis in real terms, contribut-

Contribution to GDP Growth by Final Use Component in Real Terms (Quarterly Data)

(per cent; percentage points; on an annual basis; non-seasonally adjusted data)



Sources: the NSI, BNB calculations.

[46] The high amount of inventories could reflect in part the preliminary nature of information used for compiling GDP by final use method, which may in the future result in a revision of their amount.

[47] NSI household budget survey data, seasonally adjusted by the BNB, are used.

ing slightly to the change in real GDP over the review period. Concurrently, the rise in the deflator had a more substantial contribution to government consumption growth in nominal terms on an annual basis. Lower receipts from market output[48] contributed most to the increase in nominal terms, while employee compensation costs remained broadly unchanged and the other components of government consumption had a low negative contribution to the year-on-year change.

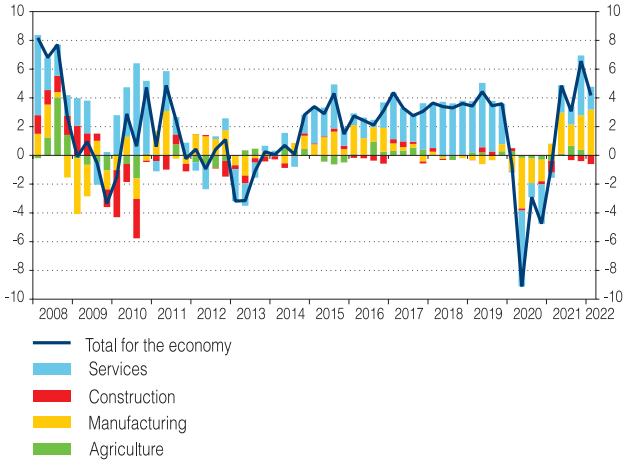
Over the first quarter of 2022 investment in fixed capital fell by 4.4 per cent year on year. According to the BNB estimates[49], the decline in total investment was due mainly to public and, to a lesser extent, private sector. Factors limiting investment activity were the continuing comparatively high economic uncertainty, the reported shortage of some raw materials, and the delay in the implementation of large infrastructure projects financed by public funds.

Net exports had the main negative contribution to annual growth of real GDP in the first quarter of 2022, driven by the higher rise in imports of goods and services compared with that of exports. Slower growth of external demand for Bulgarian goods and services was a factor limiting the exports. Imports dynamics was in line with the strong growth of private consumption, exports growth, and increased inventories in the economy.

In the first quarter of 2022 gross value added in Bulgaria increased by 0.4 per cent from the previous quarter according to seasonally adjusted data. Based on non-seasonally adjusted data year-on-year growth was 4.2 per cent. Gross value added in industry went up by 8.9 per cent on an annual basis, driven by the manufacturing sub-sector and was in line with increased exports of goods and higher domestic demand. Concur-

Gross Value Added Rate of Change in Real Terms and Contribution by Sector

(per cent; percentage points; on an annual basis; non-seasonally adjusted data)



Sources: the NSI, BNB calculations.

[48] Based on the System of National Accounts data government expenditure are presented net from the sale of goods and services. This is the reason why the decrease in these revenues is reflected in an increase in government consumption. For details, see the Fiscal Policy Effects on the Economy Section.

[49] The NSI does not provide official data on the breakdown of total investment into private and public. The series on private investment is constructed by the BNB as a difference between total investment and the estimated amount of public investment on an accrual basis in real terms. The public investment estimate is based on data from quarterly non-financial accounts of the general government sector published by the NSI.

rently, the year-on-year fall in value added in the construction sub-sector, which started in the second quarter of 2020, continued. Annual value added in services grew by 2.3 per cent in the first quarter of 2022, with all sub-sectors contributing to this effect. The information and communication and trade, transport and accommodation and food service activities sub-sectors, whose added value was supported by the growth in final consumer expenditure in the economy, as well as by external demand for this type of services made the largest positive contribution.[50]

Cyclical Position of the Bulgarian Economy

According to BNB estimates, in the first quarter of 2022 the cyclical position of the economy was characterised by formation of a positive output gap of real GDP. This suggests that some of output factors in the economy were employed above their potential level, which is a precondition for an upward pressure in the next months on the prices in product and factor markets, primarily in the labour market.

The cyclical position of the economic indicators was divergent in the second quarter of 2022.[51] The indicators that track firms' production activity (the industrial production index, production capacity utilisation, index of services production and business climate) were positioned above their long-term averages and tended to improve further, despite the worsening external environment and increased economic uncertainty. Concurrently, consumer confidence indicators (consumer confidence and retail trade turnover) were positioned below their long-term average, reporting a decline on a quarterly basis in the second quarter of 2022 amid the continued acceleration of Bulgaria's inflation and increased economic uncertainty.

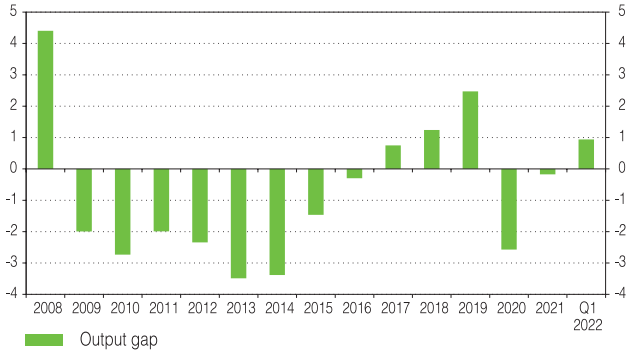
The diverging cyclical development across sectors was probably also a reason for the increasing divergence in economic agents' assessments of the short-term prospects for their economic situation, which was reflected in the increase in the indicator calculated by the BNB in the second quarter of 2022.

[50] Based on the exports data on telecommunications, computer and information services, transport services and travel of balance of payments statistics (BPM6).

[51] Most economic indicators are available until May 2022. Only data on the business climate and consumer confidence are available for the entire second quarter of 2022.

Deviation of Economic Activity from Potential Output

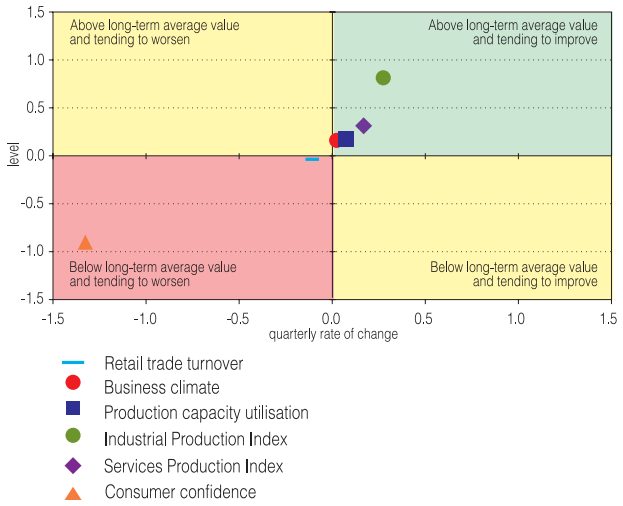
(per cent, output gap)



Notes: Results are obtained through the application of a multivariate model with unobserved components presented in the research topic on Methods for Estimating the Cyclical Position of the Economy, Economic Review, 1/2019.
The output gap is the deviation of the current level of economic activity from potential output measured as a percentage of potential output.

Sources: the NSI, BNB calculations.

Cyclical Position of the Economy in the Second Quarter of 2022 According to Selected Economic Indicators

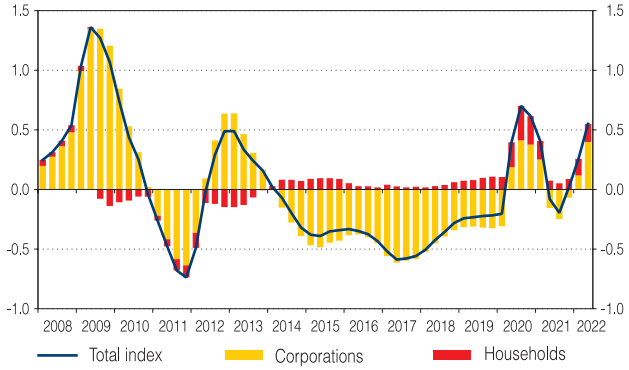


Notes: The chart compares the level (the vertical axis) and the quarterly change (the horizontal axis) of selected economic indicators. Each series is standardised a priori; and then transformed using the HP filter (with a parameter $\lambda = 100$) in order to eliminate short-term fluctuations. Data are averaged for available months in the first quarter of 2022. Standardisation of statistical series in order to improve their comparability is a reason for constructed indicators to change within the range of -1 to 1, and they are characterised by a historical average value of 0 and a standard deviation of 1. The four chart grids allow to distinguish the positions of the relevant economic indicators in individual phases of the business cycle. For example, if a given indicator is in the upper right grid, it means that it is characterised by a positive deviation from its long-term average value and continues to increase on a quarterly basis.

Sources: the NSI, BNB calculations.

Indicator of Differences in Economic Agents' Assessments about the Expectations of Economic Development in the Short Term

(deviation from long-term average value)

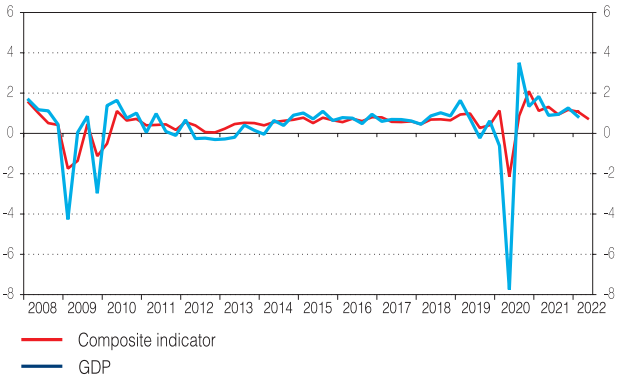


Notes: Higher values of this indicator should be interpreted as an increase in differences of economic agents' assessments. Positive/negative values of the total index show that differences in assessments are above/below their long-term level. This indicator is constructed under a methodology presented in: Ivanov, E. 'Constructing an Uncertainty Indicator for Bulgaria', BNB Discussion Papers 109/2018, and corresponds to the indicator U1 constructed in the paper.

Sources: the EC, BNB calculations.

Composite Economic Indicator of Economic Activity

(per cent, on a quarterly basis)



Notes: This indicator is constructed on the basis of a dynamic factor model whose purpose is to derive the total component in dynamics of various indicators with a monthly frequency. Dynamics of the composite indicator may be used as a guidance for the change in real GDP of Bulgaria. Selected indicators of the model include: production indices in industry, construction and services; retail trade turnover indices; unemployment rate; indicators of the business climate and consumer confidence; producer price index in industry; new loans to corporations and households; global PMI.

Sources: the NSI, Employment Agency, BNB calculations.

Economic Activity Expectations

Quarterly growth of the composite economic indicator[52] of economic activity in Bulgaria constructed by the BNB slowed down slightly in the second quarter of 2022 which is a prerequisite for similar dynamics in real GDP as well. Lower quarterly growth of the composite indicator was mainly driven by the deteriorated consumer confidence and real retail trade volumes in Bulgaria and the fall in global PMI and business climate in the euro area (partially due to the negative effects of the war in Ukraine). Adverse developments in the external environment in terms of global economic growth, further increase in commodity prices in international markets and tighter global financial conditions are expected to lead to a deterioration in the outlook for the Bulgarian economy in the second half of 2022. As a result, in the third and fourth quarters of 2022 real GDP is projected to remain at a level close to that projected for the second quarter of the year.[53]

[52] Some of the data used for the indicator are available up to May 2022: production indices in industry, construction and services; retail trade turnover indices. Data available as of June 2022 include: unemployment rate; producer price index in industry; new loans to corporations and households; global PMI indicators of the business climate and consumer confidence.

[53] For further details, see the BNB Macroeconomic Forecast, June 2022.

4.2. Labour Market

Labour Supply

Based on NSI data[54] working-age population went down on an annual basis in the first quarter of 2022, leading to a simultaneous reduction in the labour force (comprising the employed and unemployed persons) and the persons not in the labour force. At the same time, the recorded economic growth in Bulgaria resulted in an increase in employment and a fall in the number of unemployed. The labour force participation rate[55] rose on both annual and quarterly basis in the first quarter of 2022, with the strongest growth on the corresponding period of the prior year reported in the age groups of 55–64 years.

According to the Labour Force Survey the seasonally adjusted unemployment rate[56] fell to 4.4 per cent in the first quarter of 2022, down from 4.8 per cent in early 2021. Annual declines were reported in both long-term and youth unemployment. Administrative statistics data of the Employment Agency, which are published more frequently, also reported the downward trend in the unemployment rate continuing over the second quarter of 2022.

Labour Demand

In line with the surge in Bulgaria's economic activity[57], employment rose by 1.6 per cent year on year in the first quarter of 2022. The reported growth was entirely due to the employees in the services sector, in particular trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities. Services sector had the main contribution to the total number of worked hours *per* person in the economy, which rose by 2.2 per cent on an annual basis in the first quarter of 2022, after falling 2.5 per cent on an annual basis in early 2021.

[54] NSI Labour Force Survey data are used.

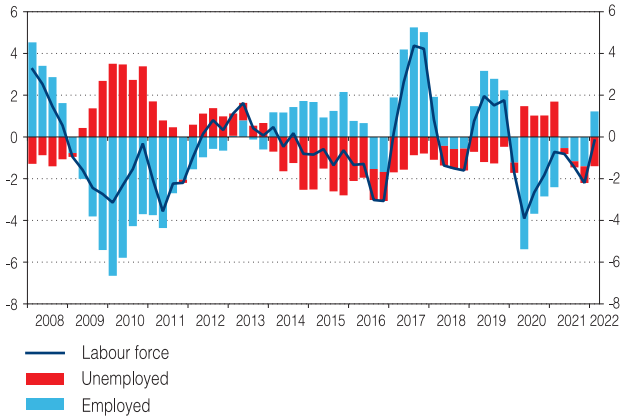
[55] The labour force participation rate is the proportion between economically active persons (labour force) and population of the same age. Quarterly data, seasonally adjusted by the BNB.

[56] The unemployment rate is the proportion between the number of unemployed and the labour force for the age group 15 and older based on Labour Force Survey data. The time series is seasonally adjusted by the BNB.

[57] NSI System of National Accounts data are used.

Contribution to the Change in Labour Force by Component

(per cent; percentage points; on an annual basis)

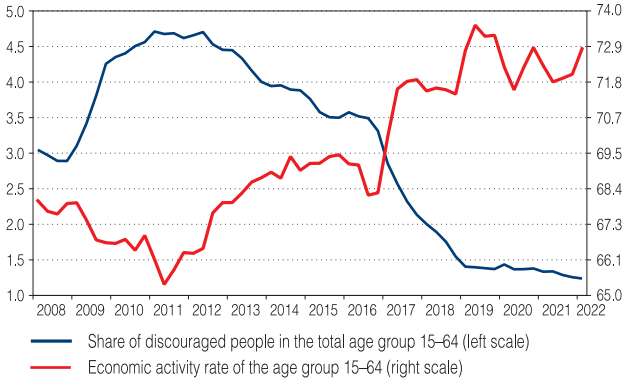


Note: Data refer to the age group 15 and older.

Sources: the NSI, BNB calculations.

Economic Activity and Share of Discouraged Persons

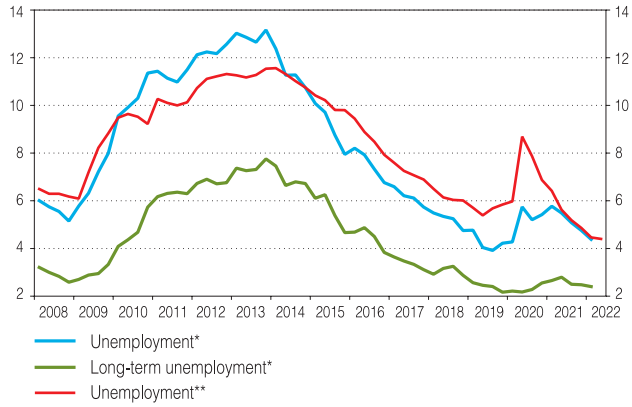
(per cent, seasonally adjusted data) (per cent, seasonally adjusted data)



Sources: NSI Labour Force Survey, BNB calculations.

Unemployment Rate

(per cent, share of labour force; seasonally adjusted data)



* NSI data.
** Employment Agency data.

Sources: NSI Labour Force Survey, Employment Agency, BNB calculations.

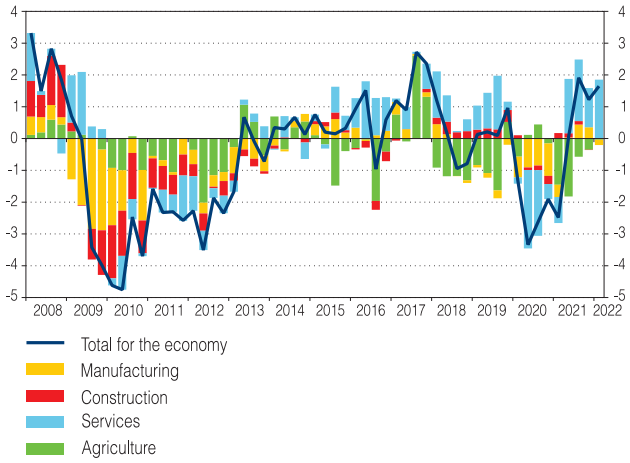
According to NSI short-term statistics, the number of job vacancies in the economy increased further to 20,782 at the end of the first quarter of 2022 or 11.8 per cent year on year (compared to 18,119 on average in the 2010–2021 period). The highest demand for workers was recorded in accommodation and food service activities and in the processing industry. At the same time, Employment Agency data revealed an annual increase in the number of jobs available at the end of March 2022 (outside employment programmes), that remained unemployed for more than three months. This trend continued by the end of June, when job vacancies available on the primary market for more than three months reached 1010, compared to 589 on average *per* month for the 2010-2021 period. These developments, as well as the increasing number of companies, that define labour shortages as a factor that hinders their activity[58], confirm the growing problem of limited labour supply in Bulgaria.

