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Bulgaria
Public Finance Review
2023

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Acknowledgments

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1. Bottom-Up Estimation of the VAT Reporting Gap in Bulgaria, by Brian Erard (Consultant)
2. Reassessing Welfare Impacts of Bulgarian Fiscal Policy through a Child Poverty Perspective, by Monica Robayo (Senior Economist, EECPV) and Maynor Cabrera (Consultant)
3. Bulgaria's Health Taxes - Overview, Trends, and Simulation Results for Potential Optimization of Health Tax Levels, by Evan Harold Blecher (Consultant)
4. Optimizing Spending in Bulgarian Public Procurement: A Strategic Sourcing Analysis, by Mihaly Fazekas (Consultant), Bence Tóth (Consultant), Zdravko Veljanov (Consultant), and Viktoriia Poltoratskaia (Consultant)
5. Education Spending and Learning in Bulgaria, by Juan Bedoya (Consultant)
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List of abbreviations

AE	Advanced Economy
AMECO	Annual Macroeconomic Database of the European Commission
AROP	At-Risk-of-Poverty
BDA	Budget Deviation Analysis
CEQ	Commitment to Equity
COFOG	Classification of the Functions of Government
DEA	Data Envelopment Analysis
DSA	Debt Sustainability Analysis
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECB	European Central Bank
EDIS	European Deposit Insurance Scheme
EMDEs	Emerging Markets and Developing Economies
EU	European Union
GCS	Global Competitiveness Survey
GDP	Gross Domestic Product
GFC	Global Financial Crisis
GMI	Guaranteed Minimum Income
HCI	Human Capital Index
HICP	Harmonized Index of Consumer Prices
IBRD	International Bank for Reconstruction and Development
IMF	International Monetary Fund
ITR	Implicit Tax Rate
MIPP	Market Income Plus Pensions
MoF	Ministry of Finance
MNE	Multinational Enterprise
NACE	Nomenclature of Economic Activities
NRA	National Revenue Agency
NRRP	National Recovery and Resilience Plan
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squared
PFR	Public Finance Review
PIM	Public Investment Management

PIT	Personal Income Tax
PPP	Purchasing Power Parity
RIP	Relative Income Price
RRF	Recovery and Resilience Facility
SFA	Stochastic Frontier Analysis
SMEs	Small and Medium Enterprises
SOE	State-Owned Enterprise
SRM	Single Resolution Mechanism
SSB	Sugar-Sweetened Beverage
SSM	Single Supervisory Mechanism
TED	Tenders Electronic Daily
UMI	Upper-Middle-Income
UMIC	Upper-Middle-Income Country
VAR	Vector Autoregression
VAT	Value-Added Tax
VTTL	VAT True Tax Liability
WAP	Weighted Average Price
WDI	World Development Indicators
WEF	World Economic Forum
WEO	World Economic Outlook

Executive Summary

Bulgaria has traditionally adhered to fiscal discipline and prudent fiscal policy since the introduction of its currency board arrangement in mid-1997. After a gradual decline in the 2000s, public debt has remained among the lowest in the European Union (EU), hovering in a narrow band between 17 and 29 percent of gross domestic product (GDP) for the last 10 years (figures ES.1 and ES.2). The low level of public debt has been supported by relatively low fiscal deficits or even surpluses in some years. This has helped the fiscal system absorb recent shocks relatively unscathed and provided sufficient fiscal space to address emerging crises and limit the scarring on economic activity, the labor market, and incomes.

Figure ES.1. General government budget balance on cash basis (MoF) and accrual basis (Eurostat)

■ Accrual basis (ESA 2010, Eurostat)
■ Cash basis (MinFin)
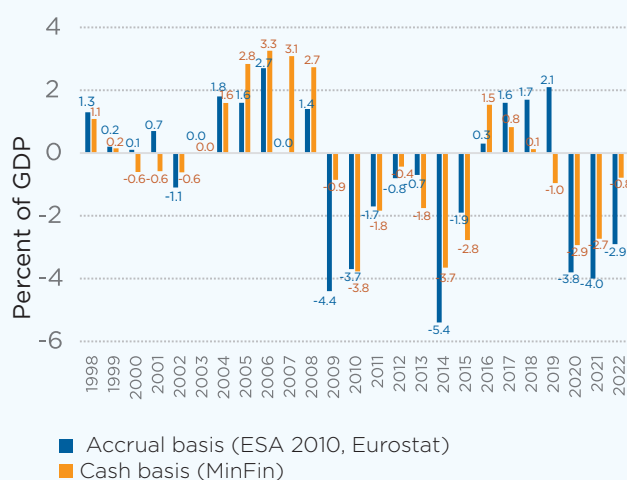
Source: Eurostat, MoF, NSI, own calculations.
Note: MoF = Ministry of Finance. The MoF's budget execution data are compiled on a cash-basis methodology; Eurostat's statistics use accrual basis.

Figure ES.2. General government debt
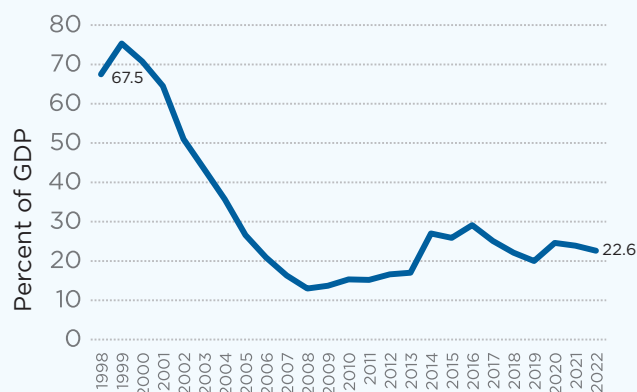
Source: ESA (2010); Eurostat.

Similar to its EU peers, Bulgaria saw its fiscal position worsen following the COVID-19 outbreak and the ensuing Russian invasion of Ukraine, which called for fiscal support measures to mitigate the pandemic and cost-of-living shocks. Yet, the deterioration of the fiscal stance was moderate by EU standards as the deficit did not exceed 4 percent of GDP in any of the crisis years. Nevertheless, the slow phasing out of certain crisis mitigation measures has kept the fiscal deficit relatively high in 2022 (at 2.9 percent of GDP) and is set to keep exerting pressure in 2023 as well. Going forward, fiscal policy would need to remain prudent in view of Bulgaria's medium-term eurozone accession target and fiscal rules in the EU more broadly.

Bulgaria's public finances will need to be placed on stronger footing to weather the sharp slowdown in growth that is under way and to meet fiscal targets related to eurozone accession. However, medium-term consolidation plans will need to be carefully balanced with longer-term development and public service needs. To this end, consolidation in the medium run would require rapid withdrawal of the remaining support measures and renewed attention to strengthening revenue collection and expenditure efficiency. Paced absorption of a significant EU fund envelope for Bulgaria under the NextGenerationEU facility and the Multiannual Financial Framework would also help generate much-needed resources for public investment in domains with high needs such as the green and digital transition. In Bulgaria, meeting fiscal deficit targets has often come at the expense of capital spending, which has likely hindered development goals and prolonged income convergence with the EU. Over the longer term, fiscal policy in Bulgaria will face the challenges of slowing economic growth and adverse demographic trends, which will require deeper structural reforms to sustain the growing bill of some of the most expensive public sectors—the pay-as-you go pension system, health care, long-term care, and education. The materialization of certain sources of fiscal risks—such as large-scale natural disasters—could also trigger fiscal sustainability concerns and call for urgent operationalization of preventive, early warning, and management systems.

This report provides fresh evidence on Bulgaria's fiscal landscape and some of the key issues that fiscal policy may need to address going forward. To start with, the report looks at opportunities to increase revenue collection with two special focuses—the value-added tax (VAT) compliance gap and health taxes (excises on tobacco and alcohol products). A novel bottom-up study on Bulgaria's VAT gap indicates that top-down VAT gap estimates for Bulgaria may be too low and there may be a greater scope for increasing VAT revenues through improvements to audit processes and other compliance-oriented activities. The bottom-up estimates provide evidence on taxpayer groups for which the rate of VAT noncompliance is relatively high. For instance, taxpayers reporting a net balance due tend to have a higher estimated rate of noncompliance than those who claim a refund. Among those reporting a net balance due, the estimated rate of noncompliance is particularly high among medium-size businesses and companies that operate in certain sectors (including various services; professional, scientific, and technical activities; agriculture, forestry, and fishing; and companies that fail to report their sector of operation). The bottom-up study indicates that audits are already effectively addressing certain pockets of VAT noncompliance, though there are potential ways to refine audit programs and other compliance activities both to achieve a higher voluntary rate of compliance and to recover a larger share of unreported taxes.

Health taxes represent another source of tax revenue that is currently not exploited optimally in Bulgaria. Even if health taxes are a relatively significant contributor to tax revenue in Bulgaria—accounting for 2.3 percent of GDP and 7.1 percent of total tax revenues—Bulgaria ranks at the bottom in the EU in terms of its excise rates on tobacco products, spirits, and beer and zero taxation on wine. Moreover, real income growth and few changes in the excise rates in recent years have resulted in increased affordability of such products, undermining health goals. Our simulation

results show that under an ambitious health tax reform scenario, reformed health taxes could bring 0.3 percent of GDP more revenue while reducing consumption of alcohol and tobacco products.

In parallel to potential measures to strengthen tax revenue collection, Bulgaria's public financial management could benefit from improved efficiency and effectiveness of spending. Noncompetitive practices in public procurement are a significant source of inefficiencies and squandering of public resources. New World Bank analysis estimates potential savings of 5.3 percent of the total value of public procurement contracts (2007–22) if competition in procurement is enhanced and the tender process is improved. The largest impact in terms of potential savings can be achieved by increasing the number of bidders who participate in the bidding process. Other policy interventions that could help increase competition and achieve better price outcomes in public procurement are the increase of small and medium enterprise (SME) participation, elimination of short advertisement periods, optimization of decision periods, and expansion of the supplier base by breaking up market concentration.

In addition to curbing inefficiencies, fiscal policy also needs to improve the effectiveness of spending in key public domains, such as education. A new study on the effectiveness of fiscal spending in terms of student results shows a negative relation between student test scores and the amount of fiscal spending on education (per capita). This result reinforces earlier findings on the input approach of Bulgaria's education spending, in contrast to the concept of results-based or output-oriented financing of education. The scheme of transfers to municipalities, adjusted in 2018 to address inequities, is based on criteria that reflect the challenges in the provision of the educational service (input approach). As a result, municipalities with the most socioeconomic difficulties receive the greatest allocation of resources per student. Moreover, the socioeconomic characteristics of the students and their context are solid predictors of learning, meaning that students in municipalities with more challenges in providing the educational service have lower learning outcomes on average. The study also demonstrates the lack of improvement in student outcomes despite the recent increase in education sector spending, with the results being robust across different measures of learning.

Social spending effectiveness in reducing headline poverty and child poverty in particular also requires urgent attention from policy makers. An updated fiscal incidence analysis shows that Bulgaria's fiscal system has a limited impact on overall poverty; neither is it effective in addressing child poverty, as it reduces it by just 0.3 percentage points. Some household types face heightened vulnerability as they do not seem to receive optimal support from fiscal measures, including households with three or more children and lone-parent households, especially those headed by lone females. Yet, some social programs, such as the means-tested programs targeting families and children, play a significant role in mitigating child poverty. Microsimulation results suggest that increasing child income tax deductions among low-income parents and refining the design of child benefits to improve targeting effectiveness and generosity can notably contribute to child poverty reduction.

Chapter 1.
Fiscal Policy Developments and Challenges

Macroeconomic context

Bulgaria's recovery from the pandemic slowed in 2022 alongside weakening external demand, tightening global financial conditions, high inflation, adverse spillovers from the Russian invasion of Ukraine, and base effects. After contracting 4 percent in 2020 due to the pandemic, output expanded 7.7 percent in 2021 (figure 1.1)—the fastest pace of growth in Bulgaria since the late 1980s. Growth was underpinned by a strong rebound in consumption, owing to relatively accommodative macroeconomic policies and robust wage growth as the labor market recovered. Increased political uncertainty, however, triggered steep declines in investment and exerted a sizable drag on the recovery. Following Russia's invasion of Ukraine, growth in Bulgaria almost halved in 2022 to 3.9 percent.

Growth is forecast to further decelerate in 2023, as Bulgaria's economy continues to face significant spillovers from the ongoing slowdown in the euro area and tight financial conditions in main trading and investment partners. Growth is forecast to slow further in 2023, to 1.4 percent—weaker than Bulgaria's underlying potential growth and a marked deterioration from the 3.8 percent envisioned before the invasion in January 2022[2] The subdued near-term outlook reflects the ongoing effects of monetary policy tightening in the euro area as the European Central Bank (ECB) grapples with taming persistent inflation as well as high (albeit slowing) inflation in Bulgaria (figure 1.2). Although the adverse impact of high inflation on real disposable income is expected to weigh on private consumption in the near term, the drag should gradually fade over the next year as the ongoing resilience in the labor market (due mostly to labor shortages) allows for a catch-up in real wage growth. Weak near-term growth also reflects a feeble global environment amid tightening financing conditions, elevated uncertainty, and tepid trade growth. These developments continue to weigh on Bulgaria's economy through weaker external demand from the euro area for Bulgarian goods and services, with Bulgaria's goods exports also dented from the slump in global manufacturing and broader rotation from goods to services as demand normalizes following the pandemic. On the positive side, the formation of Bulgaria's government in mid-2023 after about two years of political impasse should help cushion growth by stabilizing the business environment and allowing for the implementation of reforms, the National Recovery and Resilience Plan (NRRP), and eurozone accession plans.

Figure 1.1. Contributions to Bulgarian growth

Percent, percentage points

Public consumption
Private consumption
Gross fixed capital formation
Exports
Imports
GDP

Source: World Bank and Bulgarian National Statistical Institute.
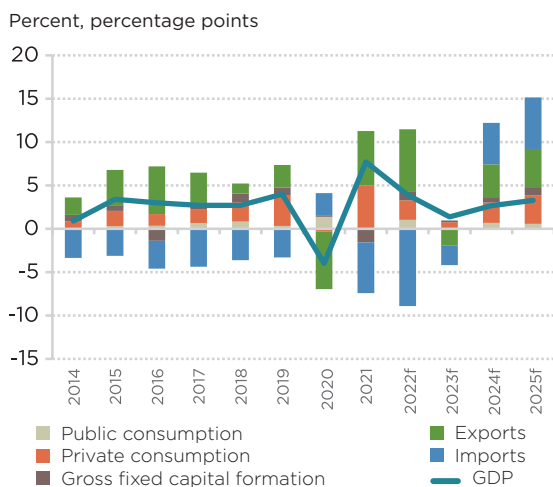
Figure 1.2. Bulgaria's HICP inflation, monthly y/y %
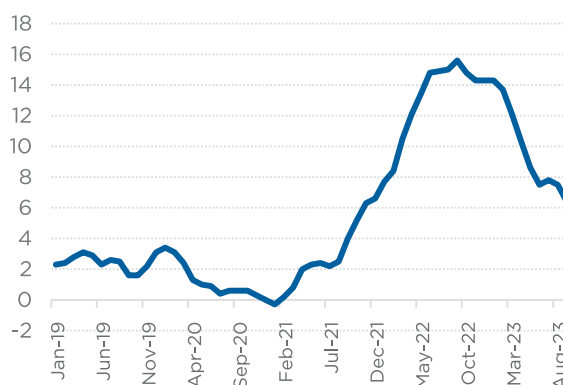
Source: World Bank.
Note: HICP = Harmonized Index of Consumer Prices; y/y = Year over year.

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2 World Bank, 2021. "Europe and Central Asia: Macro Poverty Outlook." 2021 Annual Meetings Report. World Bank, Washington, DC.

Over the medium term, Bulgaria's economic growth is set to gradually recover as uncertainty declines, energy market price pressures fade, remaining supply bottlenecks are resolved, and the external outlook improves. Growth in Bulgaria is projected to accelerate after a sharp slowdown in 2023, averaging about 3 percent over 2024–25, above its potential growth rate, which will likely keep the output gap in the positive territory. Activity in Bulgaria is expected to improve alongside a recovery in domestic demand, as private consumption is lifted by easing inflationary pressures and higher wages, while investment is supported by political stability and European Union (EU) funds. Bulgaria's economy will also benefit from firming external demand, with export growth averaging 6.2 percent over 2024-25 and helping to return the current account balance back to surplus in the medium run. Meaningful reforms and political stability—alongside effective absorption of multiple EU investment funds—will be crucial to ensure that Bulgaria's potential growth is boosted in the remainder of the decade.

Without structural reforms, economic growth is set to decelerate to 1.25 percent by 2050. A recent simulation using the World Bank's Long-Term Growth Model shows that Bulgaria's economic growth will slow down markedly to 1.25 percent by 2050 under a no-reform scenario, due primarily to the declining share of the working-age population and total factor productivity growth reverting to its trend.[3] Yet, with ambitious reforms that boost private sector productivity and investment, EU fund absorption, and human capital growth, Bulgaria's long-term growth rate could be raised to above 4 on average for the period until 2050. Simulating the future growth path of Bulgaria's economy shows that improvements in productivity bring the largest growth dividend. It also reveals that investments in human capital accumulation today will help address the economy's skill shortages and spur growth over the longer term while stronger private capital investments would boost growth primarily in the next few years. Raising private investment, however, requires new, more productive investment opportunities and an enabling institutional environment which ensures enforcement of regulations and a level playing field for all market participants.

Given Bulgaria's worsening growth prospects and the rapid aging of the population, optimization of its budget management is critical. Unless the government succeeds to increase revenue collection—by measures to improve compliance and by optimizing the tax policy mix—and improve the efficiency and effectiveness of its spending programs, the budget will face widening deficits and chronically underfinanced public systems. The latter would result in a further worsening of access to public services, especially in rural and remote areas, and poorer public service delivery quality. Structural reforms need to be undertaken as soon as possible in some systems—for example, pension system, education, and health—as these measures usually take years to start bearing fruit for budget parameters. In the short to medium term, budget consolidation will be needed for Bulgaria's ambition to join the eurozone. Given reduced growth forecasts for 2023–25, medium-term fiscal adjustment will require political determination and unpopular policies, including the phasing out of remaining fiscal support measures introduced in response to the COVID-19 and cost-of-living crises in 2020–22. The purpose of this report is to provide additional evidence and policy recommendations for improving Bulgaria's budget policies so that it can maintain low deficits in tune with the Maastricht criterion for eurozone entry in the short to medium run and put the budget on a sound footing to confront growing pressures on the expenditure side in the long term.

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3 For more details on the growth simulations, see World Bank. 2022. "Bulgaria Country Economic Memorandum: A Path to High Income."

Overall fiscal trends

Bulgaria's fiscal deficit in 2021 remained almost unchanged from 2020 at 3.9 percent of gross domestic product (GDP) (versus 3.8 percent in 2020), as increased expenditures to address the pandemic offset higher revenues. In contrast to most other EU economies, where fiscal deficits narrowed in 2021, Bulgaria's deficit even increased marginally to 3.9 percent of GDP as continued pandemic support to firms and households offset the revenue boost from robust economic growth and an acceleration in inflation (figure 1.3). Bulgaria's deficit of 3.9 percent of GDP in 2021, while modest compared to the EU average, remained almost 6 percentage points of GDP wider than in 2019. On the spending side, the initial 2021 budget planned for COVID-related measures of about 2.5 percent of GDP, instead, they reached 5 percent of GDP (IMF 2022 Article IV)[4]. Despite higher-than-expected pandemic-related spending, the fiscal deficit in 2021 was lower than targeted in the budget. This largely reflected shortfalls in public investment, as the government underspent on EU-funded projects. The combination of relatively robust, albeit slowing, growth and a moderate deficit kept the public debt stable at 23.9 percent of GDP in 2021 (against 24.6 percent of GDP in 2020) but still almost 4 percentage points of GDP higher than its 2019 level (among the lowest in the EU).

Just as the economic recovery from the pandemic was gaining momentum in Bulgaria, allowing for a gradual withdrawal of COVID-19 support measures, Russia invaded Ukraine in February 2022. Before the invasion of Ukraine, gradual fiscal consolidation—supported by the unwinding of pandemic-related spending—was expected to narrow the fiscal deficit and strengthen medium-term debt sustainability. Instead, Bulgaria's economy and budget have been affected by multiple adverse shocks. The invasion of Ukraine has led to higher energy prices, exacerbated inflationary pressures, and triggered a slowdown in growth across much of Europe, including Bulgaria; at the same time, above-target inflation in major economies has prompted a faster tightening of global financial conditions than had been assumed, which together with the war has sharply increased the cost of borrowing. In response to these adverse shocks, the government of Bulgaria introduced or extended support measures in 2022, which increased expenditures and reduced revenues. The government allocated as much as 5.7 percent of GDP between September 2021 and January 2023 to shield households and firms from the energy price spike (figure 1.4, Sgaravatti et al. 2023).[5] Moreover, several pandemic-related measures, including a blanket monthly pension supplement to all pensioners, were rolled over from 2020–21 to 2022. As a result, the fiscal deficit remained relatively wide at 2.8 percent of GDP in accrual terms in 2022 (Eurostat).

The projected slowdown in 2023 suggests that fiscal policy will need to remain flexible but prudent in the near term, especially as the currency board arrangement limits the scope of monetary policy action. Policy makers must carefully balance the need to provide adequate economic support with that of avoiding additional inflationary pressures and ensuring fiscal sustainability. Nevertheless, the budget will still face pressure from ongoing measures to mitigate the impact of high energy and food prices and the rollover of pension increases, despite the phaseout of other pandemic-related support.

Bulgaria's fiscal position remains relatively strong, but the balance is likely to remain in the red in the near term, as revenue growth is dampened by the sharp slowdown in growth and expenditures are lifted by ongoing measures to mitigate the impact of high energy and food costs. The inflation mitigation fiscal support measures, amounting to 5.7 percent of GDP from September 2021 to January 2023 (Claeys,

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4 IMF (International Monetary Fund). 2022. "2022 Article IV Consultation-Press Release and Staff Report for Bulgaria." IMF Country Report N0. 22/190, International Monetary Fund, Washington, DC.

5 Sgaravatti, G., S. Tagliapietra, C. Trasi, and G. Zachmann. 2023. "National Fiscal Policy Responses to the Energy Crisis." Bruegel, Brussels: Bruegel. https://www.bruegel.org/dataset/national-policies-shield-consumers-rising-energy-prices.

G. et al. 2023)[6], would keep the budget deficit for 2023 elevated, as some of these remained in effect in the early part of 2023 or are planned to be phased out only in 2024. Specifically, the excise tax exemption for electricity, natural gas, and liquefied oil fuel was lifted effective August 1, 2023, while the preferential 9 percent value-added tax (VAT) rate on natural gas and district heating expired on June 30, 2023. The 0 percent VAT rate on bread and flour is planned to expire at end-2023. Still, these measures have come at a large fiscal cost, especially as most support to households was untargeted (Claeys, G. et al. 2023). At the same time, these expensive measures were likely inadequate to cover the adverse impacts on the poor. Poorer households experienced higher inflation than other households, with the difference in inflation between the bottom and top quintiles increasing to 3.9 percentage points in Bulgaria in September 2022 and remaining as wide as 3.3 percentage points in March 2023 (Claeys, G. et al. 2023).

Bulgaria's fiscal position is projected to strengthen over the medium term, as fiscal consolidation is supported by a reduction in expenditures and robust revenues. The fiscal stance is assumed to tighten over the medium term, with the fiscal deficit narrowing from about 3 percent of GDP over 2023–24 to 2.4 percent of GDP by 2025 (cash basis due to data availability) (World Bank 2023)[7]. The improvement in fiscal balances is largely driven by an increase in revenues. Revenues are expected to be supported by the economic recovery, with revenue growth outpacing that of expenditures over 2024–25. Expenditures are expected to stabilize over 2024–25 but at a level higher than before the pandemic as some fiscal support measures to confront the shocks related to COVID-19 and the energy price spike have been extended rather than phased out. Government debt, in terms of GDP, is expected to rise moderately over the medium run but not exceed 27 percent of GDP by 2025. The near-term rise in government debt could, however, be less than expected if the government is able to better absorb large cash disbursements from the Recovery and Resilience Facility (RRF), provided that all milestones and targets of the NRRP are satisfactorily fulfilled. In contrast, renewed political instability may weaken the reform agenda and reduce the country's ability to fully absorb EU funds, putting pressure on the fiscal balance and deficit-financing needs. To this end, policies that strengthen public investment management (PIM), institutional quality, and human capital could help bolster absorption capacity over the longer term and set the stage for increasing investments in the economy.

Figure 1.3. **Increased revenues have helped support the fiscal balance and partly offset the drag from higher expenditures**

Percentage – point change
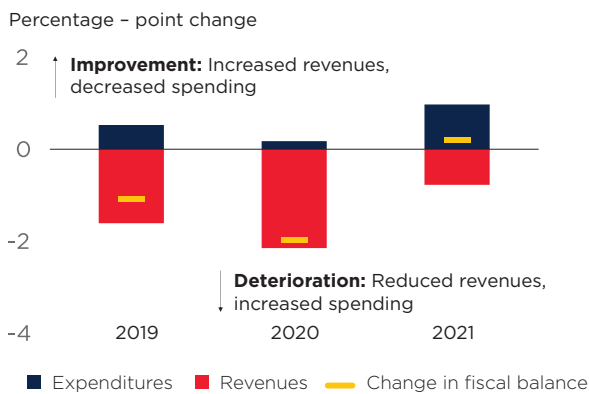
Source: World Bank and Bulgarian National Statistical Institute.

Figure 1.4. **Governments earmarked funding to shield households and businesses from the energy crisis, with Bulgaria providing a large package (September 2021 to November 2022)**
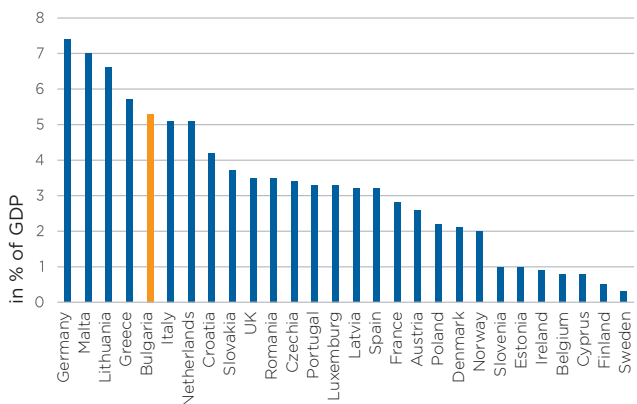
Source: Bruegel; Sgaravatti, Tagliapietra, and Zachmann 2021[8]

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6 Claeys, G., L. Guetta-Jeanrenaud, C. McCaffrey, and L. Welslau. 2023. "Inflation Inequality in the European Union and Its Drivers". Brussels: Bruegel. https://www.bruegel.org/dataset/inflation-inequality-european-union-and-its-drivers.

7 World Bank. 2023. "Europe and Central Asia: Macro Poverty Outlook." World Bank, Washington, DC.

8 Sgaravatti, G., S. Tagliapietra, and G. Zachmann. 2021. "National Policies to Shield Consumers from Rising Energy Prices." Bruegel Datasets, first published November 4, 2021, https://www.bruegel.org/dataset/national-policies-shield-consumers-rising-energy-prices.

Beyond cyclical headwinds, structural bottlenecks linger and constrain fiscal policy in Bulgaria—tax revenue collection remains suboptimal. Fiscal revenues, at about 38 percent of GDP in 2021–22,[9] continue to be constrained by Bulgaria's tax structure and persistent tax gaps. While Bulgaria's statutory rate for VAT is close to the lower bound in the EU, it comes within 1.5 percentage points to the EU average. In contrast, Bulgaria has maintained a relatively low flat tax rate of 10 percent on personal and corporate income since 2008, which results in similarly low direct tax revenues (as a percentage of GDP) by EU standards and skews tax revenues toward VAT and excises taxes (see Chapter 2 for further details). In addition, revenues from taxes on property are also low at 0.8 percent of GDP in 2021, especially relative to the EU average of 2.2 percent of GDP.[10] In contrast to other EU countries, tax expenditures—that is, the loss of tax revenue from legal tax incentives that reduce tax liability (including, but not limited to, low statutory rates on profits and dividends, reduced tax rates, tax holidays, investment tax credits, accelerated tax depreciation, and tax loss carry forward)—account for a small share of foregone revenues, at only 2 percent of tax revenue or 0.6 percent of GDP (Bulgaria Ministry of Finance [MoF] 2019 Tax Expenditure Report). Smaller tax expenditures in Bulgaria relative to other EU countries reflect Bulgaria's broad tax base and fewer tax incentives—a common feature among countries with low, flat taxes.[11] Nevertheless, corporate taxes (despite a low flat tax rate of 10 percent) account for nearly 40 percent of tax expenditures—the largest among the various taxes.

The efficiency and effectiveness of spending could also be improved in Bulgaria. A recent International Monetary Fund (IMF) study[12] that looked specifically at social protection, health, and education spending as well as public investment concludes that there is scope to improve the efficiency and quality of budget spending. In the area of social protection, the study recommends an increase in the overall allocation and a parallel review of targeting and composition of support programs, while in education, it finds Bulgaria's budget allocation close to peers but sees potential efficiency gains in improved quality and access. Health spending, while found to be largely insufficient, could be optimized by rebalancing health care away from expensive hospital care and toward cheaper prevention and outpatient care, while also reducing pharmaceutical costs by reforming the price-setting mechanism. In the area of public investment, the study sees significant scope for improving the quality and efficiency of spending and echoes the findings of an earlier Public Investment Management Assessment, also carried out by an IMF team,[13] particularly with regard to the management and organization of public investment. More specifically, the authors note that the public procurement process could be strengthened by regularly publishing procurement plans, introducing penalties for frivolous procurement appeals, and ensuring that there is full adherence to all procurement rules. Strengthening governance accountability in public procurement could help reduce corruption vulnerabilities.

A key fiscal policy challenge going forward will be to strengthen public finance sustainability, including by phasing out blanket support measures and instead focusing on targeted fiscal support in the near term. In the short to medium term, the government needs to take measures to support fiscal consolidation and the reduction of public debt. As a first step, the government needs to review carefully all existing support in response to the pandemic and the war-induced inflationary shock, with the aim of gradually phasing out blanket, poorly targeted or outdated measures while ensuring that those in need—viable businesses in temporary hardship (inflicted by circumstances outside their control) or vulnerable households—continue to receive adequate support.

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9 Eurostat (dataset). 2023. Government Revenue, Expenditure and Main Aggregates. Luxembourg.

10 European Commission. 2023. Taxation and Customs Union. Brussels.

11 Bulgaria's Ministry of Finance 2019 Tax Expenditure Report includes analysis of the tax systems of other EU member states and shows that the countries with higher direct tax rates tend to have a significant number of tax incentives and relief, reduced tax rates, and tax exemptions of certain income and gains categories.

12 Hallaert, J. J., and K. Primus. 2022. "Strengthening Public Expenditure Efficiency Investment and Social Spending in Bulgaria." IMF.

13 IMF, Fiscal Affairs Department. "Bulgaria: Public Investment Management, PIMA" (unpublished); key PIMA recommendations quoted in the 2020 Article IV Consultation Staff Report.

In the medium to long term, improved revenue collection and increased spending efficiency and effectiveness, including by improved performance-based budgeting, are needed to rebuild fiscal buffers and ensure that spending is tied closely to strategic policy priorities. The rapid aging of the Bulgarian population will put under increasing pressure the most expensive public systems—the pay-as-you-go pension pillar and health care—and will also affect directly or indirectly other domains like long-term care, education, and social services. Government debt, which is projected to decline over time and remain between 20 and 30 percent of GDP, could instead increase rapidly due to the impact of aging-related spending pressures and limited fiscal resources. Modeled scenarios on the increase in aging-related spending without compensating increases in revenues (or expenditure savings) could push the public debt trajectory higher—to more than 70 percent of GDP by 2050 (Guillemette et al. 2017; OECD 2021)[14]. Thus, structural reforms that complement fiscal policy measures and ease these pressures are urgently needed to put fiscal policy on a stronger sustainable footing. For instance, such measures could include rebalancing public spending in health care away from expensive hospital services toward a greater focus on preventive and outpatient care or increasing more rapidly the statutory and the effective retirement age and reducing labor tax evasion. Also, the high-priority green and digital agendas in the EU also call for concomitant overhaul of fiscal frameworks in member states as well as strong capacity to absorb and put the best use of targeted funding under the NextGeneration EU facility and the seven-year financial framework of the EU.

While EU fiscal rules are currently suspended due to recent shocks, the EC has presented an outline of the new EU governance framework which could become effective as of 2024. Namely, on November 9, 2022, the European Commission (EC) adopted the Communication with established guidelines for amending the EU economic management framework. The main objectives of the guidelines are to make fiscal rules more efficient in terms of compliance and more growth friendly by accounting for investments and reforms that foster inclusive and sustainable growth. In the new framework, the reference deficit and debt thresholds remain unchanged (3 percent and 60 percent respectively)—both of which Bulgaria broadly satisfies based on medium-term projections—but rules determining the required reduction of the debt-to-GDP ratio are modified. The so-called 1/20 rule - which required countries with debt-to-GDP ratios above 60 percent to annually reduce this ratio by 1/20 of the difference between the actual ratio and the 60 percent threshold - is abolished. Instead, the framework will be more flexible, with the rules determined for each country separately, which implies a stronger focus on medium-term developments and debt sustainability. Furthermore, the EC also proposed net primary expenditures as an operational indicator/anchor (instead of the so-called medium-term objectives that were linked to prudent level of structural balances) that would ensure the implementation of public debt reduction. Furthermore, the excessive deficit procedure will be triggered when a member state with debt above 60 percent of GDP deviates from the agreed expenditure path. This debt-based excessive deficit procedure will also be operationalized and strengthened, with financial penalties expanded to include additional sanctions. Escape clauses based on macroeconomic conditions will be maintained but more prominence is given to investments and reforms that support long-term growth. Bulgaria generally adheres to fiscal prudence as laid out by its national fiscal rules and long-standing political commitment to fiscal discipline aligned with Bulgaria's currency board and eurozone aspirations. Moreover, Bulgaria performs well in debt sustainability given its low debt levels. Thus, the proposed EU fiscal rules are unlikely to have a large impact on Bulgaria or cause a material departure from how fiscal policy is currently conducted in the country.

