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Strengthening Public Expenditure Efficiency

Investment and Social Spending in Bulgaria

By Jean-Jacques Hallaert and Keyra Primus

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Strengthening Public Expenditure Efficiency—Investment and Social Spending in Bulgaria

Prepared by Jean-Jacques Hallaert and Keyra Primus*

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ABSTRACT: The scope for increasing public spending to meet Bulgaria's development needs is limited by low revenue. Increasing the efficiency of spending is, therefore, crucial. This paper discusses how this can be achieved in four areas (public investment, social protection, health, and education). The methodology is based on a triple benchmarking. First, the level of public expenditure in each category is compared to other European countries. Second, the impact of spending is assessed against other European countries. Third, the input mix is analyzed to understand what components are responsible for the level of spending and for the quality of outcomes. Based on these results, the paper provides policy options for expenditure reform.

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WORKING PAPERS

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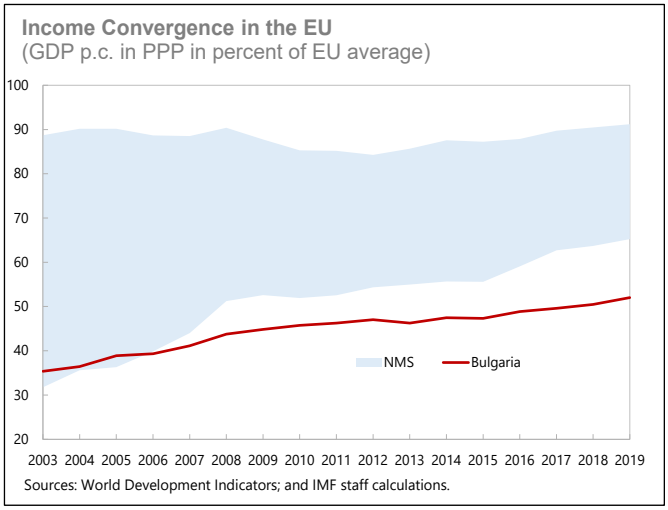
I. Introduction

Bulgaria is the poorest European Union (EU) Member State and its development needs are large. In 2019, Bulgaria's GDP per capita at PPP stood at 52 percent of EU average and income convergence has been lagging other EU Newer Member States (NMS)[1] since the Global Financial Crisis (GFC). Fostering income convergence and inclusive growth requires substantial reforms and, in this context, public spending has a crucial role to play (IMF 2021a).



As the scope for increasing public spending is limited by low tax revenue, increasing its efficiency is crucial. At 36.1 percent of GDP in 2019, public expenditure is broadly similar to its level in 2010 (36.2 percent) and well below EU average of 43.1 percent of GDP and Central, Eastern, and Southeastern Europe (CESEE) average (40.3 percent). Though the public spending ratio is relatively low, the authorities' long-standing commitment to maintain a predictable and low tax environment and fiscal prudence leaves little scope to increase it (IMF 2019a). Indeed, a low flat tax rate (10 percent on personal income tax and on corporate income tax) limits government resources from taxes and social contribution at 30.3 percent of GDP in 2019. This is the third lowest level in the EU and almost 11 percentage points below EU(27) average (Eurostat 2020a). In this context, increasing public expenditure efficiency is crucial in creating the fiscal space needed to meet the country development needs.

This paper aims to identify areas where significant efficiency gains may be achieved and, thus, where spending reforms could have a large pay off. By nature, it will focus on areas where improvements are possible or desirable but little will be said of areas where public expenditure achieves good results by international standards. Efficiency gains can be estimated through various methods. Rather than relying on econometric measures, our approach is to focus on a more in-depth analysis to identify spending drivers in each sector. More precisely, our analysis relies on a benchmarking of both spending and outcomes to draw policy recommendations informed by successful expenditure reforms in other EU countries.[2] We compare Bulgaria to other EU countries and regional peers (NMS or CESEE) with a focus on two peers: Hungary and Romania.[3] Then, the input mix is analyzed to understand what components explain the level of spending and the quality of outcomes. The paper analyzes spending during the 2010s. The analysis ends in 2019 due to data availability and, more importantly, to avoid the distortions in public expenditure implied by the fiscal response to the COVID-19 pandemic, which are expected to be mostly temporary.