Productivity and Compensation per Employee

Labour productivity[59] rose by 2.3 per cent annually in the first quarter of 2022. The manufacturing contributed most to the increase, while construction and services posted a drop. The decline in services resulted in the weaker growth of real productivity *per* employee in the economy in early 2022 compared with that reported at the end of 2021. Real labour productivity growth, some wages indexation due to consumer price rises and limited labour supply in Bulgaria contributed to the accelerated growth of compensation *per* employee to 15 per cent in nominal terms on an annual basis over the first quarter of 2022. Nominal wage increases were observed in all economic sub-sectors, with general government, education, human health and social work activities alone growing insignificantly by 0.6 per cent on an annual basis. Concurrently, NSI data on the average gross monthly wage recorded a slowdown in annual growth to 9 per cent in the first quarter of 2022 amid an increase of 11 per cent at the beginning of 2021 largely due to weaker growth in public sector wages. In the private sector, average gross monthly salary

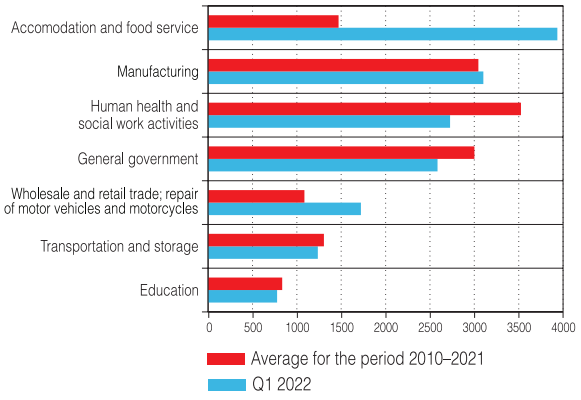
Contribution to the Change in the Number of Employed by Economic Sector

(per cent; percentage points; on an annual basis)



Sources: NSI – System of National Accounts (SNA), BNB calculations.

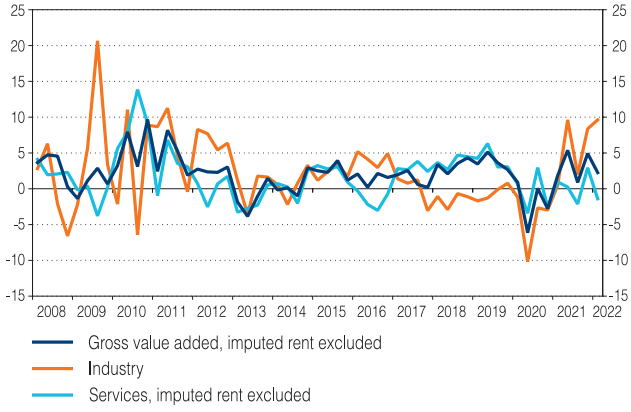
Economic Sectors with the Largest Number of Job Vacancies in the First Quarter of 2022



Source: the NSI.

Labour Productivity Dynamics (Value Added *per* Employee)

(per cent, on an annual basis)



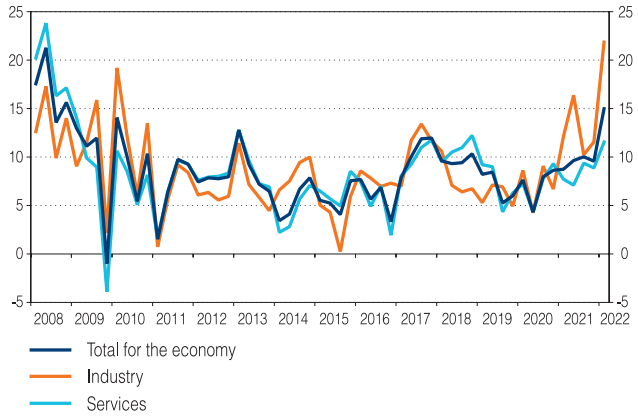
Sources: the NSI, BNB calculations.

[58] According to NSI business situation survey data. For details, see the Behaviour of Firms and Competitiveness Section.

[59] Labour productivity is calculated after adjusting gross value added (total for the economy) for imputed rent.

Compensation *per* Employee at Current Prices

(per cent, on an annual basis)



Source: NSI – System of National Accounts (SNA).

increase accelerated to 11.6 per cent year on year in the first quarter of 2022, from an annual growth of 8.8 per cent in early 2021. The different dynamics of both indicators for wage *per* employee in the economy reflected the use of various sources to assess employees and differences in definitions and coverage of compensation per employee. In addition, in the System of National Accounts additional estimates of labour costs in the 'shadow economy' and benefits in kind were made.

4.3. Behaviour of Firms

In the first quarter of 2022 corporations' costs continued rising on an annual basis.[60]

Labour Costs of Corporations

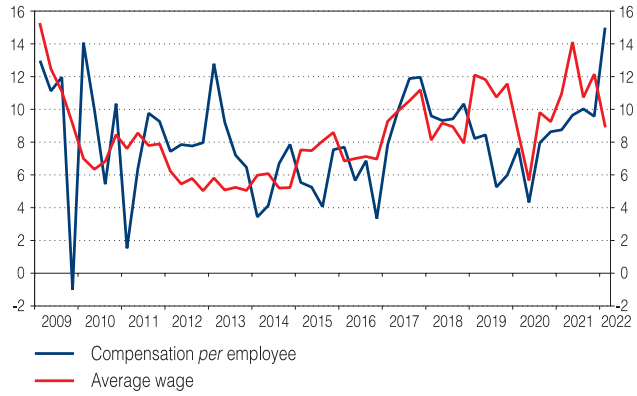
Annual growth of firms' unit labour costs accelerated significantly in the first quarter of 2022, driven by the stronger annual growth in nominal compensation *per* employee (15 per cent), while productivity *per* employee slowed down on an annual basis (2.3 per cent). The continuing surge in Bulgaria's economic activity, labour shortages, as well as the indexation of some nominal wages due to high inflation[61] were a prerequisite for this. By economic sector, the highest annual growth in unit labour costs was reported in the agricultural sector, followed by services and industry.

[60] This section reviews corporations' labour costs, while expenditure on raw materials are not analysed due to the lack of public data of quarterly frequency.

[61] According to the 2014 Survey of Price and Wage Setting Mechanisms in Non-financial Corporations in Bulgaria, about 30 per cent of companies said that they applied a rule on wage indexation to inflation dynamics.

Compensation *per* Employee and Average Wage at Current Prices

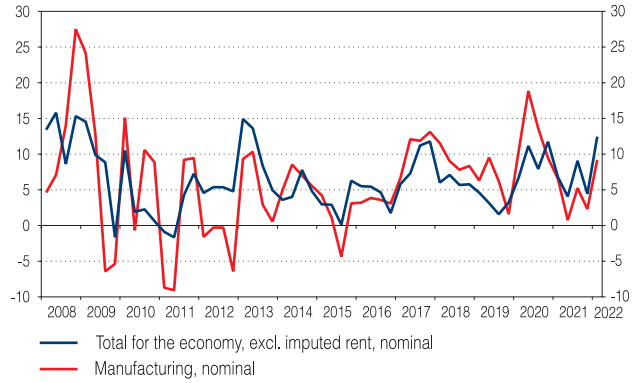
(per cent, on an annual basis)



Sources: NSI – System of National Accounts (SNA), short-term statistics of employment and labour costs.

Unit Labour Costs

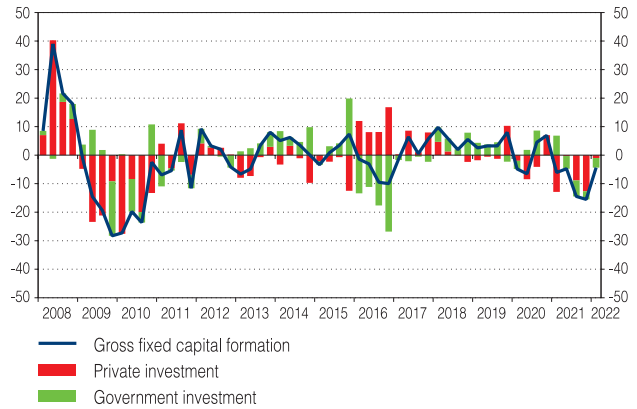
(per cent, on an annual basis; non-seasonally adjusted data)



Sources: the NSI, BNB calculations.

Contribution of Private and Public Sectors to the Annual Rate of Change in Investment in Real Terms

(per cent, on an annual basis; non-seasonally adjusted data)



Notes: The NSI does not provide official data on the breakdown of total investments into private and public. The series on private investment is constructed by the BNB as a difference between total investment and the estimated amount of public investment on an accrual basis in real terms. Data on public investment are based on information from quarterly non-financial accounts of the general government sector, published by the NSI.

Sources: the NSI, BNB calculations.

Investment Activity of Corporations

In the beginning of 2022 firms' investment spending in real terms continued falling on an annual basis. As a result, the private sector had a negative contribution to the decline in total fixed capital investment. By asset type, the decline in investment was broad-based, with investment in machinery, equipment and weapons systems and non-residential construction having the largest negative contribution.

Financing Sources of Corporations

Over the first quarter of 2022 corporations tended to use mainly internal sources, *i.e.* the gross operating surplus, for funding their operation. According to non-seasonally adjusted data, the nominal gross operating surplus grew by 31.4 per cent year on year in the first quarter of 2022 due to manufacturing. The larger amount of the operating surplus in manufacturing was driven by the growth of both sales in real terms and selling prices. Concurrently, firms in agriculture, services and construction posted an annual fall in the gross operating surplus.

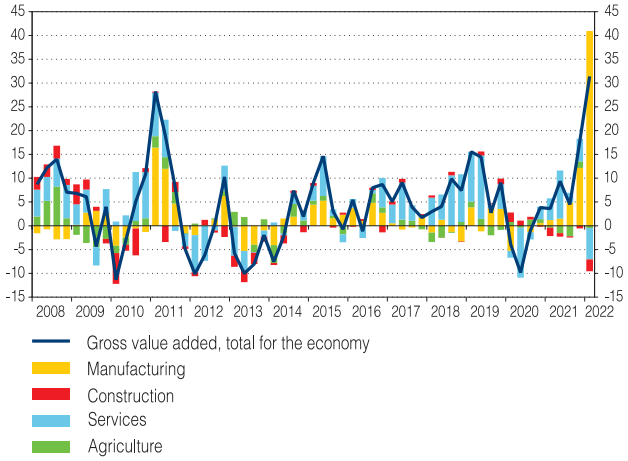
Between January and March 2022 financing of firms from external source, other than gross operating surplus, increased. The amount of external financing of corporations in all major economic sectors rose, reflecting mainly received loans. The sector with the largest amount of external financing was manufacturing.

Price Policy of Corporations

In the first quarter of 2022 firms' selling prices, as measured by the Producer Price Index in Industry (PPI), posted a 33.7 per cent increase year on year. These dynamics reflected the substantial appreciation of energy commodities (oil, natural gas, electricity) and food on the international markets, the increase in prices of agricultural produce in Bulgaria, as well as the increase in labour costs of firms in manufacturing. Within the index, more significant increases were recorded in domestic producer prices, in particular in electricity, heating and gaseous fuels, refined petroleum products, food products and metals. The annual growth rate of PPI continued to accelerate over the second quarter, reaching 41.4 per cent in June 2022. Upward pressure on firms' selling prices continued to be

Annual Rate of Change of Nominal Gross Operating Surplus and Contribution by Sector

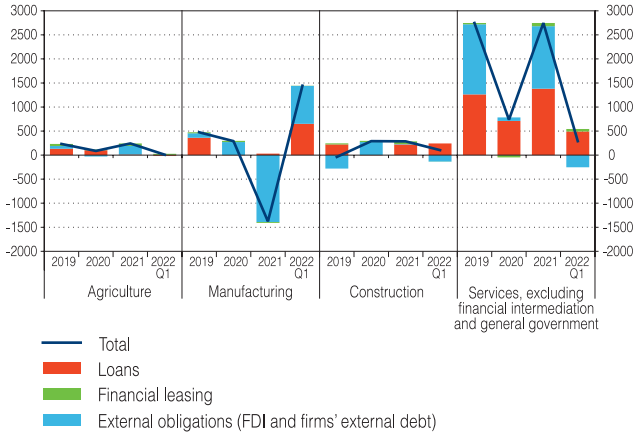
(per cent; percentage points; on an annual basis; non-seasonally adjusted data)



Sources: the NSI, BNB calculations.

Financing Sources*

(BGN million, volume change)

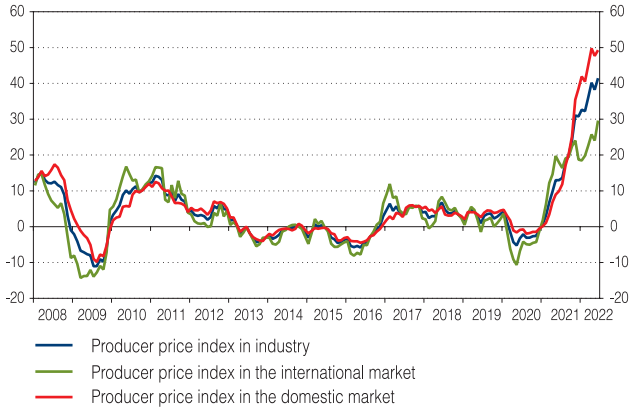


*Sources of financing other than gross operating surplus.

Source: the BNB.

Rate of Change of Producer Price Index in Industry

(per cent, on an annual basis)



Source: the NSI.

driven mainly by growth in their production costs due to higher prices of energy and non-energy commodities in international markets.

Producer price indices in the first quarter of 2022 also reported annual growth in all sub-sectors with the exception of maritime transport. The largest growth compared to the beginning of the prior year was observed in freight handling (21.4 per cent) and freight transport by road (11.6 per cent) given the improvement in economic activity and enhanced demand for this type of services.

From the supply chain perspective, accelerated price rises in the first half of the year were also seen in retail trade[62]. Annual growth in the NSI retail price index (excluding trade in motor vehicles and motorcycles) reached 20.1 per cent in May 2022 (9.0 per cent in the fourth quarter of 2021).

Economic Indicators

Economic indicators in Bulgaria for the second quarter of 2022 provide mainly signals of continuous quarterly growth in the economic activity, albeit at a slower rate.

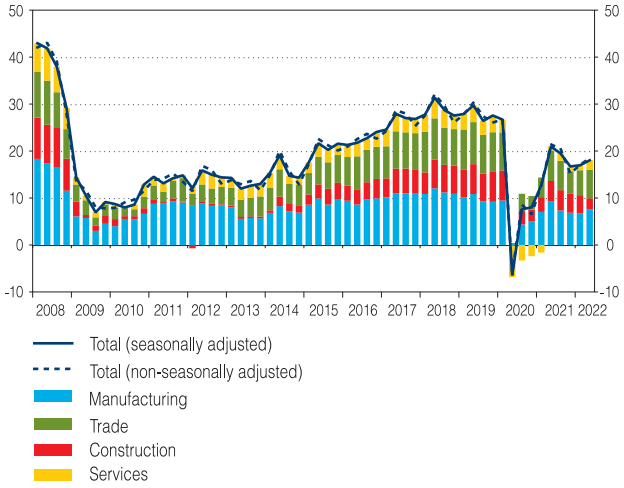
In the second quarter of 2022 the overall business climate indicator improved on the previous quarter according to BNB seasonally adjusted data. However, this was entirely due to the more optimistic assessments of firms' current business situation, while managers' expectations about the future business situation in Bulgaria deteriorated. The improvement of the business climate between April and June 2022 was reported in all economic sectors, excluding construction, where the indicator continued to follow a downward trend since late 2021. The data available for July 2022 suggest that business climate remained close to its previous month's level.

In the second quarter of 2022 the uncertain economic environment continued to be the most serious impediment to business activity, largely reflecting the negative effects of the war in Ukraine. In the April–June 2022 period the share of firms which experienced shortage of materials and equipment increased significantly, probably due to difficulties in global supply chains and the war in Ukraine. Compared to the first quar-

[62] NSI data on retail prices for 2022 are up to May.

Business Climate

(balance of opinions, per cent; seasonally adjusted data)

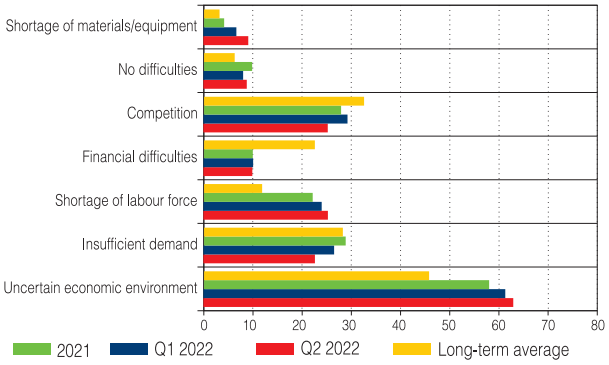


Notes: The answers to the NSI survey questions are presented in a three-tier category scale: 'increase', 'unchanged', 'decrease'. Balances of opinions are calculated as a difference between relative shares of extreme options of replies: 'increase' minus 'decrease'. The business climate indicator is a geometric average of the balances of opinions about the current and expected business situation in corporations in the next six months.

Sources: the NSI, BNB calculations.

Factors Hampering Economic Activity of Corporations

(relative share of corporations)

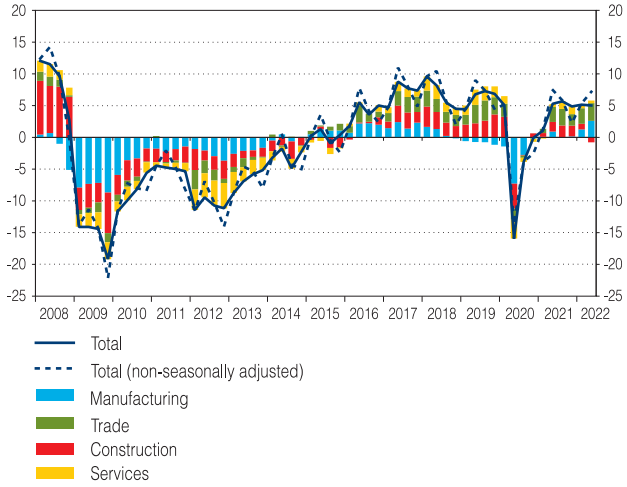


Note: The data is average for the period and is calculated as a weighted average based on economic sectors' shares of corporations in total economy (manufacturing, construction, trade and services).