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14 OECD. 2021. "2021 Economic Assessment of Bulgaria: Overview". January 2021. https://www.oecd.org/economy/surveys/bulgaria-2021-OECD-economic-survey-overview.pdf and Guillemette, Y. et al. 2017. "A revised approach to productivity convergence in long-term scenarios". OECD Economics Department Working Papers. No. 1385. OECD Publishing. Paris. https://doi.org/10.1787/0b8947e3-en.

Government revenues

Limited fiscal revenues hinder Bulgaria's ability to tackle development needs, which are large given that Bulgaria remains the poorest country in the EU. Bulgaria's government revenues, at about 38 percent of GDP over 2021–22, are in the bottom quarter of EU member states. Low revenues dampen the government's ability to redistribute income, which contributes to the high level of inequality in Bulgaria. In the context of Bulgaria's rapidly aging population, low tax and social security contributions as a share of GDP could lead to sizable fiscal pressures over the longer term.

Bulgaria's ability to significantly raise overall government revenues is constrained by its tax structure, which is characterized by low direct taxes on income. Bulgaria's tax revenues including social contributions amounted to only 30.7 percent of GDP in 2021—the third lowest level in the EU (after Romania and Ireland) and 11 percentage points below the EU-27 average.[15] Bulgaria's low flat tax rate on income (10 percent on personal income tax [PIT] and on corporate income tax) limits government resources from taxes and social contributions. Bulgaria, alongside Romania, imposes the lowest top statutory PIT rate (at 10 percent) in the EU, with the EU average reaching 38.9 percent as of 2021.

Bulgaria's standard VAT rate of 20 percent is close to the lower bound of the EU distribution but still within a few percentage points of the EU average—suggesting that much of the disparity in tax revenues arises from differences in income tax rates as well as collection and tax compliance issues. Temporary reductions in VAT rates on some items were introduced in mid-2020 as a COVID-19 support measure. These cuts on indirect tax rates were extended until end-2023; at least some of them (for example, the preferential 9 percent rate on restaurant and catering services) are likely to remain in place beyond that deadline, due to the lack of agreement in the ruling coalition to lift them. Moreover, additional VAT cuts and exemptions for selected items as well as an excise tax exemption for energy price sources were approved in mid-2022 in response to the spike of inflation. All these measures have resulted in untargeted fiscal support, foregone revenues, and increased regressivity (IMF 2022)[16].

Given little scope in the near term to meaningfully increase statutory tax rates on income or consumption, complementary reforms to strengthen tax administrative capacity are needed to lift revenues. Given the government's long-standing commitment to maintain a predictable and low tax environment, there is little scope in the near term to increase direct tax rates on personal and corporate income in Bulgaria. Although Bulgaria is a signatory to the global minimum corporate tax agreement,[17] the agreement relates to the effective corporate tax rate, not the statutory tax rate. Depending on how the agreement is implemented, Bulgaria's current tax structure may already meet this standard once other taxes on corporate income are considered, including the 10 percent rate on profits and 5 percent rate on dividends. Moreover, absent reforms that improve tax collection capacity and reduce tax evasion, the increase in statutory tax rates may not yield the expected increase in revenues and may push informality higher. Prior to the 2008 tax reform, the progressive income tax system generated less revenue from income taxes than those generated after the introduction of the flat (and effectively lower) rate, largely due to widespread tax fraud and evasion.[18] Thus, raising the statutory tax rate on personal income (and corporate income) would first require the sequencing of other reforms to improve tax capacity and administration, else earlier issues with tax fraud and evasion may reappear and mute or reverse the possible boost to revenues—in turn dampening the government's ability to redistribute income (see Chap-

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15 Eurostat, gov_10a_taxag.

16 IMF (International Monetary Fund). 2022. "2022 Article IV Consultation-Press Release and Staff Report for Bulgaria." IMF Country Report NO. 22/190. International Monetary Fund. Washington, DC.

17 As part of this plan, Pillar 2 establishes a global minimum effective corporate tax rate of 15 percent for large multinational enterprises (MNEs) which has important implications for the use of tax incentives around the world. Source: OECD (Organization for Economic Cooperation and Development). 2022. "G20 Inclusive Framework on BEPS: Progress Report September 2021-September 2022." Paris.

18 https://ime.bg/var/The-Flat-Tax-in-Bulgaria.pdf

ter 2 for further details). Lastly, the timing for income tax rate hikes is not ideal in the near term with the economic slowdown underway.

Bulgaria's overall tax gap is broadly in line with the EU average despite low statutory tax rates on income, partly reflecting long-standing structural bottlenecks, and contributing to reduced fiscal resources. Bulgaria's statutory tax rates on income are among the lowest in the EU and special preferences and exemptions are limited, which in theory would reduce the cost of compliance and lead to a small tax gap. Although Bulgaria is not among the EU countries with the highest tax gaps, it is close to the upper end of the ranking in a recent study by Raczkowski (2015).[19] Its overall tax gap (based on 2014 data) is estimated at 8.4 percent of GDP, putting the country in the 12th place of the EU-28 countries at that time. For comparison, the highest tax gap country, Italy, is characterized by a tax gap rate of 13.8 percent, while the lowest tax gap country, Luxembourg, features a tax gap of only 1.6 percent of GDP. Moreover, the EC's annual estimate of the VAT gap shows Bulgaria to be close to the median for the EU (2020), with a VAT gap at 6.3 percent of the total VAT tax liability against a median of 6.9 percent for the year, which is the 13th best position in the EU and far from the best performer, Finland, with just 1.3 percent (figure 1.5). Chapter 2 includes in-depth analysis of the VAT gap in Bulgaria.[20] Although there are many drivers contributing to the tax gap, weak perceptions of governance and the control of corruption continue to weigh on compliance in Bulgaria. These constraints point to the need for reforms that strengthen administrative capacity, enforcement, compliance, transparency, and communication strategies with the public (to highlight the importance of paying taxes).

Separately, the redistributive power of Bulgaria's fiscal system is relatively low by EU standards. Bulgaria's fiscal system is progressive overall, even if its tax system is regressive due to the dominance of indirect taxes in overall tax revenue. The regressiveness of the tax system is due to the overall architecture of

Figure 1.5. VAT gap as % of the VTTL in EU-27 member states, 2020 and 2019
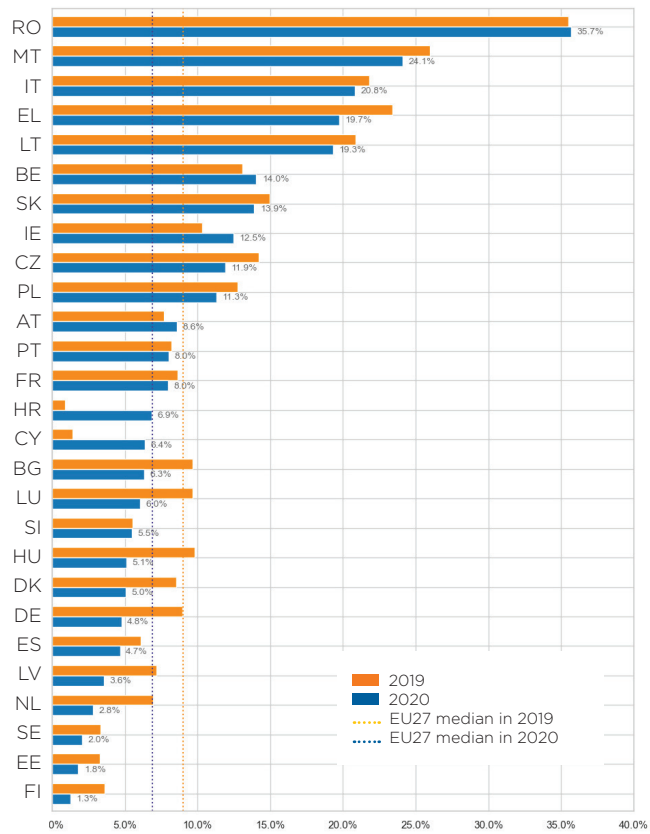
Sources: EC, DG TAXUD, VAT Gap in the EU, Report 2022.
Note: VTTL = VAT total tax liability.

Bulgaria's tax system, where indirect taxes are the backbone of tax revenue while personal income and corporate profit taxes are proportional (flat) and relatively low by EU standards (at 10 percent). The share of indirect taxes in overall tax revenues of the central government budget is about 68 percent (based on 2021 budget data). Of these, 47 percent are VAT revenues and 21 percent are excise duties. **Yet, most components of Bulgaria's fiscal system are progressive**, and the poorest are net recipients of social benefits, as evidenced by their positive net cash position (figure 1.6).[21] However, from the third decile on, Bulgarians are net payers into the fiscal system: direct and indirect taxes paid exceed cash benefits received.

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19 Raczkowski, K. 2015. "Measuring the Tax Gap in the European Economy." Journal of Economics and Management 24 (3): 58–72.
20 EC, DG TAXUD, VAT Gap in the EU, Report 2022.
21 For a detailed discussion of the distributional impact of Bulgaria's fiscal system, see World Bank, The Distributional Impact of Taxes and Social Spending in Bulgaria with an application to Green Fiscal Policies, June 2022

Figure 1.6. Taxes and benefits by decile, MIPP

Percent of market income plus pensions
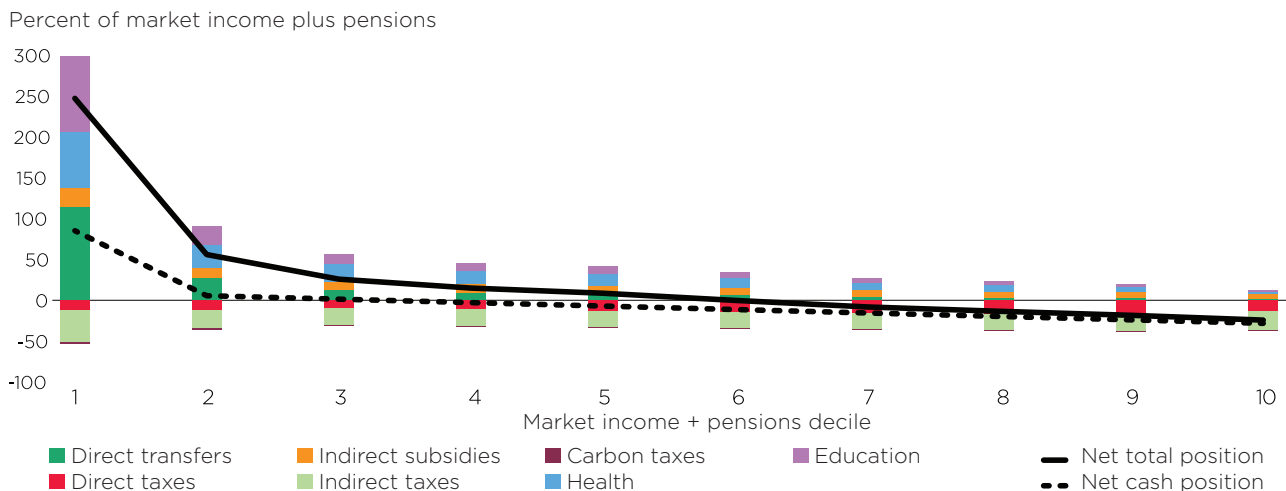
Sources: World Bank. 2022. "The Distributional Impact of Taxes and Social Spending in Bulgaria with an Application to Green Fiscal Policies."
Note: MIPP = Market income plus pensions; SIC = Social insurance contributions. The net total position is the difference between final income and MIPP. The net cash position is the difference between consumable income and MIPP.

The fiscal system contributes to inequality reduction, but its contribution is among the lowest in Central and Eastern Europe. The fiscal system as a whole—direct taxes and transfers, indirect taxes and transfers, and in-kind transfers—leads to a decline in the Gini coefficient from 0.451 for MIPP[22] to 0.327 for final income. Yet, redistribution through the budget and specifically the redistributive impact of direct taxes and transfers is among the lowest in Europe, which contributes to the high levels of income inequality in Bulgaria. Total government expenditure is 41.5 percent of GDP (2021, Eurostat), which is the third lowest in the EU after Lithuania and Romania. Moreover, second only to Hungary (which also has a flat income tax structure, but a higher statutory rate than Bulgaria), Bulgaria is one of the countries that achieves the least redistribution through direct taxes and transfers (excluding contributory pensions). The Gini coefficient declines by 0.04 due to the impact of direct taxes and transfers. For comparison, in Ireland, the country that has the most redistributive impact of direct taxes and transfers, the Gini declines by 0.16 points (EU Statistics on Income and Living Conditions for 2019, based on income year 2018).[23]

Government expenditures

Bulgaria's expenditures are relatively low, with the government adhering to limited fiscal redistribution compared to most EU peers. Bulgaria has traditionally adhered to relatively limited redistribution through the budget compared to most EU member states, partly owing to the need to maintain fiscal prudence due to the currency board arrangement. Despite the marked increase in general government spending in 2020–21 in response to the COVID-19-induced crisis, expenditure to GDP—at 41.6 percent of GDP in 2021 (figure 1.7)—remained among the lowest in the EU. Massive support measures that helped cushion the pandemic-induced shock on businesses and households were common across the EU, and Bulgaria was no exception, with the spike in expenditures in Bulgaria in 2020 (5.2 percentage points of GDP) close to the EU average (6.2 percentage points of GDP).[24]

Bulgaria did not phase out some of its pandemic-related and cost-of-living mitigation measures, which kept fiscal expenditures elevated in 2022. After Bul-

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22 In this estimate, contributory pensions are treated as market income rather than transfers.
23 World Bank 2022.
24 Eurostat 2023. "Government revenue, expenditure and main aggregates." Luxembourg.

Figure 1.7. General government expenditures
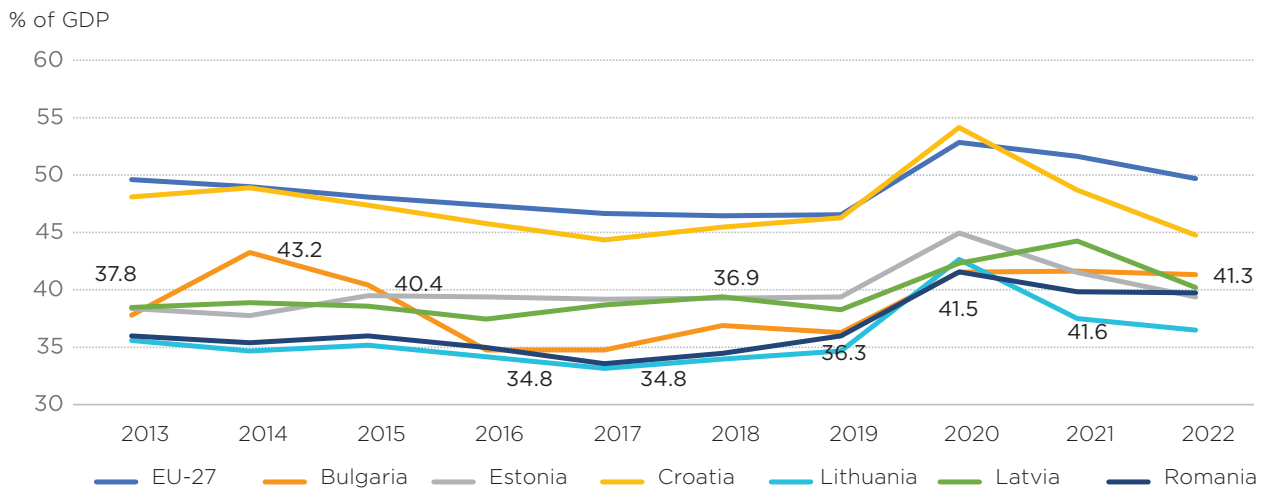
% of GDP

Source: Eurostat, GOV_10A_MAIN, downloaded on 31.08.2023.

garia's expenditures rose from 36.3 percent of GDP in 2019 to 41.6 percent of GDP in 2021, they remained elevated at 41.3 percent of GDP in 2022 due to the continuation of fiscal support measures in response to the pandemic and the sharp rise in the cost of living. While many EU member states started phasing out pandemic-related measures as early as 2021, Bulgaria kept most in place over 2021–22, including the most expensive non-differentiated pension supplements to all pensioners and a preferential VAT rate of 9 percent on selected goods and services (restaurants and catering services, books, baby products, sports facilities).[25] Thus, while total spending to GDP for the EU average has been on a downward trend over 2021–22, Bulgaria's budget expenditure kept trending upward in 2021 and barely budged in 2022, undermining the country's ambition to join the eurozone in the short to medium run and posing additional risks to the sustainability of public finances in the longer run, unless prompt fiscal consolidation is undertaken.[26]

Bulgaria's fiscal rigidity increased during the pandemic. The increase in fiscal rigidity was due to the expansion of medium-rigid expenditure items in overall expenses as some of the key pandemic response measures—for example, subsidies to companies for job retention—which increased the share of medium-rigid expenses in 2021. Yet, this situation was reversed in 2022, as employment-related subsidies were gradually phased out with the removal of pandemic-related distancing measures. In comparative terms, Bulgaria's fiscal rigidity ranks close to the upper end in its Europe and Central Asia peer group (for which comparable BOOST discal data are available; figure 1.8), with only North Macedonia featuring a much higher share of high-rigidity expenses. High rigidity items account for more than 60 percent of total spending, placing Bulgaria well above income peers. Increased and persistent high rigidity can restrain policy makers' ability to adapt to needs or shocks and forces governments to cut more discretionary spending components, such as public investment, which can significantly reduce long-run growth prospects.

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25 Pension supplements were integrated into pensions, while pension benefits were further raised in 2022; the reduced VAT rate of 9 percent on the abovementioned goods and services was originally meant to be effective only temporarily, until end-2021, but continues to be applied in 2023.

26 The government's official target for eurozone accession—January 1, 2024—was abandoned in early 2023 after it became clear that the country will neither be able to meet the Maastricht criterion on inflation nor deliver on some of its reform commitments by the spring of 2023 the latest, so that it could join from start 2024. The new government has set 2025 as the new target year for euro adoption; it will become clear whether the country is ready to join then in the spring of 2024, when the EC will publish its regular Convergence Reports.

Figure 1.8. High rigidity versus income
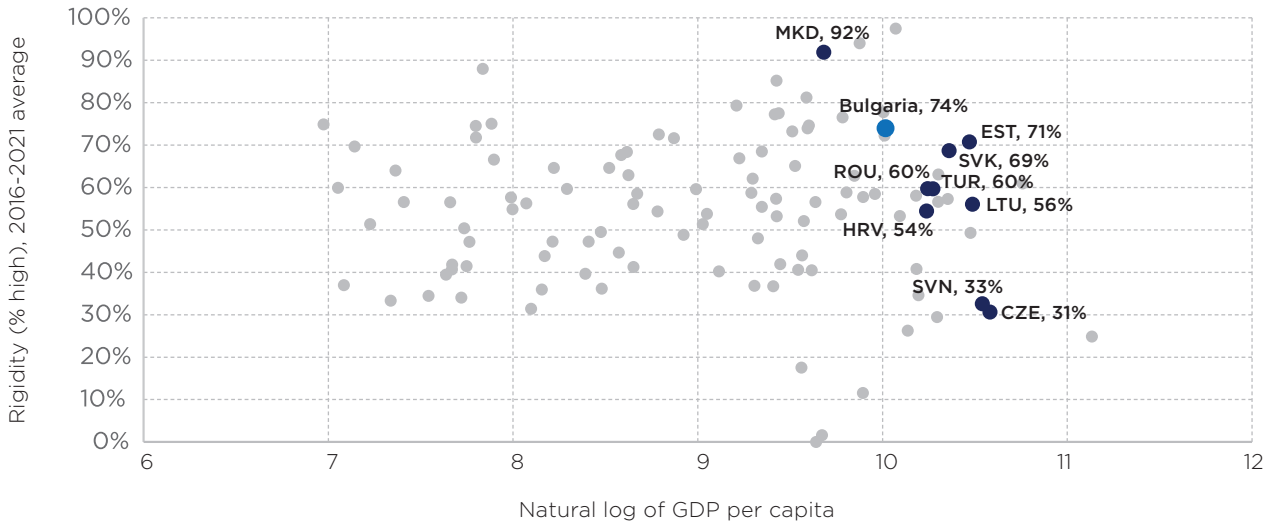
Source: World Bank BOOST fiscal database.

Fiscal pressures on expenditure growth come from high-rigid expenditure items, particularly pensions. Application of force and momentum analysis[27] suggests that fiscal pressures on expenditure growth in 2019–21 stem primarily from high-rigid expenditure items such as pensions. This comes in contrast to the pre-pandemic period (2014–18) when expenditure growth was due largely to low-rigidity items (figures 1.9 and 1.10).

Figure 1.9. Momentum by rigidity categories

Percentage points
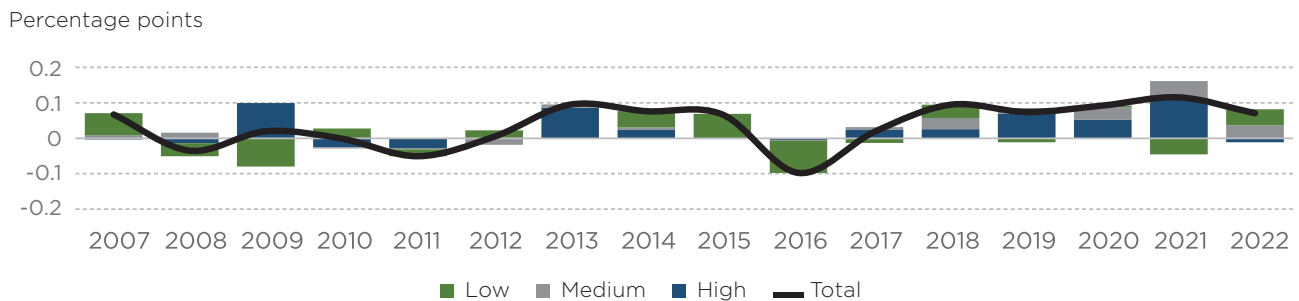
Source: World Bank BOOST fiscal database.

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27 Momentum is computed as the product of relative size and growth rate of each component; it represents the relative contribution of individual components to overall expenditure growth. Force is computed as the difference between momentum at period t and t−1 and captures the acceleration/deceleration of each component's contribution. Large, sustained positive momentum levels of a specific component might signal the need for deceleration to slow down its relative contribution to expenditure growth before these pressures lead to macro-fiscal problems.

Figure 1.10. Momentum by functional expenditure type

Legend:
- All others
- Spending in water and sanitation
- General public services (COFOG)
- Defense (COFOG)
- Spending in transport
- Social Protection (COFOG)
- Spending in public safety
- Spending in energy
- Spending in agriculture
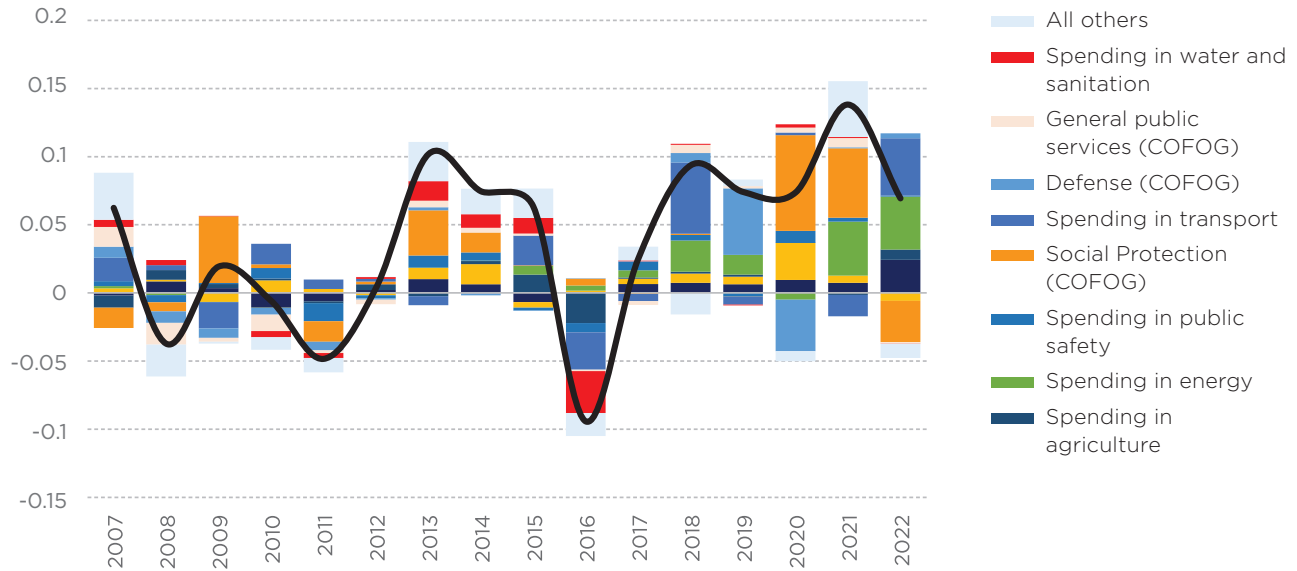
Source: World Bank BOOST fiscal database.

Despite the relatively high expenditure rigidity of Bulgaria, the country's fiscal stance has remained largely countercyclical. Over 2016–22, the country's fiscal position—as measured by juxtaposing the change in the cyclically adjusted primary balance (as a percentage of GDP) to the output gap—has remained countercyclical in all years except 2021 when there was procyclical fiscal tightening in 2021 (coupled with a temporary increase in fiscal rigidity). The countercyclicality of the fiscal stance is, overall, a welcome trend as it demonstrates the ability of the budget to stabilize the economy during negative shocks and prevent overheating during times of economic boosts.[28]

Figure 1.11. Cyclicality of fiscal policy stance, 2016–21
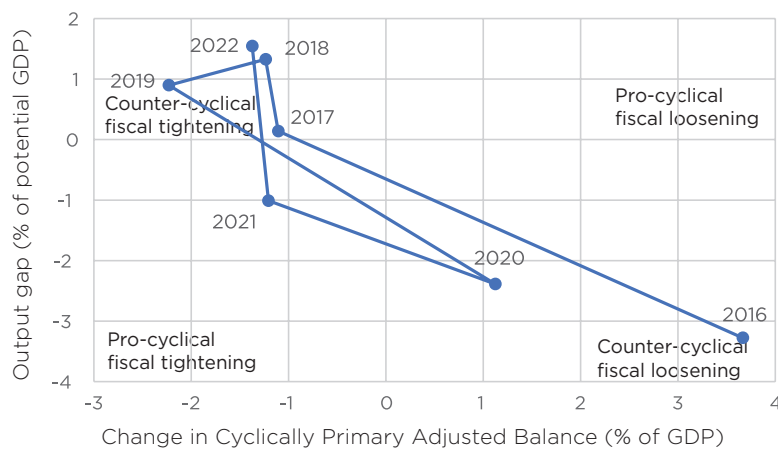
Source: World Bank BOOST fiscal database.

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28 There have been few previous studies on the cyclicality of Bulgaria's fiscal stance. Todorov and Durova (2020) find evidence for the hypothesis that discretionary fiscal policy in Bulgaria is procyclical. Their finding is based on the calculated correlations between the output gap and the changes in the trend shares of total government expenditure and total government revenue to GDP for 1999–2019. Similarly, Mesea (2013), who explores the cyclicality of fiscal policy in the EU, based on time series for 1995–2011, finds that EU advanced economies (AEs) are characterized by countercyclical policy (when accounting for total expenditures, which includes automatic stabilizers), while EU emerging market economies (including Bulgaria) feature a procyclical stance (Mesea, O. E. 2013. "The Analysis on the Cyclical Behaviour of Fiscal Policy in the EU Member States." Procedia Economics and Finance 6: 645-653; Todorov, I., and K. Durova. 2020. "The Fiscal Policy of Bulgaria from the Standpoints of the Business Cycle and the Twin Deficits Hypothesis." Journal of Tax Reform 6 (3): 256–269).

Yet, despite the overall countercyclicality of the fiscal stance, cash basis general government spending in Bulgaria is influenced heavily by the seven-year EU fiscal framework cycles. This influence can be seen clearly in the spike in expenditures in 2014–15, which were the last two years when EU funds under the previous program period (2007–13) could be absorbed.[29] Indeed, the share of EU funds in total spending rose from 3 percent in 2008 to 18.6 percent in 2015 (figure 1.12). Apparently, the administration made every effort to absorb EU funding to the maximum within the allowed time window, as all unspent funds are eventually lost. A similar spike of expenses, financed out of EU structural and investment funds for 2013–20 is expected in 2023, which is the last year for absorption of those funds under the applicable n+3 rule.[30]

Figure 1.12. General government spending – national budget and EU funds components

BGN, mn
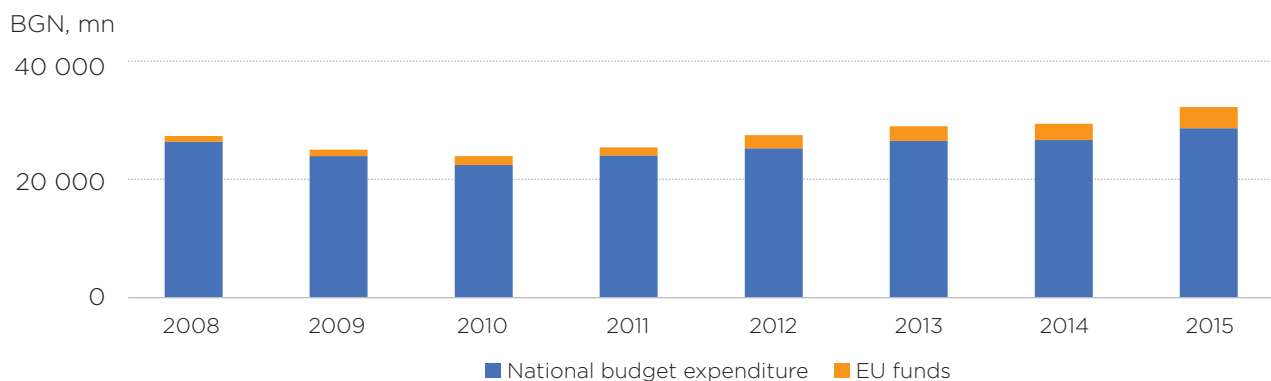
Source: MoF, monthly reports on budget execution (national methodology), cumulative data as of the December each year.
Note: Reports on budget execution broken down by national budget and EU funds started to be published from early 2008.

There is also a distinctive monthly cyclicity of cash spending within the fiscal year. Data for the last five years show serious backloading of expenditures in the last three to four months of the calendar year and a pronounced spike of expenses in the month of December. While this holds true for general government spending, it is worth noting that the bigger contributor to this monthly cyclicality is the national budget, which has both a much higher weight in total and a more pronounced peak of spending in the last few months of the year. Moreover, the peak of spending in December—as judged by the share of spending in December against total annual spending—was larger between 2018 and 2020 than in the last two years, 2021 and 2022 (figure 1.13). This could be explained by the political turmoil that Bulgaria has experienced since 2021 and the reduced speed at which the administration has been working, including contracting and payment of major capital expenditure projects. Typically, regular governments have made (large-scale) outstanding or advance payments to contractors in December, as soon as annual budget spending on other expenditure items became clear. The spike of spending in the year-end is widely recognized as a harmful budget practice as it leads to wasteful spending, including from significantly lower quality of the (unplanned new) expenditure compared to the quality score of spending in the earlier part of the year.[31] In addition, it also leads to lower transparency and accountability of budget spending, as year-end reshuffling of expenses between different headings, which is not considered to result in significant deviations from the approved budget, is decided by ordinances of the Council of Ministers, and without sanction from the National Assembly.

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29 Under the n+2 rule for EU funds spending, money under a given program period can be absorbed up to two years after the end of the period.
30 See EC's Spring 2023 Economic Forecast.
31 Liebman, J., and N. Mahoney. 2017. "Do Expiring Budgets Lead to Wasteful Year-End Spending? Evidence from Federal Procurement." *American Economic Review* 107 (11): 3510–3549.

Figure 1.13. Monthly budget expenditure

BGN, mn
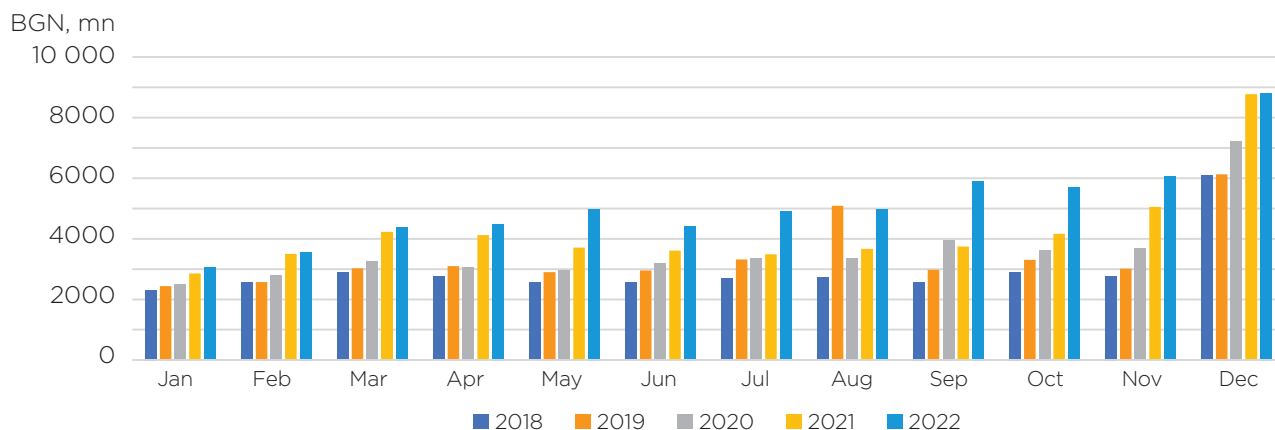
Source: Based on the MoF's regular monthly budget reports on cumulative budget data for the year to date, based on the national methodology for fiscal data collection.

Government debt

Following a rapid decline in gross general government debt since 2000, Bulgaria has maintained a prudent and conservative debt stance since. While government debt reached 73 percent of GDP by end-2000, it declined to around 15 percent in 2010–11 (figure 1.14). Government debt has picked up only moderately afterward, reaching 24.6 percent of GDP as of end-2020 and then moderating to 22.6 percent of GDP as of end-2022 (Eurostat). Despite this recent increase,

Bulgaria's government debt remains low by EU standards. Bulgaria has been among the top three countries in the EU with the lowest public debts since the global financial crisis (GFC) (2009); in 2022, it ranked second after Estonia. The same conclusion holds if one compares Bulgaria to the averages of the wider region, Europe and Central Asia, and to the group of emerging markets and developing economies (EMDEs)[32] — Bulgaria's public debt is about half the average in the EMDE group and lower by a wide margin compared to the Europe and Central Asia average.