[1] EU Newer Member States (NMS) include in addition to Bulgaria: Croatia, Czech Republic, Hungary, Poland, Romania, Slovak Republic, Slovenia, Estonia, Latvia, and Lithuania. CESEE is broader as it also includes non-EU, Eastern European Countries. Unless otherwise specified, the EU refers to the EU(28) i.e., including the United Kingdom.

[2] This approach is similar to the one of Hallaert and Queyranne (2016) for France and Hallaert (2016) for Belgium.

[3] Comparator countries were chosen to be EU NMS for which data are available for the whole period and that share with Bulgaria important similar structural features such as flat tax regime, non-euro-area countries, diversified economies.

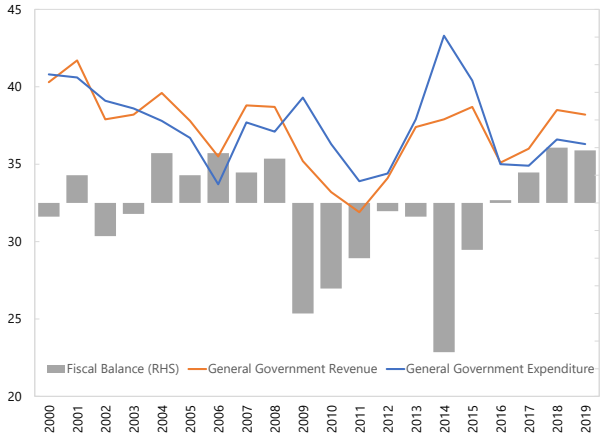
The paper is organized as follows. The first section provides a brief overview of Bulgaria's expenditure development over 2010-19 comparing its results with the fiscal consolidation carried out in the EU and NMS. The following sections focus on areas where efficiency gains are potentially the largest: public investment,[4] and social spending (social protection, education, and health).

II. Expenditure Development in the 2010s: A Brief Overview

Over 2010-19, Bulgaria's fiscal balance moved from a deficit to a surplus. Following the GFC and the introduction of a flat tax on personal and corporate income in 2007 and 2008, the revenue-to-GDP ratio decreased from 2008 to 2011.[5] Despite some containment measures such as a pension freeze in the early 2010s, this resulted in a return to fiscal deficits which persisted until 2015. In the second half of the decade, a rise in revenue ratio and expenditure containment led to a return to fiscal surpluses (Figure 1).

The spending-to-GDP ratio fluctuates substantially. This fluctuation is in large part related to the EU Fund absorption cycle that drives much of the time profile of capital expenditure.

Figure 1. Bulgaria: Fiscal Developments
(in percent of GDP)



Despite the fluctuations, the expenditure-to-GDP ratio is broadly similar in 2019 to its level in 2010, though the composition of spending changed significantly (Table 1). The distribution of spending between current and capital spending has been relatively stable but hides significant changes in the allocation of resources.

- The decline in the capital-spending-to-GDP ratio (from 4.9 percent of GDP to 4.5 percent of GDP) masks a substantial change: Gross fixed capital formation was 1.2 percent of GDP lower in 2019 than in 2010. In contrast, capital transfers, which were negligible at the beginning of the period, rose to more than 1 percent of GDP in the second half of the period.
- The composition of current spending has profoundly evolved. The wage bill and subsidies increased substantially as a share of GDP and of public spending, by 1.2 and 1.3 percent of GDP, respectively.