Sources: the NSI, BNB calculations.

Corporations' Expectations about Staff Recruitment in the Following Three Months

(balance of opinions, per cent; seasonally adjusted data)

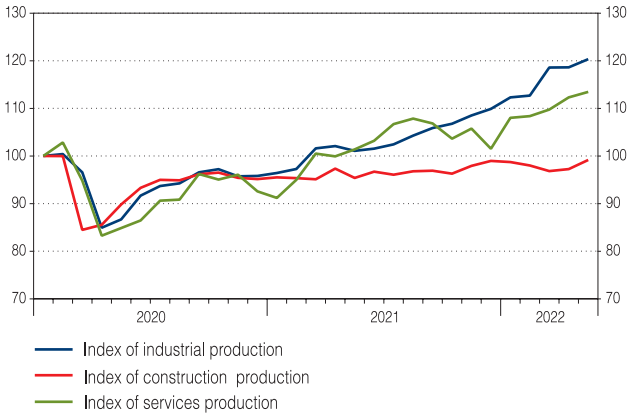


Notes: The answers to the NSI survey questions are presented in three-tier category scale: 'increase', 'unchanged', 'decrease'. Balances of opinions are calculated as a difference between relative shares of extreme options of replies: 'increase' minus 'decrease'.

Sources: the NSI, BNB calculations.

Dynamics of the Production Index in Manufacturing, Construction and Services

(January 2020 = 100; seasonally adjusted data)



Sources: the NSI, Eurostat, BNB calculations.

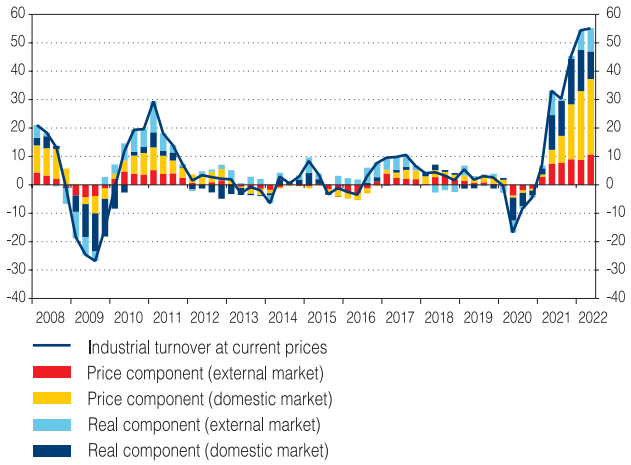
ter, the share of companies that believe that the labour shortage is hampering their activity also increased. By economic sector, the expectations for staff recruitment worsened most in construction, where entrepreneurs' assessment of firms' future activity fell most.

NSI data on short-term business statistics on output and turnover in manufacturing, trade, services and construction production for April–May 2022 give grounds to expect a quarterly slowdown in gross value added in the respective sectors over the second quarter of the year.

On average, nominal industrial turnover in the April–May 2022 period continued to grow (on a quarterly and annual basis) at relatively high rates, driven mainly by the price component, while real turnover growth slowed down. The quarterly growth rate of seasonally adjusted industrial production index on average for April–May 2021 also decelerated, driven by the sub-sectors of production and distribution of electricity, heat and gas. Between April and May 2022 retail trade volumes at constant prices decreased slightly compared to the first quarter of 2022, which could reflect the negative effects of high inflation on consumers' purchasing power and deteriorating consumer confidence given the high level of uncertainty. Services production index increased between April and May 2022, albeit at a lower pace on the January–March

Industrial Turnover Dynamics

(per cent, percentage points, quarterly, on an annual basis; seasonally adjusted data)



Note: Data for the second quarter of 2022 are up to May.
Sources: the NSI, BNB calculations.

2022 period. Across sub-sectors, the largest growth slowdown was recorded in services related to hotels and restaurants. Between April and May 2022 construction production recorded a slight increase on the first quarter of the year, but in May the index remained below its pre-COVID-19 level. The NSI business climate survey suggests that in May 2022 the main constraints for construction firms continue to be the uncertain economic environment, commodity prices and labour shortages.

4.4. Household Behaviour

Household Income

In the first quarter of 2022 both total household income[63] and received and withdrawn savings and loans rose nominally on an annual basis, driven by higher economic activity in Bulgaria in the context of limited labour supply and rising price levels.

Total household income rose nominally by 9.6 per cent year on year in the first quarter of 2022. At the same time, annual growth of total household income moderated compared to the increase reported at the end of 2021 mainly due to lower growth of pensions, followed by wages, which aggregately occupied the largest share of total income, reaching 87.8 per cent at the beginning of 2022.

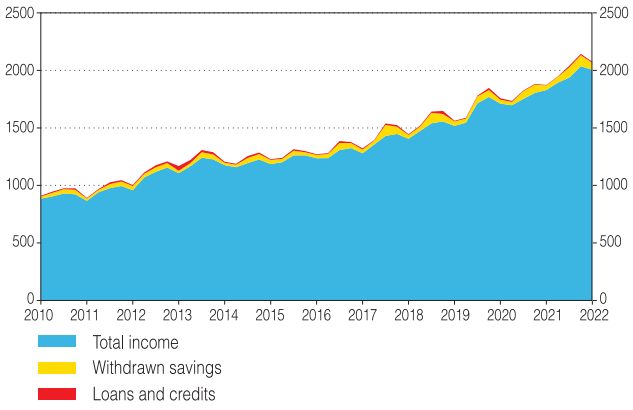
The continued acceleration of Bulgaria's inflation in the first quarter of 2022 led to a relatively weak growth of 0.7 per cent in total household income in real terms[64] on the same period of the previous year. Wage bill in real terms rose by 3.8 per cent on an annual basis, while pensions declined by 0.9 per cent year on year. As a result, the increase in real disposable income of households moderated to 0.2 per cent year on year in the first quarter of 2022 compared to the 6.7 per cent annual growth in the fourth quarter of 2021.

[63] Total income includes household cash income from wages, pensions, self-employment, social security benefits, allowances and valued in-kind income, which is the cash value of goods and services received in kind by households, for instance social transfers in kind. Total income does not include withdrawn savings and loans. For details, see NSI's methodology on the Household Budget Survey.

[64] To obtain total income, real wage and pensions, nominal values are deflated by HICP.

Household Revenue

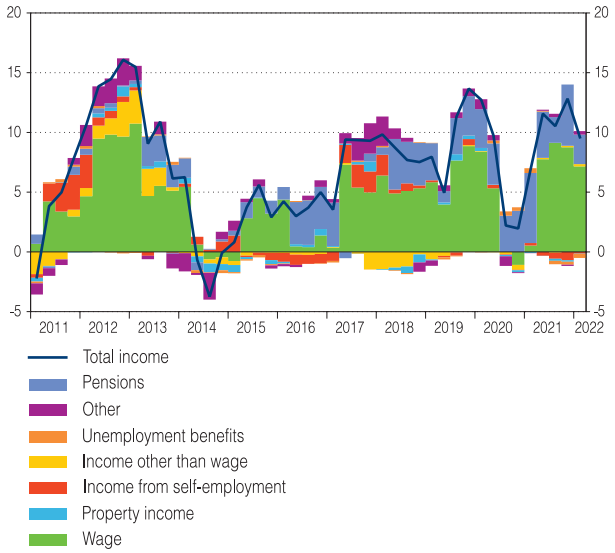
(BGN, average *per* person, mohthly)



Source: NSI – Household Budget Survey.

Contribution to the Change in Total Monthly Household Income

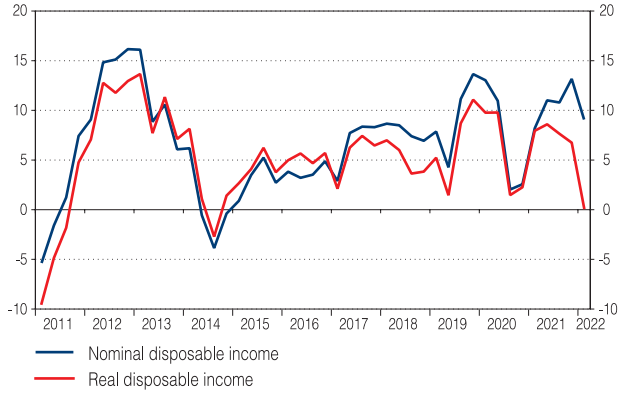
(per cent, percentage points; average *per* person, on an annual basis)



Sources: NSI – Household Budget Survey, BNB calculations.

Household Disposable Income

(per cent, average *per* person, on an annual basis)



Note: Real disposable income of households represents total income reduced by taxes, social security contributions and regular transfers to other households, HICP deflated.

Sources: NSI – Household Budget Survey, BNB calculations.

Household Expenditure

Total household expenditure[65] rose nominally by 13.3 per cent on an annual basis over the first quarter of 2022. Consumer spending comprising 82.3 per cent of total household expenditure in early 2022 increased by 13.5 per cent year on year, with food and soft drinks contributing most to this increase. Concurrently, expenditure on leisure, cultural recreation and education, and furnishing and maintenance declined on an annual basis.

In real terms[66], consumer spending according to the NSI Household Budget Survey went up by 4.3 per cent on an annual basis in the first quarter of 2022 (6.2 per cent in the fourth quarter of 2021). Cash spent on leisure, cultural recreation and education, followed by expenditure on food and soft drinks, and transport and communications had the main contribution to the rise in real terms.

NSI national accounts data[67] also reported a slowdown in real annual growth of private consumption to 6.4 per cent in the first quarter of 2022 compared to the 8.7 per cent annual growth over the fourth quarter of 2021 in line with the slower growth in real disposable income of households as a result of rising inflation in Bulgaria.

Household Savings

The NSI Household Budget Survey shows that the propensity of households to save[68] a part of their income[69] decreased in the first quarter of 2022 on the corresponding period of the previous year. Accumulated households' net assets in the banking system continued to decline for a

[65] Total expenditure include consumer spending, taxes, social contributions, regular transfers to other households and other expenditure. For details, see NSI's methodology on the Household Budget Survey.

[66] Consumer expenditure are deflated by overall HICP. Subcomponents of consumer expenditure are deflated by the corresponding HICP groups.

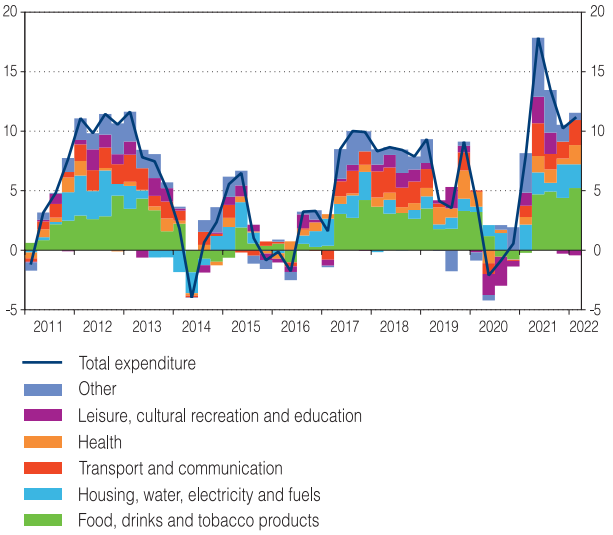
[67] Comparing national accounts data and the NSI Household Budget Survey, the differences in the two statistics in terms of the way of collecting data, their coverage and the definitions used should be taken into account. It might be possible that the dynamics of consumer expenditure in the two statistics do not match.

[68] Household savings are measured by the difference between the total income and the total expenditure in the relevant quarter. The propensity to save is calculated as a ratio between savings and gross income in the relevant quarter.

[69] Income is gross income in the relevant quarter reduced by taxes and social security contributions.

Contribution to the Change in Households Consumer Expenditure

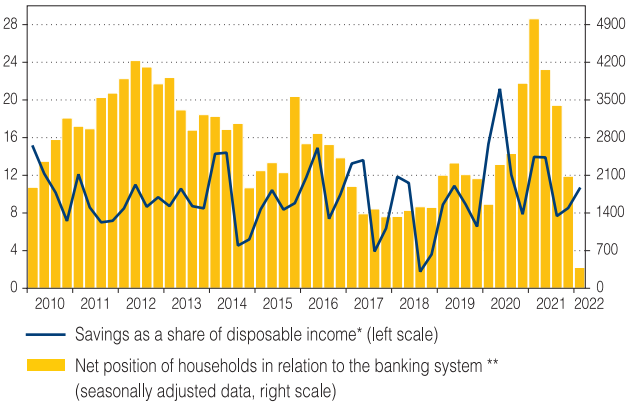
(per cent, percentage points; average *per* person, on an annual basis)



Sources: NSI – Household Budget Survey, BNB calculations.

Household Propensity to Save

(per cent) (million BGN, on an annual basis)



Notes: Savings as a share of disposable income represent the difference between total income and total expenditure of households as a share of total income reduced by taxes, social security contributions and regular transfers to other households. The net position of households *vis-à-vis* the banking system is the difference between deposits and loans of households (positive values should be interpreted as an excess of deposits over loans).

* According to NSI data.
** According to BNB data.

Sources: NSI – Household Budget Survey, the BNB.

fourth consecutive quarter, reflecting the trend of lower annual growth in their deposits compared to loans withdrawn. Some of the household withdrawals from the banking system are likely to be used to finance consumption, as evidenced by a higher annual increase in private consumption in real terms over the first quarter of 2022 compared to real household disposable income

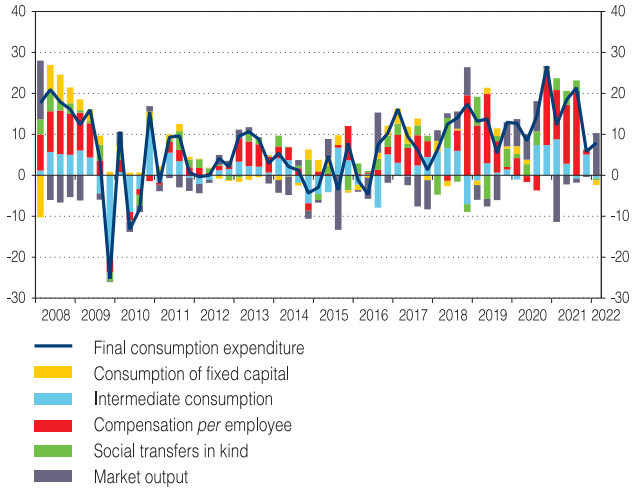
4.5. Fiscal Policy Effects on the Economy

In the first quarter of 2022 the fiscal policy effects on the economic activity in Bulgaria continued to be implemented mainly through increased net transfers to households and higher subsidy spending, which supported households' disposable income and firms' financial position. The rise in net fiscal transfers to households was determined by higher social payments[70] (year-on-year growth of 16.8 per cent), the increase in the minimum and maximum amount of pensions effective as of 25 December 2021 and the payment of allowances to pensions being the main drivers behind these payments. Subsidies to support businesses due to high electricity prices contributed most to the significant rise in subsidy expenditure (year-on-year growth of 109.5 per cent).

Over the first quarter an annual growth of government consumption in nominal terms was reported. Government consumption growth reflected primarily lower receipts from market output[71] on an annual basis, while employee compensation costs remained unchanged and the other components of government consumption had a low negative contribution. Government consumption growth slowed down on an annual basis in real terms, contributing slightly to real GDP growth. Investment of the general government sector posted a decline in nominal and real terms on the first quarter of 2021. This decline was partly attributable to the high base of the same period of 2021, but it probably reflected the government's reorientation towards

Contribution of Major Groups of Expenditure to Government Consumption Growth in Nominal Terms (Quarterly Data)

(per cent; percentage points; on an annual basis)



Source: the NSI, BNB calculations.

[70] Social benefits other than in kind from quarterly non-financial accounts of the general government sector are considered.

[71] The government consumption component 'market output, output for own final use and payments for other non-market output' refers to sales of goods and services by the general government and is reported with a negative sign in the formation of government final consumption.

a broader range of current expenditure incurred in the absence of an adopted state budget at the beginning of the year[72].

Annual growth of total expenditure under the consolidated fiscal programme (CFP) accelerated to 9.8 per cent at the end of June 2022 (1.0 per cent in March 2022). The adoption of the State Budget Law for 2022 providing for higher operating expenditure and increased social and capital expenditure compared to 2021 contributed to the accelerated annual growth in total budget expenditure over the second quarter. Operating expenditure (growth of 36.5 per cent) and subsidy expenditure (growth of 32.2 per cent) had the largest contribution to growth of total expenditure by June. Most of the increased operating expenditure is likely to be linked to the repair and maintenance of national road network and the purchase of medicines and vaccines against COVID-19.[73] Growth of subsidy expenditure was ascribable to subsidies paid to support businesses due to high electricity prices and national subsidies provided by the State Fund Agriculture.

Higher operating expenditure, coupled with the increase in the minimum wage and in teaching staff labour income from 1 April 2022, implies a positive impact of government consumption on economic activity in the second quarter of the year. Concurrently, capital expenditure decreased further to -15.4 per cent year on year at the end of June (-11.5 per cent at the end of March) with a simultaneous decline in national and EU-funded capital expenditure. CFP capital expenditure dynamics is indicative of a negative contribution of gross fixed capital formation of the government sector to real GDP growth over the second quarter of the year.

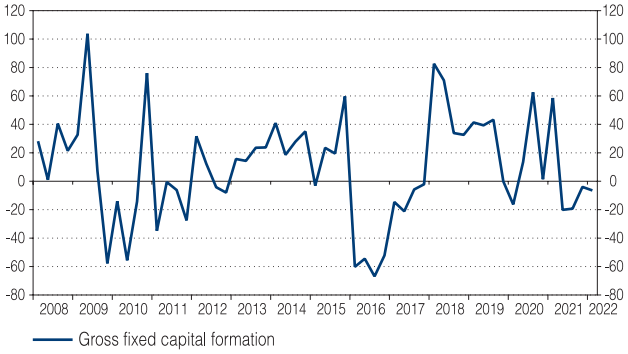
By end-June 2022 total CFP budget revenue rose by 14.1 per cent on an annual basis, with their growth reflecting almost entirely tax revenue. Tax revenue growth over the review period was a result primarily of higher VAT receipts

[72] In the absence of adopted state budget for 2022, over the first quarter of the year the provision of Article 87 of the Law on Public Finance was applied, under which expenditure and transfers should not exceed their level in the same period of the previous year. For more details, see also Economic Review, 1/2022.