Figure 1.14. Gross government debt
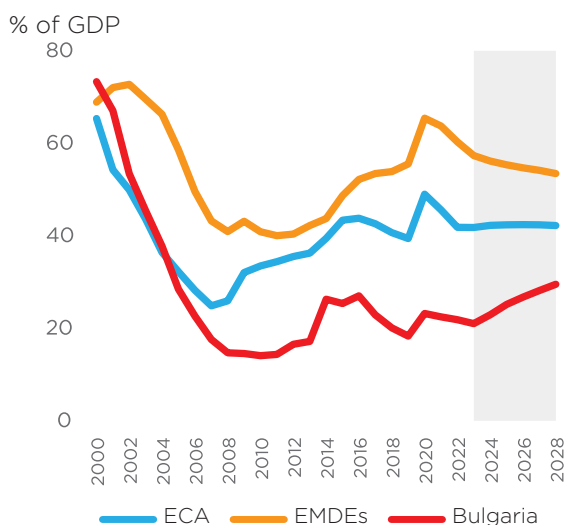
% of GDP

Sources: IMF; World Bank.
Note: Shaded areas indicate IMF forecast (WEO October 2023); figure uses IMF data for comparability.

Figure 1.15. Primary balance
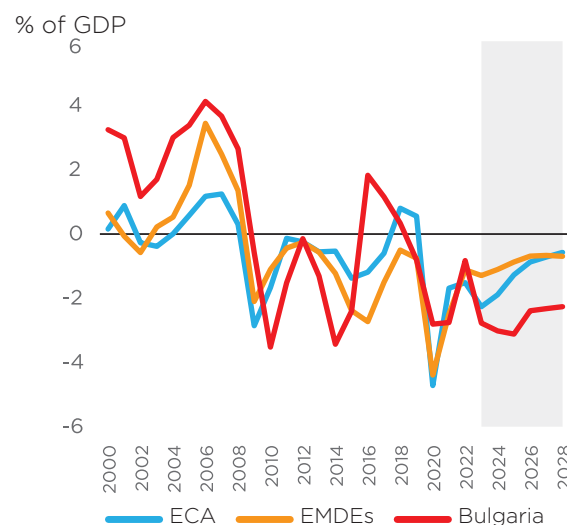
% of GDP

Sources: IMF; World Bank.
Note: Shaded areas indicate IMF forecast (WEO October 2023); figure uses IMF data for comparability.

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32 The comparison with other Europe and Central Asia and EMDE countries uses IMF data for comparability purposes and thus will differ from Eurostat data on general government debt used elsewhere in the text.

Low levels of public debt in Bulgaria have been supported by restrictive fiscal policy and robust growth. Adherence to relatively low levels of public debt can be attributed to the restrictive fiscal stance maintained since the introduction of the currency board arrangement in mid-1997 as well as robust economic growth since 1998. The fiscal position has been generally characterized by low deficits or even surpluses since 1998, with the exception of few brief crisis episodes when the deficit exceeded 3 percent of GDP (2009–10, 2014, and 2020–21). The primary balance was in surplus in the decade up to the GFC, which contributed to the rapid deleveraging of the general gov-

ernment sector (figure 1.15). Also, privatization, concession and license proceeds in the early 2000s, and a hefty fiscal reserve accumulated during the fiscal surplus years helped contain the debt level, even during years of government deficits. The fiscal stance and the trend of public debt have changed substantially since the onset of the COVID-19 pandemic. While public debt declined during 2000–19 (due to the concerted contribution of a favorable interest rate differential, a primary surplus [on average for the period], and other factors), the upward trend during 2020–22 was due to the negative primary balance, despite a negative real interest rate differential (figure 1.16).[33]

Figure 1.16. **Decomposition in the change of public debt-to-GDP ratio**

% of GDP

■ Real interest growth deferential   ■ Primary balance   ■ Other   ▬ Total change
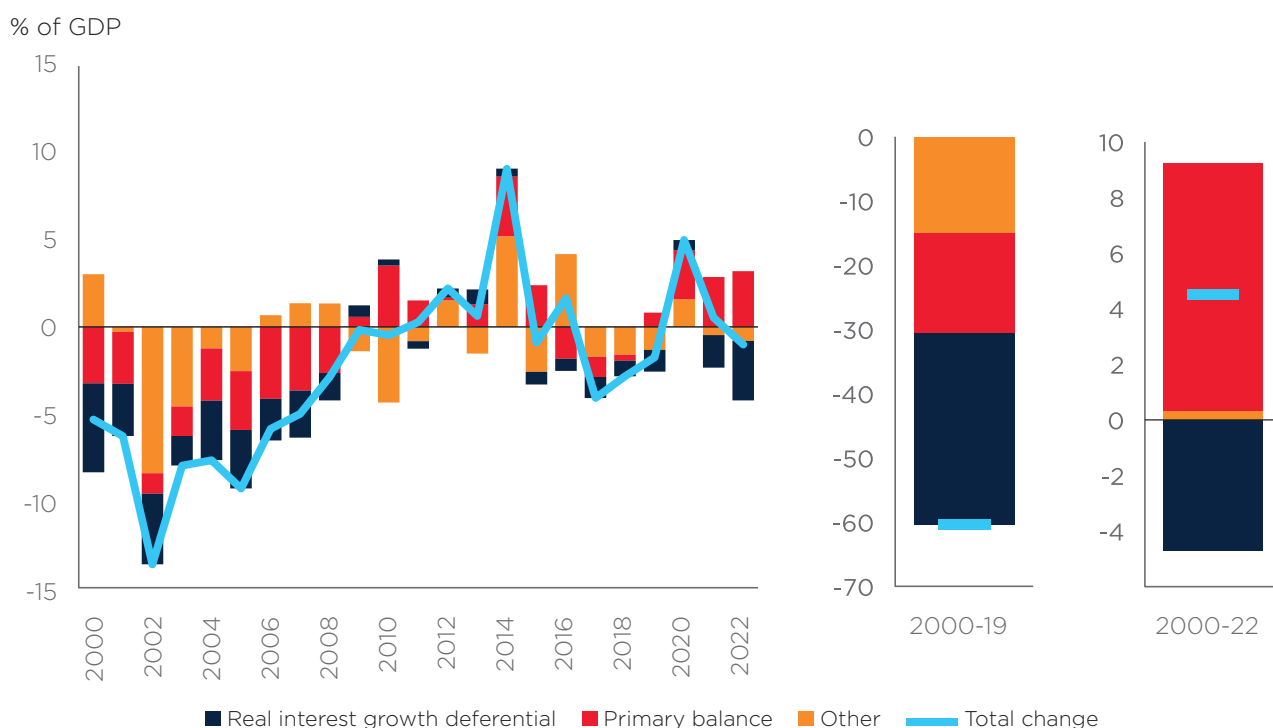
Sources: World Bank, IMF.

Public debt is expected to increase moderately and then stabilize over the medium run. Based on the World Bank's projections, public debt is forecast to increase in 2023–25 before reaching a peak of 28.7 percent of GDP in 2025 and then subsiding gradually to

26.4 percent of GDP in 2027. While the interest growth rate differential is expected to remain favorable, its debt-reducing impact is likely to soften as tighter financing conditions increase interest expenditures and nominal GDP growth weakens, in part because of

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33 See Annex 1 for details on the Debt Sustainability Analysis (DSA), including the variables used.

declining inflation over the medium term. The World Bank's DSA shows that Bulgaria's primary balance—assuming country-specific financing conditions and growth projections—is within the threshold to stabilize gross government debt at 27 percent of GDP as of 2022. Nevertheless, the primary balance is expected to deteriorate in 2023 due to the rollover of fiscal support schemes aimed to protect households and firms from high prices but narrow over the medium term as fiscal support measures are gradually phased out. The fiscal consolidation that is envisioned over the medium term—absent growth or interest rate shocks—is anticipated to keep Bulgaria's public debt on a sustainable trajectory.

Fiscal risks

Although Bulgaria's fiscal risks remain low, the materialization of certain sources of downside risks could trigger fiscal sustainability concerns. Even if Bulgaria's fiscal risks overall can be defined as low, due mostly to its history of fiscal discipline with low headline and structural deficits (or even surpluses in some years after 2000) and small public debt levels, there are certain sources of risks that may undermine the sustainability of the fiscal position if current trends continue or certain risk triggers occur. The analysis of Bulgaria's fiscal risks below uses the fiscal risk analytical framework of the IMF's Hana Polackova[34] (see Annex 6) that break downs fiscal liabilities into a matrix of direct and contingent, explicit, and implicit.

Explicit direct liabilities

Overall, Bulgaria's public debt level is relatively low by EU standards and does not represent a source of serious fiscal risk. Fiscal discipline has been maintained for more than two decades, and budgetary expenditures have been financed entirely or almost entirely with revenues due to a restrictive spending stance, a relatively broad revenue base, and well-functioning revenue administration. This has resulted in low (structural and headline) deficits or even surpluses on the general government budget in some years.

Explicit indirect liabilities

State debt guarantees are limited and do not represent a material source of fiscal risk either. Despite a moderate uptick in state guaranteed public debt, which includes guaranteed debt for the central government and the local governments sectors, in 2020 and 2021, its level remains low at BGN 556 million (EUR 284 million) and 0.4 percent of GDP as of end-2021 (figure 1.17). The slight increase over 2020–21 can be attributed to the pandemic shock, whereby one of the fiscal support measures was precisely state guarantees on loans to companies and individuals. Overall, the biggest item among guaranteed debts are debts of public (state-owned and municipally owned) enterprises, which account for about one-third of all guaranteed debt as of end-2021. Almost all these (99.4 percent) are guaranteed debts of state-owned enterprises (SOEs), the rest are owed by municipal enterprises. The second biggest item among guaranteed debts is guaranteed debts of financial institutions which account for 21 percent of all guarantees as of end-2021. Overall, however, these amounts are fairly small against the size of the government and its revenue-generating capacity, and even if all are guarantees called at the same time, this would not be able to cause a significant trouble for the fiscal position.

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34 Polackova, Hana. 1999. "Contingent Government Liabilities: A Hidden Fiscal Risk". IMF, Finance & Development.

Figure 1.17. Public guaranteed debt

Legend: ── BGN mn, lhs ── % of GDP (rhs)
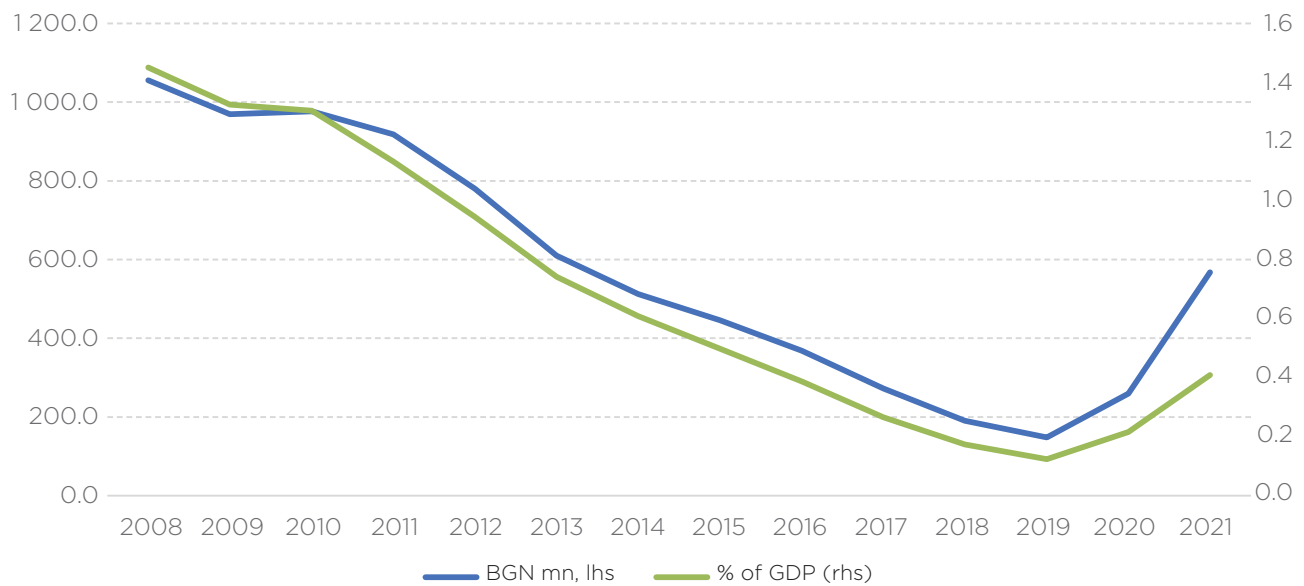
Source: MF.

Risks to the budget from bank deposit insurance, however, exist but are moderate. Bulgaria, as an EU member, is a part of the EU-wide deposit insurance scheme whereby all bank deposits of physical and legal entities up to the equivalence of EUR 100,000 are guaranteed and recovered in case of bank failure. To this end, a State Deposit Insurance Fund collects (risk-weighted) contributions from all banks operating in the country.[35] As of end-2022, the total asset size of the deposit insurance fund was BGN 1.5 billion, 89.4 percent of which is in highly liquid assets, while the amount of guaranteed deposits (up to the guaranteed amount) was BGN 78.5 billion. Apparently, the amount in the deposit insurance fund would most likely suffice for the coverage of insured deposits at a medium or smaller bank (or several smaller banks) but would not be enough in case of failure of one of the largest banks or a full-blown banking crisis. In the latter case, the state may need to interfere, and the implicit liability would be triggered. In fact, the country has already lived through such an episode in recent times when the fourth biggest bank—Corporate Commercial Bank—failed in 2014. During the legal term for recovery of insured deposits—five years after the

bank's failure—the deposit insurance fund paid 99.8 percent of all guaranteed deposits or BGN 3.7 billion. At the time of the failure, the fund did not avail of the entire sum, and it took a BGN 1.7 billion loan from the state. This loan was repaid by end-2019 but largely with financial support from the European Bank for Reconstruction and Development (EBRD) and International Bank for Reconstruction and Development (IBRD) after the State Deposit Insurance Fund borrowed about EUR 300 million from each of the financial institutions in 2016 and then used the proceeds to repay partly its debt to the state. As of end-2022, the fund still owes a principal amount of about BGN 558 million to IBRD and BGN 440 million to EBRD; repayment of the principals of both loans already started in 2022.

The upcoming third pillar of the European Banking Union—the so-called deposit insurance pillar—is expected to reduce the fiscal risks stemming from potential trigger of bank deposit insurance in member states. Even if outside the eurozone, Bulgaria applied and was admitted to the European Banking Union in October 2020. For the moment, however, the banking union functions only with its first two pillars—the Single Supervisory Mechanism (SSM) and the Single Res-

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35 The State Deposit Insurance Fund collects contributions from local banks and subsidiaries of foreign banks, with the exception of branches of foreign banks, which are subject to the deposit insurance schemes of the country where their parent organization operates.

olution Mechanism (SRM)—while its third pillar, the European Deposit Insurance Scheme (EDIS), a single deposit insurance, is yet to be launched but the timeline remains unclear. The expectation is that EDIS would provide a stronger insurance cover in the euro area, thereby reducing the vulnerability of national deposit insurance schemes to large local shocks and weakening the link between banks and their national sovereigns.

Implicit direct liabilities

Bulgaria's implicit direct liabilities, particularly with regard to future pension and health payments, are a serious source of concern and risks to the budget. As already shown in previous sections, Bulgaria is characterized by one of the most rapid declines and aging of the population among EU countries. This has a direct adverse impact on the budget via two channels: (a) reducing the economic growth potential as working-age population shrinks and thus undermining the revenue base of the budget and (b) increasing certain expenditure items (pensions, health, long-term care), some of which are highly rigid, especially the outlays of the main, pay-as-you-go, pension pillar. The immediate results of these adverse trends are that the expenditure side of the budget is set to expand against a potentially lower revenue base and collection, which may lead to higher (and even unsustainable) structural deficits in the medium to long term; moreover, the rigidity of the budget would increase, making it less flexible and able to respond to future shocks.

Figure 1.18. Bulgaria's gross government debt scenario accounting for rise in aging-related spending
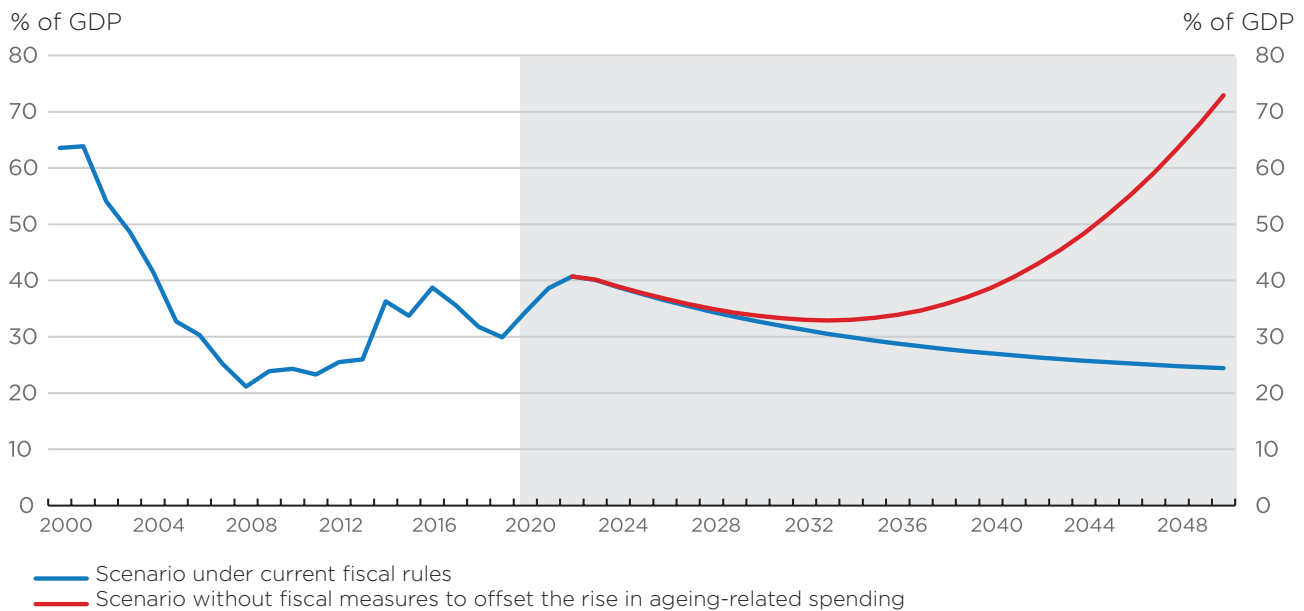
Source: OECD. "2021 Economic Assessment of Bulgaria: Overview". January 2021.

To illustrate the large potential impact of aging-related spending pressures, the Organization for Economic Co-operation and Development (OECD) has recently developed and published[36] a scenario for the general government debt dynamics, including the effect of an increase in aging-related spending without compensating increases in revenues and/or expenditure savings. Even if the starting point of the projection (2020) is above the actual level of the public debt for 2020 (24.6 percent of GDP), the scenario shows a non-triv-

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36 OECD. "2021 Economic Assessment of Bulgaria". January 2021.

ial push-up of the public debt trajectory whereby the level of the public debt would almost double to exceed 70 percent of GDP by 2050. This simulation comes to illustrate the significant cost that future, direct implicit liabilities stemming from the aging of the population would inflict on the budget in the long term, unless offsetting measures are not taken in the meantime (figure 1.18).

Indirect implicit liabilities

Indirect implicit liabilities are the hardest source of fiscal risk to quantify and project. This is because they may be related to unexpected events[37] (for example, bank failures) and force majeures (environmental disasters, war, terrorist attacks) that are unpredictable by definition. While the probability of the latter group of events is relatively low, the damage and the related fiscal cost could be potentially significant. Bank failures and the potential fiscal cost of these beyond the above-discussed support for deposit insurance schemes are mitigated somewhat as Bulgaria is already a part of the SRM in the EU. Under the SRM, if a bank in the European Banking Union fails, the SRM allows bank resolution to be managed effectively through a single resolution fund that is financed by the banking sector. Thus, the SRM ensures an orderly resolution of failing banks with minimal costs for taxpayers and to the real economy.

As far as non-guaranteed debts of local governments and SOEs are concerned, their overall level is low to moderate though they are concentrated in a few sectors, which raises the associated fiscal risk. Local government debt is just 0.8 percent of GDP as of end-2022; the debt of SOEs, including municipally owned enterprises, is larger but still moderate at 11.6 percent of GDP (latest data as of end-2021, National Statistical Institute). Yet, they are concentrated in sev-

eral sectors, energy, transport, postal services, and national defense, which increases the fiscal risks.[38] The debts of SOEs have fluctuated in a narrow range since the National Statistical Institute started publishing the data in 2013—between 10 percent and 13 percent of GDP, depending on the year, which demonstrates that these levels remain fairly stable.[39]

Finally, fiscal risks could emanate from the materialization of natural disaster events, such as fires, floods, landslides, hailstorms, and others. The total estimated damage of these since 2010 varies year by year in a wider range—from BGN 35million in 2019 to 487 million in 2011 or between a minimum of 0.03 percent of GDP and a high of 0.6 percent of GDP. The fiscal cost of these events was smaller than total estimated damages, as not all damages were covered, nor was the entire cost borne by the budget (for example, insurers, EU-funded programs, donations also contributed to the disaster relief). Over 2010–20, the costliest and most frequently occurring natural disasters were floods and (related to them) landslides and storms. Even if earthquake risks have not materialized in recent years, a large part of the country—including the two biggest cities, Sofia and Plovdiv—is located in a high earthquake-risk zone, meaning that a potentially catastrophic quake is always in the cards, albeit with a low probability.

Risks stemming from business-cycle dynamics

Although it is expected that the structural deficit will start to decline as of 2025, heightened uncertainty surrounding the outlook magnifies the risk of procyclical fiscal tightening. Fiscal consolidation is associated with short-term output losses, but the magnitude depends on business-cycle positions and the policy mix (see Annex 2). A sudden reassessment

37 Bova, E., M. Ruiz-Arranz, F. G. Toscani and H. E. Ture. 2016. "The Fiscal Costs of Contingent Liabilities: A New Dataset." Working Paper. 2016/14. IMF. Washington, DC.

38 For more details, see World Bank. 2021. "Bulgaria: Integrated State-Owned Enterprises Framework (iSOEF) Assessment".

39 The other potential sources of indirect implicit liabilities as mentioned in the IMF's matrix above, such as liabilities related to the cleanup of debts of privatized companies, central bank obligations, debts stemming from reversal of private capital inflows, or debts of uninsured employment, pension, or social insurance funds are either not applicable or too hypothetical to comment on.

of growth or shift in market conditions could substantially increase fiscal adjustment needs. One standard deviation below median growth and above the median nominal interest rate would require a primary balance adjustment of 2.4 percentage points of GDP to stabilize government debt at 27 percent of GDP in Bulgaria—a much larger fiscal adjustment than assumed in the baseline. The materialization of downside risks to growth and tighter financing conditions, combined with uncertainty around Bulgaria's output gap estimate, could lead to an unintentional shift from countercyclical to procyclical fiscal tightening.

Balancing the need for debt sustainability with that of supporting the recovery will require prioritizing public spending to ensure that fiscal policy delivers strong growth dividends. Estimates of fiscal multipliers (box 1.2), which measure the response of the real output to an exogenous change in government expenditure or taxes, could help guide such policy choices—with important caveats. The business cycle can amplify the output losses from fiscal adjustment, as fiscal multipliers tend to be larger during recessions (Jordà and Taylor 2016[40]; Riera Crichton, Vegh, and Vuletin 2016[41]). Fiscal spending multipliers are also sensitive to the composition of fiscal policy. The size of output losses from fiscal consolidation can depend on the composition of the fiscal adjustment; in OECD countries, for instance, spending-based fiscal adjustments—such as from the expiration of fiscal support measures—are estimated to generate smaller declines in output relative to tax-based fiscal adjustment (Alesina and Ardagna 2013[42]; Alesina, Favero, and Giavazzi 2015[43]).

Fiscal multiplier estimates for Bulgaria suggest that fiscal policy has a modest but persistent impact on output. Output losses from fiscal consolidation are estimated to be pronounced in Bulgaria and other Central and Eastern European economies. Government spending multipliers for Bulgaria are estimated using a sign-restricted Bayesian structural vector autoregressive (VAR) model and range from 0.1 to 0.6 in the short term to 0 to 0.3 in the long term—on par with other Central and Eastern European economies and larger than in some other euro area countries. Long-run capital spending multipliers are larger than spending multipliers for total government expenditures—a result found in other EMDEs. An earlier World Bank study[44] on the fiscal multipliers of EU funds specifically shows similar results, as it finds little evidence of large (in other words, above 1) relative GDP multipliers on EU funds spending at either the national or subnational (NUTS2) level—likely reflecting that the impact of EU funds is targeted toward promoting longer-term growth while fiscal multipliers are measured over the shorter run. The previous World Bank study estimates regional short-term multipliers using recent data on EU fund spending and a leave-one-out predicted disbursement schedule instrument. Estimated multipliers vary across samples, but all significant estimates are less than 1, despite a strong response of regional investment to EU funds, which often increases euro-for-euro. These results suggest some tempering of expectations on using EU structural and investment funds as a tool for short-term regional fiscal stimulus and focusing on the long-run benefits of EU funds, in line with their original purpose.

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40 Jordà, Ò., and A. Taylor. 2015. "The Time for Austerity: Estimating the Average Treatment Effect of Fiscal Policy." Economic Journal 126: 219–55.

41 Riera-Crichton, D., C. A. Vegh, and G. Vuletin. 2015. "Procyclical and Countercyclical Fiscal Multipliers: Evidence from OECD Countries." Journal of International Money and Finance 52: 15–31.

42 Alesina, A., and S. Ardagna. 2013. "The Design of Fiscal Adjustments." Tax Policy and the Economy 27 (1): 19–68.

43 Alesina, A., C. Favero, and F. Giavazzi. 2015. "The Output Effect of Fiscal Consolidation Plans." Journal of International Economics 96: S19–S42.

44 Pennings, S., F. Furatti, M. Schiffbauer, and D. Nikolova. Forthcoming. "Are Regional Fiscal Multipliers on EU Structural and Investment Fund Spending Large? A Reassessment of the Evidence." World Bank working paper series.

Box 1.1. Estimating fiscal multipliers for Bulgaria

Fiscal multiplier estimates for Bulgaria suggest that fiscal policy has a significant impact on output, with fiscal consolidation (expansion) reducing (increasing) output. The magnitude, however, is subject to wide uncertainty, as implied by large confidence intervals (figure B1.1.1A). To broadly summarize, Bulgaria's spending multiplier is somewhat modest on impact but grows in the short term and is persistent in the long term.

The total government spending multiplier for Bulgaria is relatively large and persistent compared to other Central and Eastern European economies. Using a local projection method, the total government spending multiplier in Bulgaria is estimated at 0.07 on impact. That is, an EUR 100 increase in spending increases output by EUR 7. After one year, the spending multiplier is estimated at EUR 27. The cumulative multiplier peaks at 0.3 in six quarters after the spending shock and remains persistent in the long term. Previous estimates of Bulgaria's fiscal spending multiplier, using VAR-based methodology, find that public indebtedness and trade openness reduce the multiplier, while the size of the spending multipliers depends on the phase of the business cycle (Georgieva 2021[45]). In other Central and Eastern European countries, total spending multipliers tend to be larger on impact than Bulgaria but decline at a faster rate, on average.

The current government spending multiplier is moderate in Bulgaria. The current government spending multiplier in Bulgaria is estimated at 0.2 on impact, while the cumulative multiplier peaks at 0.3 on the second quarter after the spending shock and remains positive and statistically significant six quarters after the shock (figure B1.1.1B). In other Central and Eastern European countries, the cumulative current spending multipliers are larger, on average, and turn negative after two years. Estimated cumulative current spending multipliers for a sample of eurozone countries remain small, negative, and statistically insignificant, though with a substantial variation across countries (for example, estimated cumulative current spending multiplier peaks at 1.8 in Greece seven quarters after the spending shock).

The government capital spending multiplier is small on impact but peaks to 0.4 after three quarters as the positive boost to output accumulates over time. The estimated fiscal multiplier for the government capital spending in Bulgaria is smaller on impact compared to the current spending multiplier, but it tends to peak in the short term and exceeds cumulative current spending multipliers three quarters after the spending shock (figures B1.1.1C and D).

Policy reforms can affect the size of fiscal spending multipliers. In general, fiscal multipliers tend to be larger for AEs than EMDEs, larger for public investment than current spending, and larger during recessions than economic expansions. Moreover, direct spending appears to be more effective (larger multiplier) compared to tax cuts and transfers (Gechert 2015[46]). Strengthening public spending efficiency appears to be associated with further improvement in spending multipliers (Hory 2016[47]). Countries with strong fiscal positions are often found to have large fiscal multipliers, while long-run multipliers in high-debt countries with weak fiscal positions could be negative due to expectations of future fiscal consolidation and/or weak investor sentiment and high sovereign risk (Huidrom et al. 2020[48]). The size of fiscal multipliers could be also reduced by the prevalence of informality, which implies that public spending efficiency in high-informality countries could be enhanced with structural reforms that encourage formalization of firms and employment (Furceri et al. 2022[49]).

45 Georgieva, S. 2021. "Fiscal Multipliers in Bulgaria and Central and Eastern Europe Countries." Economic Studies journal 1: 131-167.

46 Gechert, S. 2015. "What fiscal Policy is Most Effective? A Meta-Regression Analysis." Oxford Economic Papers. 67(3). pp.553-580.

47 Hory, M. 2016. "Fiscal Multipliers in Emerging Market Economies: Can We Learn Something From Advanced Economies?". International Economics. 146: 59-84.

48 Huidrom, R., A. Kose, J. Lim, and F. Ohnsorge. 2020. "Why Do Fiscal Multipliers Depend on Fiscal Positions?". Journal of Monetary Economics, 114: 109-125.

49 Furceri, D., P. Pizzuto, E. Colombo, and P. Tirelli. 2022. "Fiscal Multipliers and Informality." IMF Working Papers 2022/082. International Monetary Fund. Washington, DC.

Figure B1.1.1. Fiscal multiplier estimates

A. Total government spending

Fiscal multiplier

■ Bulgaria ━ CEE

B. Current spending

Fiscal multiplier

■ Bulgaria ━ CEE
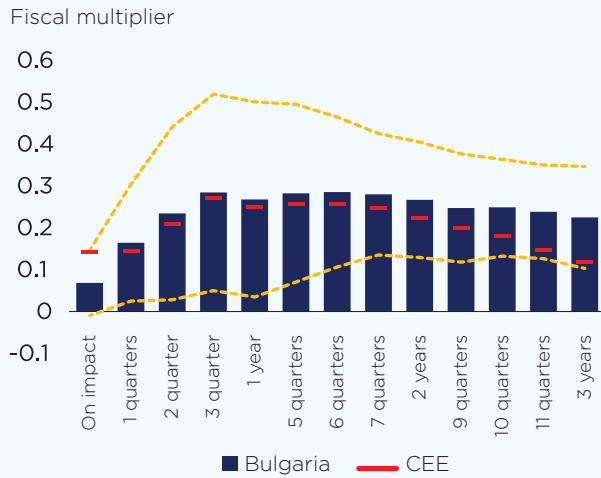
C. Capital spending
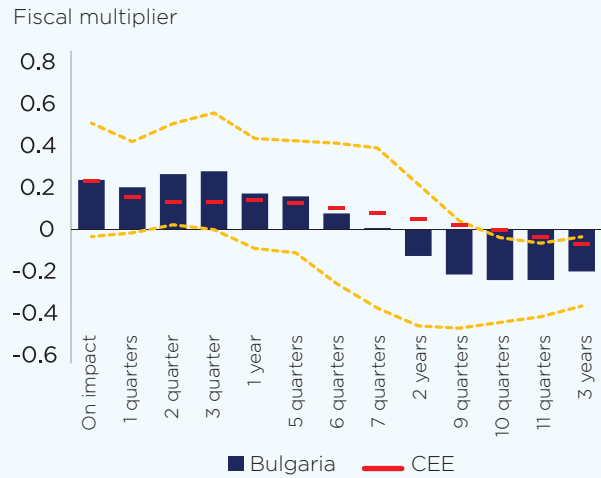
Fiscal multiplier
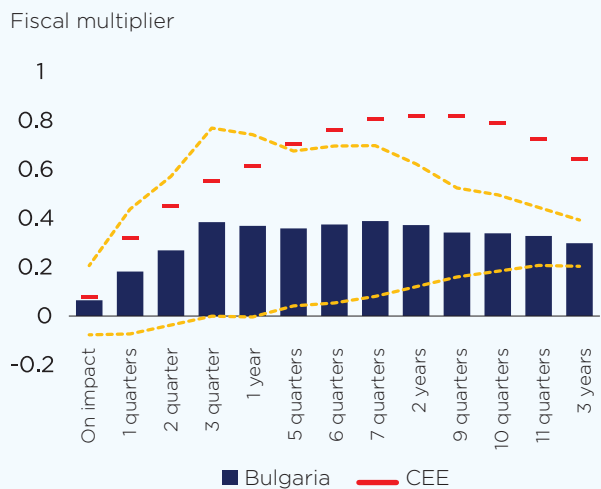
■ Bulgaria ━ CEE

D. Current spending versus capital spending multipliers in Bulgaria

Fiscal multiplier

■ Capital spending ━ Current spending
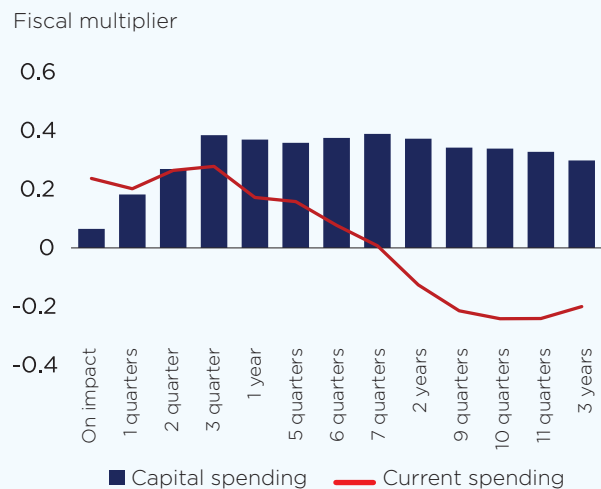
Source: World Bank.
Note: Figures show cumulative fiscal multipliers indicating the cumulative response of GDP over h quarters to the spending shock at t. Total government expenditure is defined as total consolidated government spending excluding interest payments and social benefits; current expenditure is a sum of the government spending on compensation of employees and intermediate consumption; and capital spending is public sector gross fixed capital formation. Central and Eastern Europe denotes the average of estimated spending multipliers for Croatia, Bulgaria, Hungary, Poland, Romania, Latvia, and Lithuania. Dashed lines indicate 90 percent confidence intervals.