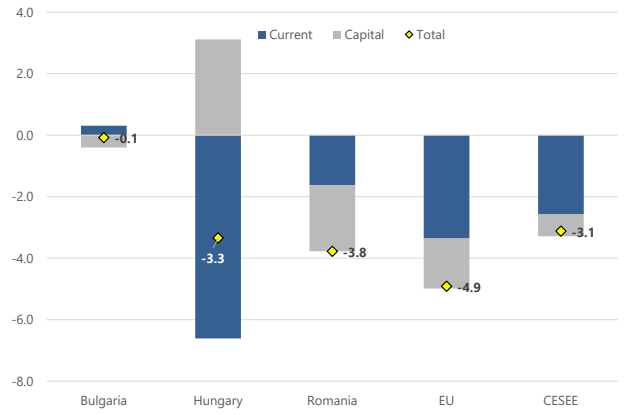
[4] The public investment section builds on IMF (2018) by providing an in-depth assessment of Bulgaria's public investment and public capital stock levels, as well as the quality of public infrastructure. It also uses IMF's tools to provide an assessment on the quality of public investment management in Bulgaria and compute the efficiency gap at the output and quality level. The significant amount of EU resources that Bulgaria is expected to receive over the coming years raises the importance of strengthening public investment management and improving the efficiency of public investment.

[5] The 5½ percentage points decline in the revenue-to-GDP ratio between 2008 and 2011 is driven by a 7 percent decline in nominal terms of tax revenue in part due to a 12½ percent decline in revenue from CIT and PIT. Since 2011, the ratios have rebounded but remained lower in 2019 than in 2008 (the tax-to-GDP ratio was 1.7 percentage point lower and revenue from the CIT and PIT-to-GDP ratio was 0.3 percentage point lower).

Their increase was largely offset by the decline of other categories notably the purchase of goods and services (-1.1 percent of GDP) and social benefits (-0.7 percent of GDP). The functional classification highlights a sharp increase in spending on economic affairs (1.4 percent of GDP driven by an increase in spending to the sector "fuel and energy")[6] that was offset by a significant decline of spending in social protection (1.4 percent of GDP), while other categories experienced comparatively smaller changes.

Bulgaria's fiscal developments differ in important ways from comparators in the last decade. First, unlike Bulgaria, all comparators have a significantly lower public-expenditure-to-GDP ratio in 2019 than in 2010. As a result, the expenditure gap between Bulgaria and comparators has narrowed. However, the expenditure ratio remains significantly lower in Bulgaria than in comparators (Tables 1 and 2). Second, the stability in the distribution of total spending between current spending and capital spending contrasts with the significant variations in all comparators (Figure 2).

Figure 2. Change in Total Public Spending
(2019 vs. 2010, in percent of GDP)



Sources: Haver and IMF staff calculation.

[6] Economic affairs include: general economic, commercial and labor affairs; fuel and energy; mining, manufacturing and construction; transport; and communication. For further details on the economic affairs spending, see *Manual on sources and methods for the compilation of COFOG statistics — Classification of the Functions of Government (COFOG) — 2019 edition*.

Table 1. Bulgaria – Main Fiscal Aggregates (2000-19, in percent of GDP)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Difference (2010-2019)
	(percent of GDP)										(ppts of GDP)
	Economic classification										
Total expenditure	36.2	33.7	34.3	37.8	43.2	40.3	34.9	34.8	36.5	36.1	-0.1
Current spending	31.2	30.0	30.2	33.2	34.1	33.1	30.8	31.4	32.4	31.5	0.3
Compensation of employees	9.0	8.6	8.6	9.5	9.5	9.3	8.9	9.1	9.5	10.3	1.2
Goods and services	5.7	5.4	5.3	5.7	5.5	5.2	4.8	4.8	4.8	4.5	-1.1
Interest payments	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.8	0.7	0.6	-0.1
Subsidies	1.1	0.9	0.9	1.3	1.3	1.8	1.4	1.1	2.2	2.4	1.3
Current transfers	1.2	1.5	1.8	2.2	2.6	2.0	1.2	2.2	2.3	1.0	-0.2
Social benefits	13.5	12.8	12.8	13.8	14.4	13.8	13.7	13.3	13.0	12.7	-0.7
Capital spending	4.9	3.7	4.1	4.7	9.2	7.3	4.1	3.5	4.1	4.5	-0.4
Gross fixed capital formation	4.6	3.4	3.4	4.1	5.3	6.6	2.7	2.3	3.1	3.3	-1.2
Capital transfers	0.3	0.3	0.7	0.5	3.9	0.7	1.4	1.2	1.0	1.2	0.8