[73] Daily data on payments of the Ministry of Regional Development and Public Works and the Ministry of Health made through SEBRA are used.

Annual Rate of Change in Gross Fixed Capital Formation of the General Government Sector in Nominal Terms (Quarterly Data)

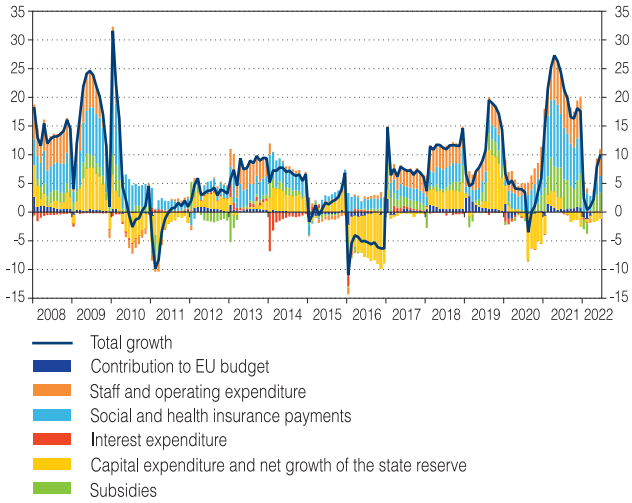
(per cent, on an annual basis)



Source: the NSI.

Contribution of Major Groups of Expenditure to Total Budget Expenditure Growth, Cumulatively

(per cent; percentage points; on an annual basis)



Notes: In the Consolidated Fiscal Programme reports for January 2016, personnel costs include wage, insurance and other remuneration expenditure, while in the reports for past periods the latter were not included in operating expenditure. To prevent inconsistencies of data prior to and after January 2016 resulting from the methodological change, personnel costs and operating expenditure data are presented aggregately in the chart.

Sources: the MF, BNB calculations.

dominated by the strong increase in VAT revenue from imports. Non-tax revenue and receipts from grants had a low positive contribution to growth of total budget revenue.

By end-June 2022 the CFP budget balance amounted to BGN 1180 million (0.8 per cent of GDP[74]). The funds reported as cash expenditures in December 2021 earmarked for allowances to pensions and energy subsidies in 2022 (amounting to BGN 1.2 billion), which are not reflected in budget expenditure this year, had an impact on the realised balance.

[74] Nominal GDP for 2022 is based on the BNB macroeconomic forecast in June 2022.

5. Price developments

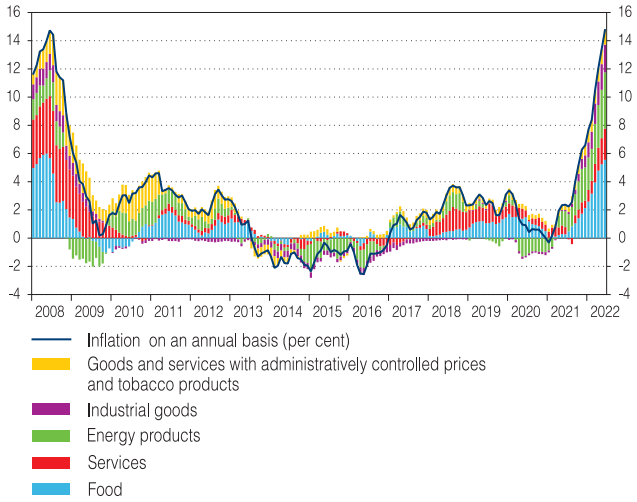
5.1. Consumer Prices

Annual inflation, measured by the HICP, continued to follow the acceleration trend that has emerged since the beginning of 2021, reaching 14.8 per cent in June 2022 which is the highest value since June 1998 (18.3 per cent). Although food and energy product groups (excluding administratively controlled prices) had a major contribution to inflation, the first six months of 2022 saw a strong expansion in the range and intensity of price increases in the other components of the consumer basket. This was driven by the simultaneous effect of pro-inflationary factors in terms of both external and internal macroeconomic environment. Higher prices of main energy sources (natural gas, oil, electricity for business consumers[75]) and of agricultural products in international markets, with their upward dynamics accelerating significantly since the start of the war in Ukraine (end-February 2022) as a result of disruptions in global supply chains, exerted the strongest upward pressure on consumer prices. The 12.3 per cent depreciation of the euro against the US dollar on an annual basis in June 2022, mainly reflecting stronger tightening of the US monetary policy *vis-à-vis* the euro area, was another factor for the increased prices of both imported commodities and raw materials, some of which are traditionally traded in US dollars in international markets, and finished consumer goods imported from non-euro area and non-EU countries. Continuing bottlenecks in global supply chains in the first half of 2022, sustained high prices of international transport and accelerating inflation in durable goods in the EU were additional factors with a pro-inflationary effect through imports. As regards the internal macroeconomic environment, strong consumer demand measured by

[75] In 2021 the Independent Bulgarian Energy Exchange (IBEX) was fully integrated with the Day Ahead electricity market in South-East Europe, whereby the price of electricity for non-household consumers in Bulgaria began to be determined by the demand and supply of electricity in the region, and not only at the local level.

Inflation and Contribution of Major Commodity and Services Groups to It

(per cent; percentage points; on an annual basis)

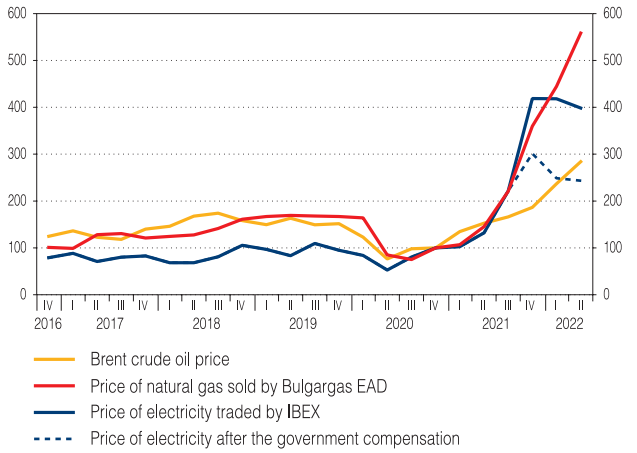


Notes: This structure corresponds to the Eurostat classification; tobacco products and goods and services with administratively controlled prices are presented separately. The price index of goods and services with administratively controlled prices is calculated through the elementary aggregates level in the consumer basket.

Sources: the NSI, BNB calculations.

Primary Energy Commodity Prices

(index, Q4 2020 = 100)

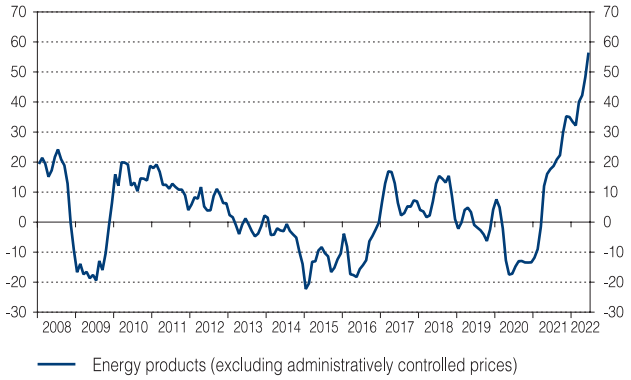


Note: The electricity price refers to the day ahead segment of the Independent Bulgarian Energy Exchange EAD (IBEX).

Sources: the ECB, the IBEX.

Rate of Change of Energy Commodity Price Index

(per cent, on an annual basis)



Sources: the NSI, BNB calculations.

retail trade volumes in real terms and rising unit labour costs continued to exert an upward pressure on prices.

Energy Products Prices

The increase in energy products prices, reaching in June 2022 56.5 per cent on an annual basis (from 35.0 per cent growth in December 2021) had the second largest positive contribution to inflation measured by the HICP. The significant rise in prices was due to both rises in transport fuel prices under the influence of the upward oil price dynamics in international markets and prices of gaseous fuels for households (LPG) and solid heating fuels.

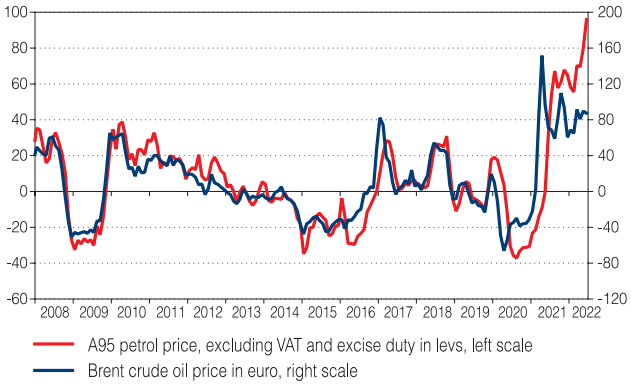
Food Prices

Food inflation accelerated to 22.3 per cent in June 2022 (8.1 per cent at the end of 2021) and this group had the highest positive contribution to the HICP increase on an annual basis, with both processed and unprocessed food contributing to this.

Unprocessed food prices posted year-on-year growth of 17.5 per cent (compared to 6.0 per cent in December 2021). The sub-group of meat and meat products had the biggest contribution to the increase in unprocessed food prices, which can be explained by the higher costs of production, due to the growth in animal feed and energy prices, as well as rising meat prices in euro in international markets.[76] Fruit and vegetables sub-group also had an essential positive

Rate of Change in Brent Crude Oil and A95 Petrol Prices

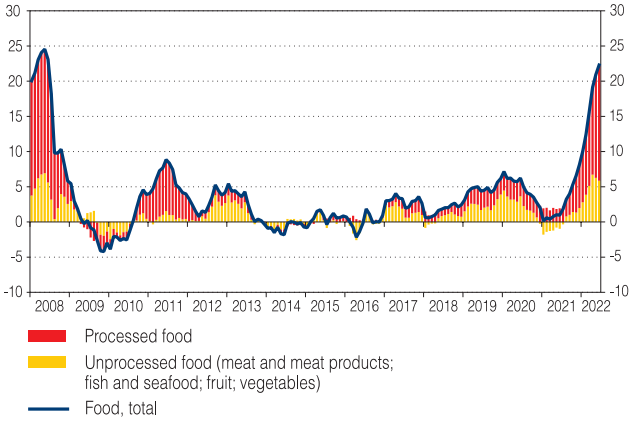
(per cent, on an annual basis) (per cent, on an annual basis)



Sources: The ECB, the NSI, BNB calculations.

Rate of Change of Food Price Index and Contribution of Processed and Unprocessed Food

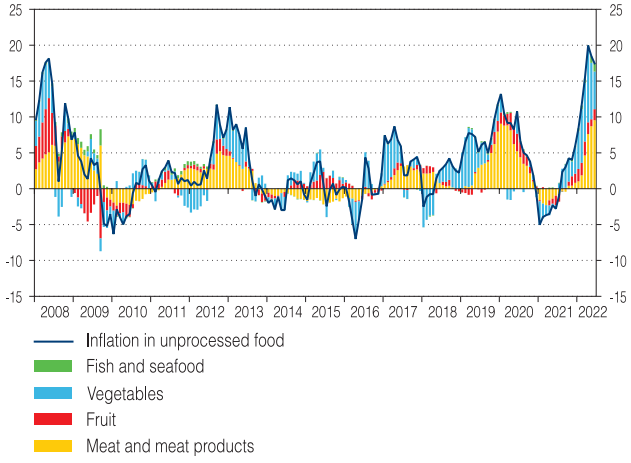
(per cent, on an annual basis)



Sources: the NSI, BNB calculations.

Contribution of Major Sub-groups to Unprocessed Food Inflation

(per cent, percentage points, on an annual basis)



Sources: the NSI, BNB calculations.

[76] For further information, see the publication of the Ministry of Agriculture: Situation on the Pigmeat Market in Bulgaria – June 2022 (in Bulgarian only).

contribution to the food inflation in June 2022, with the NSI data on agriculture[77] indicating that this was due to higher prices of electricity, fuels, mineral fertilisers, plant protection products and other products used for intermediate consumption by the sector. Commodity Exchange and Wholesale Markets State Commission data suggest that a factor with a pro-inflationary effect in the sub-group of fruit and vegetables was also the upward dynamics in the prices of imported products.

Processed food inflation was 24.7 per cent in June 2022 (9.2 per cent by end-2021), with the sub-groups of bread and cereals and milk, dairy products and eggs, followed by animal and vegetable oil and fats and sugar and chocolate products having the highest positive contribution to the price increase. Inflation in these food sub-groups was driven by the upward dynamics of production costs[78] in the context of an annual rise in international wheat, dairy products, vegetable oils, sugar and other commodity prices in euro along with higher prices of goods and services intended for intermediate consumption in agriculture in Bulgaria.

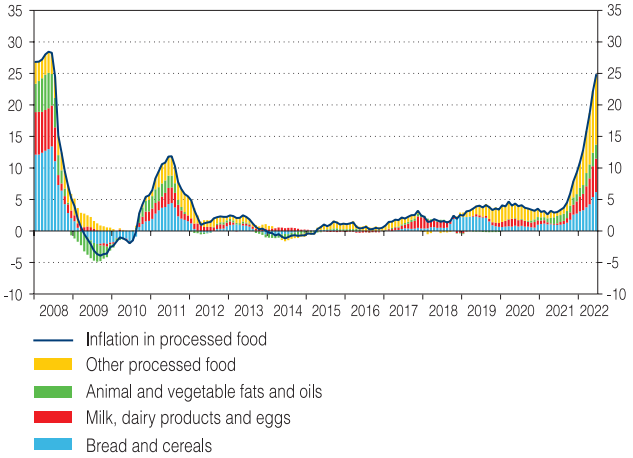
Core Inflation

In the first six months of 2022 core inflation (including services and non-food prices) followed an upward trend, reaching 9.3 per cent in June 2022 (from 3.2 per cent at the end of 2021). Price increases in both non-food goods and services contributed to these developments.

Inflation in non-food goods accelerated to 8.5 per cent in June 2022 compared to 3.9 per cent at the end of 2021. This dynamics was driven primarily by the sub-group of non-durable goods, mainly materials for the maintenance and repair of the dwelling, spare parts and automobile accessories, clothing and footwear, and household goods. In the group of durable goods, inflation acceleration was comparatively smoother, and furniture and furnishings along

Contribution of Major Sub-groups to Processed Food Inflation

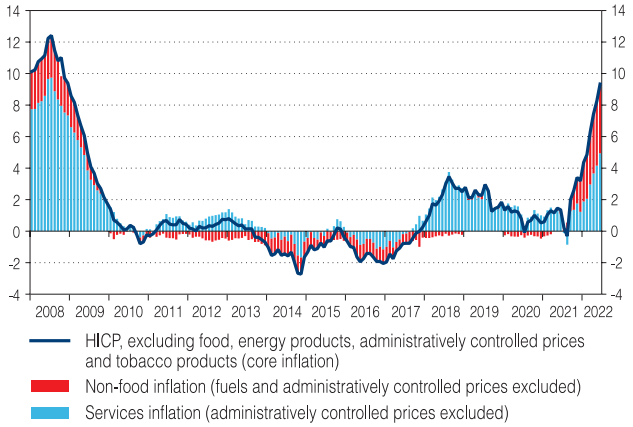
(per cent, percentage points, on an annual basis)



Sources: the NSI, BNB calculations.

Core Inflation and Contribution of Services and Non-food Goods to It

(per cent; percentage points; on an annual basis)



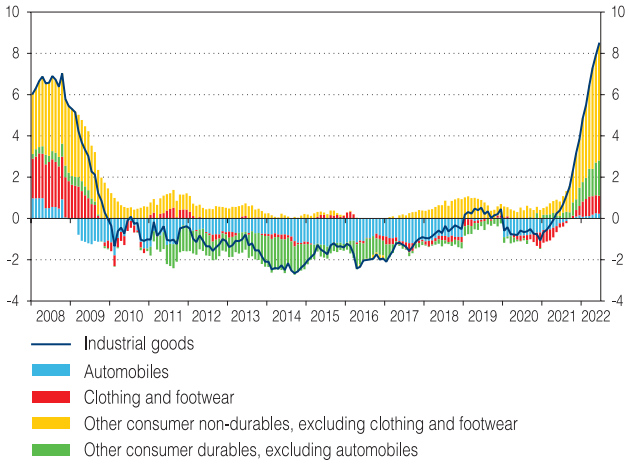
Sources: the NSI, BNB calculations.

[77] The analysis employs NSI data on price indices of goods and services for intermediate consumption used in agriculture.

[78] According to the producer price index (PPI), in June 2022 prices related to the manufacture of bakery and farinaceous products rose by 34.8 per cent, and those related to the production of milk and dairy products increased by 22.1 per cent. In June 2022 producer prices related to the manufacture of oils and fats grew by 57.2 per cent on an annual basis.

Contribution of Major Sub-groups to Inflation in Industrial Goods (Excluding Energy Products)

(per cent, percentage points, on an annual basis)



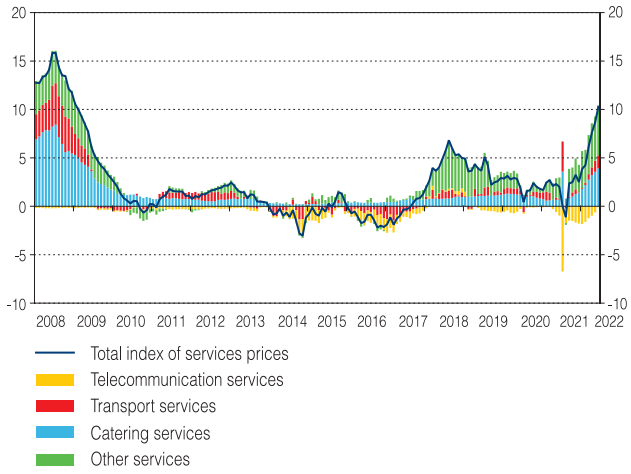
Sources: the NSI, BNB calculations.

with major household appliances continued to have the largest positive contribution to the price increase. Increased prices in these sub-groups were a result of the growth in household final consumption expenditure[79], as well as higher prices of imported industrial goods[80] and raw materials used in the production process.