The recent shocks related to the COVID-19 outbreak and the war in Ukraine have unveiled the broader need for more flexible fiscal policy, with automatic stabilizers complemented with discretionary fiscal measures—particularly in countries where strong governance and administrative capacity allow for discretionary spending to be time bound and targeted. Automatic stabilizers have the advantage of being timely, targeted, and temporary in smoothing the economic cycle.[51] In the EU, larger

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50 Automatic fiscal stabilizers refer to elements, built into government revenues and expenditures, that reduce fluctuations in economic activity without the need for discretionary government actions.

51 Furthermore, these do not suffer some of the same drawbacks as discretionary fiscal measures, such as the need for measurement of the economic cycle or implementation lags.

automatic stabilizers are typically linked with lower output volatility (Karras and Yang 2022)[52] and may reduce the need for discretionary spending. Model simulations for the euro area suggest that automatic fiscal stabilizers cushion around 10–30 percent of a standard GDP shock according to ECB estimates (Bouabdallah et al. 2020).[53] However, the shocks from the pandemic and invasion of Ukraine have not been standard in nature—both were exogenous shocks that have affected both demand and supply channels (rather than traditional macroeconomic imbalances). In the first phase of the pandemic, governments introduced severe restrictions on social and economic activities to contain the spread of the virus—border closures disrupted global supply chains, factory closures exhausted product stockpiles, and the lockdown curtailed services. As a result, income stabilization, supported by both automatic stabilizers and discretionary government measures, did not stabilize consumption and investment to the same extent as in past downturns but instead led to a temporary increase in the private sector's saving rate. Once these lockdowns were lifted, pent-up demand was released, and the economic recovery gained momentum.

In Bulgaria's case, long-standing structural challenges and untargeted, blanket support have constrained the effectiveness and efficiency of discretionary spending. At the same time, while automatic stabilizers help mitigate output volatility in Bulgaria, they are quite limited in scope and size because of resource constraints, with inadequately deep social safety net coverage. Although 88 percent of the population is covered by at least one benefit, the benefits received are not large enough to properly stabilize income. Bulgaria spends 16.4 percent of GDP on social protection measures (including health, about 12 percent of GDP excluding health), lower than EU peers such as Poland and Croatia, which spend more than 20 percent of GDP, or Germany at 28 percent of GDP (ILO 2022[54]). Given structural challenges related to governance and administrative capacity, many of the discretionary support measures were blanketed and covered both vulnerable and non-vulnerable entities. Reprioritizing discretionary support away from broad (untargeted) measures can free up resources that can be redirected to expand automatic stabilizers and social protection measures (Bridle et al. 2018[55]). In instances where additional discretionary support is warranted, policy makers can instead provide vulnerable households with means-tested cash transfers, which are less costly than untargeted support, especially when implemented with automatic sunset clauses (World Bank 2022[56]). Protecting spending in categories such as health, climate, and education is critical given setbacks from the pandemic, increased costs due to inflation, and large investment gaps.

While automatic stabilizers showed limited responsiveness during the initial phase of the pandemic (due to the nature of the shock), generous fiscal discretionary packages have cushioned activity in Bulgaria but worsened the fiscal position since 2019 and contributed to inflationary pressures. The generous fiscal packages in response to the twin crises—the COVID-19 outbreak and the ensuing war in Ukraine—have worsened Bulgaria's fiscal position and have skewed budget spending toward current expenditures at the expense of capital expenditure. The latter was also aided by insufficient

52 Georgios Karras, Michael C.-Y. Yang . 2022. "Fiscal Policy in the 21st Century: Evidence on Automatic Stabilizers in the European Union." Journal of Government and Economics 6.

53 Bouabdallah, O., Checherita-Westphal, C., Freier, M., Nerlich, C., Sławinska, K. 2020. "Automatic Fiscal Stabilisers in the Euro Area and the COVID-19 Crisis". Econ. Bull. (Issue 6) ECB.

54 ILO (International Labour Organization). 2022. "World Social Protection Report 2020-22." International Labour Organization, Geneva.

55 Bridle, R., L. Merrill, M. Halonen, A. Zinecker, and P. Tommila. 2018. "Swapping Fossil Fuel Subsidies for Sustainable Energy." Nordic Council of Ministers, Denmark.

56 World Bank. 2022. "EU Regular Economic Report: Energizing Europe—Inclusive Growth: Inflation Chipping Away Income Gains." World Bank, Washington, DC.

capacity to implement ambition public spending programs and other weaknesses in PIM, as also shown in recent IMF analyses.[57] Moreover, discretionary support to households and firms to confront higher energy prices has been largely untargeted and may add to inflationary pressures and work against monetary policy tightening set by the ECB (given Bulgaria's currency board arrangement). In addition to being costly, untargeted tax cuts and subsidies on fossil fuels support demand for environmentally damaging and carbon-intensive energy sources, eroding incentives for energy conservation and creating tension with longer-term climate goals.

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57 See Hallaert and Primus. 2022. "Strengthening Public Expenditure Efficiency: Investment and Social Spending in Bulgaria." IMF, Washington, DC.

Chapter 2.
Government Revenue Trends and VAT Gap Analysis

Total revenue trends

Bulgaria is the poorest EU member state and will require significant resources to address large development needs, face costs associated with a rapidly aging population, and tackle high levels of inequality. Income convergence has been lagging other newer EU member states since the GFC, reflecting weakness in the underlying drivers of long-term growth as earlier gains in human capital accumulation slow, sustained political and policy uncertainty weigh on investment, and long-standing structural bottlenecks dampen productivity growth. As a result, Bulgaria's GDP per capita in purchasing power parity (PPP) terms remains the lowest in the EU, reaching only 59 percent of the EU average in 2022. To this end, mobilizing domestic revenue is crucial in creating the fiscal space to meet Bulgaria's development needs and will require complementary policies that increase productivity, raise living standards, reduce inequalities, and support the green transition.

Although Bulgaria's overall government revenues have recovered to pre-pandemic levels, they remain low relative to the EU average and several EU peers. The COVID-19 pandemic triggered a 0.7 percentage point of GDP fall in overall government revenues in Bulgaria, to 37.7 percent of GDP, largely owing to the effects of tax cuts to mitigate the negative economic effects of the pandemic and, to a much smaller extent, due to automatic stabilizers. Although 12 EU member states experienced a similar decline in overall government revenues as a share of GDP in 2020, the EU average rose slightly because the fall in output was sharper than that of revenues. Bulgaria's overall government revenues subsequently recovered to 38.5 percent of GDP in 2022—in line with their pre-pandemic level of 38.4 percent of GDP in 2019—as VAT collection rose in tandem with stronger growth and rapid price increases (figure 2.1). Despite the more recent cyclical improvement, government revenues in Bulgaria remain structurally lower relative to many EU member states, with Bulgaria in the bottom six in the EU in 2022 and trailing the EU average by about 8 percentage points of GDP—though its revenue performance is broadly aligned with or even better than regional peers in Europe and Central Asia with similar income per capita levels.[58] Nevertheless, low overall government revenues in Bulgaria largely reflect weak tax revenue collection amid low statutory tax rates on income and challenges related to enforcement. Statutory rates on wealth, including on real estate income, remain low in Bulgaria—a trend that is common in many EU economies, especially newer members in Central and Eastern Europe, as will be addressed in the next edition of the Public Finance Review.[59] Bulgaria's low overall government revenues contain its ability to spend on key development areas, which, in turn, hinders the country's catch up with average EU living standards.

The composition of overall government revenues in Bulgaria is broadly aligned with the EU but only for the largest two sources of revenues—taxes and net social contributions. Tax revenues account for the largest source of overall government revenues in both Bulgaria and the EU, amounting to about 58 percent of total revenues in each economy in 2022. Although net social contributions were the second largest category after taxes in both Bulgaria and in the EU, they amounted to only about 22 percent of total revenues in Bulgaria compared to about 30 percent of total revenues in the EU (figure 2.2). The third largest source of overall government revenues in Bulgaria is derived from other revenues outside of taxes, net social contributions, market output (sales, fees, and own account capital formation), and property income. In all, other revenue sources accounted for nearly 13 percent of Bulgaria's total revenues—the highest share in the EU, in part owing to sizable EU grants as relative allocations are larger for poorer EU member states.[60] In con-

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58 Relative to Europe and Central Asia peers of similar per capita income levels (in PPP terms), Bulgaria's revenues as a share of GDP are in line or higher than Kazakhstan, Russia, and Türkiye.

59 Blochliger, H., and M. F. Diagne. 2023. "Property Taxes in Central and Eastern Europe and Baltic Countries: Why and How to Increase Them?" Paris: OECD. https://oecdecoscope.blog/2023/02/16/property-taxes-in-central-and-eastern-europe-and-baltic-countries-why-and-how-to-increase-them/.

60 Historically, however, Bulgaria's absorption rate of EU funds has trailed the EU average, curbing its ability to derive revenues from this source.

trast, the third largest source of overall government revenues for the EU average is from market output, which accounted for 6.8 percent of total revenue in 2022. Still, despite these differences, the larger challenge for Bulgaria is the low level rather than the composition of overall government revenues.

Figure 2.1. Total general government revenues, 2022
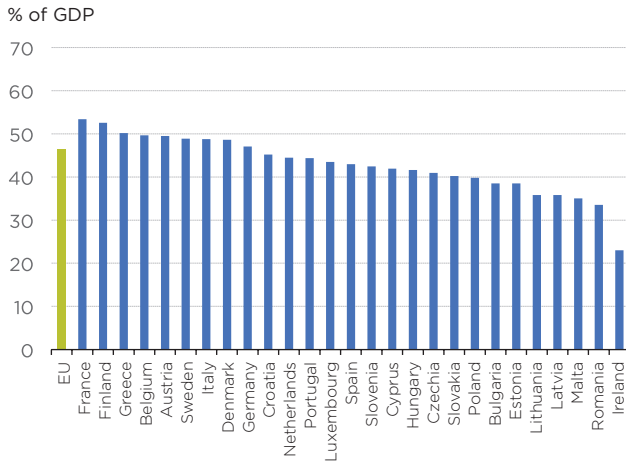
% of GDP

Source: Eurostat.

Figure 2.2. Revenue composition, 2022

% of total revenue

- Others
- Property income
- Market output, output for own final use and payments for non-market production
- Net social contributions
- Taxes
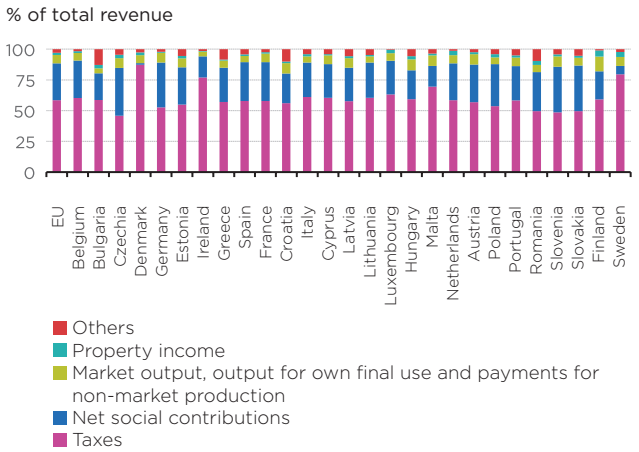
Source: Eurostat.

Although taxes are the largest overall government revenue source for Bulgaria, tax revenues as a share of GDP remain low. Tax revenues including net social contributions have remained relatively stable over the last few years despite the pandemic, amounting to about 31 percent of GDP in Bulgaria in 2022.[61] Relatively stable tax revenues throughout the pandemic in Bulgaria and the broader EU likely reflected sizable economic support packages, which helped keep businesses viable and protect jobs, thus supporting consumption and buoying indirect tax revenue. Nevertheless, Bulgaria's tax revenues including net social contributions remained the fifth lowest among EU member states and well below the EU average of nearly 41 percent of GDP in 2022 (figure 2.3). Excluding net social contributions, tax revenues reached an estimated 22 percent of GDP in 2022 or about 5 percentage points of GDP lower than the EU average.

Figure 2.3. Tax revenues, 2022

% of GDP

- Net social contributions
- Taxes on production and imports
- Current taxes on income, wealth, etc.
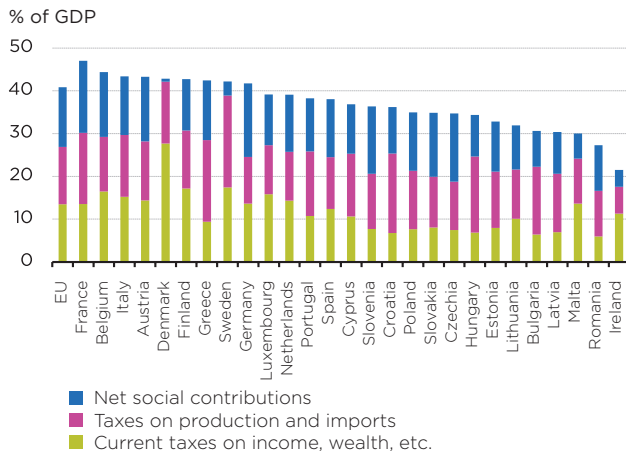
Source: Eurostat.

Figure 2.4. Tax revenue, selected taxes

% of GDP

- EU
- Bulgaria
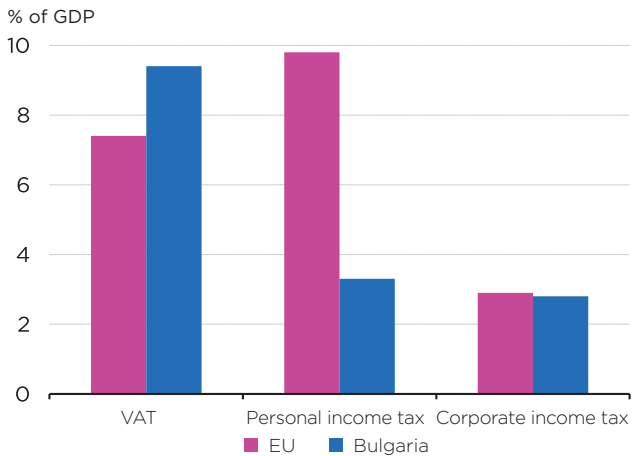
Source: Eurostat.

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61 Tax revenues in Bulgarian lev terms, however, fell slightly in 2020 as a result of the pandemic.

Bulgaria's low tax revenue collection can be largely explained by low, flat statutory income tax rates. Bulgaria has maintained a flat personal and corporate income tax rate of 10 percent (the lowest top statutory rate in the EU)[62] since 2008 (personal) and 2007 (corporate) as part of a series of reforms following EU accession to tackle challenges related to tax avoidance, invasion, and a large informal sector—all of which carved into the tax base (figure 2.4). Although a flat income tax rate system can be appealing in countries where informality is pronounced or tax administration is weak, a progressive income tax rate structure is preferable for addressing fairness and equity concerns. In practice, however, these welfare gains can be diluted by tax loopholes and exceptions, which typically benefit the wealthy and large firms.[63] In Bulgaria's case, the transition from a progressive to a flat income tax system appears to have increased the tax base by reducing the size of the informal economy,[64] but the welfare effects are less obvious, with some empirical results suggesting welfare gains[65] while others have demonstrated a worsening in inequality.[66]

Another explanation for the relatively low tax burden in Bulgaria is low health taxes, especially excise taxes on tobacco and alcohol. Bulgaria has tobacco and alcohol excises that are compliant with the EU tax directives (box 2.1).[67] Excise taxes on tobacco products and alcohol contribute significantly to tax revenue, accounting for 7.1 percent of total tax revenues (2.3 percent of GDP) in 2021. Yet Bulgaria applies the lowest minimum excise tax rate amount as required by EU directives. Moreover, recent high inflation has eroded the tax base while illicit trade further reduces it.[68] World Bank simulations show that under an ambitious health tax scenario in which excise tax rates on tobacco and alcohol products are increased, Bulgaria could raise health tax revenues by about 0.3 percent of GDP, which could be used to increase health and other spending or reduce other taxes.

Box 2.1. Health excise taxes in Bulgaria

Health taxes are excise taxes that are applied to products that generate health-related negative externalities and internalities, particularly tobacco, alcohol, and sugar-sweetened beverages (SSBs). In addition to correcting for market failures, health taxes are a source of tax revenue for governments with substantial scope to raise significant additional revenue efficiently.[69] Bulgaria has a well-developed tobacco and alcohol excise tax system that is compliant with the EU tax directives.[70] Yet, there are no EU excise directives on SSBs, and Bulgaria does not apply excises on SSBs.

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62 The top statutory PIT rate in Bulgaria is 10 percent, which is 28.7 percentage points below the EU average of 38.7 percent based on 2022 data; for corporate income taxes, Bulgaria's top statutory rate of 10 percent is 11.2 percentage points below the EU average of 21.2 percent. Source: EC. 2022. Taxation Trends in the European Union. Brussels.

63 Nevertheless, empirical analyses suggest a complex relationship between income tax structures and inequality; for a review of the literature, please see Stephenson, A. 2018. "The Impact of Personal Income Tax Structure on Income Inequality for Belgium, Bulgaria, Germany, Lithuania, and Poland: A Comparison of Flat and Graduated Income Tax Structures." Atlantic Economic Journal 46: 405–417. https://doi.org/10.1007/s11293-018-9601-y.

64 Djankov, S. 2022. Flat Tax Reform in Ukraine: Lessons from Bulgaria. VoxEU, CEPR, Brussels.

65 Vasilev, A. 2015. "Welfare Effect of Flat Income Tax Reform: The Case of Bulgaria." Eastern European Economics 53 (3): 205–220.

66 Tanchev, S. 2021. "How the Proportional Income Taxation Increases Inequality in Bulgaria." Journal of Tax Reform 3 (7): 244–254.

67 The directives create obligations for member states in terms of the product definitions, tax structures, minimum tax rates and benchmarks, and tax administration.

68 The size of the illicit cigarette market in Bulgaria is currently not known. An independent study using 2010 data reported that approximately 18 percent of cigarette consumption in Bulgaria was illicit (Joossens et al. 2015). Since then, the only estimates available are generated by KPMG with funding from the tobacco industry. They point to relatively low levels of illicit cigarette trade representing only 1.6 percent of the total market (KPMG 2022) even though these estimates are generally unreliable (Gallagher et al. 2018).

69 However, these efforts can be undermined by illicit trade.

70 The directives create obligations for member states in terms of the product definitions, tax structures, minimum tax rates and benchmarks, and tax administration.

Given the challenging macroeconomic environment of slowing growth, higher-for-longer inflation, and constrained policy space, health taxes provide an opportunity to align health priorities with fiscal objectives by raising the price of tobacco and alcohol and thereby reducing the affordability of and the incentive to consume these products, while increasing tax revenues. In Bulgaria, health taxes contribute significantly to tax revenue, accounting for 7.1 percent of total tax revenues (2.3 percent of GDP) in 2021. Although health taxes, including those on tobacco, meaningfully contribute to Bulgaria's overall tax revenues, taxes on tobacco and some alcohol products are the lowest of all EU member states. Moreover, recent high inflation has eroded the tax base and the value of specific taxes, with legislated tax increases not keeping pace. Structural challenges—such as the illicit trade, particularly for cigarettes—have also further dented tax revenues.

Cigarette excise tax rates in Bulgaria have been raised twice in the past decade, in 2017 and 2023, largely to keep excise taxes aligned with the EU minimum level. Although the excise tax yield on cigarettes increased slightly after the 2017 tax rate hike, this also reflected a nominal rise in the ad valorem component amid an increase in prices; more recently in 2022, high inflation eroded the specific excise component, leading to a fall in the overall excise tax yield (figure B2.1.1). As a result, Bulgaria's excise tax yield per 1,000 cigarettes relative to the weighted average price (WAP) remained the lowest in the EU in 2022.[71] Bulgaria achieves EU targets with a relatively large reliance on the ad valorem component, accounting for nearly 40 percent of the excise yield. This contributes to a wider variation in prices giving smokers greater opportunities to avoid tax/price increases by trading down to cheaper brands.[72] Moreover, cigarettes have become more affordable in Bulgaria over the past decade, requiring only 2.2 percent of per capita GDP to purchase 100 packs of cigarettes compared to 4.1 percent in 2013, likely contributing to a steady rise in per capita tobacco sales and nominal increase in tobacco excise tax revenue (figure B2.1.2).

Figure B2.1.1. Decomposed WAP and affordability of cigarettes in Bulgaria, 2013–22
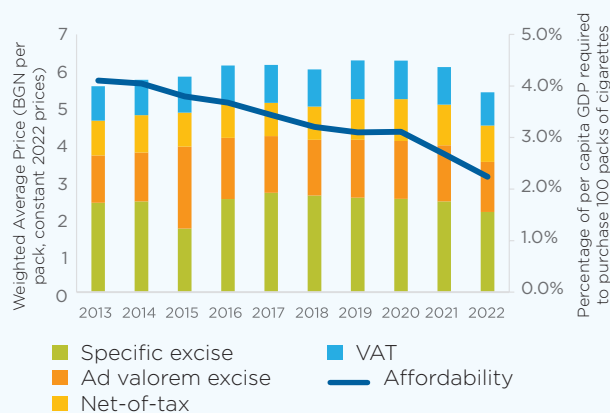
Source: EC, Eurostat.
Note: The relative income price (RIP) is measured as the percent of per capita income needed to purchase 100 packs of cigarettes. Rising RIP indicates a decline in affordability.

Figure B2.1.2. Tobacco excise tax revenue in Bulgaria, 2012–21
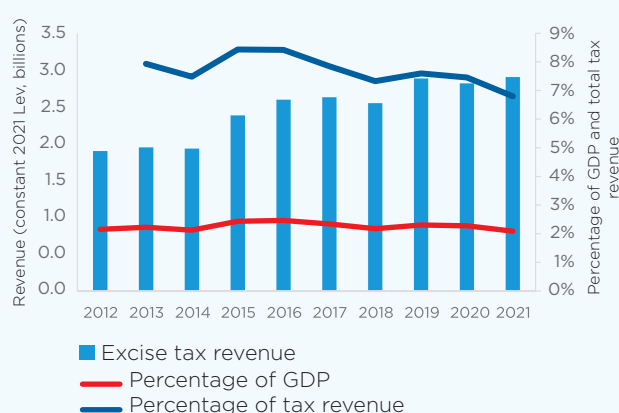
Source: EC, Eurostat.

71 This does not yet account for Bulgaria's 2023 tax increase.
72 Lane, Christopher, Evan Harold Blecher, Janos Nagy, Ceren Ozer, Danielle Elena Bloom, and Daniel Prinz. "Why Health Taxes Matter: A Mechanism to Improve Health and Revenue Outcomes (English)." Global Tax Program Health Taxes Knowledge Note Series, No. 1 Washington, DC, World Bank Group.

Bulgaria's alcohol excise tax rates meet EU minimum tax rates but are the lowest of all EU member states (figure B2.1.3). While tobacco tax rates are also the lowest, the wider variation in alcohol tax rates in the EU highlights how low Bulgaria's alcohol tax rates are, suggesting scope to increase rates.[73] Since Bulgaria is already in compliance with the EU minimum tax rates, excise taxes on alcohol have not increased since at least 2011.[74] The lack of excise tax increases, combined with recent inflation, has eroded the real value of excise taxes on alcohol by 25 percent since 2011 in Bulgaria. This erosion in real tax yields has contributed to alcohol becoming more affordable in Bulgaria over the past decade. Spirits, the most widely bought alcohol in Bulgaria (40 percent of total sales in 2021), are 25 percent more affordable than in 2011; wine (34 percent of total sales), which is not subject to excise taxes, is 30 percent more affordable; and beer (25 percent of total sales) is 39 percent more affordable. As alcohol has become more affordable in Bulgaria, per capita alcohol sales have increased 15 percent since 2011, in turn boosting alcohol excise tax revenue by 11 percent in real terms despite declines in real excise tax yields (figure B2.1.4).

Figure B2.1.3. Distilled spirits excise taxes in EU member states (40 percent ABV per 750 ml), 2023
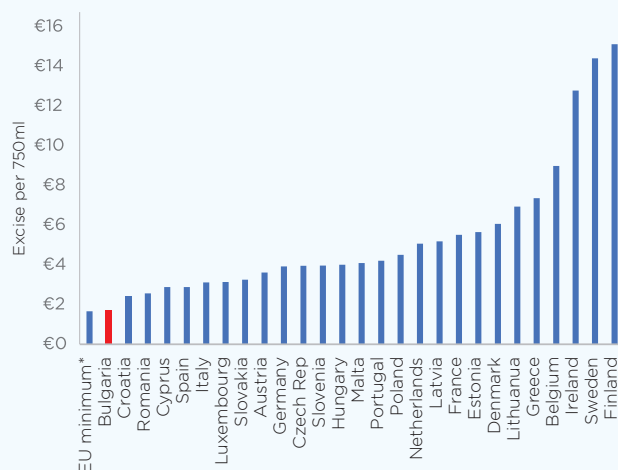
Source: World Bank estimates using EC data.
Note: ABV = Alcohol by volume.

Figure B2.1.4. Alcohol excise tax revenue in Bulgaria, 2012–21

■ Excise tax revenue
— Percentage of GDP
— Percentage of tax revenue
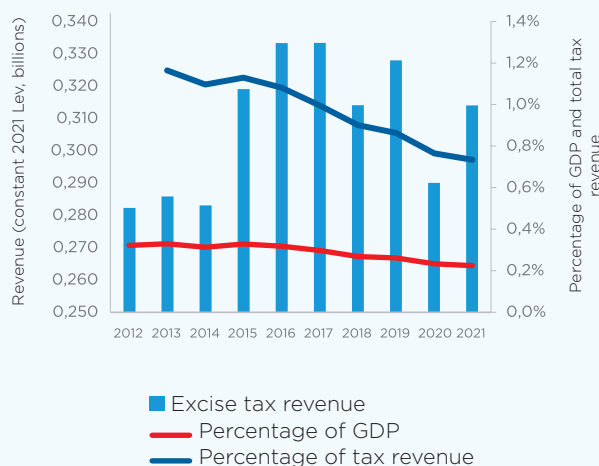
Source: EC, Eurostat.

World Bank simulations for Bulgaria show the health and fiscal benefits of raising cigarette and alcohol taxes, albeit without accounting for weaknesses or improvements in tax administration.[75] The baseline scenario (A) estimates the impact on cigarette (alcohol) prices, sales, and tax revenue if there are no changes in tax policy but considers the effects of inflation, economic growth, and de-

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73 Beer taxes in Bulgaria are less than half the median and a quarter of the EU average. The highest taxes are in Finland, 19 times that of Bulgaria. Spirits taxes in Bulgaria are less than half the median and approximately one-third of the EU average. Finland also has the highest spirits taxes, 10 times more than Bulgaria's.

74 It is likely further back than 2011, but the data sourced for this review are only available from 2011.

75 Details of the simulation methodologies, data, and modelling parameters will be provided in a forthcoming background paper. The size of illicit cigarette market in Bulgaria is not known. An independent study using 2010 data reported that approximately 18 percent of cigarette consumption in Bulgaria was illicit (source: Joossens L., A. Lugo, C. La Vecchia, A. Gilmore, L. Clancy, S. Gallus. 2014. "Illicit Cigarettes and Hand-Rolled Tobacco in 18 European Countries: a Cross-Sectional Survey." Tobacco Control, 23 (e1): e17-23).

mographic changes, which will result in continued declines in real prices, increases in cigarette and alcohol sales, and declines in real tax revenues.[76] Scenario B simulates the effects of the 2023 cigarette tax increases and benchmarks excise taxes to inflation (for cigarettes, the specific tax component), which protects real tax revenues but has little impact on reducing per capita consumption of cigarettes (alcohol). Scenario C models a more ambitious agenda of increasing the specific tax on cigarettes by 25 percent; for alcohol, this scenario doubles the excise tax on beer and spirits and introduces an excise tax on wine (benchmarked to beer), and other excises are benchmarked to in-

flation. As the figures highlight, the baseline scenario shows how inflation erosion will contribute to increasing sales and declining real revenues. However, an ambitious approach to raising taxes significantly has the potential to reduce sales and boost excise tax revenues, increasing the latter from the baseline by 0.2 percentage point of GDP for cigarettes and by 0.1 percentage point of GDP for alcohol, allowing the government to increase health spending per capita or lower other taxes. Moreover, the consumption of cigarettes and alcohol may be expected to decline, yielding positive health effects in the medium to long run (see Annex 5 for details).

Table B2.1.1. Health tax reform simulation scenarios

Scenario	Description	Details
A	Baseline	No change in taxes; inflation and economic growth affect the baseline
B.1	Benchmarking specific taxes to inflation to maintain real value over time	Raising taxes by expected inflation in each year
B.2	Estimate new baseline for 2023 tobacco tax increases	Same as B.1, but including the 2023 tobacco tax increases to estimate the impact on the baseline for future tax policy proposals
C.1	Raising the tax on beer and spirits, benchmarking other products to beer and spirits based on alcohol content	Increasing excise to BGN 7.50 per degree of alcohol per hL on beer, BGN 2,200 per hL of pure alcohol of spirits, BGN 330 per hL on intermediate products
	Introducing excise in wine and other fermented beverages, with wine at one-quarter of the alcohol weighted rate of beer	Introducing excise of BGN 16.41 per hL of wine and BGN 25.78 per hL on other fermented beverages
C.2	Raising cigarette taxes to the expected new EU benchmark	Raised specific taxes on cigarettes by 25%

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76 The baseline scenario highlights how real taxes erode over time due to inflation. It is particularly important at the present time given the higher rates of inflation over the last few years.

Figure B2.1.5. Health taxes - simulation results: sales

Percentage change in per capita sales (packs of cigarettes and litres of absolute alcohol)

Legend: Cigarettes, Alcohol
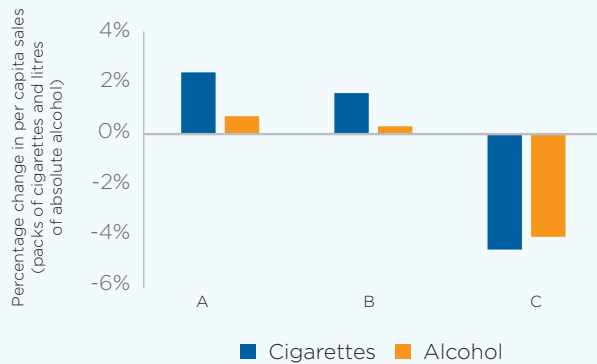
Source: World Bank.

Figure B2.1.6. Health taxes - simulation results: tax revenues

Excise tax revenue (Lev, billions, constant prices)

Legend: Cigarettes, Alcohol
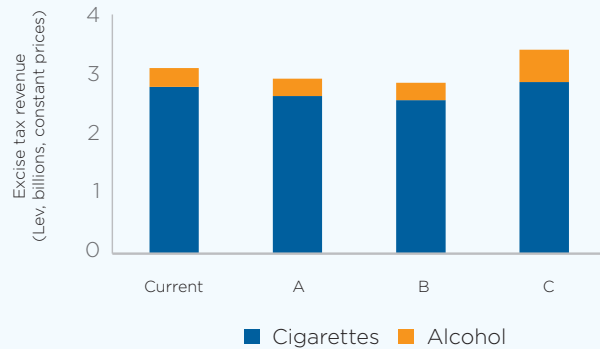
Source: World Bank.

Bulgaria also features relatively low wealth taxes, as approximated by the recurrent taxes on immovable property. According to EC data, recurrent taxes on immovable property in Bulgaria accounted for just 0.3 percent of GDP in 2021. Their low share in total tax revenue is due to below-market tax bases in many localities. At the same time, recurrent taxes on immovable property are found to be the least distortive tax instrument in their impact on long-run GDP per capita, followed by consumption taxes, other property taxes, and environment-related taxes, in that order, according to a study by OECD (2010)[77]. Corporate and personal income taxes are, in turn, the most distortive. Given that, there is unexploited potential to raise property taxes which would allow reduced direct taxation or increased fiscal space for other policies.[78]

Environmental taxes are relatively high in Bulgaria, but additional green fiscal reforms will need to play a critical role in enabling the green transition, with carbon pricing through taxes a key policy to mitigate climate change. Although overall environmental taxes, including taxes on energy use, are comparably high at 2.8 percent of GDP in 2021 (compared to the EU average of 2.2 percent of GDP, EC), Bulgaria does not impose significant levies on explicit pollution and CO_2 emissions; nevertheless, Bulgaria's use of energy taxes partly covers emissions, at least implicitly, as the tax base is on energy products used for both stationary and transport purposes. Carbon taxes support a green transition through changes in relative prices. They help raise the price of fossil fuels, electricity, and goods and services that are produced using carbon intensive products compared with those that have a lower carbon content. This change in relative prices enables a shift to cleaner technologies and incentivizes energy conservation. Increased government revenues through raising carbon taxes could be redirected to offset the negative impacts of higher taxes on growth and employment. Higher carbon taxes also entail co-benefits, such as better health outcomes due to lower air pollution as well as reduced traffic congestion (for more details see the special section of World Bank (2022b),[79] which focuses on fiscal instruments that can support the green transition in the EU).

Given low personal and corporate income tax rates in Bulgaria, tax revenues rely largely on indirect taxes, with consumption accounting for a large share of the tax base. In Bulgaria, the composition of

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77 OECD (Organization for Economic Cooperation and Development). 2010. "Tax Policy Reform and Economic Growth." Paris.

78 A deep dive into local property taxes will be undertaken as a part of the upcoming 'Subnational Public Finance Review for Bulgaria', by the World Bank, due to be published in late 2024.