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Difference (2010-2019)
	(percent of GDP)										(ppts of GDP)
	Functional classification										
Total expenditure	36.2	33.7	34.3	37.8	43.2	40.3	34.9	34.8	36.5	36.1	-0.1
General public services	3.8	3.7	3.4	3.6	3.9	3.8	3.6	3.2	3.3	2.8	-1.0
Defence	1.7	1.2	1.0	1.2	1.3	1.3	1.1	1.1	1.2	1.2	-0.5
Public order and safety	2.5	2.3	2.2	2.6	2.8	2.8	2.3	2.5	2.5	2.7	0.2
Economic affairs	5.0	4.3	5.2	5.6	8.5	5.9	3.8	4.2	6.7	6.4	1.4
Environment protection	0.7	0.7	0.7	0.9	0.7	0.8	0.7	0.7	0.7	0.7	0.0
Housing and community amenities	1.0	1.1	1.0	1.3	1.6	2.1	1.9	1.5	1.1	1.2	0.3
Health	4.4	4.1	4.4	4.5	5.5	5.4	5.0	4.9	5.0	5.0	0.5
Recreation, culture and religion	0.7	0.7	0.8	0.8	1.5	1.3	0.8	1.0	0.8	0.7	0.0
Education	3.6	3.4	3.3	3.7	4.1	3.9	3.4	3.5	3.5	3.9	0.3
Social protection	12.9	12.2	12.3	13.5	13.3	13.0	12.3	12.3	11.9	11.5	-1.4

Sources: Haver and IMF staff calculation.

Table 2. Comparators – Main Fiscal Aggregates (2010-19, in percent of GDP)

Hungary	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Difference (2010-2019)
				(percent of GDP)							(ppts of GDP)
				Economic classification							
Total expenditure	48.8	49.1	49.1	50.1	50.0	50.4	46.8	46.5	45.9	45.6	-3.2
Current spending	43.9	43.1	43.8	44.3	42.6	41.0	41.1	39.8	38.2	37.4	-6.5
Compensation of employees	10.7	10.1	9.9	10.1	10.3	10.4	10.8	10.7	10.4	10.1	-0.6
Goods and services	7.7	7.3	7.3	7.4	7.7	7.8	7.5	7.9	7.9	8.1	0.4
Interest payments	4.1	4.1	4.6	4.5	4.0	3.4	3.1	2.6	2.3	2.2	-1.9
Subsidies	1.1	1.2	2.3	2.1	2.0	1.9	2.0	1.9	1.5	1.5	0.4
Current transfers	2.4	2.6	2.6	3.2	3.1	2.8	3.5	3.0	3.3	3.2	0.8
Social benefits	17.9	17.7	17.2	16.9	15.7	14.6	14.3	13.6	12.8	12.2	-5.7
Capital spending	4.9	6.1	5.2	5.8	7.1	9.3	5.8	6.8	7.5	8.0	3.1
Gross fixed capital formation	3.6	3.3	3.7	4.4	5.3	6.5	3.2	4.5	5.8	6.1	2.4
Capital transfers	1.3	2.7	1.5	1.4	1.8	2.8	2.7	2.3	1.7	2.0	0.7
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Difference (2010-2019)
				(percent of GDP)							(ppts of GDP)
				Functional classification							
Total expenditure	48.8	49.1	49.1	50.1	50.0	50.4	46.8	46.5	45.9	45.6	-3.2
General public services	9.3	8.9	9.5	10.2	9.8	8.9	8.2	7.9	8.2	8.2	-1.1
Defence	1.2	1.1	0.7	0.7	0.6	0.7	0.8	1.1	0.9	1.0	-0.1
Public order and safety	1.8	1.9	1.9	2.0	1.9	2.0	2.3	2.3	2.2	2.1	0.3
Economic affairs	5.8	7.0	7.2	7.6	8.5	9.5	7.3	7.3	7.6	8.0	2.2
Environment protection	0.6	0.7	0.7	0.9	1.2	1.2	0.5	0.4	0.4	0.5	-0.1
Housing and community amenities	0.7	0.8	0.8	0.8	0.9	1.0	0.7	0.7	0.7	0.8	0.1
Health	5.0	5.1	5.1	5.0	4.8	5.1	4.7	4.7	4.6	4.5	-0.4
Recreation, culture and religion	1.8	1.7	1.9	1.8	2.0	2.1	3.3	3.3	3.1	3.0	1.2
Education	5.5	5.0	4.7	4.7	5.2	5.2	5.0	5.1	5.0	4.7	-0.8
Social protection	17.2	16.9	16.6	16.4	15.3	14.6	14.2	13.7	13.1	12.7	-4.5