Annual inflation in the group of services accelerated to 10.3 per cent in June 2022 compared to 2.5 per cent at the end of 2021. These developments were driven by emerging indirect effects of higher food and fuel prices on catering and transport services prices. Other sub-groups with an essential contribution to the price rises were short-stay accommodation services, services for the regular maintenance and repair of the dwelling, house rentals and motor vehicle repair and maintenance services. Potential factors with a pro-inflationary effect on dynamics of these prices were the strong consumer demand of households, rising unit labour costs, increased prices of main energy sources and continuing house price rises. The sub-group of telecommunication services had a low negative contribution to the services inflation in June 2022.

Contribution of Major Sub-groups to Inflation in Services

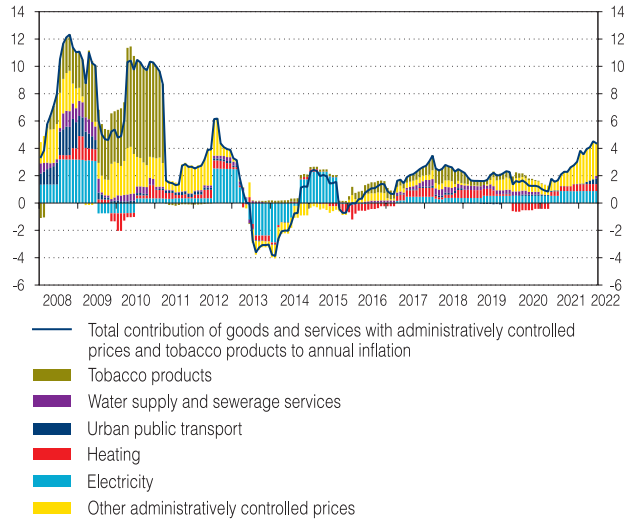
(per cent, percentage points, on an annual basis)



Sources: the NSI, BNB calculations.

Contribution of Major Sub-groups to Inflation in Administratively Controlled Prices (Including Tobacco Products)

(per cent, percentage points, on an annual basis)



Sources: the NSI, BNB calculations.

[79] Measured by dynamics of retail trade volumes.

[80] Eurostat's data on foreign trade statistics indicate that for January–April 2022 prices of consumer goods imported into Bulgaria from third countries increased at faster rates compared with the prices of goods imported from the EU, which is likely to reflect the euro depreciation against the US dollar.

Goods and Services with Administratively Controlled Prices and Tobacco Products

Inflation in goods and services with administratively controlled prices and tobacco products increased to 4.4 per cent in June 2022, from 3.0 per cent by end-2021. Central gas supply had the largest positive contribution to this[81] in the context of rising natural gas prices in international markets. Other regulated services whose prices picked up more significantly on an annual basis were urban public transport, refuse collection and disposal, postal services and medicines and other pharmaceutical products. Electricity and heating prices continued to have an essential positive contribution to the annual inflation in the group of goods and services with administratively controlled prices. This reflected higher prices of electricity (4.4 per cent) and heating (16.23 per cent) since 1 July 2021, as approved by the Energy and Water Regulatory Commission (EWRC) for a year ahead.

In June 2022 the diffusion index, showing the share of groups of goods and services with rising prices on an annual basis, came to 87.2 per cent. In terms of the amount by which prices rose, the number of HICP goods and services with inflation of above 5 per cent on an annual basis grew strongly from the beginning of 2022, whereas the groups with inflation from 0 to 5 per cent prevailed at the end of 2021.

Inflation Expectations

According to the regular NSI business surveys, the share of firms which foresee an increase of selling prices in the following three months rose in the first half of 2022. By economic sector, this trend was most pronounced in retail trade and, to a lower degree, in industry and services. In addition, the prevailing expectations in the group of retail trade managers forecasting price hikes are that the increase will be at the same and/or a faster pace than that observed previously, which implies continued rising inflation in food and non-food goods over the following months.

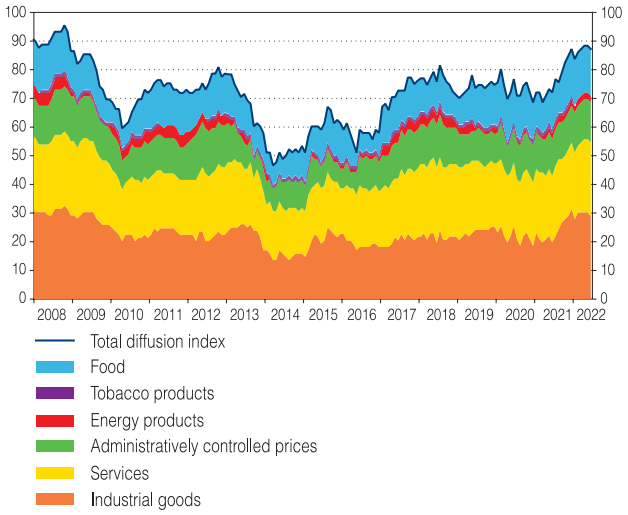
Based on these developments and our assumptions about changes in international prices of

[81] The EWRC approved price of natural gas of the public supplier Bulgargas EAD as of June 2022 which is 212.3 per cent higher than that in June 2021 was the reason for the regulated price of central gas supply service to report an increase of 128.5 per cent on an annual basis.

Diffusion Index

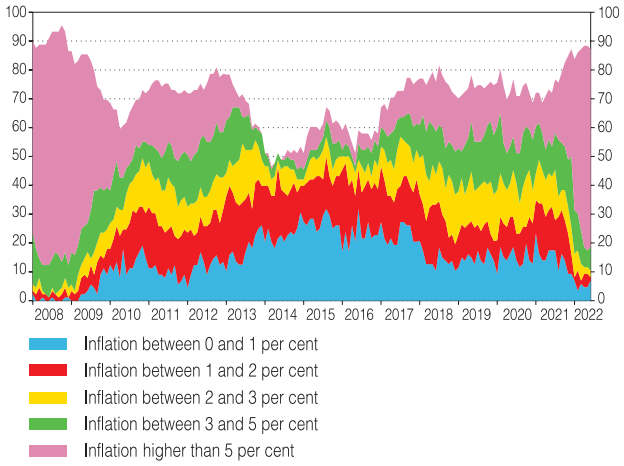
a) relative shares of increasing HICP sub-indices on an annual basis by major groups of goods and services

(per cent)



b) relative shares of increasing HICP sub-indices on an annual basis by the size of the increase

(per cent)

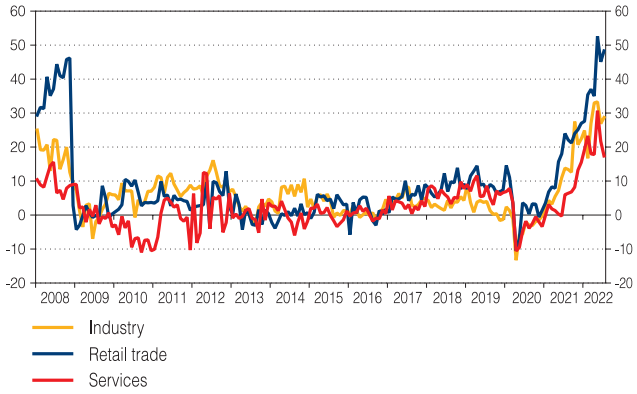


Notes: Data on the HICP 4-digit level sub-indices (sub-classes according to the NSI methodology) have been used. The diffusion index shows the share of sub-indices reporting an increase in value on an annual basis. When calculating the relative shares, the weight of the relevant sub-indices in the consumer basket is not taken into account.

Sources: the NSI, BNB calculations.

Expectations of Selling Prices in Industry, Retail Trade and Services in the Following Three Months

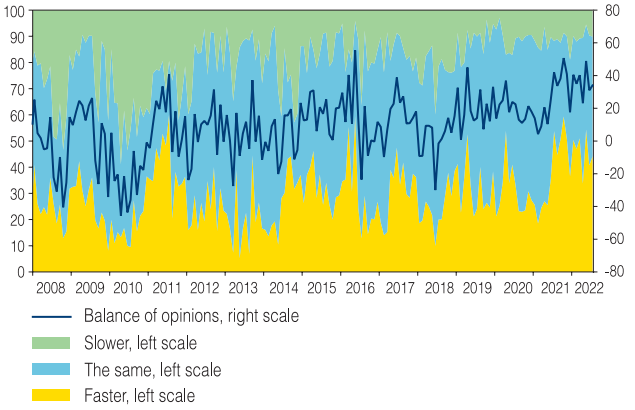
(balance of opinions)



Source: the NSI.

Expectations for the Rate of Growth in Selling Prices in Retail Trade over the Following Three Months

(share of managers, per cent) (balance of opinions)



Source: the NSI.

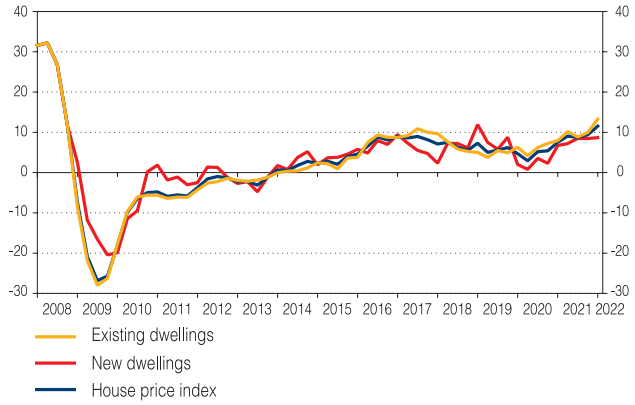
raw materials and their pass-through to administratively regulated prices, headline inflation in the second half of 2022 is projected to accelerate slightly compared to June 2022. Other factors with a pro-inflationary effect are expected to be also the projected strong increase in unit labour costs, emerging indications of a strengthening link between price dynamics and wages in the economy, as well as private consumption growth and accelerating inflation of industrial goods in Bulgaria's main trading partners.[82]

5.2. Housing Prices

In the first quarter of 2022 the annual growth rate of the house price index (HPI)[83] was 11.5 per cent, from 9.4 per cent in the previous quarter, which was also accompanied by an increase in the volume of concluded sale and purchase transactions (by 32.9 per cent on an annual basis in the first quarter).[84] Higher housing prices continued to be reported in all six largest cities, with Rousse recording the most significant house price increase (15.4 per cent). By HPI sub-component, prices of existing dwellings (13.3 per cent) increased simultaneously with new ones (11.5 per cent). Factors still supporting housing demand and thereby contributing to higher prices included the increased labour income, strong credit activity, as well as

Rate of Change of House Price Index

(per cent; on an annual basis)



Note: From the beginning of 2022, the HPI is calculated solely on the basis of data from an administrative source (the Property Register), and thus the data are not fully comparable to those of previous years.

Source: the NSI.

[82] For further details, see the BNB Macroeconomic Forecast, June 2022.

[83] From the beginning of 2022, the HPI is calculated solely on the basis of data from an administrative source (the Property Register), and thus the data are not fully comparable to those of previous years.

[84] Eurostat data are used.

Key Indicators of the Housing Market Developments in Bulgaria

(per cent; year-on-year change)

Indicators	2017	2018	2019	2020	2021	2021			2022
						II	III	IV	I
Price developments									
House price index, total	8.7	6.6	6.0	4.6	8.7	9.1	8.7	9.4	11.5
New dwellings	6.7	5.7	8.5	2.2	7.7	7.2	8.5	8.4	8.7
Existing dwellings	9.7	7.0	4.8	6.0	9.2	10.2	8.8	10.0	13.3
Inflation (HICP)	1.2	2.6	2.5	1.2	2.8	2.2	2.9	6.0	8.9
House rentals, paid by tenants (HICP)	1.0	1.9	3.3	2.5	1.7	1.5	1.5	1.9	5.2
Lending									
New housing loans	32.7	14.9	12.4	18.1	0.0	23.1	31.3	38.7	47.0
Annual percentage rate of charge on new housing loans (per cent, at the end of the period)	4.4	3.9	3.5	3.2	0.0	3.1	3.1	3.0	2.9
Housing loans balances	12.7	19.4	0.0	-15.5	14.4	14.5	16.2	17.6	17.1
Construction and investment									
Permits issued for the construction of new residential buildings (square meters)	32.5	39.0	-7.9	-9.0	0.0	43.5	10.3	23.7	13.9
Value added in construction (at average annual prices for 2015)	4.0	1.1	3.7	-1.0	0.0	-1.3	-6.6	-9.0	-14.0
Constriction Production Index, building construction	10.9	2.6	8.4	-8.3	0.8	4.6	-0.1	3.0	5.1
Fixed investment; residential buildings	-10.3	102.1	19.2	-2.2	6.6	-4.8	-14.5	-15.5	-4.4
Construction cost index for new buildings	2.5	2.9	5.1	2.1	12.2	8.5	16.3	18.5	24.2

Note: Values indicating the amount of the APRC on housing loans to households are averages weighted by the relevant volumes of new loans for a 12-month period.

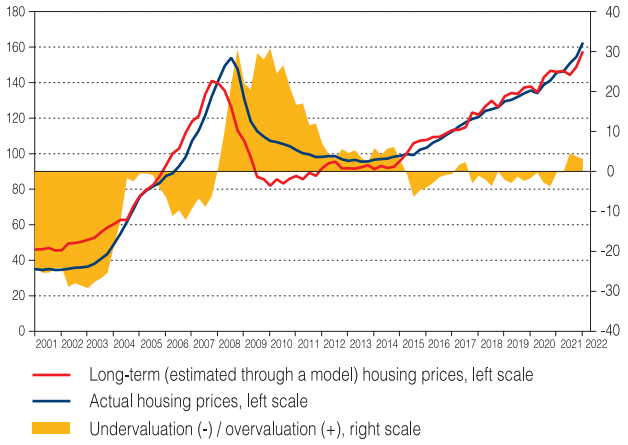
Sources: the NSI, the BNB, Eurostat.

accumulated savings in the economy and limited alternatives for their investment amid low interest rates and accelerating inflation.

In addition, the continuing acceleration of the annual growth in the construction cost index[85] to 24.2 per cent in the first quarter of 2022, which corresponded to the reported shortage of some construction materials and the increase in their prices[86] after the outbreak of the war in Ukraine, was a supply-side pro-inflationary factor. Over the review quarter, country-wide housing prices were 5.6 per cent higher than historical maximum values recorded in the third quarter of 2008. In the first quarter of 2022 the price-to-rent ratio, which is a frequently used indicator of undervaluation/overvaluation of houses, continued to exceed significantly (by 30.0 per cent) its long-term (historical) average value. This signals that household decisions to purchase a home were driven by reasons other than ensuring an immediate financial advantage by renting newly acquired properties. Such reasons could be the expectations of a continuing increase in hous-

Actual and Equilibrium Housing Prices

(index 2015 = 100) (per cent)



Sources: the NSI, BNB calculations.

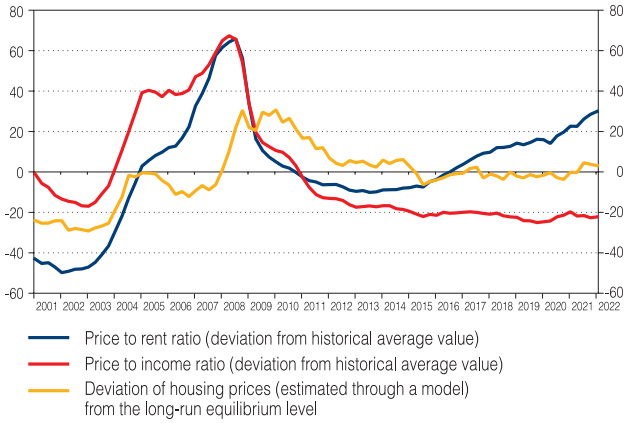
[85] Eurostat data are used.

[86] According to NSI business situation survey data for Bulgaria.

ing prices (and realised capital gains after a sale in the future) or perceptions of residential properties as an alternative asset for preserving value in an environment of low interest rates and high inflation. At the same time, estimates based on the BNB macroeconomic model[87] suggest a significantly lower positive deviation of current residential property prices in Bulgaria from their long-term equilibrium level (about 3.1 per cent). This was due to the fact that rising household income in combination with persistently low interest rates on housing loans have pushed up housing affordability which is recorded as an increase in their equilibrium price within the macroeconomic model. According to the regular NSI business survey, in July 2022, 48.8 per cent of the managers in construction foresee an increase in selling prices over the next three months (against 34.2 per cent at the end of 2021).

Indicators of Undervaluation/Overvaluation of Housing

(per cent)



Sources: the NSI, BNB calculations.

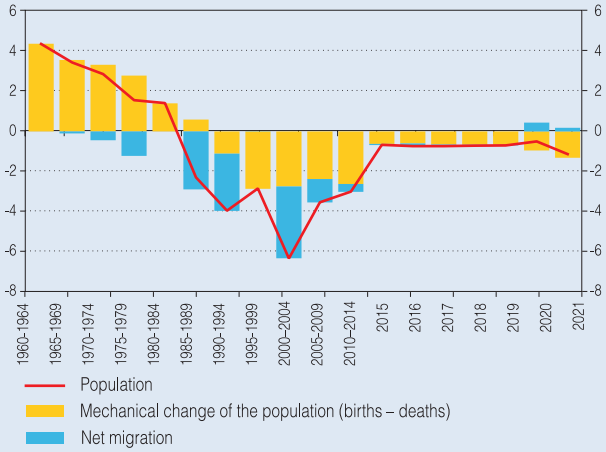
[87] For more information on this model, see the research topic on *House Prices in Bulgaria Between 2000 and 2016*, Economic Review, 1/2017.

Macroeconomic Effects of Demographic Changes in Bulgaria

Demographic processes are gaining increasing significance for the economic development of Bulgaria. As a result of low fertility, high mortality rates and emigration, Bulgaria's population has been persistently declining (Chart 1) and ageing (Chart 2) in the recent three decades, and this trend is expected to be retained in the medium-term horizon.