79 World Bank. 2022b. "EU Regular Economic Report 7: Green Fiscal Reforms."

tax revenues is heavily skewed toward indirect taxes, which largely comprise VAT as well as import taxes and other taxes on production. Indirect taxes accounted for almost half of tax revenue in 2021—among the highest share in the EU—amounting to 15.2 percent of GDP or 1.4 percentage points of GDP above the EU average of 13.8 percent of GDP (figure 2.5). VAT revenues alone account for nearly one-third of Bulgaria's tax revenue. Bulgaria's large share of indirect taxes in tax revenues reflects a combination of low statutory income tax rates and relatively average VAT rates, as Bulgaria's standard VAT rate of 20 percent (9 percent for reduced rate) is broadly in line with the EU average of 21.5 percent. As a result, nearly half of the tax revenue base comprises consumption taxes, which tend to be more regressive than other forms of taxation but less distortive than labor and capital taxes as they do

not disincentivize work and are less harmful to investment. Direct taxes account for less than 22 percent of tax revenues (6.7 percent of GDP) and social contributions for only 29 percent (8.9 percent of GDP), placing Bulgaria in the bottom five of the EU for these sources of taxes as a share of GDP. In Bulgaria, the reliance on consumption taxes reflects the need to preserve the tax base while instituting a growth-friendly direct tax system (of a proportional 10 percent corporate and personal income tax) that encourages investment, employment, and faster convergence to Europe's AEs, especially given that Bulgaria has the lowest GDP per capita in the EU.[80] In contrast, the EU's composition of tax revenues is roughly balanced between direct taxes (13.6 percent of GDP), indirect taxes (13.8 percent of GDP), and social contributions (13.2 percent of GDP) (figure 2.6).

Figure 2.5. Tax composition, 2021

% of GDP
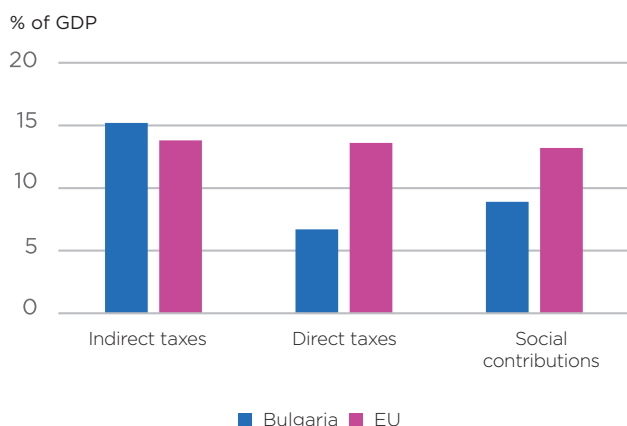
Source: EC, DG Taxation and Customs Union, based on Eurostat data..

Figure 2.6. Tax composition, 2021

% of GDP
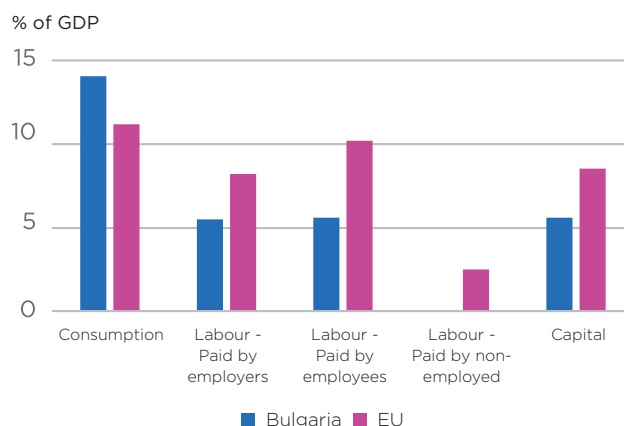
Source: EC, DG Taxation and Customs Union, based on Eurostat data..

In Bulgaria, the tax burden falls mostly on consumption and labor income rather than on capital income, but the seemingly large burden from labor taxes reflects social contributions rather than PITs. Tax rates levied on consumption are high in Bulgaria compared to those on capital and some forms of labor income. Based on the EC's assessment for 2021, Bulgaria's implicit tax rate (ITR)[81] was 20.9 percent on consumption, 11.9 per-

cent on capital income (based on 2017 data, latest available), and 25.1 percent on labor income—the bottom third of the EU (37.8 percent average) (figure 2.7). Most of the labor income tax burden (about 75 percent), however, is due to social contributions rather than PITs, the latter of which faces an implicit rate of only 6.3 percent in Bulgaria in 2020 (latest available data) or about half the EU average.

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80 Institute for Market Economics. 2016. F*lat Tax in Bulgaria: History, Introduction, Results.*

81 The ITRs are a better gauge of the effective level of taxation as different statutory rates may be applied at different income thresholds, while allowances, exemptions, and tax credits can significantly lower the actual amount that needs to be paid. Here ITRs are as calculated by the EC, which uses a top-down approach to measure what percentage of the potential respective tax base is actually collected in revenue. For example, ITR on consumption shows the ratio between the revenue from consumption taxes and the estimated base. The technical details of the estimation of this indicator are presented in publication 2022 edition of Taxation Trends in the European Union (EC 2022b), Section F of Annex B.

Figure 2.7. ITRs, 2021

Percent
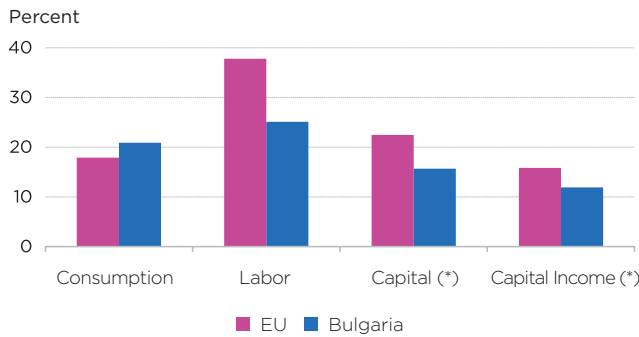
Source: Eurostat.
Note: Asterisk indicates 2017 data for Bulgaria's ITRs on capital, given data availability. The EU average is computed as a simple average for ITRs on capital.

ITRs on consumption in Bulgaria are higher than the EU average. Bulgaria's implicit consumption tax rate stood at 20.9 percent—the tenth highest in the EU and well above the EU average rate of 17.9 percent—and has increased since the GFC. The VAT accounts for about two-thirds of total consumption ITR in Bulgar-

ia, owing to Bulgaria's high reliance on the VAT in its tax mix (figure 2.8). Until the COVID-19 pandemic, the country had very few exemptions from the statutory VAT rate of 20 percent (the largest one being a 9 percent rate on tourist packages) due to a consistent policy against preferential VAT rates which could undermine the biggest source of budget revenues and jeopardize the flat income and corporate tax model. Non-VAT components, such as excise duties on energy and tobacco, also contributed to the overall ITR on consumption in 2021. The contributions of taxes on tobacco and alcohol on Bulgaria's ITR on consumption were above the EU average. Overall, relatively high consumption tax rates do not appear to result in significant VAT avoidance and evasion. Moreover, based on the EC's latest assessments of the tax gap, which measures the overall difference between the expected VAT revenue and the amount actually collected,[82] Bulgaria's VAT gap remained below the EU average in 2020 (see the next section).

Figure 2.8. Decomposition of ITR on consumption, 2020

Percent
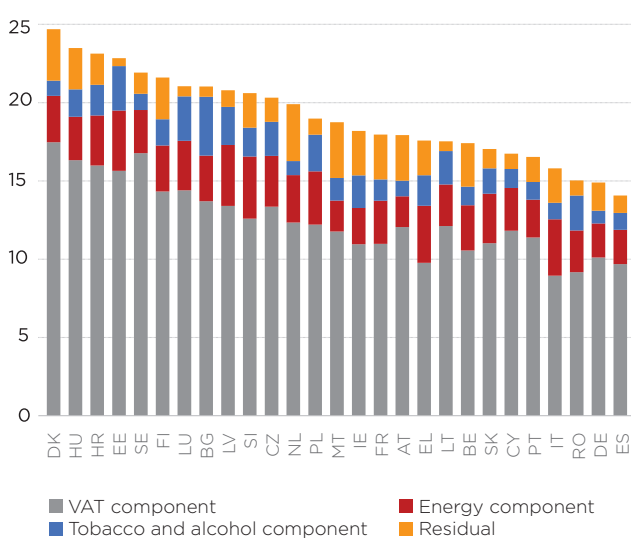
Source: EC, DG Taxation and Customs Union, based on Eurostat data.

Figure 2.9. VAT gap, 2019 and 2020

Percent
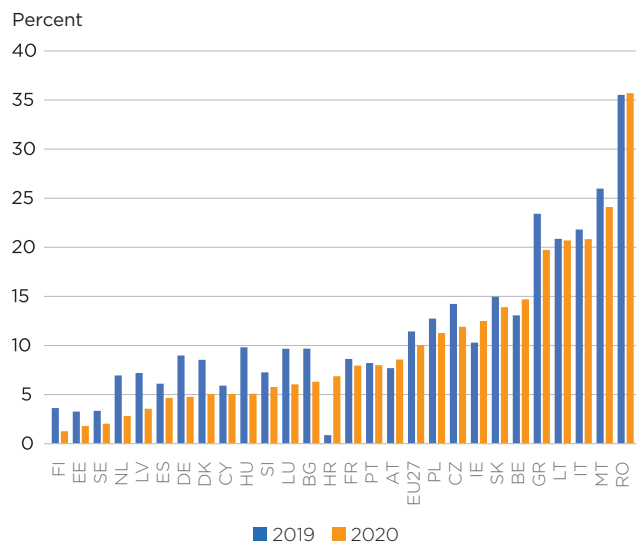
Source: EC, Center for Social and Economic Research.

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82 For more details, see EC and Center for Social and Economic Research. 2022. "VAT Gap in the EU". Warsaw.

Bottom-up estimation of the VAT reporting gap in Bulgaria

Given that VAT revenues constitute one-third of Bulgaria's total tax revenues, the focus of this section is to analyze the VAT gap, which is the difference between expected revenues and the revenues actually collected. The tax gap is the difference between the aggregate true tax liability and the amount that is actually reported and paid. VAT gaps are driven by several factors, including tax fraud and evasion, avoidance and optimization practices, bankruptcies and financial insolvencies, and miscalculations and administrative errors. The drivers of tax gaps are generally broken down by the following: non-filing gap (taxes owed by non-filers), reporting gap (taxes understated by filers), and payment gap (reported taxes that have not been paid). The reporting gap comprises the bulk of the tax gap and is the focus of this analysis (figure 2.10).[83]

In addition to determining the amount of foregone revenues, estimating VAT gaps is useful for assessing the performance of tax administration, improving transparency and accountability, and identifying taxpayer segments and issues for further compliance risk analysis and management. Lost revenues are particularly damaging in countries such as Bulgaria because of large development needs—reducing the VAT gap could provide additional resources for public goods and services, which could help reduce inequality and improve income redistribution. The additional revenues could also be used to reduce debt levels following the recent adverse shocks of the pandemic and Russia's invasion of Ukraine and could be also used to finance climate goals and the green transition. Estimates of the scale of the VAT gap can help develop well-targeted measures and monitor their effectiveness.

The VAT gap is commonly estimated using a 'top-down' approach, based largely on national accounts data. While top-down estimation methodologies yield a rough sense of overall trends and levels of VAT noncompliance, they are largely incapable of producing more useful granular-level information on different components of the gap.[84] Based on the accompanying background paper to this report, a novel bottom-up estimation strategy for the VAT reporting gap in Bulgaria is introduced, which permits the development of disaggregated estimates of tax noncompliance by industry sector, region, and size separately for those taxpayers reporting a net VAT balance due and those claiming a refund. The bottom-up estimation strategy relies on an extrapolation of findings from risk-based VAT audits to the overall VAT population, and the estimates can be sensitive to the underlying modeling assumptions. This section illustrates how top-down VAT gap estimates can be used as a control measure against which the bottom-up estimates may be calibrated.

The EC estimates VAT gaps across the EU using a macroeconomic top-down approach, which only produces one aggregated number. According to EC estimates, Bulgaria's VAT gap fell from 9.7 percent of VAT revenues due in 2019 to 6.3 percent of VAT revenues due in 2020 (figure 2.9). This improvement in compliance in 2020 was common across most EU member states and likely reflected, to some degree, the effect of pandemic-related government support measures, which were contingent on paying taxes. In Bulgaria, the estimated VTTL dropped by 3.9 percent (due largely to a fall in effective rates and base effects). At the same time, VAT revenue dropped by only 0.4

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83 In a broader sense, the full VAT gap includes not only this 'reporting gap' but also VAT liabilities that are owed by firms that fail to file their required tax returns and VAT liabilities that are reported on tax returns but not fully paid. These latter components of the VAT gap, which generally represent only a small share of the full VAT gap, are not addressed in this chapter.

84 The accuracy of each of these top-down approaches depends on the quality of the available national accounts data as well as the underlying modeling assumptions. Certain key information sources, such as supply and use tables, may be out of date, while other important statistics might be based on preliminary estimates. The degree to which informal sector transactions are accounted for in the official statistics is also of potential concern, particularly in economies with large informal sectors. Consequently, top-down measures of the VAT gap are generally best viewed as ballpark figures rather than as precise estimates.

percent, which marks a 3.7 percent improvement in VAT compliance (figure 2.11). Overall, Bulgaria's VAT gap of 6.3 percent is broadly in line with the EU median, with the gap ranging from 1.3 percent in Finland to 35.7 percent in Romania.

Figure 2.10. VAT account for about one-third of tax revenues in Bulgaria—second highest in the EU after Croatia
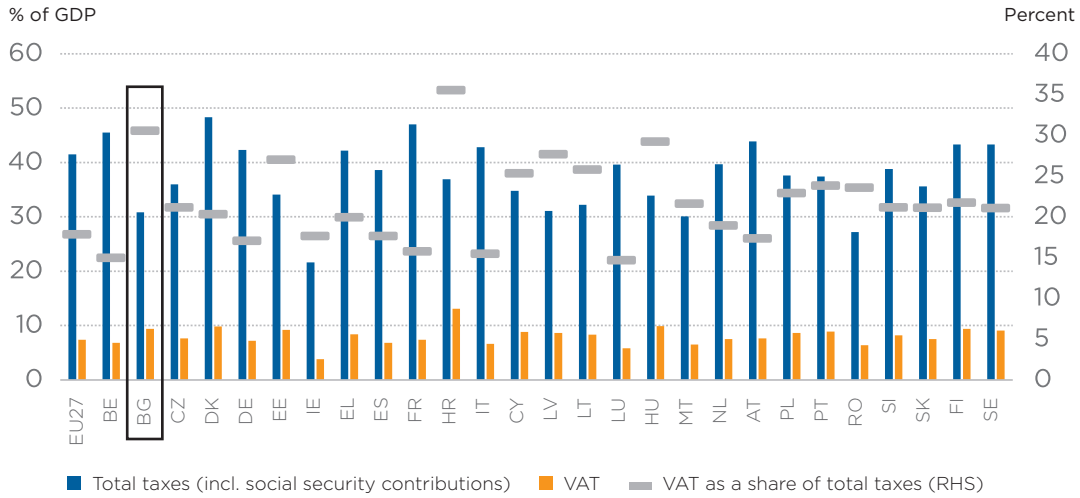
Source: Eurostat.

Figure 2.11. Change in actual VAT revenue components (in %, 2020 versus 2019) shows an improvement in compliance in 2020
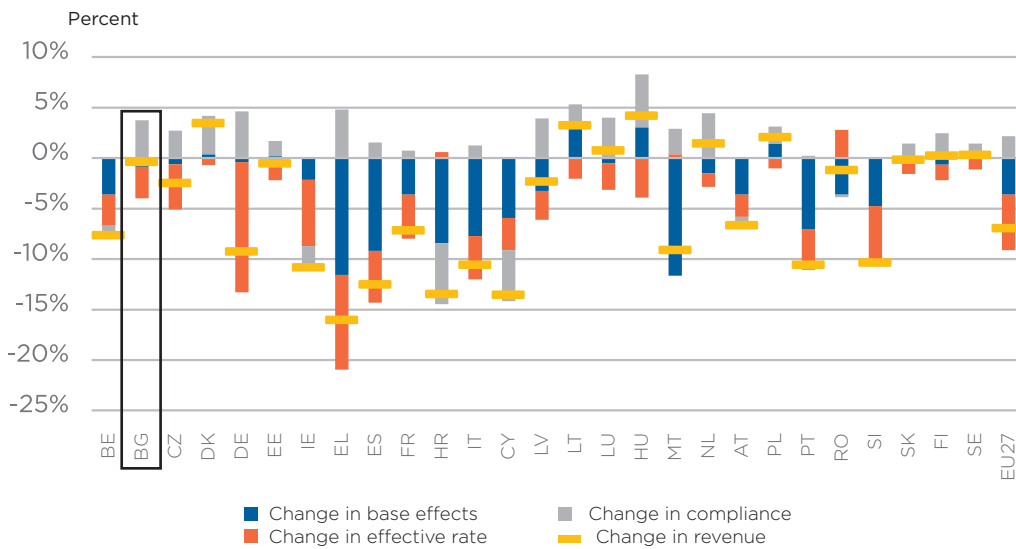
Source: EC 2022 VAT gap report.

The aim of this section is to estimate the VAT gap from a bottom-up, microeconomic approach, which would provide policy makers with additional tools to bolster revenues and complement the EC's macroeconomic top-down approach. Bottom-up VAT gap estimation studies are comparatively rare. Such studies attempt to estimate the tax gap by extrapolating firm-level results from VAT audits to the overall population of audited and unaudited taxpayers. Like top-down methods, bottom-up approaches rely on various modeling assumptions, and the results tend to have a large margin of error. Hence, they should be viewed more as

ballpark measures than precise estimates. In countries with sufficiently rigorous national accounting systems, they provide an opportunity to corroborate top-down estimates. Owing to their foundation on micro-level data, bottom-up methods also provide a means to decomposing the estimated gap in various useful ways, permitting a granular perspective on the VAT gap.

VAT gap estimation methodology for Bulgaria

A novel selection-on-observables estimation strategy was developed and implemented to estimate Bulgaria's VAT reporting gap in 2019. The selected VAT gap estimation strategy involves the application of a set of balancing weights to the members of a population of audited taxpayers to mirror the relevant characteristics of the unaudited taxpayer population.[85] The weighted sum of the observed VAT adjustments within the audit population then serves as an estimate of the VAT reporting gap within the population of unaudited taxpayers, while the unweighted sum of these VAT adjustments serves as an estimate of the gap within the population of audited taxpayers. Giv-

en the lag between the time VAT returns are filed and the completion of the audit process, 2019 was chosen for the estimations as it is the most recent year for which the audit process is largely complete.

Data description

The specified sampling design involved 100 percent sampling of all audited returns, 100 percent sampling of all unaudited returns filed by medium and large firms,[86] and a 3.89 percent random sample of returns filed by unaudited small business-es. The filer population includes all firms that filed at least one monthly return for 2019, and the audit population includes all taxpayers who experienced an audit covering at least one monthly period for that year. The sample includes 22,851 taxpayers from a population of 309,786 taxpayers, including 7,474 audited taxpayers and 15,377 unaudited taxpayers (table 2.1). Over 160 potential explanatory variables for the risk classification, entropy balancing, and statistical matching procedures were then constructed based on primary data provided by the National Revenue Agency (NRA).

Table 2.1. Sample and population counts by audit status and firm size

	Small		Medium		Large		All	
	Audited	Not audited	Audited	Not audited	Audited	Not audited	Audited	Not audited
Sample size	7,373	11,906	75	2,390	26	1,081	7,474	15,377
Population size	7,373	306,315	75	2,390	26	1,081	7,474	309,786

VAT gap estimation results

The bottom-up approach indicates that the top-down estimate of the VAT gap may be too low in Bulgaria. The bottom-up VAT gap estimates are for 2019—by design, the baseline produces the same top-line estimate of the VAT gap in that year as the

EC. A baseline estimate for the Bulgaria VAT reporting gap in 2019 is calibrated to approximately match the official top-line VAT gap estimate of BGN 1,185 million. Thus, the baseline estimate of BGN 1,189 million is a close match; it represents 10.4 percent of aggregate net reported VAT liability—a measure that we refer to as the 'noncompliance rate'. A commonly

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85 For more details on the selected methodology and the full study, please refer to World Bank. 2023. "Bottom-Up Estimation of the VAT Reporting Gap in Bulgaria."

86 The designation of firm size was based on the territorial directorate where the taxpayer is registered (Large Taxpayers Directorate, Medium Taxpayers Directorate, or another directorate). This measure differs from the EU designation of firm size.

used alternative measure of overall VAT noncompliance is the ratio of the estimated VAT gap to aggregate VTTL. For this measure, the estimated rate is 9.4 percent.[87] While the headline number produced for 2019 using the macroeconomic approach may indeed be too low, the main contribution of the bottom-up analysis in this report is the decomposition of the overall gap by industry, region, firm size, and refund claim status.

The baseline estimate indicates that the noncompliance rate among taxpayers reporting a balance due (3.17 percent) is substantially larger than the rate for refund claimants (1.46 percent). The latter group accounts for approximately 22 percent of the overall gap. The overall rate of noncompliance is much higher than the corresponding rates for the refund and balance due groups. This is because the base against which misreporting is compared when the groups are combined is equal to the *difference* between the bases of the latter and former groups. Thus, while refund claimants as a group overstate the refunds to which they are entitled by a modest degree (1.46 percent) and those reporting a balance due as a group understate how much they owe to a somewhat larger degree (3.17 percent), the impact of their misreporting with respect to overall net tax revenue (10.39 percent) is quite substantial.

Smaller taxpayers demonstrate higher noncompliance rates in some cases. Overall, the estimated rate of noncompliance is much higher for small taxpayers (12.65 percent) than medium (2.86 percent) or large taxpayers (0.72 percent). However, this general pattern does not hold when one focuses on refund claimants. Within this subgroup, the estimated rate of noncompliance is substantially higher for medium taxpayers (4.77 percent) than small ones (1.74 percent), although large taxpayers continue to have the lowest rate (0.12 percent).

Table 2.2. Breakdown of baseline VAT reporting gap estimates by refund/balance due status and taxpayer size, (BGN, millions) (noncompliance rate in parentheses)

Size	Refund	Balance due	Total
Small	240.7	913.6	1,154.3
	(1.74%)	(3.98%)	(12.65%)
Medium	15.8	8.1	24.0
	(4.77%)	(0.70%)	(2.86%)
Large	4.3	6.4	10.7
	(0.12%)	(0.12%)	(0.72%)

VAT reporting gap estimates suggest that the overall estimated rates of noncompliance vary substantially across different NACE[88] sectors. Extremely high rates are observed for real estate (107.83 percent); professional, scientific, and technical activities (52.15 percent); and taxpayers with missing NACE information (146.09 percent). To some degree, these findings reflect the fact that refunds claimed by the refund group offset a very substantial share of the revenue received from the balance due group, resulting in a small base for computation of the noncompliance rate. In the case of the missing NACE code category, refund claims slightly more than offset the revenue received from the balance due group. While not as extreme as the results for these three industry sectors, the overall estimated rate of noncompliance is also rather high for the combined service category for NACE codes K, P, Q, R, and S (17.49 percent).

Among refund claimants, the estimated rate of noncompliance is especially high for the professional, scientific, and technical activities sector (20.52 percent). Audited returns account for 92.8 percent of the entire estimated gap within this sector, which indicates that the NRA VAT audit program is effectively addressing the known compliance risks associated with this segment of the refund population.[89] Relative-

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87 These are based on an estimated aggregate net VAT reported in our weighted estimation sample of BGN 11.445 billion, which is slightly higher than the corresponding estimate in the official EC's VAT gap report for 2019, published in 2022 (BGN 11.061 billion). The corresponding statistics based on the lower estimate of aggregate reported net VAT liability used in that report are 10.7 percent and 9.7 percent, respectively.

88 NACE = Nomenclature of Economic Activities.

89 Under the breakdown of the estimated VAT gap based on a higher top-line gap estimate, 78.1 percent of the estimated gap associated with refund claimants in this sector is accounted for by audited taxpayers. While this is lower than the baseline result, it still suggests that the NRA audit program is effectively addressing compliance issues within this sector. See Appendix B in the Public Finance Review background note for details.

ly high estimated rates of noncompliance are also observed within certain other service sectors, including food and beverage (7.91 percent) and administrative and support activities (8.37 percent). The estimated noncompliance rate within the construction sector is also rather high (8.56 percent). Especially low estimated rates of noncompliance among refund claimants are observed in the primary industries including agriculture, forestry, and fishing (0.62 percent); mining, electricity, and water supply (0.75 percent); manufacturing industries (0.14 percent); and the information and communication sector (0.48 percent). Among those reporting a balance due, the pattern of estimated noncompliance rates is fairly similar to what was observed for the combined groups, with the exception that the estimated rate for the real estate sector is much lower (3.54 percent).

The results indicate that the NRA VAT audit program is actively working to address the known compliance risks associated with various segments of the balance due population. The highest estimated noncompliance rates within the balance due population are for the combined service category for NACE codes K, P, Q, R, and S (7.48 percent); the agricultural, forestry, and fishing sector (11.22 percent); professional, scientific, and technical activities (17.36 percent); and, especially, taxpayers with missing NACE information (67.61 percent). Within these four sector categories, audited returns respectively account for 32.3, 14.9, 19.1, and 49.9 percent of the entire estimated gap within the category.

Noncompliance rates also vary by region in Bulgaria, with the less developed northcentral and northwest regions demonstrating high rates. Table 2.3 breaks down the baseline VAT reporting gap estimates by region. The extremely high estimated overall rates of noncompliance within the northcentral (41.71 percent) and, especially, northwest (212.35 percent) regions are partly attributable to the fact that refunds claimed by the refund group slightly exceed revenue from the balance due group, leaving only a small base for estimation of the overall noncompliance rate. However, both regions have relatively high levels of noncompliance within the separate refund and balance due groups as well, suggesting that noncompliance is indeed relatively high in these regions.

Possible explanations could be the lower level of development of these regions. They are ranked among the EU's poorest regions in terms of GDP per capita in PPP terms, which is typically positively correlated with higher tax noncompliance and leads to strongly adverse demographic trends and labor shortages, resulting in problems with talent recruitment by NRA's regional offices.

Table 2.3. Breakdown of baseline VAT reporting gap estimates by refund/balance due status and region (BGN, millions) (noncompliance rate in parentheses)

Region	Refund	Balance due	Total
Northeast	12.19 (0.61%)	58.94 (1.65%)	71.14 (4.52%)
Northcentral	17.23 (0.73%)	144.03 (7.34%)	161.26 (41.71%)
Northwest	21.56 (1.78%)	204.27 (18.52%)	225.83 (212.35%)
Southeast	3.65 (0.30%)	23.16 (1.18%)	26.80 (3.62%)
Southcentral	20.41 (0.41%)	68.84 (0.91%)	89.25 (3.50%)
Southwest	185.83 (3.04%)	428.90 (3.25%)	614.73 (8.69%)

Policy takeaways from bottom-up VAT gap study

Revenue authorities could fine-tune their compliance programs to more effectively address taxpayer populations with relatively high compliance risks. The results of the bottom-up VAT gap study indicate that the published top-down VAT gap estimates for Bulgaria by the EC may be too low and that the sharp estimated decline in the gap as a share of taxes owed in recent years is potentially misleading. Consequently, there may be a greater scope for increasing VAT revenues through improvements to audit processes and other compliance-oriented activities than has heretofore been recognized.

The bottom-up estimates provide evidence on taxpayer groups for which the rate of VAT noncompliance is relatively high. For instance, taxpayers reporting a net balance due tend to have a higher estimated rate of noncompliance than those who claim a refund. Among those reporting a net balance due, the estimated rate of noncompliance is particularly high among medium-size businesses and companies that operate in certain sectors (including various services; professional, scientific, and technical activities; agriculture, forestry, and fishing; and companies that fail to report their sector of operation). The estimated rates of noncompliance are also relatively high among VAT refund claimants in certain sectors, including professional, scientific, and technical activities; construction; and various service activities. Geographically, taxpayers that are registered in the northwest, northcentral, and, to a lesser extent, southwest regions have relatively high estimated rates of VAT noncompliance.

Audits are already effectively addressing certain pockets of VAT noncompliance, including some of the sectors that pose an especially high compliance risk. However, there are potential ways to refine audit programs and other compliance activities both to achieve a higher voluntary rate of compliance and to recover a larger share of unreported taxes. For instance, although automated periodic risk assessment scores are employed by the NRA to help target audit resources toward areas of high compliance risk among refund claimants, no comparable risk scores are assigned to taxpayers reporting a net balance due. Given the relatively high rates of noncompliance within the balance-due population, it would seem worthwhile to explore ways to develop suitable risk scores for these taxpayers as well. More generally, potential improvements in VAT revenues might be achieved through a more systematic approach to VAT audit selection and other compliance activities, guided to a greater degree by data analytics.

Chapter 3.
Fiscal Spending Efficiency and Effectiveness

Recent dynamics in budget spending

Bulgaria's general government spending is relatively low compared to most EU peers. Bulgaria has adhered to relatively limited redistribution through the budget compared to most EU member states. This is related to the need to maintain fiscal prudence due to the currency board arrangement and, in recent years, the official goal of near-term eurozone accession. Despite the marked increase in general government spending in 2020–21 in response to the COVID-19-induced crisis, the expenditure to GDP ratio—at 41.6 percent of GDP in 2021—remains among the lowest in the EU.[90] While fiscal discipline and prudence is one of Bulgaria's undisputed macroeconomic strengths, limited redistribution, coupled with inefficiencies, has led to serious underfunding of certain public systems and programs, jeopardizing the achievement of development goals.

Bulgaria's distribution of fiscal spending by economic items largely mirrors its peers, but pensions hold a distinctly higher weight. Bulgaria's average annual fiscal spending by economic items is largely similar to both its structural peers and its income (UMIC) and regional (Europe and Central Asia) groups, though there are some noteworthy distinctions (figure 3.1). The two largest items on Bulgaria's expenditure side are wages of public sector workers (at 8.5 percent of GDP on average for 2015–22) and pensions (at 9.2 percent of GDP). Yet, while the wage bill holds a similar share as the country's structural, regional, and income peers, pensions appear to weigh much more heavily on Bulgaria's budget compared to all other benchmarking groups. The substantial share of budget spending on pensions is due to Bulgaria's significantly worse demography[91] and the almost nonexistent capital pillar of the pensions

system, which makes the budget-funded pay-as-you-go system the dominant source of pension income. Moreover, one of the fiscal measures in response to the pandemic (2020–21) and the ensuing inflationary shock (2022) has been pension supplements and a subsequent substantial increase of pensions, which expanded the pension bill. Between 2020 and 2022, pension spending rose from 9.3 percent (2020) to 10.3 percent of GDP (2021), with the latter being the highest value for the period under consideration (2006–22).

Bulgaria's relatively low share of capital expenditures is also a major source of difference compared with the UMIC and Europe and Central Asia averages. The share of capital spending in Bulgaria has been particularly low since the onset of COVID-19 (at 4.2, 2.9, and 3.6 percent of GDP in 2020, 2021, and 2022, respectively), despite the nearing of the end of the programming period for the 2014–20 EU funds (which typically finance a significant share of Bulgaria's fiscal capital spending) as well as the launch of the NRRP's implementation in 2022. The relatively small share of capital spending in 2020–22 can be attributed to the pandemic shock on the budget, as many governments shifted from capital to current spending to support households and firms, and the political instability in 2021–22 (figure 3.2). The series of snap elections and frequent lack of parliament and regular government starting in spring of 2021 resulted in delayed preparation and implementation of public investment projects under EU-funded programs and measures. Suboptimal absorption of EU funds is a foregone opportunity to raise the country's growth potential and support its competitiveness, inclusiveness, greening, and digitalization.

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90 Eurostat 2023. "Government revenue, expenditure and main aggregates."

91 Bulgaria has one of the fastest-aging populations in the EU; the old-age dependency ratio (the ratio of those ages 65 and above to those ages 20–64) is projected to worsen steeply, from 36 percent in 2019 to 60.8 percent in 2070 in the latest Aging Report (2021) of the EC.

Figure 3.1. Distribution of annual fiscal expenditure, average for 2015–22

% of GDP
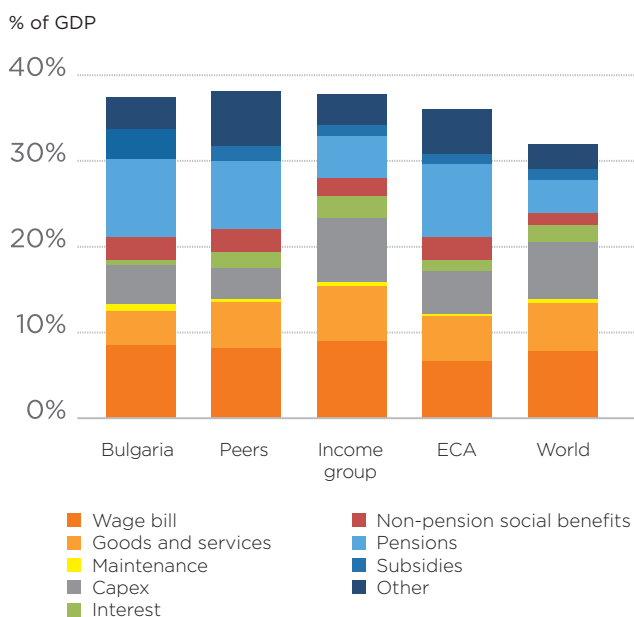
Source: The World Bank's BOOST fiscal database.
Note: Peers include Poland, Estonia, Czech Republic, Slovak Republic, Slovenia, Croatia, Romania, North Macedonia, Turkey, and Lithuania.

Budget deviation analysis (BDA) unveils that capital expenditure is heavily underexecuted in Bulgaria. BDA[92] for 2016–22 shows that Bulgaria's overall expenditure outturns have typically adhered closely to the approved budgets,[93] with actual spending never exceeding planned amounts. Yet the breakdown of spending by economic items unveils that the overall meeting of spending targets hides significant underspending and overspending on most headings. The most noteworthy discrepancy between plans and actual outlays is with respect to capital expenditure, where underspending has fluctuated in a wide range between just 31 percent of plans (2021) and 94 percent (2019); only in 2018 actual capital spending exceeded the planned amount (at 111 percent), but it is worth noting that the general government budget capital spending was 88 percent of the planned spending.[94] BDA confirms the hidden budget buffer role played by capital expenditure but hints also at potential issues with regard to the capacity of public agencies to implement capital spending projects within planned timelines.