Romania	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Difference (2010-2019)
				(percent of GDP)							(ppts of GDP)
				Economic classification							
Total expenditure	40.0	39.6	37.5	35.4	35.3	36.1	34.6	33.5	34.8	36.2	-3.8
Current spending	33.3	31.5	31.0	29.8	29.6	29.7	29.4	30.0	30.9	31.7	-1.7
Compensation of employees	9.6	7.9	7.8	8.1	7.9	7.8	9.0	9.8	10.9	11.3	1.7
Goods and services	5.5	5.8	6.0	5.7	6.0	5.9	5.6	5.2	5.1	5.5	0.1
Interest payments	1.5	1.6	1.8	1.8	1.6	1.6	1.5	1.3	1.1	1.2	-0.4
Subsidies	1.0	0.9	0.7	0.5	0.4	0.4	0.3	0.4	0.4	0.4	-0.6
Current transfers	1.9	2.1	2.5	1.9	2.3	2.4	1.4	1.7	1.7	1.5	-0.4
Social benefits	13.9	13.3	12.2	11.7	11.5	11.5	11.5	11.6	11.6	11.8	-2.0
Capital spending	6.6	7.9	6.3	5.6	5.6	6.3	5.2	3.5	3.9	4.4	-2.2
Gross fixed capital formation	5.7	5.5	4.8	4.4	4.3	5.2	3.7	2.6	2.7	3.5	-2.3
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Difference (2010-2019)
				(percent of GDP)							(ppts of GDP)
				Functional classification							
Total expenditure	40.0	39.6	37.5	35.4	35.3	36.1	34.6	33.5	34.8	36.2	-3.8
General public services	4.5	4.9	4.9	4.9	4.7	4.8	4.4	4.2	4.6	4.2	-0.3
Defence	1.5	0.8	0.7	0.7	0.7	0.9	1.7	1.8	1.7	1.7	0.2
Public order and safety	2.4	2.2	2.2	2.2	2.1	2.3	2.0	2.0	2.2	2.2	-0.2
Economic affairs	7.1	7.1	7.2	6.3	6.3	5.9	4.8	4.3	4.2	4.7	-2.4
Environment protection	0.8	0.9	0.8	0.8	0.8	1.0	0.6	0.5	0.7	0.7	0.0
Housing and community amenities	1.3	1.2	1.1	1.2	1.2	1.5	1.2	0.9	0.9	1.1	-0.2
Health	4.1	4.2	3.9	4.0	4.0	4.2	4.0	4.3	4.7	5.0	0.9
Recreation, culture and religion	1.0	1.1	1.2	1.0	1.1	1.0	0.9	1.0	1.0	1.0	0.0
Education	3.3	4.1	3.0	2.8	3.0	3.1	3.3	2.8	3.2	3.6	0.3
Social protection	13.9	13.0	12.4	11.5	11.4	11.5	11.5	11.7	11.6	11.8	-2.1