Chart 1. Contributions to the Population Change in Bulgaria

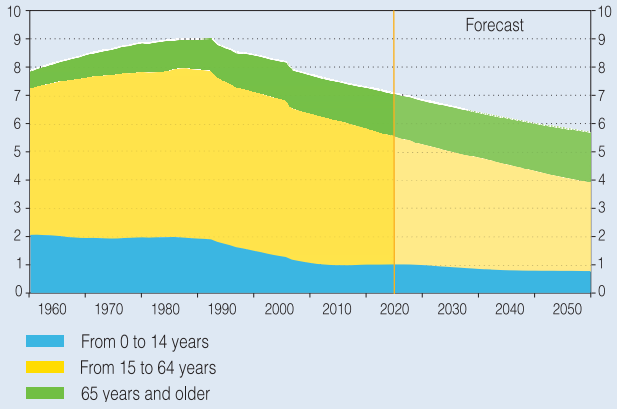
(per cent; percentage points)



Source: Eurostat.

Chart 2. Population Dynamics by Age Group

(million persons)



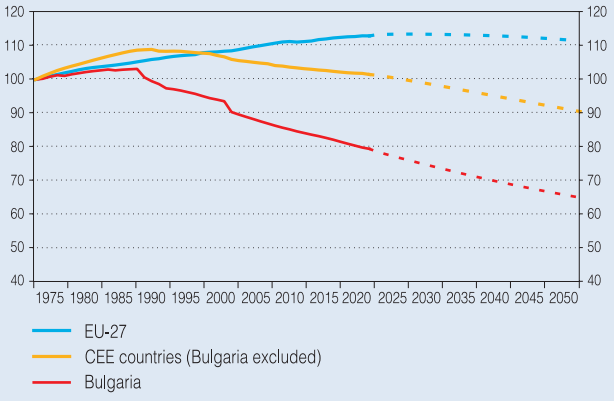
Note: The reported data cover the period 1960–2021 inclusive.

Source: Eurostat.

Trends towards a steady decline and ageing of Bulgaria's population have started since early 90s of the 20th century, driven by a number of economic, political and social factors. As a result of these developments, Bulgaria is the country with the fastest-shrinking population in the EU (Chart 3). Concurrently, the median age[1] of Bulgaria's population in 2021 is above the average for the EU and the highest compared with the rest Central and Eastern European countries (CEE)[2] (Chart 4).

Chart 3. Population Dynamics

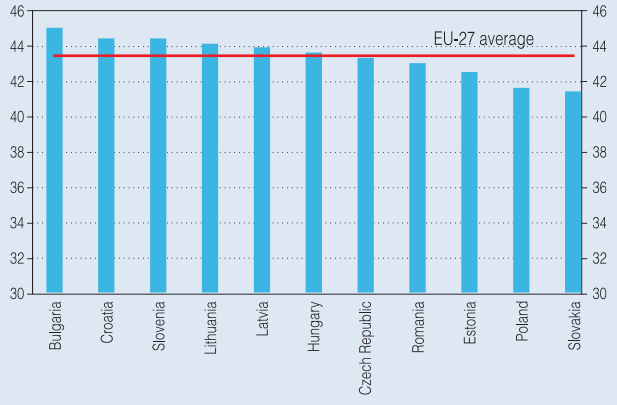
(index, 1975 = 100)



Source: Eurostat.

Chart 4. The Median Age of the Population in 2021

(years)



Source: Eurostat.

[1] The median age divides population into two equal parts: half of the country's population is under this age and the other half is older.

[2] The EU Central and Eastern European countries in the current analysis include Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia.

The purpose of this research topic is to highlight the main macroeconomic channels through which the population ageing and decline are expected to impact the economic growth, fiscal sustainability and price developments in Bulgaria.

Effects on Potential Economic Growth

The decline in population and its ageing limit the economic development of Bulgaria over the longer-term horizon both on the supply side – through changes in production factors – and on the demand side – through changes in the household behaviour regarding consumption and savings and through deterioration in Bulgaria's fiscal position.

The decline and ageing of the population affect negatively the potential growth of the Bulgarian economy as they lead to declines in labour force due to a smaller number of the persons entering the labour market compared to the exit of cohorts, as well as to an increased share of the cohorts with lower productivity. For the 1990–2021 period, the working age population (15–64 years) in Bulgaria decreased by 1.4 million people, and the cumulative drop is expected to deepen to around 2.6 million in 1990–2050.

According to the 2021 Ageing Report of the European Commission[3], unfavourable demographic developments in Bulgaria will reflect in a negative 1.2 percentage points contribution of labour, measured by hours worked, to the potential economic growth in 2050, from a positive contribution of 0.2 percentage points in 2019. This estimate reflects only the direct effect of the population decline on potential economic growth.

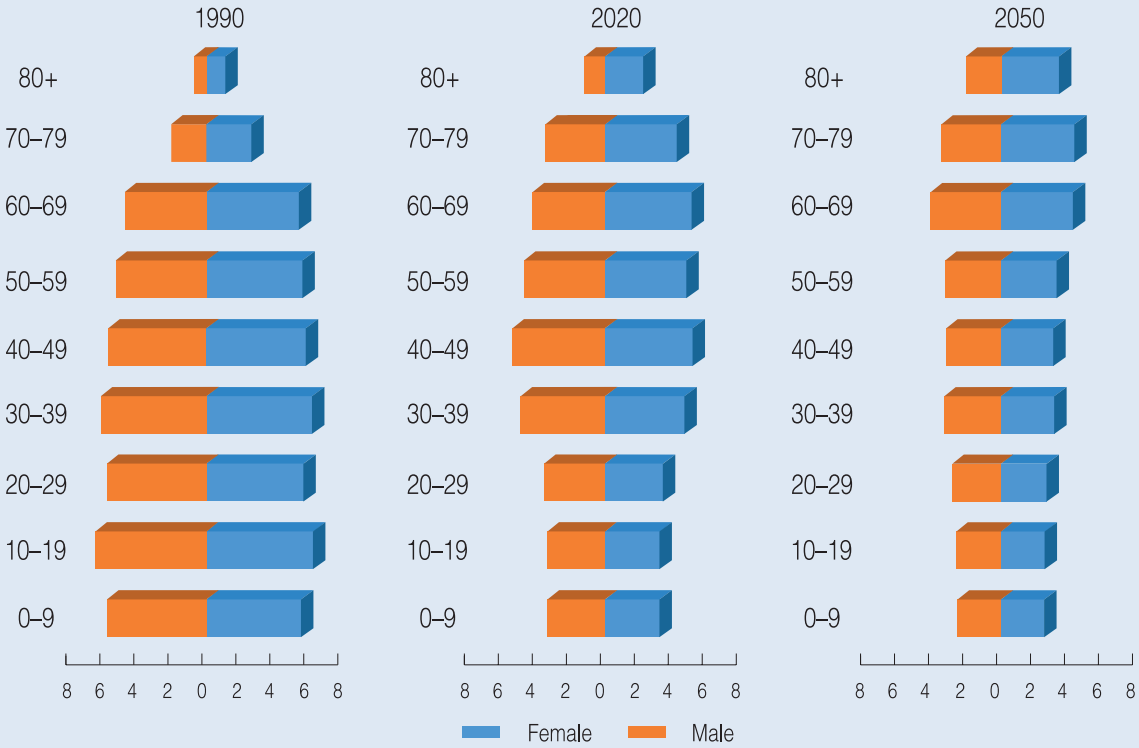
In addition to this effect, emergence of additional negative effects on potential economic growth may be expected in terms of lower labour productivity resulting from changes in the age structure of the population. According to Skirbekk (2003[4]), labour productivity is found to decrease from around 50 years of age, particularly strong for professions where speed in decision-making, learning and adaptation to a changing environment are needed, while its influence is smaller in jobs where experience and verbal abilities are important. Unfavourable demographic developments in Bulgaria entailed a significant change in the structure of population over the last 30 years. Whereas in 1990 persons in the 10–19 age group had the largest share of Bulgaria's population, in 2020 the largest share was occupied by the 40–49 age group. According to the Eurostat's forecast, in 2050 the 60–69 age group will have the highest share followed by 70–79 group (Chart 5), which suggests slowdown in the growth of labour productivity over the long term in line with the results of the Skirbekk's study (2003).

In its 2021 Ageing Report, the European Commission assesses the potential growth of the Bulgarian economy by the contributions of labour (measured by hours worked) and labour productivity (covering the contributions of total factor productivity and capital deepening). According to the European Commission forecast, the contribution of labour productivity to the potential growth in Bulgaria will continue to increase: from 1.9 percentage points in 2019 to 2.5 percentage points in 2030, and then to slow down to 2.2 percentage points in 2050 in line with a deepening population ageing process when the 60–69 and 70–79 age groups will have the largest share of the total population.

To assess the effect of a change in labour productivity on potential economic growth in some theoretical and empirical models, a variable is used to measure the accumulation of human capital in the economy (Mankiw and co-authors, 1990[5]). According to the human-capital theory, the increase of investment in the form of education and health of an individual results in a rise in his productiv-

[3] European Commission, The 2021 Aging Report, *Institutional Paper* No 148/May 2021.
[4] Skirbekk, V. (2003), Age and Individual Productivity: A Literature Survey, *MPIDR Working Paper WP 2003–028*.
[5] Mankiw, N., G., D. Romer, D. N. Weil (1990), A Contribution to the Empirics of Economic Growth, *The Quarterly Journal of Economics*, Volume 107, Issue 2, May 1992, pp. 407–437.

Chart 5. Population Structure by Age Group



Note: A unit of the horizontal coordinate represents 100 thousand people.
Source: Eurostat.

ity (Becker, 1964[6]). In the study of Mankiw and co-authors (1990), a variable is added to Solow's neoclassical growth model,[7] representing the share of working-age population enrolled in secondary school by which accumulation of human capital in the economy is measured. Their model using panel data explains about 80 per cent of the variation in income *per* capita in individual countries, and almost half of this variation is explained by the variable measuring human capital. In a study for Bulgaria covering the 1949–2005 period, Ganeva (2006[8]) finds a positive relationship between the accumulation of human capital measured by various indicators of the educational level in the country and income *per* capita.

Despite a broad consensus in the literature concerning the positive effect of accumulation of human capital on economic growth, difficulties in its measurement caused by its qualitative characteristics represent a challenge to its reliable assessment. Various sources showing assessments of human capital accumulation in individual countries, such as the data base of Barro and Lee[9] on the average number of years of education or the common data base of the Penn World Table[10], register a sustainable accumulation of human capital in Bulgaria after 1990.

Data on the educational level of population and life expectancy in Bulgaria (Charts 6 and 7) confirm the above results, along with a steady increase in the share of population with higher education and a gradual rise in life expectancy.[11] This suggests that in the last 30 years the accumulation of

[6] Becker, G. S. (1964), Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education, University of Chicago Press, Chicago.

[7] Solow's model of growth assesses the long-term economic growth on the basis of changes in the growth of population, savings and technological progress.

[8] Ganeva, R. (2006), The Impact of Human Capital on the Economic Growth (Bulgaria, 1949–2005), *MPRA Paper* No. 37244.

[9] Barro, R. and Jong-Wha Lee (2013), A New Data Set of Educational Attainment in the World, 1950–2010. *Journal of Development Economics*, vol 104, pp. 184–198. Data are available on: http://www.barrolee.com/.

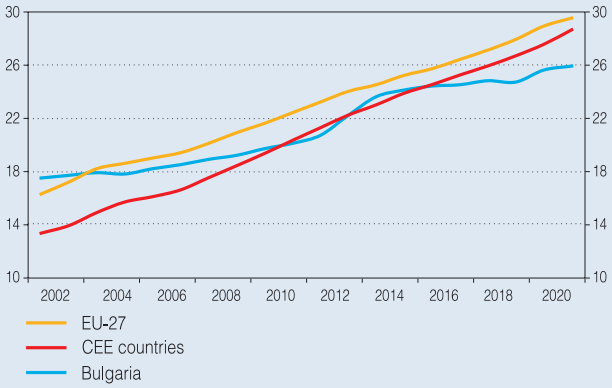
[10] Feenstra, Robert C., Robert Inklaar and Marcel P. Timmer (2015), The Next Generation of the Penn World Table, *American Economic Review*, 105(10), pp. 3150–3182. Data are available on: http://www.ggdc.net/pwt.

[11] An exception of this trend was 2020 due to the spread of COVID-19.

human capital in Bulgaria was due to the positive effects of the increased educational level and life expectancy which had exceeded the negative effects of decreased working-age population and lower labour productivity in some professions, reflecting the ageing of the population.

Chart 6. The Share of the Working-Age Population (15–64) with a Higher Educational Level

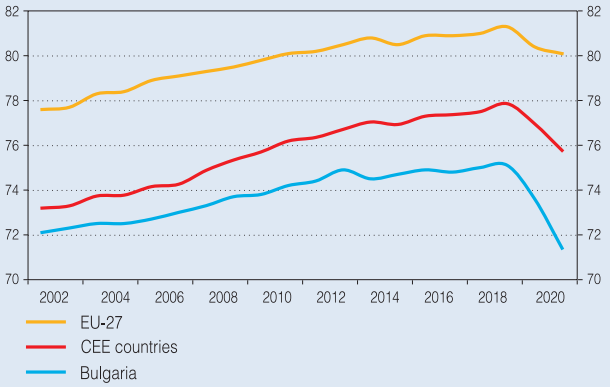
(per cent)



Source: Eurostat.

Chart 7. Life Expectancy

(years)

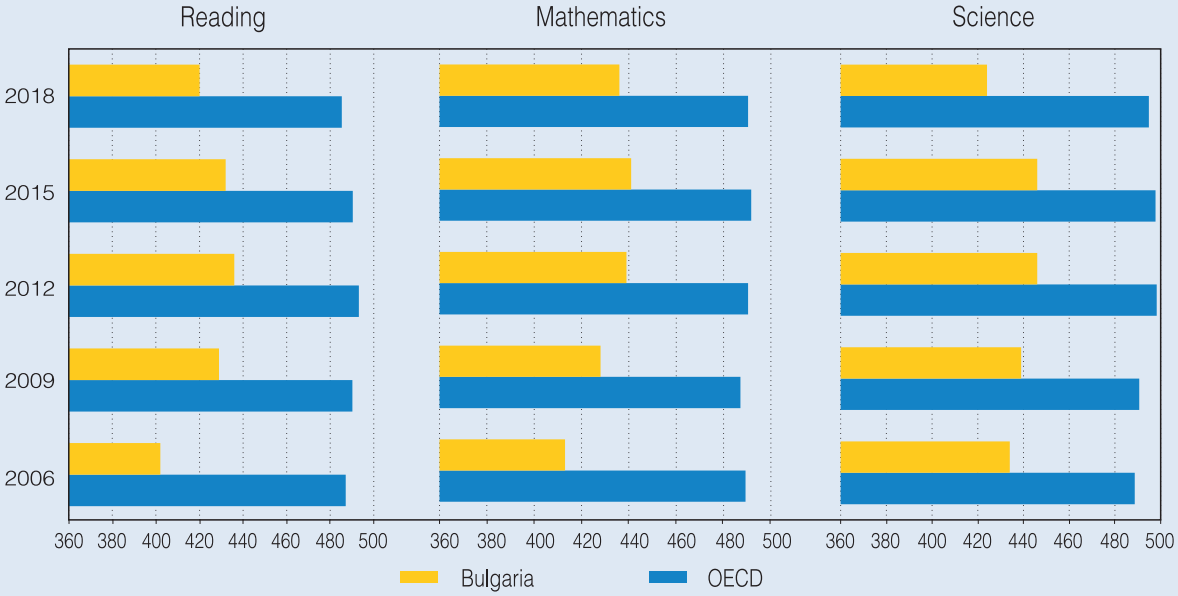


Source: Eurostat.

The increased share of population with higher education in the literature is associated with a rise in labour productivity, but when taking into account the effects of this channel, it should also be noted the quality of the education system. The results of the OECD's Programme for International Student Assessment – PISA (Chart 8), which present assessments of the functional literacy of students in various countries worldwide and their skills to apply knowledge into practice, have indicated a decline in the quality of Bulgaria's education system in recent years, with results for Bulgaria worsening compared with the average level for OECD countries and remaining at a comparatively low level. The continuation of this trend over a long-term horizon is a prerequisite for a decline in the quality of higher education, and hence for weakening of the positive effect of the long-term increase in the share of working-age population with higher education on labour productivity.

Chart 8. Average PISA Scores of 15-Years-Old Students in Bulgaria

(scores)



Source: the OECD.

As regards production factors, in addition to the effects of lower hours worked and lower productivity, negative demographic developments are likely to limit the potential economic growth of Bulgaria

over the long term and in terms of lower investments. The ageing of the population is likely to result in an increase of the physical capital intensity and to stimulate investments in a medium-term horizon, but with the progress of the negative demographic trends, it may be expected that economic growth will slow down and household savings will decline, thus limiting Bulgaria's investment capacity.

Effects on the Savings Rate and Household Consumption

According to the life-cycle hypothesis developed by F. Modigliani and R. Brumberg in the 1950s, individuals seek to smooth consumption over the course of a lifetime – borrowing in times of low income and saving during periods of high income in order to ensure their consumption during the retirement (Ando and Modigliani, 1957[12], Deaton, 2005[13]). This hypothesis suggests that young and old people save less since their income is usually lower. This observation corresponds to the so-called hump-shaped labour income profile by age groups, described by Mincer (1974[14]). According to it, earnings increase rapidly in the initial stage of the professional experience of an individual (to the maximum value for the group of 30–39 years in the case of Bulgaria) thereafter starting to slowly decrease. Research studies explain decreased labour earnings after 40–50 years by such factors as lower productivity, switching to part-time employment and lower activity in the labour market.[15] As a result, the total savings rate tends to decrease in societies with a high old-age dependency ratio.[16] At a macro level, lower savings lead to lower investments, thus affecting negatively the accumulation of physical capital.