Figure 3.2. Budget expenditures, central government budget

Percent of plan
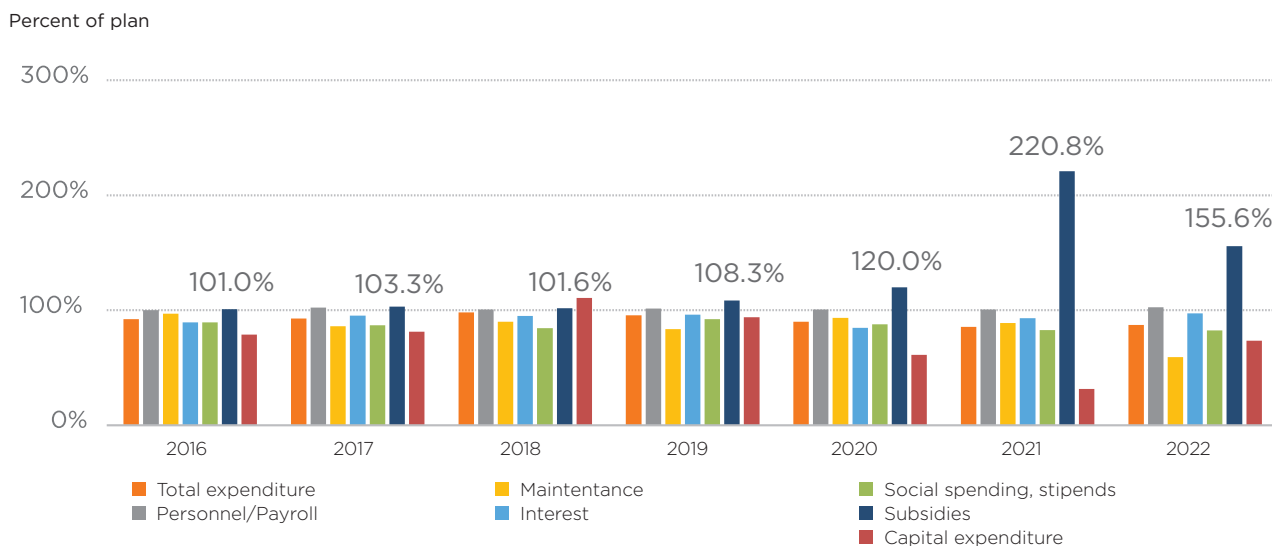
Source: MoF, state (central government) budget statistics.

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92 BDA is another useful approach to assessing quality of budget planning, public finance management, and budget credibility more generally; it compares actual outturns of revenues and spending to original budget plans.

93 We use the central government budget (also known as the state budget) for this analysis due to lack of full and consistent information on approved consolidated government budgets.

94 See Отчетът за изпълнението на бюджета – накратко, 2018, minfin.bg

Underspending on the capital expenditure side has been offset by overspending on some current expenditure items, particularly on subsidies and payroll costs. Even if the significant overspending on subsidies in 2020–22 can be largely attributed to the subsidies extended to companies in response to the COVID-19 crisis and the spike of energy costs after Russia's invasion in Ukraine in 2022, the pre-pandemic period also shows that actual spending on subsidies exceeded planned amounts. The same is also true for payroll expenditure (wages and social security contributions for public sector workers), where overspending is recorded for the entire period, ranging from a low of 0.2 percent above plan (2016) to 2.4 percent above plan (2022). While this internal reshuffle of spending among different headings has helped keep overall spending in check (that is, below or in line with original plans), the reassignment of a part of capital spending as current expenditure in the year undermines budget credibility. Moreover, savings on capital spending are usually made at the expense of delayed or suspended large-scale infrastructure projects, which undermines the country's economic growth potential.

Bulgaria's distribution of fiscal spending by functions is similar to the Europe and Central Asia average, though with a few important distinctions. The distribution of spending by functions (as a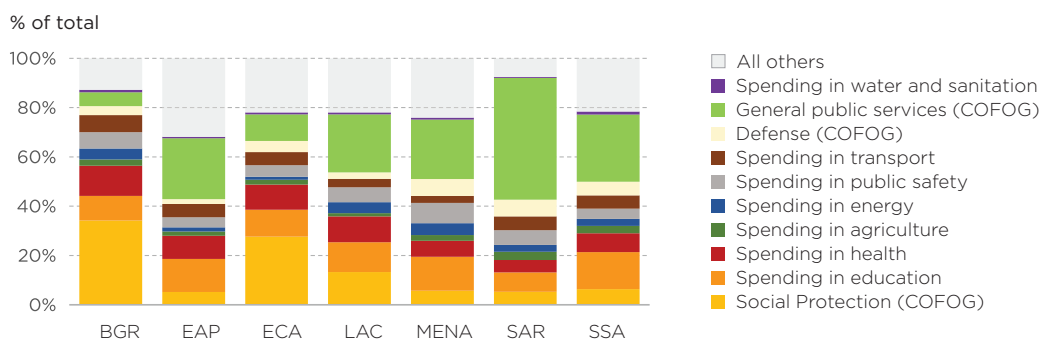veraged for 2015–22) shows that Bulgaria features a distribution that is similar to the Europe and Central Asia average, though there are a few important distinctions. The most notable difference is the larger share of spending on social protection, which notably includes pensions. The latter are the main contributor to the high share of fiscal spending on social protection, as they account for between 21.3 percent and 26.8 percent of annual general government spending in 2006–22. In terms of GDP, spending on pensions in 2006–22 fluctuated between 7.4 percent (in 2007) and 10.3 percent of GDP (in 2021).

Health, public safety, energy, and transport also hold higher-than-average shares in Bulgaria's budget, primarily at the expense of relatively lower spending on administration (that is, general public services) and education. Health spending (5.8 percent of GDP in 2021) is well below the EU average (8.1 percent of GDP) and its relatively lower share in total spending can be attributed to the low redistribution through the budget in the country. In contrast, spending on public safety, at 2.7 percent of GDP, is much higher than the EU average (1.7 percent of GDP in 2021) and is by far the highest in the EU (figure 3.3). The latter could be largely attributed to inefficiencies in the ministry of interior and specifically—a sizeable (civil) administration of the ministry, which is the main reason behind excessive payroll spending that weighs significantly on budget spending on public order and safety.[95]

Figure 3.3. Composition of expenditure by functions, 2015–22 average

% of total

Legend:
- All others
- Spending in water and sanitation
- General public services (COFOG)
- Defense (COFOG)
- Spending in transport
- Spending in public safety
- Spending in energy
- Spending in agriculture
- Spending in health
- Spending in education
- Social Protection (COFOG)

Source: The World Bank's BOOST database, Eurostat - GOV_10A_EXP, updated on April 28, 2023.

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95 For more details, see World Bank. 2018. "Bulgaria: Spending Review on Policing and Firefighting."

Fiscal spending: Efficiency analysis

The efficiency analysis of public spending is fundamental to identifying potential improvements in terms of value for money and allocation of public resources. In times of limited fiscal space or the ramp-up of fiscal consolidation programs, such analysis can help generate additional resources to address unmet social and economic needs. From a macroeconomic perspective, efficiency analysis is tantamount to an analysis of public sector productivity, as it examines selected outputs or performance indicators against a given level of inputs in terms of resources (or vice versa) and/or benchmarks a country under scrutiny against its best peers. Given that public spending holds a significant share of GDP (averaging 51.5 percent of GDP for the EU in 2021, for instance), a productivity increase in the public sector would allow for a significant reduction of inputs and prudent management of spending without compromising outputs or, conversely, result in an improvement of performance indicators for current levels of spending.

Weaknesses in public procurement processes could be a source of potentially significant inefficiencies. Such weaknesses eventually render suboptimal results in terms of value for (public) money. This is particularly relevant to EMDEs with institutional and governance weaknesses, and Bulgaria is not an exception. A recently published background note on noncompetitive practices in public procurement in Bulgaria[96] demonstrates that Bulgaria features relatively high risks of noncompetitive practices and corruption in public procurement compared to its EU peers, and these risks have increased in recent years. In a further step to try and quantify the fiscal costs of noncompetitive public procurement, the World Bank team has recently completed a strategic sourcing analysis, which puts forward an analytical framework that helps identify potential savings in public procurement orders.

More specifically, the analysis estimates potential savings of 5.3 percent of the total value of Bulgarian public procurement contracts for the period under study (2007–22) or about BGN 1.3 billion (EUR 0.7 billion) (for details, see box 3.1). The largest impact in terms of potential savings can be achieved by improving the number of bidders who participate in the bidding process. If the number of tenders where only one or two bidders participate is reduced by 60 percent, and instead at least three bidders (or up to six bidders) are simulated, savings amounting to approximately BGN 580 million could be achieved. Other policy interventions that could help increase competition and achieve better price outcomes in public procurement are the increase of small and medium enterprise (SME) participation, elimination of short advertisement periods and optimization of decision periods, and expansion of the supplier base by breaking up market concentration.

The analysis of the fiscal cost of noncompetitive public procurement suggests that the biggest net effect would come from encouraging more potential bidders, including SMEs, to take part in tenders. Policy measures such as provision of training programs for company representatives on how to prepare for submitting bids or get assistance with the required documentation could generate substantial savings as they may be expected to reduce the share of tenders with single bidders. Further, eliminating very short (or very long) submission periods and increasing the participation of smaller companies in procurement tenders is also associated with less expensive tenders. Moreover, despite having the large majority of tenders using open procedure,[97] there is still scope to increase the use of open procedures at the expense of non-open procedure types.

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96 See Fazekas, Mihaly, B. Toth, and V. Poltoratskaia. 2023. "Corruption Risks and State Capture in Bulgarian Public Procurement." World Bank Policy Research Working Paper, 10444.

97 Less than one-quarter of all tenders are awarded in non-open procedures.

Box 3.1. Fiscal cost of noncompetitive public procurement

With the help of traditional methods of strategic sourcing and application of advanced data science techniques, the World Bank team has developed an analytical framework (see Annex 5 for details) that helps understand better purchasing decisions, outlines potential savings strategies, and calculates estimated savings from public procurement contracts. Based on public procurement contract data for Bulgaria for 2007–22, potential fiscal savings as a result of improving the procurement process and making it more competitive are estimated at about 5.3 percent of the total value of contracts or approx-

imately BGN 1.3 billion (figures B3.1.1 and B3.1.2). Due to the data limitations, such as missing information on contract implementation, these could be considered as conservative estimates. In a similar analysis on relative prices in North Macedonia, Fazekas et al. (2023) estimate considerably higher potential savings of approximately 14 percent. Abdou et al. (2022)[98] find similar results for Romania, with potential savings amounting to 4.4 percent of total procurement spending, albeit only considering a narrower set of predictors related to corruption risks.

Figure B3.1.1. Total savings associated with each intervention, Bulgaria 2007–22

BGN, million

Figure B3.1.2. Total savings associated with each intervention, Bulgaria 2007–22

Percent of the total value of procurement contracts

Source: World Bank.

Source: World Bank.
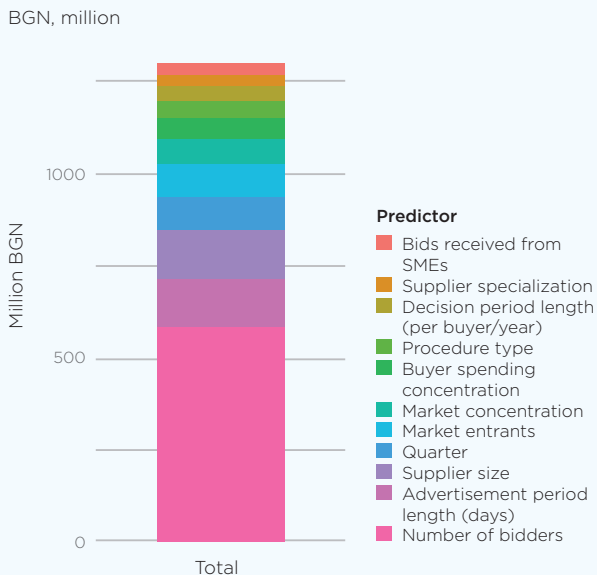
The largest impact in terms of potential savings through reduced relative prices can be achieved by improving the number of bidders in the bidding process. Almost one-quarter of the entire contract value awarded in the period of analysis or BGN 12.8 billion is distributed through single bids (figure B3.1.3). A reduction in the number of tenders where only one or two bidders participate by 60 percent, and replacement of those with a simulated

number of at least three bidders (or up to six bidders) will result in savings that amount to approximately BGN 580 million or 2.37 percent of the total contract value for the period under study. Potential strategies to increase the number of bidders may entail the development of training programs that can target particular groups of suppliers or facilitating access to documentation and application processes.

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98 Fazekas, Mihály, Nóra Regős, Bence Tóth, and Zdravko Veljanov. 2023. "Strategic Sourcing and Greening Public Procurement in North Macedonia." World Bank, in press.

Figure B3.1.3. Impact of the number of bidders on relative prices, Bulgaria 2007–22

Relative price

	1	2	3	4-6	7+	NA
	0.989	0.947	0.921	0.884	0.856	1.022

Bidder number deciles

Source: EC, Eurostat.

Figure B3.1.4. Impact of the length of advertisement period in days, Bulgaria 2007–22

Relative price

	1	2	3	4	5	NA
	1.013	0.998	0.989	0.994	1.007	1.023

Advertisement period length(days) deciles

Source: EC, Eurostat.

A related policy intervention that increases the participation of smaller companies in procurement tenders can generate further savings. Small companies are associated with lower relative prices compared to medium and large companies. Moving half of the contracts from the latter two groups to the small companies' group could generate savings of BGN 129 million or 0.53 percent of the value of procurement contracts.

Further, two predictors that are highly impactful relate to the organizational quality of the tendering process, that is, the number of days a tender is advertised and the number of days a purchasing authority takes to make a decision. Improvements such as eliminating very short advertisement periods and providing potential bidders on average with at least 29 days before submitting a bid result in savings of BGN 137 million (figure B3.1.4 and B3.1.5). Yet, policy makers should be careful when extending the advertisement periods too much as long deadlines for submission of bids, that is, having on average 60 or more days, are also associated with worse outcomes in terms of higher relative prices. Such practices can be a result of potential disputes or challenges to the tendering process, a poor design of the tendering process, or potential irregularities.

Figure B3.1.5. Average decision-making period on relative prices, Bulgaria 2007–22

Relative price

	1	2	3	4	5	6	7	8	9	10	NA
	1	0.997	0.999	0.989	0.991	1.004	0.983	0.995	0.991	1.004	0.983

Decision period (per buyer-year) deciles
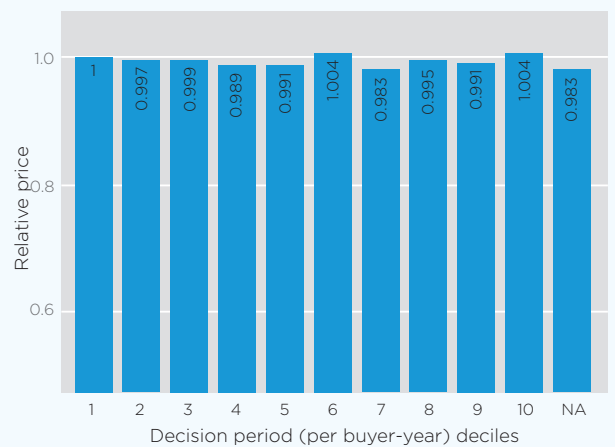
Source: EC, Eurostat.

Concentration at the market level also has a substantial impact on relative prices. Markets that were highly concentrated, that is, dominated by one or few suppliers, show higher relative prices (figure B3.1.6). Estimated savings of BGN 67 million could be achieved if the largest monopolies and oligopolies were broken up and the supplier base was diversified. For instance, the two most concentrated categories with fewest suppliers were awarded almost 40 percent of the total value. Although some technical specifications, existence of patents, or better scrutiny of the specifications are required, these results show that there is potential of achieving savings that could justify such actions.

Figure B3.1.6. Impact of market concentration on relative prices, Bulgaria 2007–22

Relative price / Market spending concentration
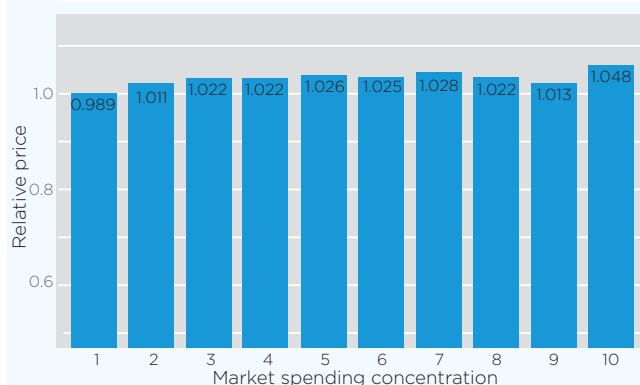
Source: EC, Eurostat.

These findings suggest that implementing a systematic and continuous monitoring of public procurement performance is needed. A monitoring tool, such as a scenarios explorer, would allow for testing different bundles and scales of interventions, make predictions about expected price savings, and verify the actual results as data on tenders following the interventions come in. Moreover, reducing the number of tenders where only one (or two) bidders participate has the greatest potential for savings in public procurement.

Special Focus 3.1. Efficiency and effectiveness of spending on education

Efficiency of spending on education needs improvement. A deeper dive into the efficiency of key spending items by government functions shows that Bulgaria lags in terms of the volume of education sector spending and that it could benefit from improved efficiency of those spending outlays. The traditional data envelopment analysis (DEA)[99] of spending efficiency shows that spending on education in Bulgaria is far from the best performing peers from the region in terms of different output-oriented measures of efficiency (figures SF3.1.1 and SF3.1.2). For instance, in terms of the overall quality of the education system[100] achieved for the given public

spending on education, Bulgaria stands far below the efficiency frontier with most peers (for which comparable BOOST data are available)—Poland, Lithuania, Czechia, Slovenia, and Estonia. North Macedonia and Croatia show an efficiency score similar to Bulgaria's, while Türkiye lags behind. Similarly, in terms of the learning-adjusted years of schooling[101] as an output indicator, Bulgaria is overtaken by all EU Central and Eastern European peers—only North Macedonia and Türkiye fare worse. The same holds true for the quality of science education, as measured by the WEF in its Global Competitiveness Report.

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99 DEA is a non-parametric, deterministic approach where the frontier is generated on the basis of observed values and efficiency scores determined by the distance of individual country observations from best performers for a given level of input or output.

100 As measured by the World Economic Forum (WEF) in its Global Competitiveness Survey (GCS), average of indicator readings for 2010–21

101 As measured in the HCI, published in the WDI database.

Figure SF3.1.1. Education spending efficiency by selected performance indicators, DEA frontier analysis
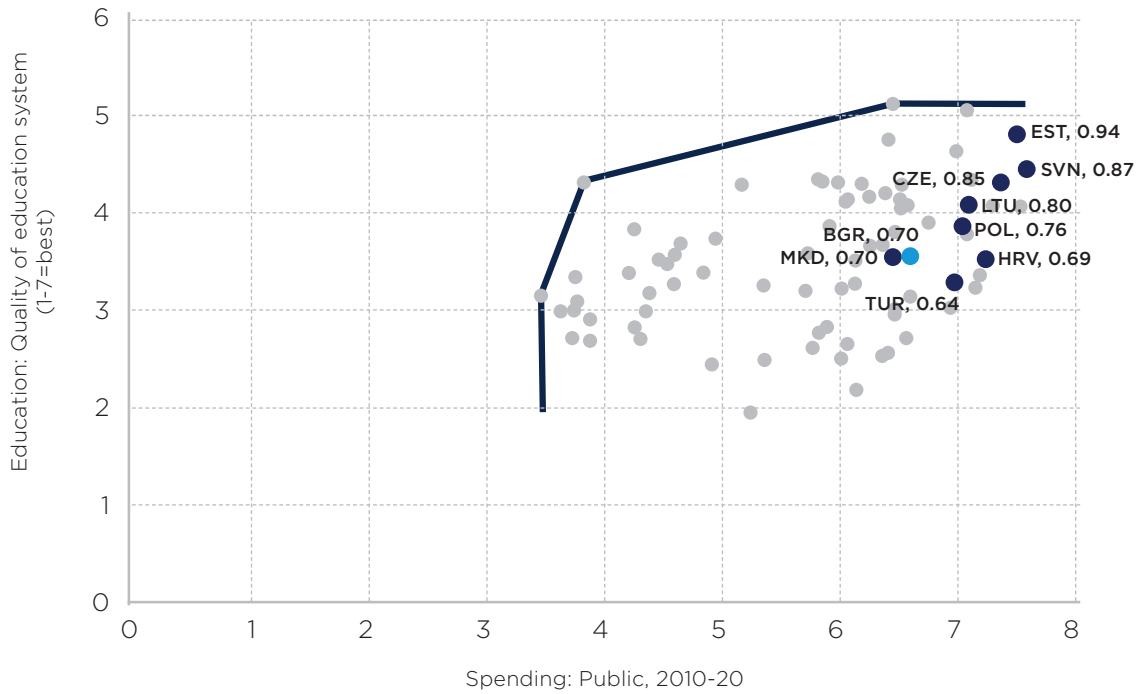
Source: WEF, World Development Indicators (WDI), Human Capital Index (HCI), BOOST, Staff calculations.
Note: Dark blue dots are comparator countries (for which there is available standardized BOOST data) and include Poland, Estonia, Czech Republic, Slovenia, Croatia, North Macedonia, Turkey, and Lithuania

Figure SF3.1.2. Education spending efficiency by selected performance indicators, DEA frontier analysis
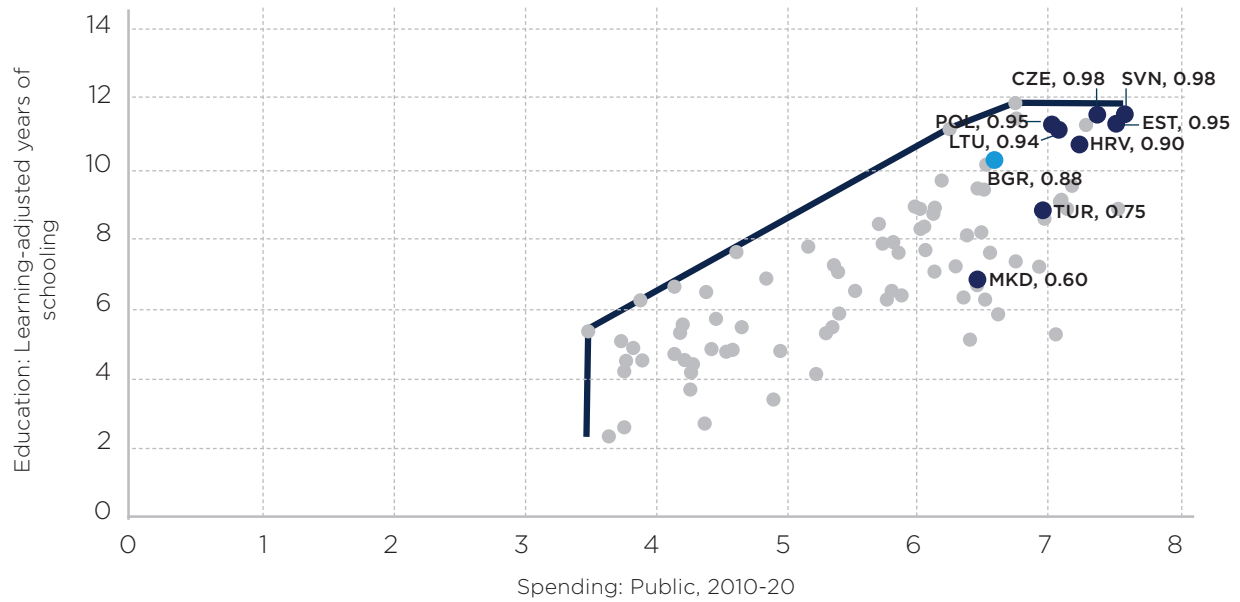
Source: WEF, WDI, HCI, BOOST, World Bank.
Note: Dark blue dots are comparator countries (for which there is available standardized BOOST data) and include Poland, Estonia, Czech Republic, Slovenia, Croatia, North Macedonia, Turkey, and Lithuania

Stochastic frontier analysis (SFA) also shows that Bulgaria is far from the highest efficiency level in education. An SFA[102] largely reinforces the findings on the suboptimal efficiency of Bulgaria's education system. Accordingly, Bulgaria does not feature among the top performers in the region but rather ranks around the average. Not surprisingly, the Baltic countries (Estonia, Latvia, and Lithuania) stand out among Bulgaria's peers as the countries with the highest quality of education for the given level of public spending, together with the Czech Republic and Poland. If Bulgaria was to reach the highest efficiency level, this would mean efficiency gains of 23.06 percent (figures SF3.1.3 and SF 3.1.4).
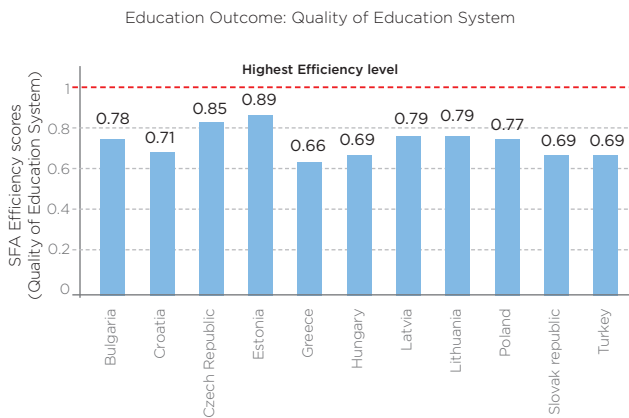
Figure SF3.1.3. Quality of education system

Education Outcome: Quality of Education System

Source: WEF, WDI, HCI, BOOST, Staff calculations; horizontal axis: average public spending on education for 2010–20.

Figure SF3.1.4. Potential gains in quality of education system
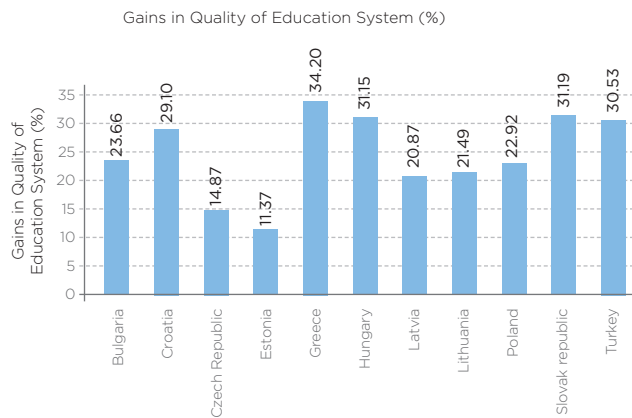
Gains in Quality of Education System (%)

Source: WEF, WDI, HCI, BOOST, Staff calculations; horizontal axis: average public spending on education for 2010–20.

The effectiveness of education spending in terms of learning outcomes is also a source of serious concern and needs policy attention. World Bank econometric analysis on the effectiveness of educational spending on learning for 2018–22 in Bulgaria (see Annex 3) shows that the effectiveness of budget spending on primary and secondary education, in terms of learning outcomes, also needs urgent policy attention. Examining (a) the existing association between spending per student and learning at the municipal level and (b) the potential causal impact of spending per student on learning at the individual level, the World Bank analysis comes up with the following findings:

1. The association between spending per student and learning at the municipal level is negative and mainly not statistically significant. Panel data techniques at the municipal level using learning scores in the nationally administered, standardized tests in Bulgarian language and literature and in mathematics for 7th grade and Bulgarian language and literature for 12th grade were applied to examine the association between spending per student and learning at the municipal level. The analysis reveals that, for the simplest model, the relationship between spending per student and learning is negative and significant with values between −0.6 and −0.3 standard deviations associated with a 1 percent increase in spending per student, depending on the indicator used (that is, the results of the specific test used). However, since the transfer system is based on allocation by inputs, once the municipal time-invariant characteristics and the socioeconomic characteristics of the test takers are introduced,

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102 Unlike DEA, the SFA is a parametric approach which estimates a production function of the production frontier on the basis of observed values.

the magnitude of the coefficient is strongly reduced, while the statistical significance is weakened or, in fact, lost in most cases.[103]

It is important to clarify that this association cannot be interpreted as causality. The results are in line with those found by Hristova and Sondergaard (2020)[104] and show the pro-poor focus of education spending. The scheme of transfers to the municipalities based on criteria that reflect the challenges in the provision of the educational service (inputs approach), leads to the fact that those municipalities with the most socioeconomic difficulties are those that receive the greatest amount of resources per student. Given that the socioeconomic characteristics of the students and their context are meaningful predictors of learning,[105] students in municipalities with more difficulties for the provision of educational services are also students with lower learning levels on average.

2. No impact of spending per student on learning is observed. A difference-in-differences model that exploits the variation in spending per student after the 2019 change in the rule for allocation of education subsidies to municipalities is used in this analysis. The aim is to approximate a causal estimation of the impact of spending per student on learning. In 2018, changes were made to the formula used to allocate resources from the national government to municipalities. This reform brought the number of municipal allocation groups from 7 to 8, in addition to including new criteria under the premise that some municipalities need more resources than others to provide the educational service. The results indicate that the learning of students enrolled at schools in municipalities that witnessed an increase in spending per student did not improve. These results remained robust across different measures of learning outcomes.

To strengthen these results, the model was also estimated using the sociodemographic characteristics of the students as result variables. Given that the sociodemographic conditions of the students are great predictors of learning, it was investigated whether the municipalities that saw an impact on spending per student as a result of the change in the transfer rules witnessed variations in the sociodemographic characteristics of the students. The results reveal that there were no changes in the socioeconomic characteristics of the individuals that could explain why the increase in spending per student had no effect on learning.

The analysis hitherto suggests that improving the efficiency and effectiveness of education spending would require a thorough rethinking of the way budget spending on education is earmarked. More specifically, it would require a transition from the current input (cost)-based approach, whereby spending is tied primarily to the number of students, the number of classes and schools, and their cost, to an output-oriented approach, where budget outlays – or at least a part of them - are increasingly linked to specific performance indicators. Under the latter, teachers who achieve improving results of their students – as measured by external objective indicators, such as national tests, scores in international assessments, or results at competitions – should see their remuneration and/or other benefits increase, too. The same principle should apply to the budget of budget holders (that is, headmasters) of schools, which, on average, show improving performance – these schools should be rewarded with financial and other incentives for their improvements.

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103 The results for learning in 12th grade are presented in table A3.2 and follow the same logic of weakening of the estimator of the association between spending per student and learning once variables are included to control for the observable and non-observable characteristics of the municipalities.

104 See Hristova, A., and L. Sondergaard. 2020. "Chapter 9: Bulgaria Case Study." In "The Role of Intergovernmental Fiscal Transfers in Improving Education Outcomes", edited by Samer Al-Samarrai and Blane Lewis. World Bank.

105 Using the data for 7th and 12th grade students in 2018–22, it can be observed that only the student's sex, the educational level of the parents (the education level of the parent/caregiver with the higher level), and the employment status of the parents (the employment status of the parent/caregiver with the higher status) explain about 20 percent of the variance observed in the learnings.

Special Focus 3.2. Efficiency and effectiveness of social spending, including for addressing child poverty

Bulgaria is one the poorest countries in the EU. Bulgaria was the second poorest country in the EU 2020, as measured by the income-based poverty rate, using the upper-middle income (UMI) poverty line ($6.85 per day, 2017 PPP, figure SF3.2.1). Similarly, Eurostat's data on relative monetary poverty, using 60 percent of the median equalized disposable income (after social transfers) as poverty threshold, shows that Bulgaria was the poorest country in the EU in 2020 (23.8 percent) and 2022 (22.9 percent), and the third poorest in 2021.

Moreover, despite some policy initiatives at the EU and national levels, child poverty remains a significant issue in Bulgaria. Bulgaria has implemented various policies to address child poverty, including means-tested allowances, such as social assistance and child benefits, to protect the poor and those at risk of poverty (Tasseva 2016)[106]. In 2021,[107] 25.9 percent of children (ages less than 18) in Bulgaria were at risk of poverty compared with 22.3 percent of adults (ages 18 and above). This is among the highest rates in the EU, together with Spain and Romania, and significantly higher than the EU average (19.3 percent) (figure

Figure SF3.2.1. Income-based poverty rate, upper-middle income (UMI) poverty line ($6.85 per day, 2017 PPP), Selected EU countries, 2020
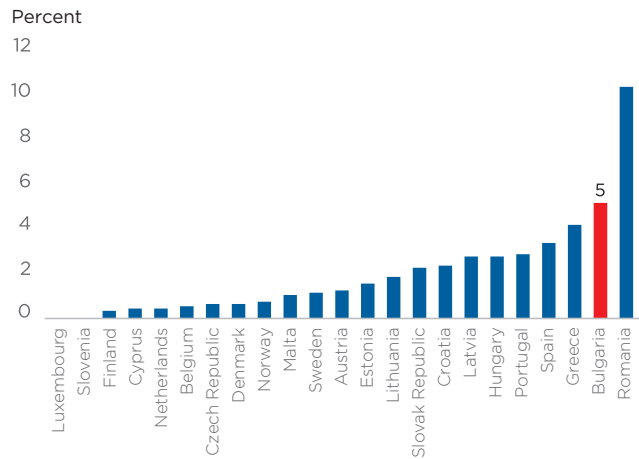
Source: World Bank. 2023. „Reassessing Welfare Impacts of Bulgarian Fiscal Policy through a Child Poverty Perspective"

SF3.2.2). Similar differences are observed when looking at the risk of poverty and social exclusion, where the rates reached 33.9 percent of children compared to 31.8 percent of adults (ages 18 and above) (Eurostat, Statistics on Income and Living Conditions, 2022).