EU	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Difference (2010-2019)
				(percent of GDP)							(ppts of GDP)
				Economic classification							
Total expenditure	50.5	49.1	49.7	49.6	49.0	48.1	47.3	46.7	46.5	46.5	-4.0
Current spending	44.9	44.2	44.7	44.9	44.5	43.7	43.3	42.5	42.3	42.3	-2.6
Compensation of employees	10.9	10.6	10.6	10.6	10.5	10.3	10.2	10.1	10.1	10.1	-0.8
Goods and services	5.8	5.7	5.7	5.7	5.7	5.6	5.6	5.5	5.5	5.5	-0.3
Interest payments	2.7	2.9	2.9	2.6	2.5	2.2	2.0	1.8	1.7	1.5	-1.1
Subsidies	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.4	1.5	1.5	0.1
Current transfers	2.3	2.2	2.3	2.4	2.3	2.2	2.2	2.1	2.2	2.2	-0.1
Social benefits	21.8	21.5	21.8	22.2	22.1	21.8	21.8	21.5	21.3	21.4	-0.4
Capital spending	5.3	4.6	4.7	4.3	4.1	4.1	3.7	3.9	3.9	3.9	-1.4
Gross fixed capital formation	3.6	3.4	3.1	3.0	3.0	3.0	2.8	2.8	2.9	3.0	-0.6
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Difference (2010-2019)
				(percent of GDP)							(ppts of GDP)
				Functional classification							
Total expenditure	50.5	49.1	49.7	49.6	49.0	48.1	47.3	46.7	46.5	46.5	-4.0
General public services	7.1	7.2	7.4	7.2	7.0	6.6	6.3	6.1	6.0	5.7	-1.3
Defence	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	-0.1
Public order and safety	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	-0.1
Economic affairs	5.5	4.8	4.9	4.6	4.6	4.6	4.3	4.3	4.4	4.4	-1.1
Environment protection	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.8	0.8	0.0
Housing and community amenities	0.8	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.6	0.6	-0.2
Health	7.2	7.1	7.1	7.1	7.1	7.1	7.0	7.0	7.0	7.0	-0.2
Recreation, culture and religion	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.2	1.2	-0.1
Education	5.0	4.9	4.9	4.9	4.9	4.8	4.7	4.7	4.7	4.7	-0.4
Social protection	19.8	19.4	19.8	20.0	19.9	19.7	19.7	19.4	19.2	19.3	-0.5

CESEE	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Difference (2010-2019)
				(percent of GDP)							(ppts of GDP)
				Economic classification							
Total expenditure	43.3	42.2	41.3	41.2	41.7	41.8	39.8	39.2	39.9	40.1	-3.2
Current spending	37.6	36.0	35.8	36.1	35.8	35.6	35.3	34.7	34.8	35.0	-2.6
Compensation of employees	10.2	9.7	9.5	9.7	9.7	9.7	9.9	10.0	10.3	10.6	0.3
Goods and services	6.6	6.4	6.2	6.3	6.3	6.3	6.1	6.0	6.0	6.1	-0.5
Interest payments	1.7	1.8	2.0	1.9	1.8	1.7	1.5	1.3	1.2	1.1	-0.6
Subsidies	1.2	1.2	1.3	1.2	1.2	1.1	1.1	1.1	1.1	1.1	-0.1
Current transfers	2.0	1.9	2.0	2.1	2.2	2.2	2.0	2.0	2.1	1.8	-0.2
Social benefits	15.9	15.1	14.8	14.8	14.7	14.5	14.6	14.3	14.2	14.3	-1.6
Capital spending	5.8	6.4	5.5	5.1	5.8	6.1	4.4	4.5	5.0	5.0	-0.7
Gross fixed capital formation	4.7	4.5	4.3	4.2	4.5	5.2	3.4	3.6	4.2	4.2	-0.4
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Difference (2010-2019)
				(percent of GDP)							(ppts of GDP)
				Functional classification							
Total expenditure	43.3	42.2	41.3	41.2	41.7	41.8	39.8	39.2	39.9	40.1	-3.2
General public services	5.2	5.1	5.4	5.5	5.5	5.3	5.0	4.7	4.7	4.5	-0.6
Defence	1.3	1.1	1.1	1.1	1.1	1.2	1.3	1.4	1.4	1.4	0.1
Public order and safety	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	-0.1
Economic affairs	6.3	6.6	5.9	5.8	6.3	6.2	5.2	5.2	5.6	5.5	-0.8
Environment protection	0.7	0.7	0.8	0.8	0.8	0.8	0.6	0.6	0.6	0.6	0.0
Housing and community amenities	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.8	0.9	-0.1
Health	5.5	5.3	5.3	5.2	5.3	5.5	5.3	5.3	5.4	5.6	0.1
Recreation, culture and religion	1.4	1.4	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.5	0.1
Education	5.0	4.9	4.7	4.7	4.7	4.8	4.5	4.5	4.6	4.7	-0.3
Social protection	14.8	14.0	13.8	13.8	13.5	13.5	13.4	13.2	13.1	13.2	-1.6