Several studies test empirically the reliability of the life-cycle hypothesis but there are no unambiguous empirical evidence if the savings rate changes significantly with the change of the age profile of the population. Higgins and Williamson (1997[17]) study the effect of the demographic transition on the saving and investment behaviour in some Asian countries during the 1950–1992 period and find that the aggregate savings rate is usually lower in the countries with a higher age dependency ratio. Using panel data on OECD countries for 1950–1980, Meredith (1995[18]) presents estimates that a 1 percentage point increase in the age dependency ratio leads to a 0.86 percentage point decrease in the savings rate. In another study about Japan, Muhleisen and Faruqee (2001[19]) establish that with the ageing of the population, the savings level declines but other aspects of demographic changes, such as a lower share of young people (who have a high consumption rate and low levels of savings) and increased life expectancy (which suggests accumulation of precautionary savings for the post-retirement period), could compensate partially the negative effects on total savings in the economy. The motive for leaving an inheritance to the younger generation is another factor which is considered to limit the decrease in the savings rate of elderly people (Meredith, 1995).

Results of the studies on the effects of ageing on household consumption are not unambiguous as well. Lee and Mason (2007[20]) find that the increase in the share of the elderly population reduces income *per* capita of all generations and leads to a net decrease in total household consumption.

---

[12] Ando, A., and F. Modigliani (1957), Tests of the life cycle hypothesis of savings: Comments and suggestions, Oxford Institute of Statistics Bulletin 19: pp. 99–124.

[13] Deaton, A. (2005), Franco Modigliani and the Life-Cycle Theory of Consumption, *BNL Quarterly Review*, 2005, vol. 58, issue 233–234, pp. 91–107.

[14] Mincer, J. (1974), Schooling, Experience, and Earnings, NBER.

[15] For further information on the factors driving decisions of individuals to participate in the labour market, see the paper: Ventsislav Ivanov, Kristina Karagyozova-Markova, Gergana Markova, Andrey Vassilev, Zornitsa Vladova (2022), 'Determinants of Labour Force Participation in Bulgaria: Empirical Evidence from Micro Data', Discussion Papers, BNB.

[16] A ratio of the population aged 65 years or over to the population aged 15–64.

[17] Matthew Higgins and Jeffrey G. Williamson (1997), Age Structure Dynamics in Asia and Dependence on Foreign Capital, *Population and Development Review,* Vol. 23, No 2 (Jun., 1997), pp. 261–293 (33 pages).

[18] Meredith, G. and U. Baumgartner (1995), Saving Behavior and the Asset Price Bubble in Japan, *IMF Occasional Papers*.

[19] Hamid Faruqee and Martin Miihleisen (2001), Population Aging in Japan: Demographic Shock and Fiscal Sustainability, IMF Working Paper.

[20] Lee, S.H. and A. Mason (2007), Who Gains from the Demographic Dividend? Forecasting Income by Age, *International Journal Forecast*, 23, pp. 603–619.

According to the authors, motives for leaving an inheritance to the younger generation cut additionally consumption of elderly cohorts. According to other authors, the ageing population changes to some extent preferences of households and the structure of their consumption, but not the level of aggregate consumption (Walder and Döring, 2012[21]). In its study, Merette and Georges (2009[22]) ascertain that the ageing of the population causes sector changes in demand: demand for health services increases, while that for housing services declines as the rate of household formation slows. In a study for Germany, Stöver (2012[23]) also establishes that ageing of the population has no significant effect on aggregate consumption but has a strong effect on its components, with the share of healthcare costs increasing and that of food expenses decreasing.

Chart 9. Median Savings by Age Groups

(percentage of disposable income)

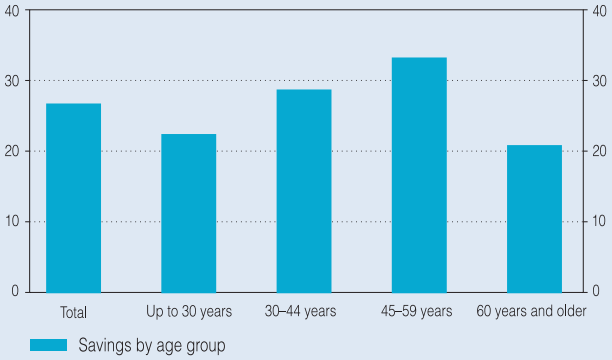
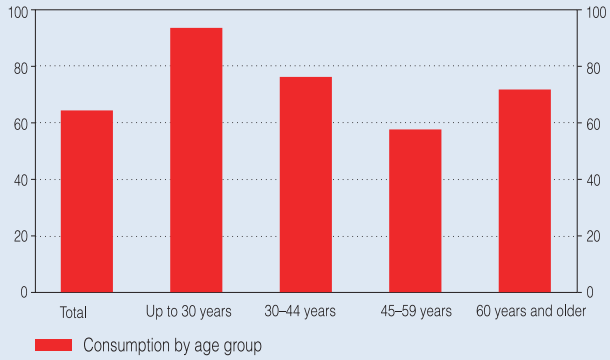


Chart 10. Propensity to Consume by Age Groups

(percentage of disposable income)



Note: Data represent the average values of the years 2010 and 2015 which are available for Bulgaria. The Chart 'Median Savings by Age Groups' represents new savings as a share of disposable income, but not all accumulated savings over the life cycle.

Source: Eurostat's Experimental Statistics.

On the basis of data for Bulgaria, a conclusion can be drawn that the life-cycle hypothesis is partially confirmed, with a higher propensity to save in Bulgaria observed during the life cycle immediately prior to retirement (Chart 9). The lower savings rate of the persons in the 30–44 age group when labour income is the highest can be explained by the childcare life cycle and relevant additional expenditure.[24] In line with the life-cycle hypothesis, individuals under the age of 30 have the highest propensity for consumption which decreases over time until retirement age when savings from previous life cycles are consumed (Chart 10). However, it should be borne in mind that the higher consumption rate of the persons over the age of 60 also reflects the lower levels of disposable income in this group. At the same time, according to Eurostat's data, individuals spend less of their disposable income on consumption with increasing of their educational qualifications and labour income. With regard to the expenditure structure, data for Bulgaria show that as consumers grow older, they spend more of their disposable income on food products, utility services and healthcare. In almost all other goods and services, a lower consumption propensity is observed for elderly people, with this being the most pronounced in expenditure on clothing, restaurants and hotels, transport and communications (Chart 11).

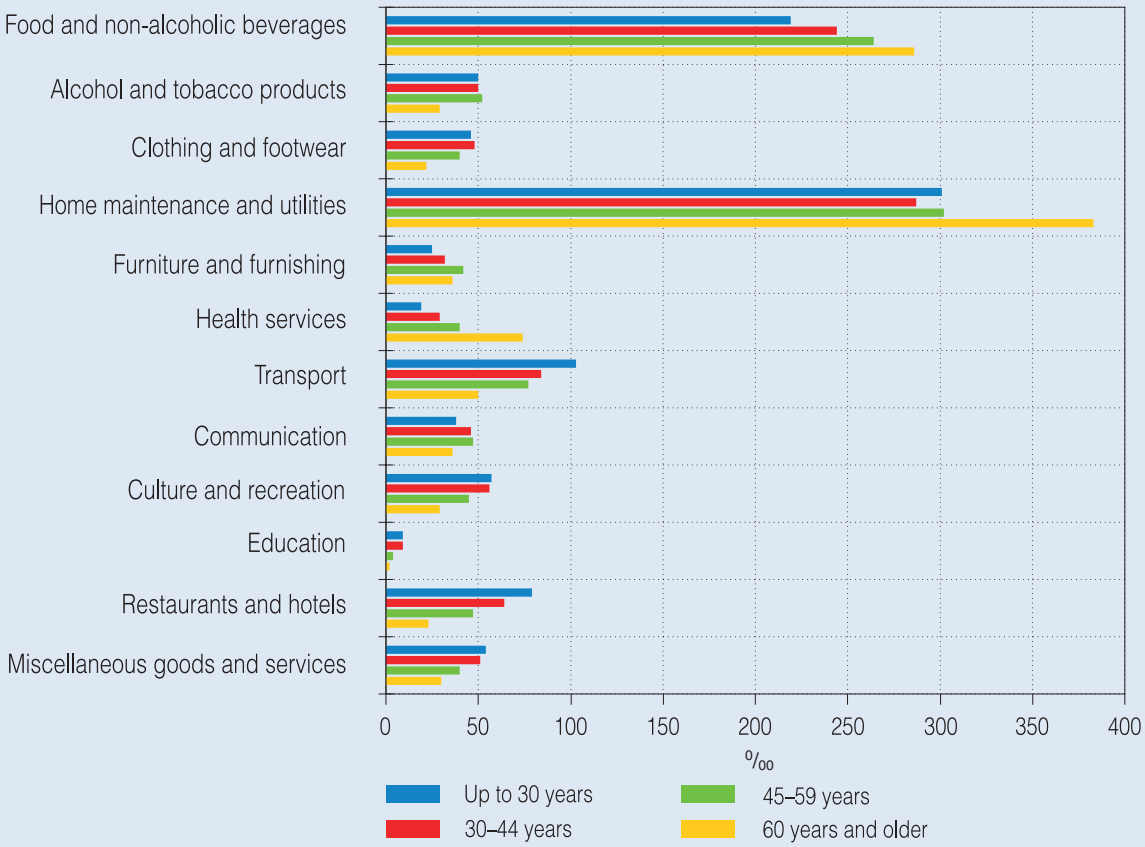
[21] Walder, A.B. and T. Döring (2012), The effect of population ageing on private consumption – a simulation for Austria based on household data up to 2050. *Eurasian Economic Review*, 2, pp. 63–80.

[22] Merette, M. and P. Georges (2009), Demographic Changes and the Gains from Globalization: An Overlapping Generations CGE Model, *Department of Economics Working Papers* No 0903, University of Ottawa.

[23] Stöver, B. (2012), The Influence of Age on Consumption, *GWS Discussion Paper*.

[24] According to NSI data, the average mother's age at first birth for seven of the largest regions of the country on average (Blagoevgrad, Burgas, Plovdiv, Rousse, Sofia, Varna and Veliko Tarnovo), which make up more than 50 per cent of the population, increased from 26.5 years in 2010 to 28 years in 2021. On average for the country, the average age of a mother at first birth rose from 26.2 years in 2010 to 27.5 years in 2021.

Chart 11. Structure of Consumption Expenditure by Commodity Groups and Services According to the Age in Bulgaria



Note: Data represent the average values for the years 2005, 2010, and 2015, which are available for Bulgaria.
Source: Eurostat.

The increase in the age dependency ratio can therefore lead to lower savings over the long term, which will be somewhat limited by an anticipated increase in life expectancy[25] and a lower share of young people, which are with the highest consumption rate. At the same time, changes in the household consumption structure can be expected over the long term, resulting in an increase of the shares of food, utilities and healthcare expenditure. Such a shift in spending towards services, such as healthcare, which are largely provided by the state, will have lasting negative fiscal effects through higher public expenditure.

Effects on Fiscal Sustainability

The ageing, decrease and change in the age structure of the population in Bulgaria have a direct impact on the tax and social security base of the state budget and on expenses on pensions, healthcare and long-term care. Higher social expenditure and lower tax revenue stemming from these demographic changes lead to a deterioration in the budget balance, an increase in public debt and a negative impact on the sustainability of public finances in the long term (Aguila, 2011[26],

[25] According to the forecast presented in the European Commission's 2021 Ageing Report, as of 2070 the average life expectancy will increase to 85 years, from 75 years in 2019.
[26] Aguila, E. (2011), Personal Retirement Accounts and Saving. *American Economic Journal*: Economic Policy, 3, pp. 1–24.

Elmeskov, 2004[27], Tosun, 2003[28]). Hock and Weil (2012[29]) find that regularly accumulated budget deficits due to higher current government expenditure related to the population ageing lead to accumulation of public debt or higher tax rates, which would ultimately lead to a loss of household disposable income and lower potential growth. According to the authors, these negative effects are more pronounced in countries with a predominant share of pay-as-you-go (cost-covered) pension systems, as is the case in Bulgaria.[30]

A possible way of reducing the pressure on public finances stemming from the ageing population is to raise the retirement age so that it can correspond to the rising life expectancy. According to Finch (2014[31]) however, this solution is not very popular from political point of view. In support of Finch's statement (2014), Bloom (2011[32]) examined the relationship between life expectancy and retirement age in 43 countries and found a low correlation between them. In an overlapping generations model (OLG) for Bulgaria, Karagyozova-Markova (2015[33]) notes that the increase in the retirement age laid down in the preliminary texts of the 2015 pension reform[34] is not sufficient to offset the negative effect of the population decline on economic growth, but significantly mitigates the impact of the population ageing on public expenditure.

Some authors, including Eiras and Niepelt (2012[35]) and Lisenkova, Merette and Wright (2013[36]), examine other channels for limiting the effects on government spending, other than raising the retirement age. According to their analyses, higher public expenditure related to the population ageing can be financed by a decrease in education and infrastructure costs as a result of a decline in the proportion of people using these services. The net effect of such redistribution of expenditure may be neutral for the country's fiscal position, but will be negative for its potential economic growth due to the adverse impact of lower education and infrastructure expenses on the accumulation of physical capital in the economy. Other authors, such as Blake and Mayhew (2006[37]), argue that the steady flow of immigrants to the countries with an ageing population can to some extent mitigate the pressure on the labour market and, consequently, on the public sector income from social security contributions. This argument is mainly applicable to more developed countries with a

[27] Elmeskov, J. (2004), Aging, Public Budgets, and the Need for Policy Reform, *Review of International Economics*, 12, pp. 233–242.

[28] Tosun, M. S. (2003), Population Aging and Economic Growth: Political Economy and Open Economy Effects. *Economics Letters*, 81, pp. 291–296.

[29] Hock, H. and D. N. Weil (2012), On the Dynamics of the Age Structure, Dependency and Consumption. *Journal of Population Economics*, 25, pp. 1019–1043.

[30] According to the Social Security Code, employees in the third employment category, which account for more than 90 per cent of the employees in Bulgaria, are subject to the following social security obligations: for those born before 1 January 1960: 100 per cent of the contributions due are transferred to the so-called first pillar of the pension system, which is administered by the State Social Security; for those born after 31 December 1959: about 80 per cent of the contributions due are transferred to the first pillar, and the remaining about 20 per cent to the accounts of universal pension funds, where the raised funds are personal and hereditary.

[31] Finch, N. (2014), Why are Women More Likely than Men to Extend Paid Work? The Impact of Work-Family Life History, *European Journal of Aging*, 11, pp. 31–39.

[32] Bloom, D. E., D. Canning, G. Fink (2011), Implications of Population Aging for Economic Growth, *NBER Working Paper* No 16705.

[33] Kristina Karagyozova-Markova (2015), Population Ageing and Long-Term Sustainability of Public Finances in Bulgaria, Sofia University 'Saint Kliment Ohridski' Faculty of Economics and Business Administration, Department of Economics, dissertation.

[34] The author has worked with the preliminary texts on the amendment of the Social Security Code, which foresee a gradual increase in the retirement age to reach 65 years for men and 63 years for women. Subsequently, a final version was adopted whereby the retirement age of men and women equals to reach 65 years by 2037, after which no statutory mechanism was approved for an increase in the retirement age.

[35] Eiras, G. M., D. Niepelt (2012), Aging, Government Budgets, Retirement, and Growth' *MPRA Paper* No 44218.

[36] Lisenkova, K., M. Merette, R. Wright (2013), Population Aging and the Labour Market: Modelling Size and Age-Specific Effects, Economic Modelling, 35 (2013), pp. 981–989.

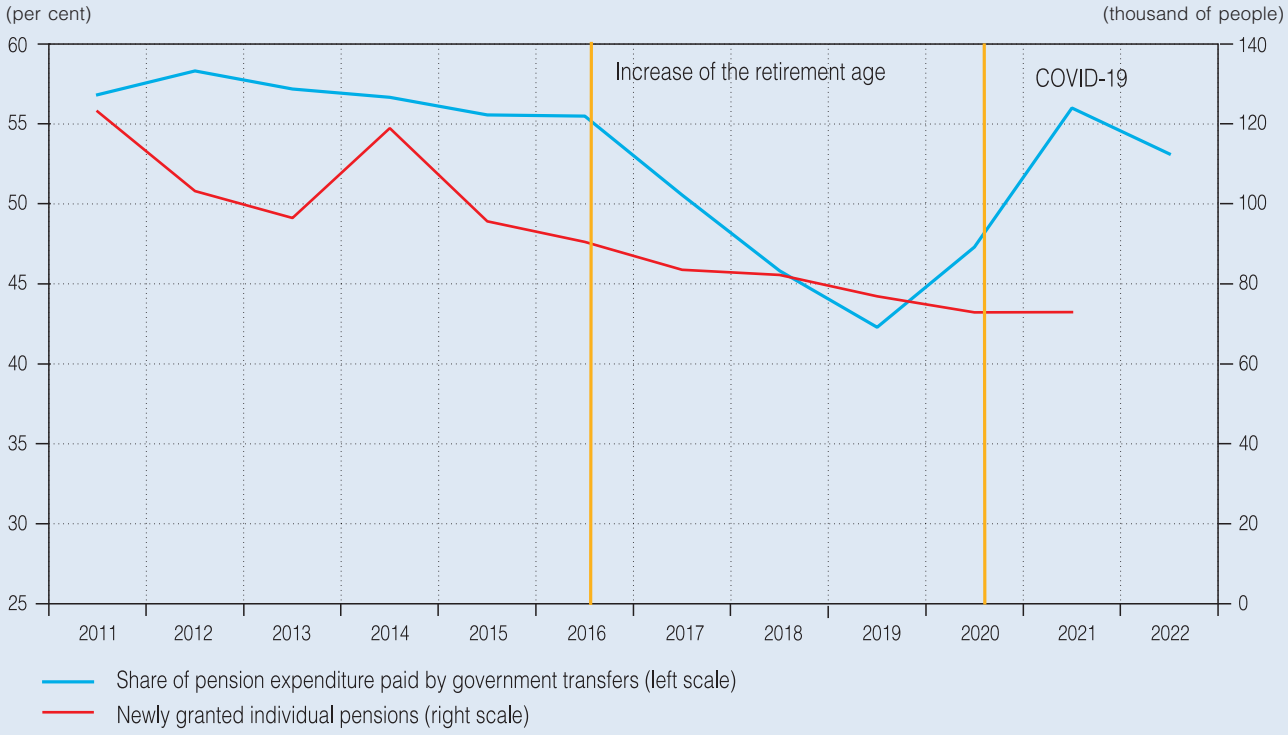
[37] Blake, D., L. Mayhew (2006), On the Sustainability of the UK State Pension System in the Light of Population Aging and Declining Fertility, *The Economic Journal*, 116, pp. 286–305.

comparatively constant inflow of immigrants due to higher remunerations offered (Lee, Mason and Cotlear, 2010[38]).