Figure SF3.2.2. AROP rate, children versus adults, 2021
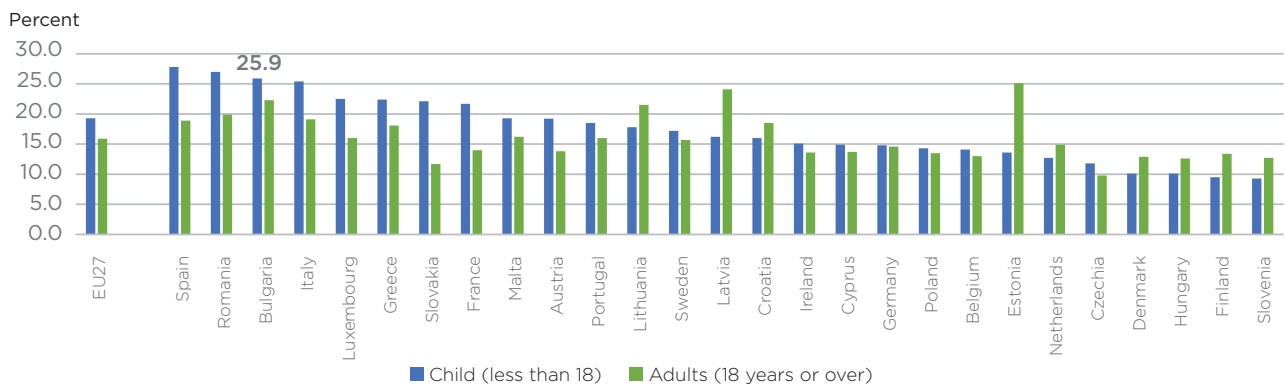
Source: Eurostat, ILC_LI02__custom_6710772.
Note: AROP = At-risk-of-poverty. The graph uses data for income year 2021 and survey year 2022.

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106 Tasseva, I. V. 2016. "Evaluating the Performance of Means-Tested Benefits in Bulgaria." Journal of Comparative Economics, 44(4), 919–935. https://doi.org/10.1016/j.jce.2016.02.003
107 2021 income year, 2022 survey year.

At the same time, social protection spending, as a percentage of GDP, is near the average of aspirational peers and close to the better performers among structural peers. Social protection spending—using Eurostat' Classification of the Functions of Government (COFOG) average data for 2016–21—is 13.2 percent for Bulgaria, compared to 13 percent in Estonia, 12.9 percent in Czechia, 14.6 percent in Slovakia, and 17 percent in Slovenia (figure SF3.2.3). Among the structural peers, only Croatia and North Macedonia slightly outperform Bulgaria. Yet, Bulgaria falls behind more markedly when using the constant price amount of social spending per capita (figure SF3.2.4). By this measure, Bulgaria ranks close to the bottom among aspirational peers and about the average among structural peers. This may be attributed to the overall lower level of the country's development and its limited redistribution through the budget.

Figure SF3.2.3. Social protection spending, average for 2016–21

Source: World Bank Boost database, based on Eurostat's COFOG series.

Figure SF3.2.4. Social protection spending, average for 2016–21
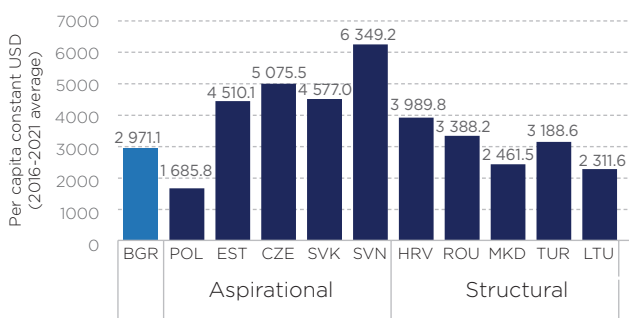
Sources: World Bank Boost database, based on Eurostat's COFOG series.

Given the high levels of poverty and inequality in Bulgaria, it is important to assess the extent to which fiscal policies succeed in addressing them. To gain a deeper understanding of the overall impact of Bulgaria's fiscal policies on addressing poverty and inequality, the World Bank conducted its first comprehensive fiscal incidence analysis (commitment to 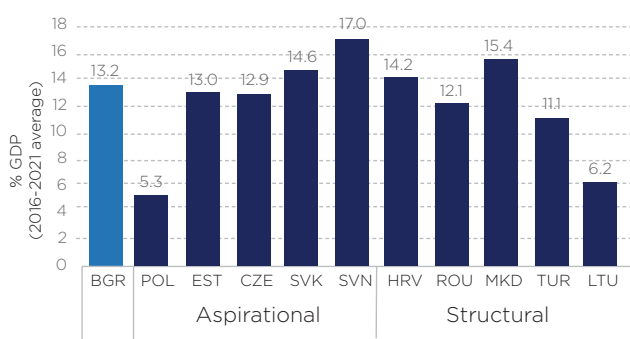equity [CEQ]) on Bulgaria in 2020–21, using 2018 data. The fiscal incidence analysis was updated again in 2022–23 with 2020 data, so that the pandemic effects can be seen more clearly.[108] In addition to updating the CEQ, the World Bank team also expanded the analysis by incorporating an assessment of the impacts of fiscal policy on child poverty.

Bulgaria's fiscal system appears to be poverty-increasing if the AROP poverty line is used. The fiscal system continues to be poverty-increasing when measuring poverty using the AROP poverty line as it raises poverty (using the AROP[109] poverty line) by 3.8 percentage points, from 25.3 percent to 29.1 percent (2020). The largest increase in poverty is due to changes between disposable and consumable income due to indirect taxes, which are not fully compensated by transfers. Indirect taxes and transfers increase poverty by 6.9 percentage points, while direct taxes and transfers reduce it by only 3.1 percentage points. Compared to 2018 (the year the first CEQ for Bulgaria was carried out), the subsidies to MIPP have a smaller impact on poverty, and indirect taxes have a similar effect.

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108 The CEQ framework helps examine how the fiscal system, as a whole and in its components, affects poverty and inequality in a given country. The CEQ approach allows for an assessment of the net effects of various policies and programs in the country's fiscal framework.

109 The AROP poverty line was equivalent to US$20.5 in 2017 PPP per day in 2020.

However, similar to the previous results, the fiscal system is not unambiguously poverty increasing, as it can still reduce poverty when measured using lower poverty lines, capturing that households in these lower-income deciles continue to be net beneficiaries of the fiscal system. The overall fiscal system reduces poverty by 3.8 percentage points when using the UMICs' poverty line (US$6.85 2017 PPP per day). This is due to the direct taxes and transfers that lower poverty by 4.6 percentage points, which outweighs the impact of indirect taxes and transfers that raise poverty by 0.8 percentage points. The net effect is a reduction in poverty from 9.2 percent to 5.4 percent.[110]

Yet, Bulgaria's fiscal system is relatively successful at reducing inequality. Direct transfers as well as education and health in-kind transfers make the most significant difference. When considering all taxes and transfers (direct taxes and transfers, subsidies, indirect taxes, and the monetized value of health and education benefits), the Gini coefficient declines from 0.454 to 0.322 or by 13 Gini points (figure SF3.2.5). Excluding the monetized value of education and health services, the improvement in inequality is still significant, with the Gini falling from 0.454 to 0.385, that is, by 7 Gini points. The aggregated effect of direct transfers—especially child benefits (noncontributory and means-tested), unemployment insurance, disability benefits, and other noncontributory and means-tested transfers—as well as direct taxes and social contributions (different from pensions) reduces the Gini coefficient by 5 points, comparing MYPP with disposable income. The direct taxes' effect is nonsignificant in terms of inequality reduction while subsidies and indirect taxes reduce the Gini coefficient from disposable to consumable income by 2 Gini points, with an individual positive effect of VAT. In-kind transfers (health and education, particularly upper secondary education), in turn, help reduce inequality by 6.2 Gini points.

Figure SF3.2.5. **Change in Gini coefficient as a result of taxes and transfers, Bulgaria versus other EU countries (2020, unless specified otherwise)**
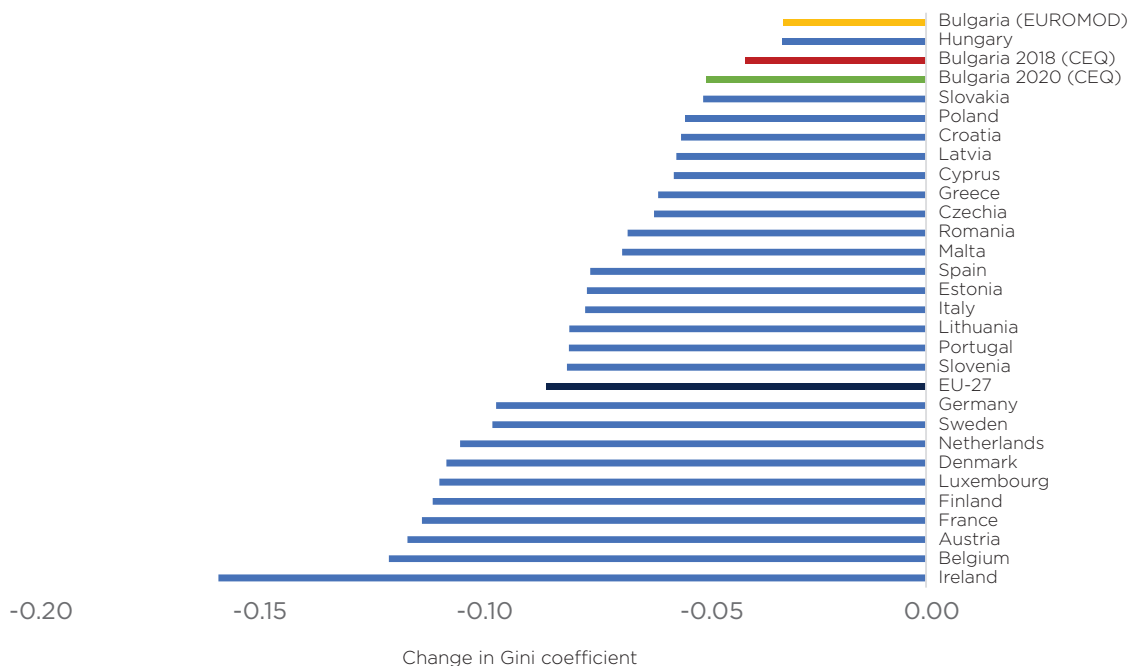
Source: World Bank. 2023. „Reassessing Welfare Impacts of Bulgarian Fiscal Policy through a Child Poverty Perspective"

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110 The difference in poverty impacts is because the AROP line—being an upper line—captures more net payers into the fiscal system as it is a higher line, while the US$6.85 line captures more households who are net recipients of the fiscal system.

Concerning social spending specifically, social protection transfers (direct transfers) have a significant impact on poverty and inequality when considered as a whole, but their effect is modest when examined individually. When considering each intervention, the marginal effect of all family and child allowances is small, but the combined effect of those direct transfers is significant. Direct transfers reduced the Gini coefficient by 0.056 and the poverty rate by 10.0 percentage points using the AROP poverty line. The most significant impact comes from other means-tested family and child transfers and disability transfers, which lower poverty by more than 1 percentage point each and inequality by 0.011 Gini points. Other family and child transfers (such as those for mothers in tertiary education, birth child grant, and children in first grade) and old-age noncontributory benefits have the smallest effects on poverty and inequality. The social assistance programs, which include the main last-resort poverty reduction program (Guaranteed Minimum Income [GMI]) and the heating allowances, have a negligible impact on inequality, and only the heating allowance has a small impact on poverty (0.1 percentage points). The size of the transfers is essential in their contribution to poverty reduction: disability and unemployment benefits are not the most progressive of all direct transfers, but their contribution is among the highest; GMI and old-age noncontributory pensions are the most progressive, but their impact on poverty is negligible; heating allowances and family child benefits (means-tested) are relatively small programs but with a significant effect on poverty reduction.

Bulgaria's fiscal system appears to have a negligible effect on reducing child poverty. In 2020, child poverty reached 30.7 percent before fiscal policy and 30.4 percent after fiscal policy is accounted for. One of the explanations for that is that indirect taxes, such as VAT, hurt poverty reduction, even if the impact of VAT is lower for children, as reduced rates are applied to goods consumed by children, such as baby food and diapers, school supplies, and books. Direct transfers, on the other hand, have a positive impact on poverty reduction. This is because they benefit low-income households, including children. In Bulgaria's case, means-tested family and child programs significantly reduce child poverty. Of all direct transfers, the sum of other means-tested family programs has the highest marginal contribution to child poverty,[111] followed by the monthly means-tested child benefit, which contributes to a two-point child poverty reduction. The pregnancy and childbirth periodic allowance (contributory and non-means tested) that serves as income maintenance before and after childbirth has the third biggest impact, as it contributes to close to 2 percentage points in poverty reduction. The benefit for raising a child up to 2 years of age has an effect of reducing child poverty by more than one point. In general, the allowances with bigger impact in terms of poverty reduction are means-tested and/or periodical.

Other programs that indirectly support children also contribute to poverty reduction (see figure SF3.2.6). Electricity subsidies, with direct and indirect effects, reduce the electricity bills for low-income households, which can help them afford other basic needs. However, this is mostly due to their large size rather than their targeting effectiveness and progressivity. Disability and unemployment transfers provide income support to households with children who have a disability or are out of work. In contrast, VAT, tobacco excise, and oil taxes raise poverty by taking more income from lower-income households. These taxes increase the prices of goods and services that low-income households consume, which reduces their purchasing power and living standards.

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111 Those programs were not individualized as specific programs in the survey and include lump-sum grant for pregnancy, financial support for bringing up a child by relatives or foster family, and other family and child noncontributory means-tested transfers.

Figure SF3.2.6. Impact of different fiscal policy measures on child poverty, 2020
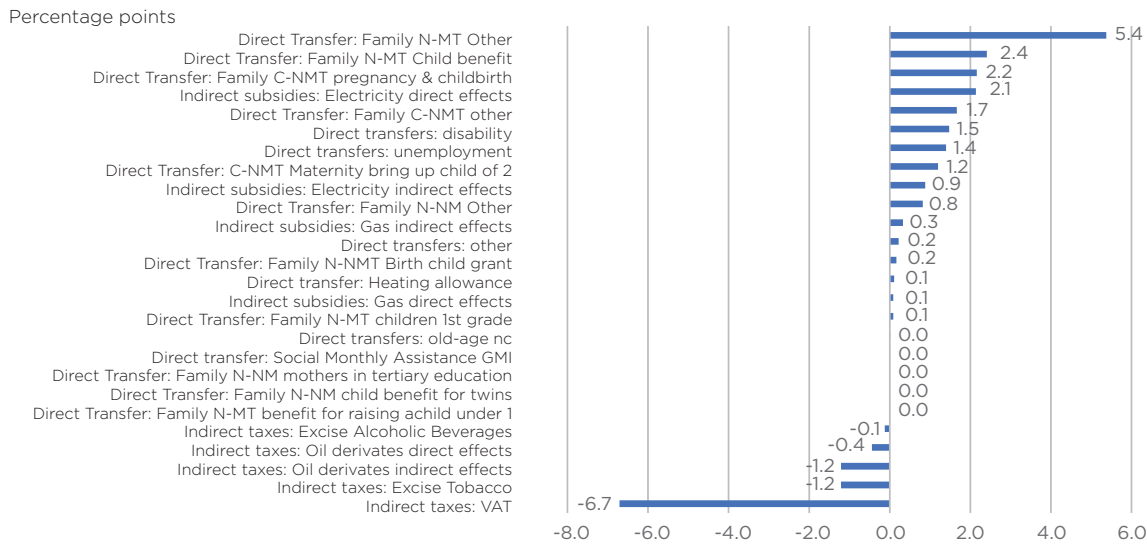
Percentage points

Source: World Bank. 2023. „Reassessing Welfare Impacts of Bulgarian Fiscal Policy through a Child Poverty Perspective".
Note: Positive value shows reduction of child poverty by the respective percentage points; negative value stands for an increase.

Notably, the fiscal policy impact on poverty depends on the structure of the household and its members. For instance, while households with children experience higher poverty levels in terms of market income than those without children, they manage to achieve lower poverty levels once fiscal policy interventions are accounted for. The support provided by fiscal policy is minimal for households without children compared to those households with children, partly because of the existence of family and child social protection benefits, though other factors, such as the reduced VAT rate for baby food and pampers, books, and school textbooks, also play a role. Separately, single-parent households are also particularly vulnerable. Households with both parents and children start with lower poverty and benefit more from social protection than lone-parent households, as poverty rates (based on the consumable income) are higher for lone parents due to the combined effect of indirect taxes and subsidies. Both female and male lone-parent households are poorer than both-parent households, but social protection favors female lone parents against male ones. Lastly, the fiscal system appears geared toward supporting households with children up to 2 years of age, at the expense of all other child age groups. While households with children in the age group of 0–2 years exhibit the highest levels of pre-fiscal poverty, these children experience the lowest post-fiscal poverty compared to other age groups after the implementation of fiscal policies. For comparison, for children of all other ages, poverty increases (figure SF3.2.7).

Figure SF3.2.7. Bulgaria 2020: headcount poverty by number of children

Percentage points
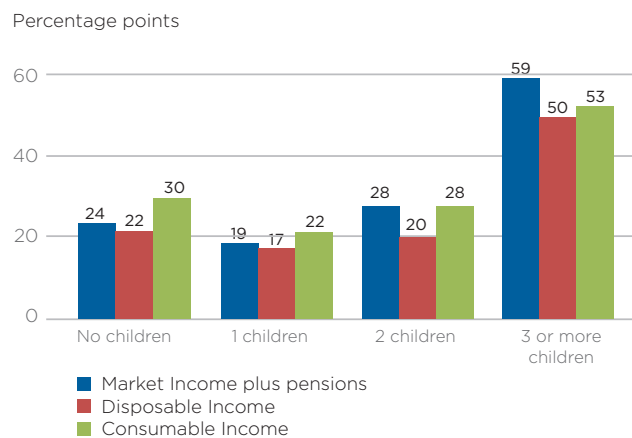
Source: Based on the EU Statistics on Income and Living Conditions 2021 and Household Budget Survey 2021 using CEQ methodology.

Policy simulations demonstrate that the effectiveness of fiscal policy—including social spending—in terms of reducing child poverty could be enhanced. Our policy simulations—on conditioning child income tax deductions on income and on reducing the scope but improving the adequacy of means-tested child allowances—show that child poverty could be further reduced with the help of finetuning existing fiscal policy instruments. The first scenario reduces the income tax paid by vulnerable households (those with taxable incomes[112] up to 7 percent[113] of the AROP poverty line in 2020) as a result of higher deductions applicable only to these households. This results in a decrease in both overall poverty and child poverty—by 1.1 and 2.7 percentage points, respectively. Yet, this measure is not fiscally neutral, as it decreases (income tax) revenue by EUR 176 million (9 percent less than the revenue estimated under the baseline scenario). The second scenario—which, with the help of a sensitivity analysis, increases the amount of the monthly means-tested child benefits by 50 percent but reduces the scope of beneficiaries by reducing the income threshold to 70 percent of the current one—appears to be more efficient in terms of cost vs benefit. The overall reduction of child poverty is by 0.46 percentage points. The net cost of this measure is relatively tiny compared to the first scenario, at only EUR 12.1 million, implying an increase of the program's cost by some 9 percent. A more ambitious third scenario—that could be labelled as aspirational for its high-reaching goal of reducing child poverty substantially—combines the first scenario of an income-tested PIT allowance with a more generous monthly child benefit program. The total fiscal cost under this scenario is EUR 570 million, resulting from less PIT collection but improved generosity and targeting of the child allowance, which is increased almost threefold (by 184 percent). As a result, child poverty declines by 8 percentage points to 22.4 percent, while overall poverty shrinks by more than 3 percentage points.

The insights obtained from the microsimulations suggest a promising direction for policy initiatives to alleviate child poverty. By increasing child tax deductions for lower-income households and refining the targeting effectiveness and generosity of child benefits, the potential for favorable outcomes in terms of child poverty reduction becomes evident. The significant welfare enhancement resulting from adjustments in child income tax deductions can benefit the lower-income segment of the population at minimal fiscal cost. While the Bulgarian government's efforts to combat child poverty are commendable, exploring the impact of modified parameters for targeted child benefits underscores their potential to curtail child poverty substantially, even though their influence on national poverty levels might be relatively moderate. This underscores the value of targeted and well-considered policy changes to address the complex issue of child poverty.

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112 For earnings from a labor contract, the taxable income is equal to gross earnings less social insurance contributions (SIC). For self-employment income, taxable income is the equivalent of gross earnings minus normatively recognized expenditures and SIC.

113 The 7 percent threshold was determined using sensitivity analysis. In this exercise, several thresholds were analyzed to determine the level leading to approximately the same child poverty reduction than the one obtained with the 2022 child tax credit reform.

Annexes

Annex 1: Model for Bulgaria's DSA

D_t is sovereign debt in domestic currency.

Standard dynamics equation:

$$D_t = (1 + \epsilon_t)D_{t-1}^F + D_{t-1}^d + I_t - PB_t + Other_t$$

$$d_t = (1 + \epsilon_t)\frac{d_{t-1}^f}{(1+g_t)(1+\pi_t)} + \frac{d_{t-1}^d}{(1+g_t)(1+\pi_t)} + d_{t-1}\frac{(1+i_t^e)}{(1+g_t)(1+\pi_t)} - pb_t + \varepsilon_t$$

- d_t is the sovereign debt-to-GDP ratio.
- ϵ_t is change in the nominal exchange rate.
- d_{t-1}^f is the sovereign debt-to-GDP ratio denominated in foreign currencies.
- d_{t-1}^d is the sovereign debt-to-GDP ratio denominated in domestic currency.
- i_t^e is the effective nominal interest rate on sovereign debt.
- g_t is real GDP growth.
- π_t is the GDP deflator.
- pb_t is the primary balance-to-GDP ratio.
- ε_t stock-flow residual (Bulgaria's Brady bond swap, European Stability Mechanism (ESM), and euro area loans).
- $r_t = (1 + i_t^e)/(1 + \pi_t^d)$ is the real interest rate.
- $r_t = (1 + i_t^e)/(1 + \pi_t^d)$ is change in the real exchange rate.

$$\Delta d_t = \frac{z_t d_{t-1}^f}{(1+g_t)(1+\pi_t^f)} + \boldsymbol{d_{t-1}}\frac{\boldsymbol{r_t - g_t}}{\boldsymbol{1+g_t}} + d_{t-1}^f\frac{\pi_t^d - \pi_t^f}{(1+g_t)(1+\pi_t^f)(1+\pi_t^d)} - \boldsymbol{pb_t} + \varepsilon_t$$

- $d_{t-1}\frac{r_t - g_t}{(1+g_t)}$ is the real growth-interest differential.
- pb_t is the primary deficit.

Debt stabilizing primary balance:

$$pb_t = \frac{d_{t-1}}{1+g_t}\left[\frac{\pi_t^d - \pi_t^f}{1+\pi_t^d}\alpha_t^f + r_t - g_t\right] \approx d_{t-1}\frac{r_t - g_t}{1+g_t} \rightarrow \boldsymbol{pb^* = d^*\frac{r-g}{1+g}}$$

- α_t^f is the foreign currency share in public debt.

Annex 2: Output Gap Assessment

The assessment of fiscal cyclicality is sensitive to the measurement of output gaps. To assess the cyclicality of fiscal policy, an estimate of the output gap is needed to gauge the business-cycle phase. Measuring output gap at the national level is complex since it is an unobserved variable. Nevertheless, output gaps can be estimated using a range of methods. Univariate filters—which typically decompose quarterly output series into trend and cycle components—are often expanded into multivariate filters that include inflation, unemployment, various financial indicators, and commodity prices. Filtering techniques distinguish short-run deviations of output from trends, which is most relevant for the assessment of fiscal policy cyclicality. A multivariate filter, which incorporates more economic information than univariate filters, is the technique used in this analysis.

Output gap estimates are subject to wide variation, especially in an environment characterized by a high degree of uncertainty, rendering challenges in assessing fiscal policy cyclicality. Over 2010–23, Bulgaria's output gap estimate, as measured using the multivariate filter technique, is statistically different from zero in only three years (2013, 2014, 2020) at the 90 percent confidence interval (figure A2.1). As a result, the direction of fiscal policy cyclicality outside of these three years cannot be easily determined since the output gap interval ranges from negative to positive values, preventing a robust assessment of the economy's cyclical position. In addition to wide confidence bands around output gap estimates, measurements vary across institutions due to differences in the modeling approach and underlying assumptions of potential growth.[114] Moreover, fiscal policy cyclicality in Central and Eastern European economies can be asymmetric under different phases of the business cycle. During economic expansions, fiscal policy tends to be countercyclical, while it tends to be procyclical and acyclical in recessionary periods (Arčabić and Banić 2021[115]).

The high degree of uncertainty and increased risks to the growth outlook pose challenges in gauging the position of the business cycle and thus calibrating fiscal policy. The impact on growth from the materialization of risks is highly uncertain, in part given lags in data and complex economic links. High uncertainty about the position of the economy (in other words, the output gap estimate) can lead to difficulties in calibrating fiscal policy.[116] In turn, the fiscal stance may instead amplify the drag (boost) from negative (positive) shocks to growth rather than smooth the business cycle—highlighting the need for timely business-cycle monitoring and flexible fiscal policy. Downside risks to growth forecasts also pose negative feedback loop risks, as was the case following the GFC as growth disappointments translated into weaker fiscal positions and prompted many EU countries, including Bulgaria, to adopt tighter fiscal stances—in turn exacerbating the economic downturn.

Figure A2.1. Output gap estimation, multivariate filter technique

Percent of potential output

■ 90 percent ■ 60 percent ■ 30 percent
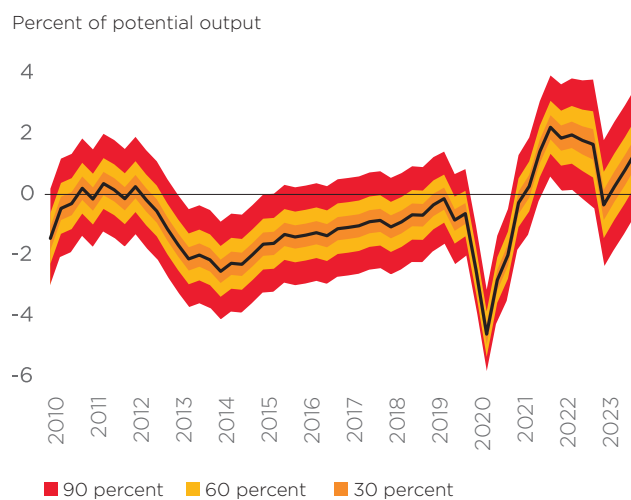
Source: Annual macroeconomic database (AMECO), EC, Eurostat, and World Bank.
Note: Output gap is calculated by using a multivariate filter approach and is the gap between actual and potential GDP at constant market prices.

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114 Estimates of long-term potential output rest on structural models of the production function or long-term growth expectations. Refer to World Bank 2023 for additional details.
115 Arčabić, V., and F. Banić. 2021. "Characteristics of Fiscal Policy in Croatia: Does It Depend on the Phase of the Business Cycle?" Public Sector Economics 45 (4): 433-457.
116 This task is made even more challenging in instances where budgets are highly rigid.

Annex 3: Methodological Note on Study of Education Spending Effectiveness

Based on the World Bank's BOOST database on fiscal spending for 2018–22 and the results in the 7th grade language and mathematics tests and the 12th grade language test, the association between spending per student and learning at the municipal level is studied under the following model:

$$Y_{mt}=\alpha+\theta Expc_{mt}+\pi X_{mt}+\gamma_m+\varepsilon_{mt} \quad [1],$$

where Y_{mt} represents the mean standardized score in the learning tests for the municipality m in the period t; $Expc_{mt}$ represents the natural logarithm of education spending per student excluding resources from European funds at 2010 prices in the municipality m in the period t; Y_{mt} represents a vector including the share of girls, the share of students with parents with secondary education or less, and the share of unemployed parents for the test takers in the municipality m in the period t; and γ_m is a municipality fixed effect capturing all the characteristics of the municipalities that are invariant in time. The parameter of interest in equation [1] is represented by θ which is interpreted as the change in standard deviations of the learning measure (Y) associated with a 1 percent increase in spending per student (*Expc*).

The results of the model's estimation are presented in tables A3.1 and A3.2.

Table A3.1. Association between spending per student and learning for 7th graders at the municipal level

	Math			Language		
Spending per student	−0.281***	−0.070*	−0.045	−0.351***	−0.121***	−0.078**
	(0.045)	(0.036)	(0.037)	(0.059)	(0.039)	(0.034)
Observations	1,021	1,021	1,021	1,021	1,021	1,021
R-squared	0.045	0.831	0.834	0.040	0.901	0.915
Municipality fixed effects	No	Yes	Yes	No	Yes	Yes
Controls	No	No	Yes	No	No	Yes

Note: Robust standard errors in parentheses.

These results show the association between expenditure per student and learning outcomes at the municipal level. The spending per student refers to the natural logarithm of all the executed expenditure excluding European funds divided by the total number of students (1st to 12th grade). The learning outcomes refer to the results of 7th grade students in standardized tests. The tests are normalized to 0 mean a 1 standard deviation distribution within each year. The controls include the share of girls, the share of students with parents with secondary education or less, and the share of unemployed parents. All control variables are built using the 7th grade test takers.

Table A3.2. Association between spending per student and learning for 12th graders at the municipal level

	Language	Language	Language
Spending per student	−0.596***	−0.055	−0.019
	(0.064)	(0.050)	(0.046)
Observations	917	917	917
R-squared	0.096	0.865	0.887
Municipality fixed effects	No	Yes	Yes
Controls	No	No	Yes

Note: Robust standard errors in parentheses.

These results show the association between spending per student and learning outcomes at the municipal level. The expenditure per capita refers to the natural logarithm of all the executed expenditure excluding European funds divided by the total number of students (1st to 12th grade). The learning outcomes refer to the results of 12th grade students in standardized tests. The tests are normalized to 0 mean a 1 standard deviation distribution within each year. The controls include the share of girls, the share of students with parents with secondary education or less, and the share of unemployed parents. All control variables are built using the 12th grade test takers.

*** p<0.01, ** p<0.05, * p<0.1

As a second step, a difference-in-differences model that exploits the variation in spending per student after the 2019 change in the rule for allocation of education subsidies to municipalities was used. The aim was to approximate a causal estimation of the impact of spending per student on learning. In 2018, changes were made to the formula used to allocate resources from the national government to municipalities. This reform brought the number of municipal allocation groups from seven to eight, in addition to including new criteria under the premise that some municipalities need more resources than others to provide the educational service.

The first step in the analysis of the impact of spending per student on learning begins with identifying whether the reform to the transfer allocation rules had an effect on spending per student:

$$Expc_{mt} = \gamma_m + \varphi_t + \sum_{r \neq 2018} 1[R_{mt} = r]\beta_r + \varepsilon_{mt} \ [2]$$

The model in equation [2] represents a differences-in-differences approximation to measure the impact of the change in the rules for assigning transfers to municipalities on education spending per student. $Expc_{mt}$ represents the spending per student in the municipality m in the period t, R_{mt} corresponds to dummy variables per year that take the value of 1 for those municipalities that were assigned to a new group under the transfer allocation change and 0 in another case. β_r corresponds to the estimator of the change in the gap in spending per student for those municipalities that were assigned to new groups under the change in the allocation rules versus those that were not relative to the existing gap in 2018. γ_m corresponds to the fixed effect of a municipality and a φ_t to a time fixed effect.

Figure A3.1. Dynamic impact of the change in the transfer allocation rules in the spending per student
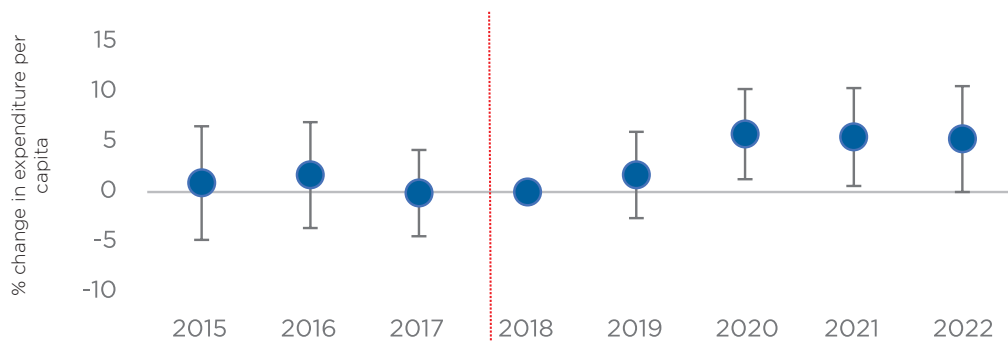

Figure A3.1 presents the estimated value for the β_r coefficients of the model [2]. The first element that stands out is that the change in the allocation rules generated a sustained impact of 5.5 percent per year between 2020 and 2022 in spending per student with respect to those municipalities that did not change groups under the new transfer allocation rule. The β_r coefficients estimated for 2015–17 validate the econometric strategy used. The existing gap in spending per student between the municipalities that were reassigned and those that were not remained invariant before the change in the allocation rules (parallel trends). The results then reveal that a group of municipalities saw an increase in their spending per student because of the reform. This scenario then presents us with an opportunity to assess whether this sustained increase in spending per student of around 5.5 percent had an impact on student learning.