Sources: Haver and IMF staff calculation.

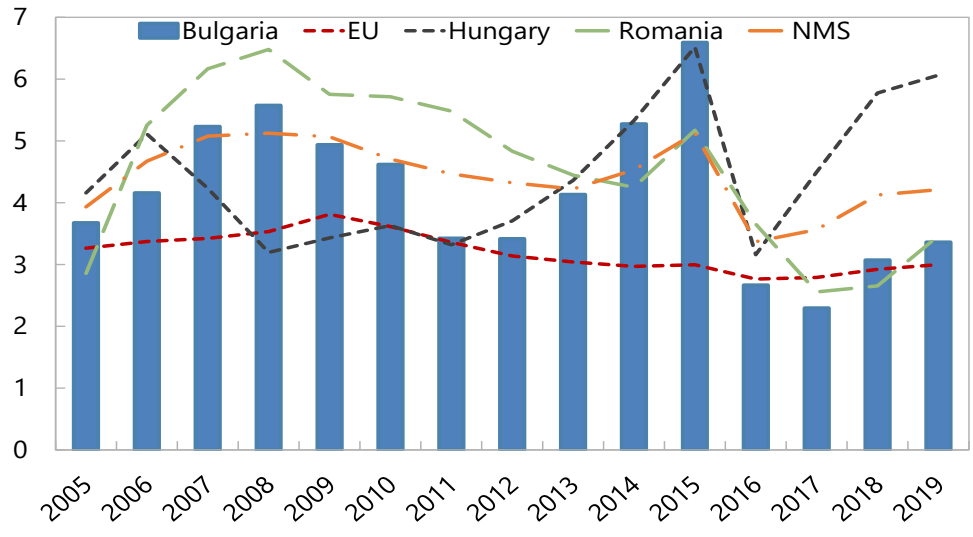
III. Public Investment

A. Recent Developments of Public Investment

Public investment is essential to raise growth and income convergence, when used effectively. Research has shown that increasing the share of public investment in total government spending yields large growth gains (Fournier 2016). Public investment can also be catalyst for inclusive economic growth and development (IMF 2020b). EU funds for investment—particularly the Structural and Cohesion Funds —can stimulate growth and potential output, if they are used effectively, efficiently, and in a timely basis (Paliova and Lybek 2014). Therefore, increasing both the volume and efficiency of public investment can have an important impact on economic growth.[1] Over the medium term, the large volume of planned EU-financed investment raises the importance of strengthening the efficiency of public investment to maximize the investment returns.

The level of Bulgaria's public investment seems broadly comparable to that of other peers, although it has fluctuated over the last decade (Figure 3). During the period between 2005-10, the average public investment in Bulgaria was 4.7 percent of GDP, which was close to the average in NMS (4.7 percent of GDP). This was higher than the average of 3.5 in EU countries and Hungary (4.0 percent of GDP); but lower than the average of 5.4 percent of GDP in Romania. Over the period 2011-19, public investment in Bulgaria declined to 3.8 percent of GDP on average but remained above the EU average (3.0 percent of GDP). However, during the same period, public investment in Bulgaria was slightly lower than the averages of NMS (4.2 percent of GDP), Hungary (4.8 percent of GDP), and Romania (4.1 percent of GDP).