In the case of Bulgaria, the negative demographic trends have significant fiscal consequences, as the number of contributors to the pension and health system is expected to continue decreasing in the long term compared to the number of recipients of these services, in view of the projected dynamics of the age dependency ratio in Bulgaria (Chart 13).

Despite the gradual increase in the retirement age which started in 2016, income from social security contributions under the Pensions Fund of the State Social Security (SSO) in Bulgaria remains insufficient for the pension expenditure, with the remainder (more than half of all pension payments in 2021) financed by transfers from the state budget (Chart 12). This negative trend was exacerbated by the onset of the COVID-19 pandemic, when non-contributory pension supplements were paid. Additional government transfers, that have the character of temporary social assistance in response to health or economic crises but are paid through the basic pension, create expectations of durability of the funds received and cannot be easily abolished.[39]

Chart 12. The Share of Pension Expenditure Paid with Non-Insurance Revenue and Newly Granted Individual Pensions



Note: Data on pension expenditure paid with social contributions for 2022 are in line with the Law on Amendment of the State Social Security Budget of July 2022.

Source: the NSSI.

The increase in the age dependency ratio (Chart 13) measured by the ratio of the population over 65 to the population aged 15 to 64, as well as the projections of a continuing increase of this ratio to 52.5 per cent by 2070 will be a factor for a sustained rise in government expenditure on pensions, healthcare and long-term care. At the same time, it can be expected that the decline in labour force will be reflected in lower tax-insurance revenue, which, in the context of an increasing share of persons at retirement age, would lead to a significant increase in the budget deficit of

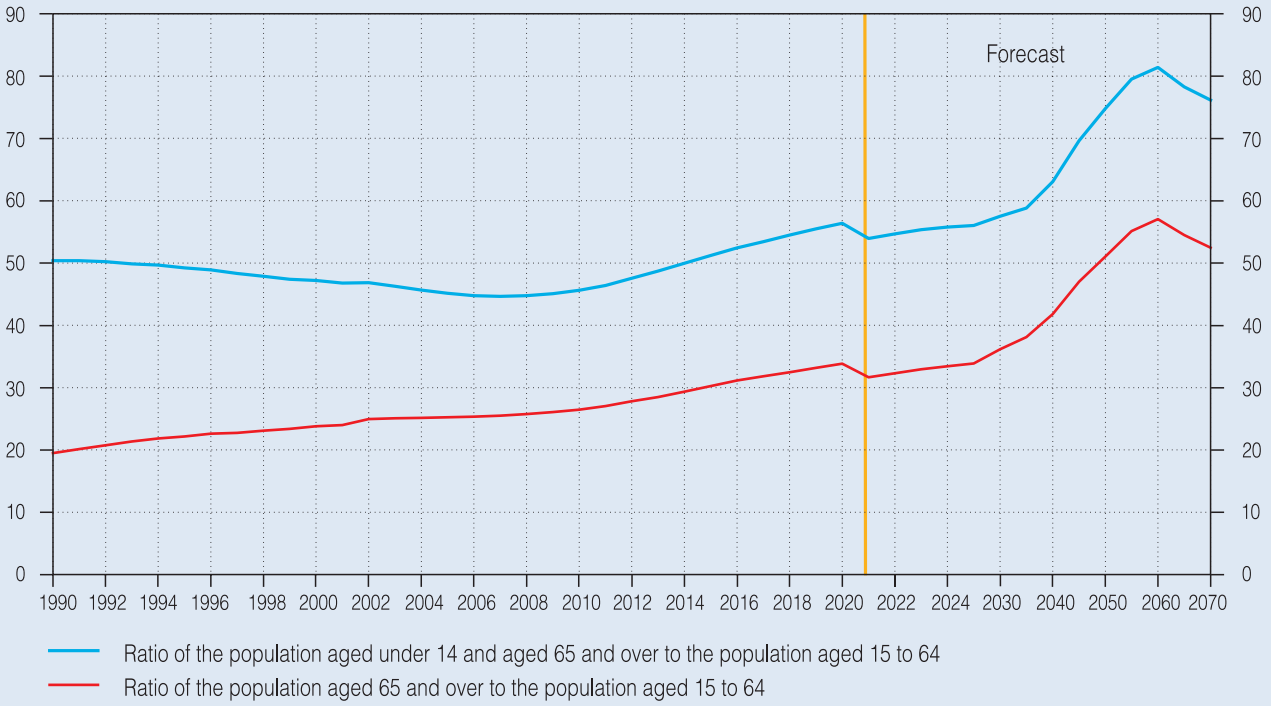
[38] Lee, R., A. Mason and D. Cotlear (2010), Some Economic Consequences of Global Aging: A Discussion Note for the World Bank, *Health, Nutrition and Population (HNP) Discussion paper*; The World Bank.

[39] COVID-19 pension allowances paid from August 2020 to July 2022 were included twice in the amount of the basic pension: in December 2021 and July 2022, respectively.

the State Social Security, which is already on an expansion trend in recent years and is projected to reach 4 per cent of GDP by the end of 2022 (compared with 3.1 per cent at the end of 2019). Other things being equal, this would lead to an increase in transfers from the state budget in order to maintain the sustainability of the pension system.

Chart 13. Age Dependency Ratios in Bulgaria

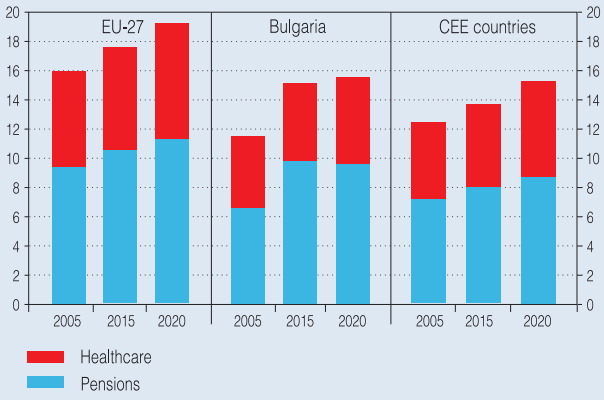
(per cent)



Source: Eurostat.

Chart 14. The Share of Public Expenditure on Pensions and Healthcare

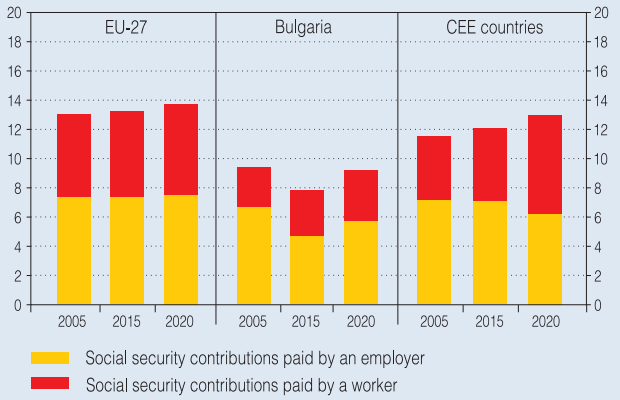
(share of GDP)



Source: Eurostat.

Chart 15. Social Contributions Revenue

(share of GDP)



Source: Eurostat.

On a comparable basis, over the 2005–2020 period, the share of expenditure on pensions and healthcare increased both in Bulgaria and at EU level and in Central and Eastern European countries, with the increase in healthcare expenses being the strongest in 2020 due to the COVID-19 pandemic. The comparison of the share of pension expenditure in Bulgaria with the corresponding share in the countries of Central and Eastern Europe shows that already in 2015 pension expenditure in Bulgaria was higher as a percentage of GDP, and this was retained in 2020 (Chart 14). At the same time, the ratio of income from social and health insurance to GDP, which finances pension and healthcare expenditure, fell slightly in Bulgaria, while the overall EU and Central and Eastern

European countries registered an increase (Chart 15). Income from social security contributions is not sufficient for the maintenance of social systems in any of the groups of countries under consideration, but this shortfall is strongly expressed in Bulgaria which is characterised by the most negative demographic trends.

In the medium term, it can be expected that demographic processes will further increase the tax wedge on labour[40] in a context of underfunding of the pension system. This in turn can lead to a deterioration of the competitiveness of the Bulgarian economy and a decrease in its long-term growth potential. In the longer term, the ageing of the population will be a factor for increasing transfers from the state budget to the budgets of the State Social Security and the National Health Insurance Fund (NHIF). In the period after 2027 and 2029, when the pensionable years required for entitlement to a pension for men and women cease to rise, and the retirement age for men ceases to rise, respectively, the negative fiscal effects on the pension system will intensify. Also in 2037, the required retirement age for women also ceases to increase, thus the ratio between the number of pensioners and the number of insured persons would deteriorate further. The rising share of elderly people in Bulgaria will also result in increased healthcare expenditure of the state[41]. According to the European Commission's 2021 Ageing Report, total public expenditure related to the population ageing in Bulgaria will grow by between 2.1 and 4.1 percentage points of GDP in 2070 compared to 2019. At the same time, the projected decline of the labour force in Bulgaria by just below 1 million and 300 thousand people in the period 2019–2070 will significantly reduce the tax-insurance base of budget revenue. Possible financing of the social system with excessive accumulation of public debt will pose additional risks to the fiscal sustainability of the country. The rapid increase in the speed and amount of assuming public debt will in turn limit the public sector's response in case of significant macroeconomic shocks.

Effects on Inflation

Demographic processes affect inflation through various channels, including changes in relative prices of production factors, changes in household consumption and saving preferences and effects on potential economic growth and fiscal and monetary policies (Anderson and co-authors, 2014[42]). Across different channels, the effects of negative demographic developments can both amplify and weaken the pressure to rise consumer prices, with the net effect depending on the specific structural characteristics of the economy.

Some empirical studies have found a negative correlation between population ageing and core inflation. According to these studies, the negative impact on inflation is the result of weaker aggregate demand due to an ageing population, as well as of the growing political influence of older cohorts in defining economic policies and the redistributive role of the state. On the demand side, population ageing affects inflation in the country due to changes in consumer habits. Older cohorts spend more in relative terms than younger cohorts on services, namely healthcare and long-term care, and housing costs for utilities and maintenance, and less on transport, durable goods and clothing (Bodnar and Nerlich, 2022[43]). Prices of these services are largely regulated, making them more rigid *vis-à-vis* higher demand. As a result, the ageing population can have a limiting effect on price increases in the economy (Bodnar and Nerlich, 2022). Anderson and co-authors (2014) found a negative correlation between adverse demographic processes and inflation mainly as a result of

[40] Minimum and maximum social security thresholds are considered, which are set administratively, on the basis of a political decision and directly affect corporations' costs.

[41] According to Article 40, paragraph 1, item 4 of the Health Insurance Law, health insurance contributions for pensioners by the State Social Security or by a professional pension fund are paid on the basis of the amount of the pension or the sum of the pensions, excluding allowances thereto, and are charged to the state budget.

[42] Anderson, D., D. Botman, B. Hunt (2014), Is Japan's Population Aging Deflationary?, *IMF Working Paper No 14/139.*

[43] Bodnar, K., C. Nerlich, 2022, The macroeconomic and fiscal impact of population ageing, *ECB Occasional Paper Series*, No 296.

lower GDP growth. Bobeica and co-authors (2017[44]) empirically confirm the negative correlation between population ageing and inflation for Germany, the US and the euro area. According to the authors, findings could be explained by the so-called secular stagnation hypothesis[45] under which population ageing leads to a relatively higher increase in aggregate savings than investment.

According to Bullard and co-authors (2012[46]), population ageing leads to persistently lower inflation due to political factors. According to them, as a result of demographic processes, the elderly population becomes the main group of voters. Since adult cohorts rely heavily on their savings for consumption, they prefer low inflation rates. Preferences of the dominant group of voters, in turn, influence the redistributive policy of governments, with inflation having the character of a tool for redistributing resources in the society.

Another part of empirical studies supports the thesis that the population decline and ageing lead to higher inflation. These results are mainly explained by the life cycle hypothesis (Juselius and Takats, 2015[47]; Bodnar and Nerlich, 2022). It has been found that the relationship between the demographic structure and inflation follows a U-shaped relationship: the relatively higher share of dependent young and elderly persons is likely to have an inflationary impact, while the relatively higher proportion of the working-age population is considered to have a disinflationary effect (Bodnar and Nerlich, 2022; Goodhart, C. and M. Pradhan, 2020[48]). The reason for this is that dependents (young and old) consume but do not contribute to the production process, while an ageing population can lead to a shortage of labour supply, thereby depressing the potential output of the economy. If an ageing population is dominated by a low birth rate and a declining share of young people, whereas labour supply is stable or even growing, as seen in the euro area over the past two decades, the impact is usually disinflationary (Bodnar and Nerlich, 2022). By contrast, once the labour force starts to shrink and the share of old age dependents to total population rises more strongly, the disinflationary effects become pro-inflationary (Bodnar and Nerlich, 2022). The shrinking working-age population creates an inflationary pressure also in terms of wage rises as a result of labour shortages, which further reinforces pro-inflationary effects.

In the case of Bulgaria, there is already a materialisation of pro-inflationary effects of labour shortages due to negative demographic developments. According to NSI data, the share of enterprises in Bulgaria that point to labour shortages as a factor that hinders their activity increased steadily in all sectors of the economy in the period 2014–2019 (Chart 16). Although the COVID-19 spread has temporarily halted this trend, since the summer of 2020, this share has started to rise again and continues to rise at rapid rates in the first half of 2022 as well, approaching its historical peak. The limited supply of labour has put an upward pressure on wages, and their growth in recent years has outpaced that of labour productivity. As a result, the share of compensation of employees in value added in Bulgaria increased from below 40 per cent in 2008 to 52.3 per cent in 2021, thus not only reaching the corresponding share in the other Central and Eastern European countries, but also slightly exceeding it at the end of the period (Chart 17). This suggests that the wage costs of enterprises are becoming an increasingly significant component of the total production costs in Bulgaria, and thus their increase in order to attract staff is more likely to be passed on from enterprises to final consumer prices.

---

[44] Bobeica, E., C. Nickel, E. Lis, Y. Sun (2017), Demographics and Inflation, *ECB Working Paper No 2006*.

[45] The secular stagnation hypothesis suggests that the post-World War II period, characterised by high birth rates, has stimulated capital accumulation, the rise of labour force and savings. At the retirement of this generation, there was a greater abundance of capital than labour, which led to a decrease in the marginal product of capital.

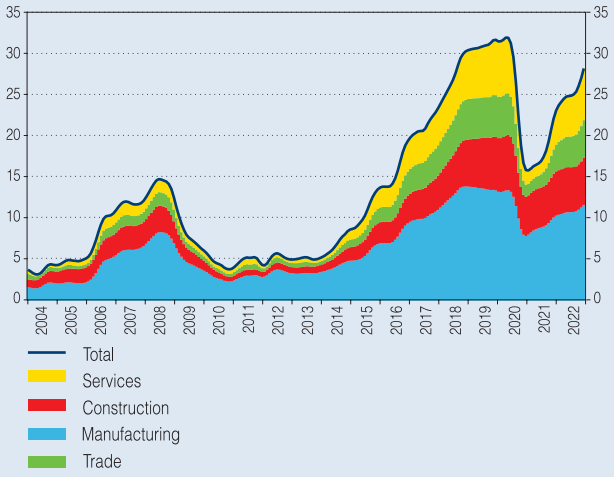
[46] Bullard, J., C. Garriga, C. J. Waller (2012), Demographics, Redistribution, and Optimal Inflation, *Federal Reserve Bank of St. Luis Review*, 94(6), pp. 419–439.

[47] Juselius, M., E. Takats (2015), Can Demography Affect Inflation and Monetary Policy?, *BIS Working Paper* No 485.

[48] Goodhart, C., M. Pradhan (2020), The Great Demographic Reversal: Aging Societies, Waning Inequality, and an Inflation Revival.

Chart 16. Enterprises Experiencing Labour Shortages in Bulgaria

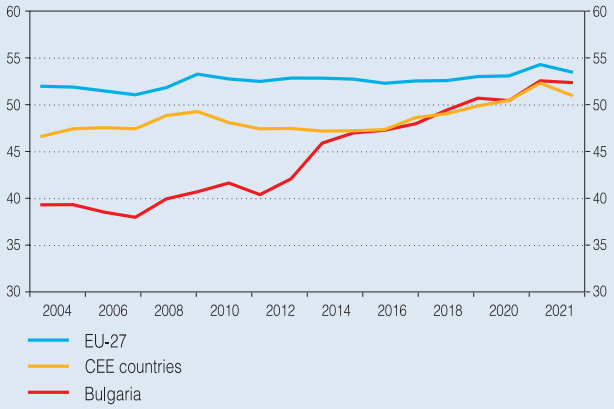
(percentage of enterprises)



Source: the NSI, BNB calculations.

Chart 17. The Share of Compensation of Employees in Gross Value Added

(per cent)



Source: Eurostat, BNB calculations.

As a result of the historical development and trends for Bulgaria, it can be expected that demographic processes will have a rather pro-inflationary effect in the medium and long term, mainly through the limited labour supply.

Conclusion

In conclusion, described channels of impact of the population ageing and decline, as well as the descriptive analysis for Bulgaria show that demographic processes already have a negative impact on economic activity of the country, while creating risks to the sustainability of public finances. Labour shortages put pressure for wage growth ahead of labour productivity, which creates upward pressures on final consumer prices in the country, while lowering the price competitiveness of the Bulgarian firms in international markets. In the absence of measures to address labour supply constraints, it could be expected that adverse demographic developments will continue to have a pro-inflationary impact over the medium and long-term horizon. In addition, demographic processes in Bulgaria are expected to have a strong negative effect on the country's economic growth through the decline of the working-age population, lower labour productivity that can be expected as a result of the population ageing and the negative effects on exports due to the worsening price competitiveness. Under a hypothesis of unchanged policies, a further increase in the State Social Security deficit can be expected, which poses a significant risk to the sustainability of Bulgaria's public finances in the medium and long term.

ISSN 2367-4962 (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.