The model in equation [3] takes the results in figure A3.1 as a starting point and focuses on estimating whether the observed impact on spending per student was transferred to student learning. Y_{imt} represents the result in the standardized test of the student i in the municipality m in the period t, R_{mt} corresponds to dummy variables per year that take the value of 1 for individuals belonging to schools in those municipalities that were assigned to a new group under the changed allocation of transfers and 0 otherwise. ϑ_r corresponds to the estimator of the change in the gap in learning between those municipalities that were assigned to new groups under the change in the allocation rules and those that were not, relative to the existing gap in 2018. γ_m corresponds to a municipality fixed effect and φ_t to a time fixed effect.

$$Y_{imt} = \gamma_m + \varphi_t + \sum_{r \neq 2018} 1[R_{mt} = r]\vartheta_r + \varepsilon_{imt} \ [3]$$

Figure A3.2. Dynamic impact of the change in the transfer allocation rules in math test and language test respectively for 7th grade students
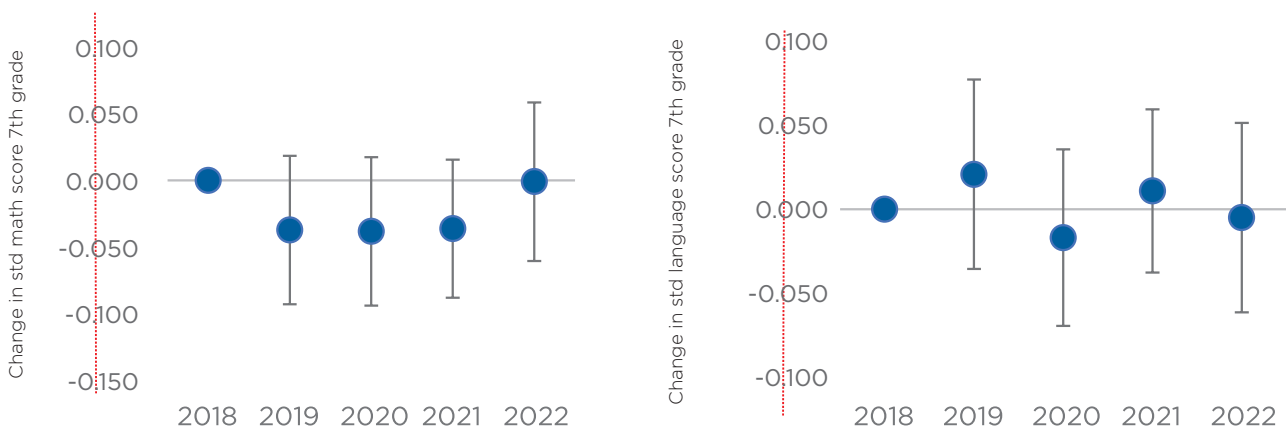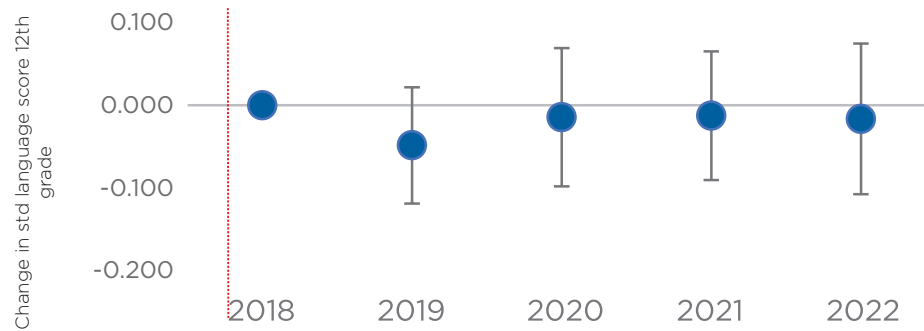
Figure A3.3. Dynamic impact of the change in the transfer allocation rules in language test for 12th grade students

Figures A3.2 and A3.3 present the estimated value for the ϑ_r coefficients of the model [3] for different measures of learning. The results reveal that the sustained 5.5 percent increase in spending per student did not have an effect on student learning. This indicates that the existing gap in terms of learning between students in municipalities that had an increase in spending per student because of the reform of the transfer rule and those that did not remained constant over time, so the additional spending did not have an impact on student learning.

Finally, to strengthen these results, the model was also estimated using the sociodemographic characteristics of the students (see table A3.4) as result variables. Given that the sociodemographic conditions of the students are great predictors of learning, it was also investigated whether the municipalities that saw an impact on spending per student as a result of the change in the transfer rules witnessed variations in the sociodemographic characteristics of the students. However, the results reveal that there were no changes in the socioeconomic characteristics of the individuals that could explain why the increase in spending per student had no effect on learning.

Table A3.3. Impact of the change in education resources transfer rules on test takers socioeconomic characteristics

	7th grade takers			12th grade takers		
	Sex	Parents low education	Parents unemployed	Sex	Parents low education	Parents unemployed
2019*Group change (==1)	0.019**	0.002	−0.003	0.006	0.003	0.006
	(0.009)	(0.010)	(0.006)	(0.010)	(0.009)	(0.004)
2020*Group change (==1)	0.001	0.000	0.002	0.011	0.012	0.007
	(0.009)	(0.010)	(0.006)	(0.013)	(0.008)	(0.005)
2021*Group change (==1)	0.000	−0.001	−0.001	−0.003	0.012	0.010
	(0.011)	(0.010)	(0.007)	(0.012)	(0.009)	(0.007)
2022*Group change (==1)	−0.000	0.013	0.005	0.013	0.004	0.010
	(0.010)	(0.010)	(0.007)	(0.011)	(0.011)	(0.007)
Observations	272,028	272,028	272,028	208,186	208,186	208,186
R-squared	0.001	0.191	0.079	0.005	0.116	0.043

Note: These results show the impact of the transfer allocation group change in the characteristics of the standardized test takers. The variable sex takes the value of 1 if the taker is a female and 0 otherwise. The variable parent low education takes the value of 1 if the parent has secondary education or less and 0 otherwise. The variable parent unemployed takes the value of 1 if the parent is unemployed and 0 otherwise.
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A3.4. Sociodemographic characteristics of students

Sex	male/female
Education level of the parent with the higher level	**coefficient**
Higher education (PhD, master's, bachelor's, professional bachelor's)	6
Secondary education (8–12th)	5
Middle school (5–7th)	4
Primary education (up to 4th grade)	3
Attended school but has no formal diploma on a completed level of education (including completed primary grade, literacy course)	2
Has not attended school	1
Employment status of the parent with the higher level	**coefficient**
Employed, househusband/wife, student, pensioner	6
Short-term unemployed - looking for a job	5
Long-term unemployment - looking for a job	4
Unemployed - not looking for a job	3

Source: Data provided by the Ministry of Education and Science as per self-reporting cards filled in by parents.

Annex 4: Rigidity Classification of Budget Expenditure

Rigidity Key

Low	Other low rigidity expenditures
	Spending: Use of goods and Services
	Spending: Capital Expenditures
Medium	Other medium rigidity expenditures
	Spending in Subsidies
	Spending: Other goods and Services (educ+health)
	Spending: Capital Expenditures (educ+health)
High	Other rigid expenditures
	Social benefits - (pension contributions)
	Subnational: Total transfers
	Social benefits - (pensions)
	Social protection (excluding pensions)
	Spending: Interest on debt
	Spending in goods and services (basic services)
	Spending in goods and services (employment contracts)
	Spending: Wage bill

Annex 5: Optimizing Spending in Bulgarian Public Procurement: A Strategic Sourcing Analysis[117]

Introduction

Public procurement is a powerful tool of national governments to achieve their target programmatic objectives, and accordingly it constitutes a large share of the national budget. Therefore, as budget maneuvers are becoming more restricted and public scrutiny over allocation of state funds is becoming more intense, governments are more inclined to pay closer attention to how they can maximize spending outcomes for their citizens. In this procurement analysis, we present a comprehensive and novel framework that can help identify potential savings in public procurement orders (and recommend suggested policy interventions). The framework combines traditional methods of strategic sourcing, economic theory, and application of advanced data science techniques to better understand purchasing decisions, outline potential savings strategies, and calculate estimated savings from public procurement contracts. The analysis uses administrative data on purchased goods, works, and services by the Government of Bulgaria for 2007–22.

The analysis aims to contribute to a better understanding of the factors that inflate prices in public procurement in Bulgaria and the potential strategies and policies to achieve savings. To help target policy decisions, explanatory factors are grouped in two main groups: (a) factors that can be influence directly through policy, such as the length of the advertisement period for tenders or what type of procedure is used for the tender, and (b) factors that can be indirectly influenced through policy, such as employing measures that can encourage greater number of bidders participating in the tender, the share of SMEs, or whether contracts are awarded to buyers with higher spending concentration. The methodology provides policy makers with specific recommendations that can be applied within the boundaries of the legal framework.

Data and Methodology

Two procurement sources are used for the analysis. First, we have collected all tenders and contracts from the old national e-procurement portal, http://www.aop.bg. Second, we have also collected all publications from the new national e-procurement portal, https://app.eop.bg The data are collected using automated web scrapers, which were adapted to the specificities of the source websites and data repositories. Our final dataset consists of 163,857 public procurement contracts from January 2007 to December 2022.

We have also collected data on Bulgaria's procurement tenders from the EU-wide Tenders Electronic Daily (TED) portal. Before proceeding with the analysis and to avoid duplication of tender notices published both on the national portals and TED, we have deduplicated our dataset.

To estimate potential savings, we first employ an ordinary least squared (OLS) regression model. The OLS model allows us to perform price predictions and simulate alternative scenarios. The following equation is used to estimate our regression model:

$$Pr_i = \alpha_i + \beta1*X_{1i} + \beta2*X_{2i} + \beta3*X_{3i} + ... + \beta13*X_{13i} + \varepsilon_I$$

Our dependent variable, the relative price Pr_i, was bounded between 0.2 and 5, and transformed into log, to avoid potential large-scale errors that cannot be addressed.[118] We estimate the relative price by dividing

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117 Mihaly Fazekas (Central European University and Government Transparency Institute), Bence Tóth (University College London and Government Transparency Institute), Zdravko Veljanov (Central European University and Government Transparency Institute), Viktoriia Poltoraskaia (Central European University and Government Transparency Institute).

118 To test data quality and potential data errors, we explored relative prices that are higher than 5 or lower than 0.2. We concluded that such outlier values are likely errors related to how data have been input or processed. We transform relative prices into log for the regression analysis because the distribution of prices is highly skewed and does not follow a normal distribution. There are fewer values on either ends of the distribution. For the savings scenarios, we transform back the logged relative price into relative price to allow for better comparability across groups.

the actual contract value by the estimated value at the tender (only for tenders with 1 lot) or lot level.

Relative price = actual contract value / estimated tender or lot value

Our main predictors and control variables, $X_{1i} - X_{13i}$, are derived from the literature on economic and public administration theory and are considered to be policy relevant. We include, among others, the number of bidders, what type of procedure is being used, and organizational qualities of the tender such as length of the advertisement or decision period. The controls for structural factors include market, year, and location. Fazekas et al.'s (2022) analysis of public procurement in Poland has identified a set of factors, such as the number of bidders that participate in a tender or the type of procedure used for the tendering process, that help identify savings strategies. Furthermore, focusing on the pharmaceutical sector in the Latin America and the Caribbean region, Fazekas et al. (2021) show the importance of potential bidders having sufficient time to prepare their bids—the length of the advertisement period—as a directly influenceable policy for achieving savings. The defining feature of this analysis is the use of unit prices as a dependent variable, which is a more precise price indicator than relative prices, albeit only applicable to highly standardized goods with known quantities. In the absence of such data for calculating unit prices, this analysis uses relative prices as a second-best option. This implies a conservative approach, leading to a lower-bound estimate of the potential savings. Similar analyses that use relative prices include a recent paper by Abdou et al. (2022) who estimate the potential impact of corruption on relative prices in five countries (Romania, Georgia, Paraguay, Uganda, and Indonesia). Basdevant and Fazekas (2023)[119] in turn develop a corruption cost tracker[120] to demonstrate the benefits of reform for procurement savings (also Fazekas et al. 2020)[121].

Savings scenarios

We use advanced statistical modeling techniques to estimate the prices under alternative policy scenarios. The results obtained from these assessments allow us to estimate how much the government would have paid if it had used a more cost-effective strategy for procuring goods, services, and supplies. The estimation is based on the price modeling regression by trying to explain the relative price in relation to relevant factors, such as the number of bidders or procurement procedure type, to name a few. The aim is to capture the association between various relevant policy factors and relative prices.

The total predicted savings are obtained through the most readily influenceable factors—that is, we assume that such policy changes do not require complex law amendments or substantial procedural changes. Rather, our approach is based on policy changes that can be readily achieved. Therefore, we rely on smaller tweaks in the procurement process design, such as stimulating greater participation of bidders, and implementation of decisions, such as the type of procedure being used or how many days the tender notice is being advertised. In the absence of more precise data on unit prices, which can provide more accurate predictions, the estimations based on the use of relative prices most likely present only the lower bound of impact of the proposed changes—that is, it could represent a conservative savings estimation.

The proposed savings interventions focus on factors that can be directly or indirectly influenced through policy. Directly influenceable factors include interventions such as the type of procedure used in the tendering process, the number of days the tender notice is advertised, or the number of days the purchasing authorities need to evaluate all offers and make a decision (decision period). Indirectly influenceable factors used in our modeling include interventions such as

119 Basdevant, Olivier, and Mihály Fazekas. 2023. "The Corruption Cost Tracker: An Online Tool to Assess Corruption Risks in Public Procurement."
120 https://public.tableau.com/app/profile/gti1940/viz/Corruptioninpublicprocurement/Overviewofcountries?publish=yes.
121 Fazekas, Mihály, Elizabeth Dávid-Barrett, Aly Abdou, and Olivier Basdevant. 2020. "The Corruption Cost Tracker: Quantifying the Costs of Corrupt Contracting and the Savings to Be Made from Reform." Government Transparency Institute Reports: GTI-R/2020:02 Policy Brief.

the number of bidders that participate in the bidding process, the share of contracts awarded by the high spending concentration buyers, or the share of bids received from SMEs. A complete list of all savings interventions and modifications is available in table A5.1. The extent of changes along each dimension is derived from the distributions of the variables and represents small-scale changes in the overall dataset (even though the changes within specific categories might be substantial). The selected scenarios are demonstrative of what is feasible, rather than judgements on what scale of change should be aimed at. A scenario explorer, as recommended at the end, would allow for a more comprehensive and flexible exploration of a range of feasible scenarios.

Table A5.1. Summary of savings interventions

	Influenceable predictor	Intervention
Can be directly influenced through policy	Procedure type	Move 70 percent of contracts in any non-open procedure type to fully competitive procedures
	Advertisement period length (submission period)	Increase advertisement period length: eliminate short advertisements (1–27 days) by moving them to a category where the mean advertisement period is 29 days
	Length of decision period (decision period)	Increase decision period length: eliminate short decision periods by moving them to a category where the decision period is on average 58 days
Can be indirectly influenced through policy	Number of bidders	Move 60 percent of tenders from 0–2 bidder categories to categories that have 3 to 6 bidders
	Buyer spending concentration[122]	Move 70 percent of contracts from the higher-spending concentration buyers (7–10 deciles) to lower-spending concentration buyers (4th decile)
	Market concentration	Move 80 percent of contracts from the highest concentration market—10th decile to lower concentration markets (9th decile)
	Share of bids received from SMEs	Increase the share of SME participants by 50 percent
	Supplier specialization	Move 50 percent of contracts supplied by highly specialized suppliers (lowest decile - category 1) to less specialized suppliers (6th decile)
	Supplier size	Increase participation of smaller companies: move 50 percent of contracts awarded to medium and large companies to smaller companies

Source: World Bank.
Note: The specific scenario parameters are selected based on the effects identified by the regression model and considerations of feasibility (for example, increasing the average bidder number from 2 to 10 is not feasible based on international practice).

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122 Buyer spending concentration is calculated as the share of contract value that is awarded to the same supplier by the same buyer in a year. Based on the distribution of buyer concentration, we group them into 10 categories for more informative and comparable analysis

Overall savings

Based on our sample dataset and within the timeframe of our data, the potential savings are estimated at about 5.3 percent (figure A5.2) or approximately BGN 1.3 billion (figure A5.1).

The largest impact in terms of potential savings can be achieved by increasing the number of bidders who participate in the bidding process. If we reduce by 60 percent the number of tenders where only one or two bidders participate, and instead we manage to stimulate at least three bidders (or up to six bidders), we can achieve savings that amount to approximately BGN 580 million for the period under study. Within these two categories, single bidding or two bidders, some procedure types such as negotiations without publication, direct negotiation, or award without publication are much more frequent compared to the other categories of the number-of-bidders predictor.

In a related policy intervention, focusing on smaller companies can generate further savings. Small companies are associated with lower relative prices compared to medium and large companies. By moving half of the contracts from the latter two groups to the small companies' group, we estimate savings of BGN 129 million. Further, two predictors that are highly impactful relate to the organizational quality of the tendering process, that is, the number of days a tender is advertised and the number of days a purchasing authority takes to make a decision. For instance, improvements such as eliminating very short advertisement periods and providing potential bidders on average at least 29 days before submitting a bid result in savings of BGN 137 million.

In figure A5.2 we illustrate the share of savings in percentage points that are associated with each intervention. Increasing the number of bidders is predicted to generate savings of 2.37 percent of the total value of procurement contracts. Although the size of the effect of the other predictors is lower, significant savings could still be generated. For instance, moving half of the awarded tenders from the medium and large suppliers to small companies is associated with 0.53 percent savings. In total, adding up all interventions could generate 5.3 percent savings.

Figure A5.1. Total savings associated with each intervention, Bulgaria 2007–22
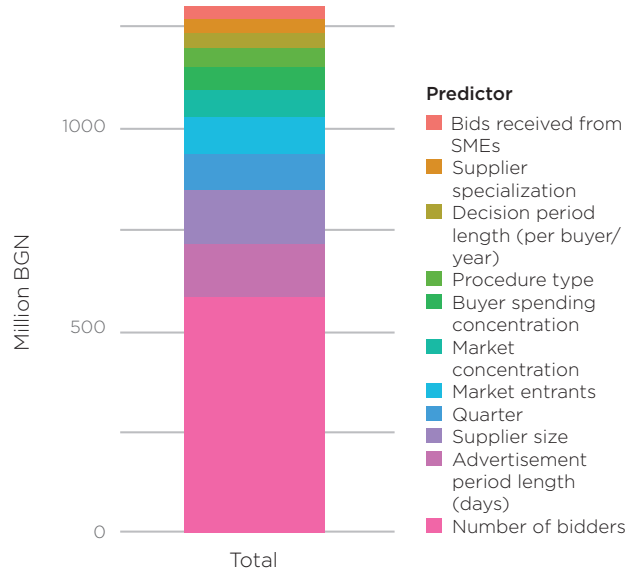
Source: World Bank.

Figure A5.2. Total percentage savings associated with each intervention, Bulgaria 2007–22
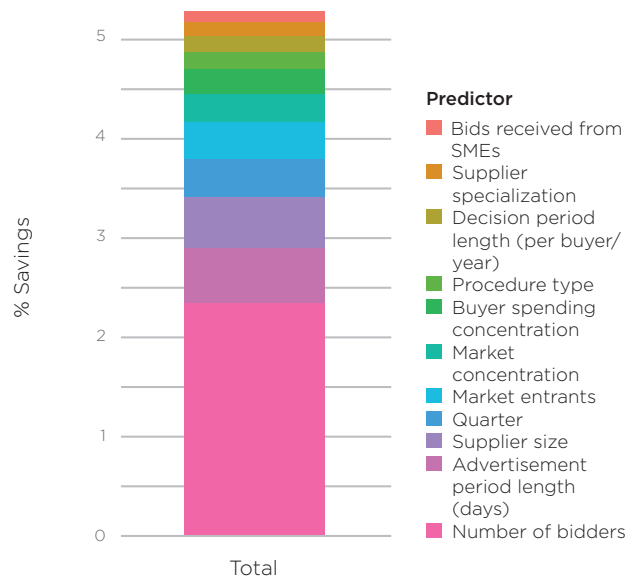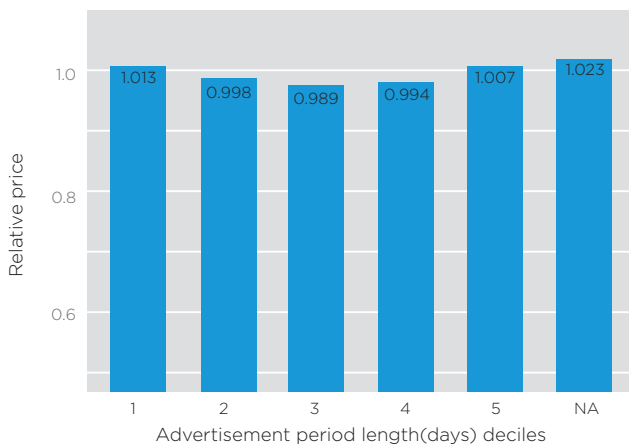

Source: World Bank.

Effects of individual noncompetitive procurement practices

The savings scenario section has presented two types of factors that can be addressed to create alternative scenarios: factors that can be directly influenced through policy and factors that can be indirectly influenced through policy. In this section, we illustrate the individual impact of each individual intervention on the relative price. Our starting point is that changes in policy parameters can generate savings in the contracted prices. Procuring entities whose tenders are advertised, on average, more days, thus allowing for more potential bidders to prepare for and participate in the process, also award contracts at lower relative prices. Eliminating short advertisement periods in tenders whose maximum number of allotted days is 27 and instead providing on average 29 days can yield 0.56 percent or BGN 137 million of savings over the analysis period. Figure A5.3 sketches the impact of the length of advertisement period on relative prices. Category 3 represents the group of tenders that have allowed on average 29 days for bidders to submit their offers. Compared to categories 1 and 2, which feature very short deadlines, contracts in this category are awarded at lower relative prices. Similarly, very long deadlines, having on average 60 or more days, are also associated with higher relative prices. Such practices can be a result of potential disputes or challenges to the tendering process, a poor design of the tendering process or potential irregularities. Both very short and very long submission periods are statistically significant and substantial compared to the reference category 3 (having on average 29 days for submitting a bid).
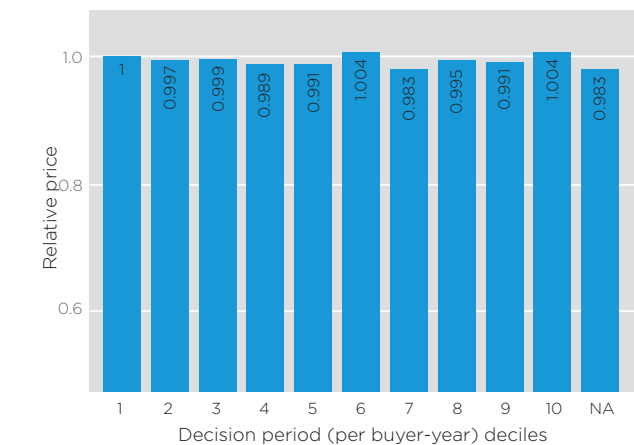
Figure A5.3. Impact of the length of advertisement period (in days) on relative prices, Bulgaria 2007–22

Source: World Bank.

Figure A5.4. Impact of average decision-making period length (in days, per buyer-year) on relative prices, Bulgaria 2007–22

Source: World Bank.

In addition to policies that can have a direct impact on relative prices, there are also factors that can contribute to producing savings through an indirect policy impact. Such strategies usually entail the development of training programs that can target particular groups of suppliers or facilitating access to documentation and application processes. Figure A5.5 shows that the more the number of bidders who participate in the procurement process by tabling a bid, the lower the relative prices of contracts are. Our alternative scenario explores the possibility of decreasing the number of tenders where only one or two bidders take part by 60 percent, and instead replacing those with at least three bidders. This alone is associated with savings of up to BGN 580 million or 2.37 percent.

Figure A5.5. Impact of bidder number on relative prices, Bulgaria 2007–22
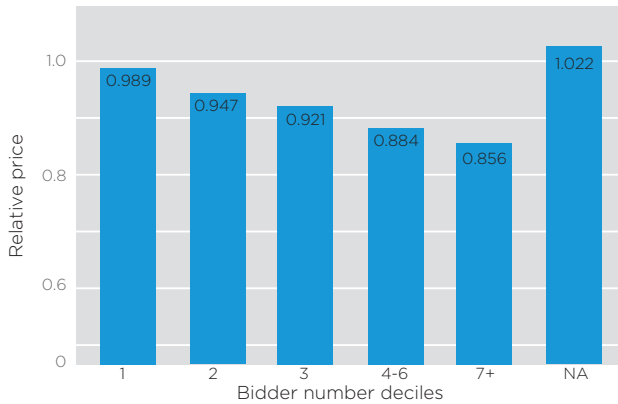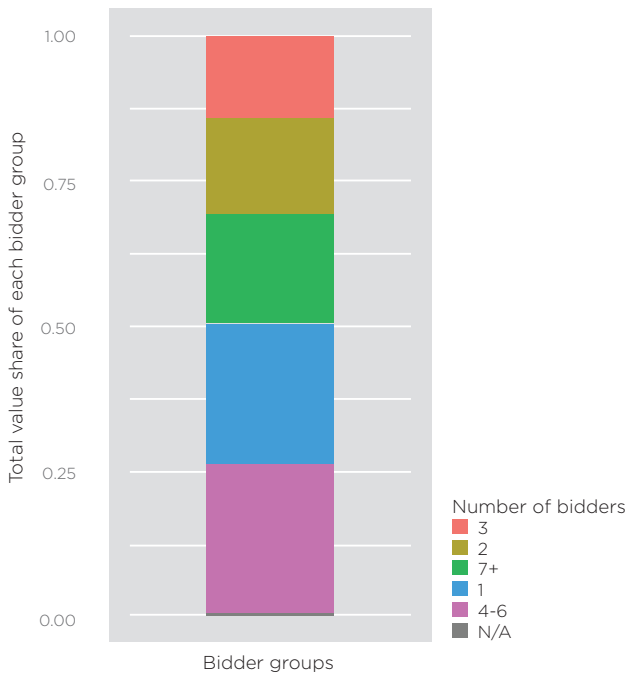

Source: World Bank.

The single-bidder category is the largest category in the total number of tenders (figure A5.6B), and it is the second highest category when it comes to the total value of contracts awarded (figure A5.6A). Almost one-fourth of the entire contract value awarded in the analysis period or BGN 12.8 billion is distributed through single bids. From all the analyzed interventions, increasing the number of bidders produces the highest amount of potential savings.
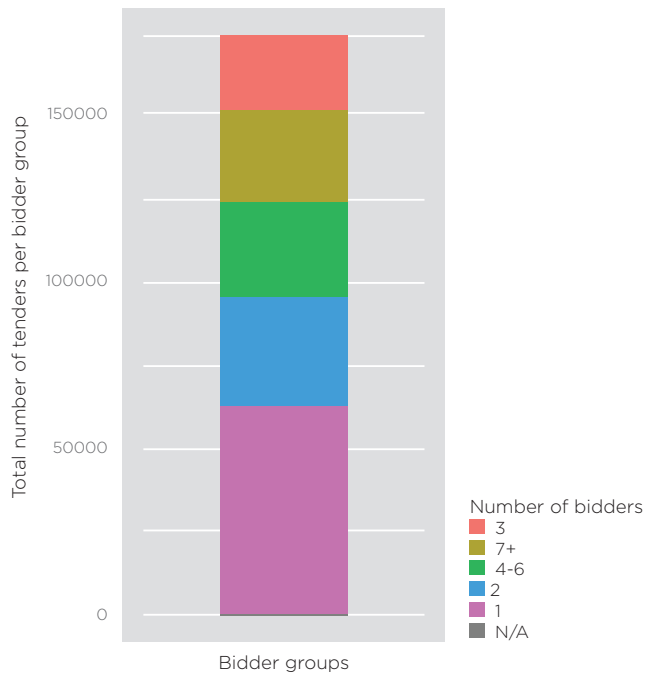
Figure A5.6. Distribution of the data by number of bidders (categories), Bulgaria 2007–22

A. Distribution of total value of contracts allocated to each bidder group

B. Distribution of total number of contracts allocated to each bidder group

Source: World Bank.

Concentration at the market level also has a substantial impact on the relative prices. Markets that were highly concentrated, that is, dominated by one or few suppliers show higher relative prices. Estimated savings of BGN 67 million could be achieved if the largest monopolies and oligopolies were broken up and the supplier base was diversified. For instance, the two most concentrated categories with fewest suppliers were awarded almost 40 percent of the total value. Although some technical specifications, existence of patents, or better scrutiny of the specifications are required, these results show that there is potential of achieving savings that could justify such actions.

Source: World Bank.

Conclusion and policy recommendations

A range of policy recommendations can be made based on the empirical findings. Before going into the details of selected, high-impact policy interventions, we put forward a broader recommendation: implement a systematic and continuous monitoring of public procurement performance, building on the above analysis. Such a monitoring tool, a scenarios explorer, would allow for testing different bundles and scales of interventions, make predictions about expected price savings, and verify the actual results as data on tenders following the interventions come in.

Our analysis identified potential savings of an estimated **5.3 percent** of the total value of Bulgarian public procurement contracts analyzed. This overall savings figure largely aligns with the findings of Fazekas et al. (2022)[123] on Poland which use similar predictors to estimate potential savings of 5 percent or Zl 24 billion. However, due to the data limitations such as missing information on contract implementation, these could be considered as conservative estimates. In a similar

analysis on relative prices in North Macedonia, Fazekas et al. (2023) estimate considerably higher potential savings of approximately 14 percent. Abdou et al. (2022)'s findings for Romania also produce similar results of potential savings of 4.4 percent of total procurement spending, albeit only considering a narrower set of predictors related to corruption risks. What links all these studies is the common measure of prices in public procurement: relative prices. A more precise estimation of prices can be achieved if unit price is available as a dependent variable, albeit unit prices are only meaningful for standardized goods and services where quantities can be compared. Fazekas et al. (2021)[124] examine potential savings for pharmaceutical products in the Latin America and Caribbean region using unit prices and estimate potential savings of 14 percent of total spending.

Following similar approaches to the abovementioned studies, we have explored alternative scenarios that operate on the assumption of certain policy improvements. **Eliminating very short (or very long) submission periods can greatly contribute to savings**. Our analysis has shown that these groups of tenders are associated with higher prices. These are indicators that can be directly influenced through policies and as such it can result in improving the organizational quality of the tendering process, such as the average time spent on evaluation of tenders, or the time allowed for submitting bids (decision and submission period).

The participation of **smaller companies in the tender is also associated with less expensive tenders**. Both proxies, relative prices of tenders when an SME participates in the bidding process and the relative prices of smaller companies (compared to medium and large companies), show significant effect. Encouraging participation or developing assistance programs to increase participation of SMEs could generate substantial savings across the two explanatory factors.

Further factors that have been used in our model include the type of procedure. Despite having the large

123 Fazekas, Mihály, Barbara Ziolkowska, and Nóra Regos. 2022. "Chapter 4. Public Procurement: Saving and Greening." In "Poland Public Finance Review". Washington, DC: World Bank.

124 Fazekas, Mihály, Alexandre De Oliveira, and Nóra Regos. 2021. "Lowering Prices of Pharmaceuticals, Medical Supplies, and Equipment. Insights from Big Data for Better Procurement Strategies in Latin America." Policy Research Working Paper: WPS 9689, Washington, DC, World Bank.

majority of tenders using open procedure,[125] there is still potential of generating savings by further improving the use of this procedure. Procedure types such as invitation tenders or negotiated procedures without publication are associated with more expensive tenders. The results indicate that there is still potential to **further increase the use of open procedure** at the expense of non-open procedure types.

Contrary to theoretical expectations, tenders that use electronic auction or tenders under framework agreements are related to higher relative prices. The number of observations for which there is information is not sufficiently large to further investigate this issue, but the analysis does indicate an opportunity **to further improve the design and application of these procedures and methods.**

Lastly, based on our analysis an achievable policy target that can be set is to work on **reducing the number of tenders where only one (or two) bidders participate.** This factor has shown the greatest potential for savings in public procurement. Considering that single bids are by far the largest group in the total number of contracts awarded and the second largest group concerning the total value of contracts, working on strategies to curb it would be a highly efficient route toward greater savings. This can include development of better procurement strategies by purchasing authorities, potential training programs on how to prepare for submitting bids, or assistance with the required documentation.

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125 Less than one-fourth of all tenders are awarded in non-open procedures.

Annex 6: Matrix for Fiscal Risk Analysis

The fiscal risk matrix

Liabilities	Direct (obligation in any event)	Contingent (obligation if a particular event occurs)
Explicit **Government liability as recognized by a law or contract**	• foreign and domestic sovereign borrowing (loans contracted and securities issued by central government) • budgetary expenditures • budgetary expenditures legally binding in the long term (civil servants' salaries and pensions)	• state guarantees for nonsovereign borrowing and obligations issued to subnational governments and public and private sector entities (development banks) • umbrella state guarantees for various types of loans (mortgage loans, student loans, agriculture loans, small business loans) • trade and exchange rate guarantees issued by the state • state guarantees on private investments • state insurance schemes (deposit insurance, income from private pension funds, crop insurance, flood insurance, war-risk insurance)
Implicit **A moral obligation of government that reflects public and interest-group pressures**	• future public pensions (as opposed to civil service pensions), if not required by law • social security schemes, if not required by law • future health care financing, if not required by law • future recurrent costs of public investments	• defaults of subnational government or public or private entities on nonguaranteed debt and other obligations • cleanup of liabilities of entities being privatized • banking failure (support beyond state insurance) • failure of a nonguaranteed pension fund, employment fund, or social security fund (protection of small investors) • default of central bank on its obligations (foreign exchange contracts, currency defense, balance of payments stability) • bailouts following a reversal in private capital flows • environmental recovery, disaster relief, military financing

Source: Polackova 1999.

Annex 7: Health Taxes' Simulation Results

Table A7.1. Cigarette excise tax simulation results

		Before	A	B.2	C
WAP	Lev per pack (nominal)	5.43	5.55	5.68	6.67
Sales	Millions of packs	783.1	800.1	793.8	746.1
	Packs per capita	113.8	116.6	115.6	74.7
Excise revenue	Lev (nominal, million)	2,787	2,864	2,957	3,361
	Percentage of GDP	1.69	1.57	1.62	1.84
Percentage changes					
WAP	Nominal		2.3	4.6	22.8
	Real		−5.9	−3.8	13.0
Sales	Total		2.2	1.4	−4.7
	Per capita		2.4	1.6	−4.5
Excise revenue	Nominal		2.8	6.1	20.6
	Real		−5.5	−2.4	10.9

Table A7.2. Alcohol excise tax simulation results

		Before	A	B.2	C
Sales	LAA, millions	67.5	67.6	67.3	64.5
	Per capita LAA	9.8	9.9	9.8	9.4
Excise revenue	Lev (nominal, million)	316	315	343	614
	Percentage of GDP	0.19	0.17	0.19	0.34
Percentage changes					
WAP					
Beer	Nominal		8.0	8.7	16.3
	Real		−0.6	0.0	7.0
Wine	Nominal		8.7	8.7	10.5
	Real		0.0	0.0	1.6
Spirits	Nominal		7.2	8.7	25.2
	Real		−1.4	0.0	15.2
Sales	LAA		0.2	0.3	−3.0
	Per capita LAA		0.7	0.3	−4.0
Excise revenue	Nominal		−0.2	8.5	94.4
	Real		−8.2	−0.2	78.9

Source: World Bank.
Note: LAA = Liter of absolute alcohol.

WORLD BANK GROUP

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