Figure 3. Public Investment (in percent of GDP)

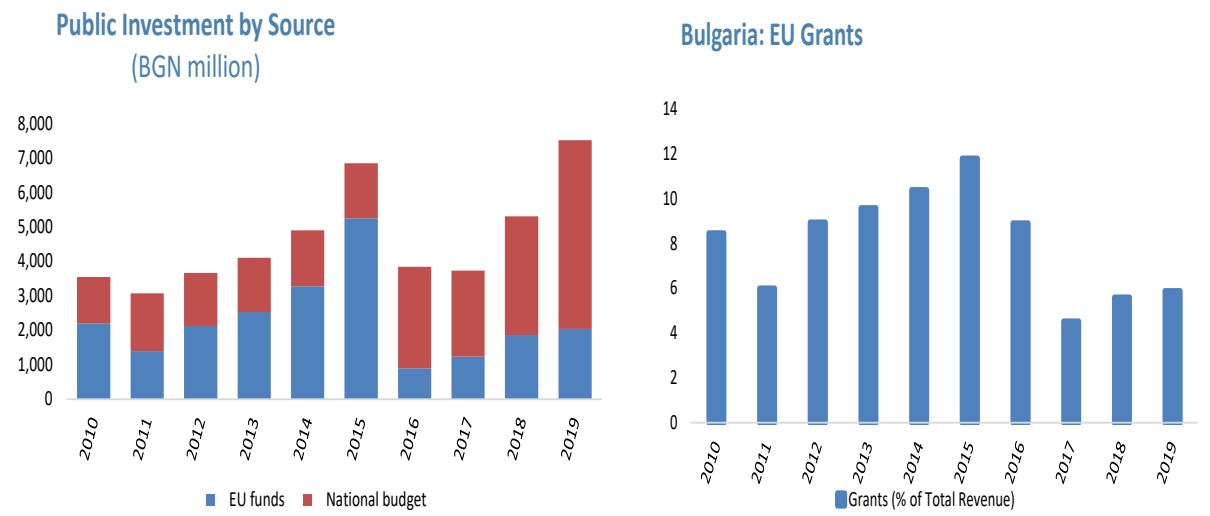


Sources: Eurostat, and Haver Analytics.

[1] Chakraborty and Dabla-Norris (2009) noted that from a policy perspective, the link between public investment and growth depends critically on the quality and efficiency of public capital.

Public investment in Bulgaria is largely driven by EU funded projects. Over the period 2010-19, on average, almost half of the public investment in Bulgaria came from EU funds, with the remainder coming from the national budget (Figure 4). Execution rates depend on EU funding, with the national budget compensating for low absorption of EU funds at the start of the first program cycle. For instance, the national budget accounted for about 70 percent of capital spending in 2016-19—which is during the initial period of the second EU cycle. Similarly, grants received from the EU fluctuates, and are important in driving the overall investment spending.

Figure 4. Public Investment: Sources of Funds



Sources: IMF staff calculation and Bulgaria authorities.

Bulgaria absorbs a large share of EU funds during the EU cycle, but the spending profile is highly uneven throughout the EU programming cycle. The EU programming period is 7 years, and the "N+3" rule gives the country 3 more years to spend the money allocated. Owing to the fact that absorption of the EU funds is often low in the first years of the program period, there is high spending in the later years—including the additional 3 years—in an attempt to utilize all the EU funds. There is therefore a lot of volatility of capital spending, which tends to accelerate in the years after the EU cycle. In the first EU programming period (2007-2013), Bulgaria spent 50 percent of the funds allocated by the EU during the programming period and 45 percent during the additional 3-year period.[2] The sharp spike in investment spending in 2014-15 mainly reflects delayed spending of the first EU programming cycle which was utilized during the second programming cycle. In the 2014-20 programming period, more than 50 percent of the funds allocated by the EU was spent. Bulgaria is in the process of spending the remaining funds and plans to utilize all by the 2023 deadline.

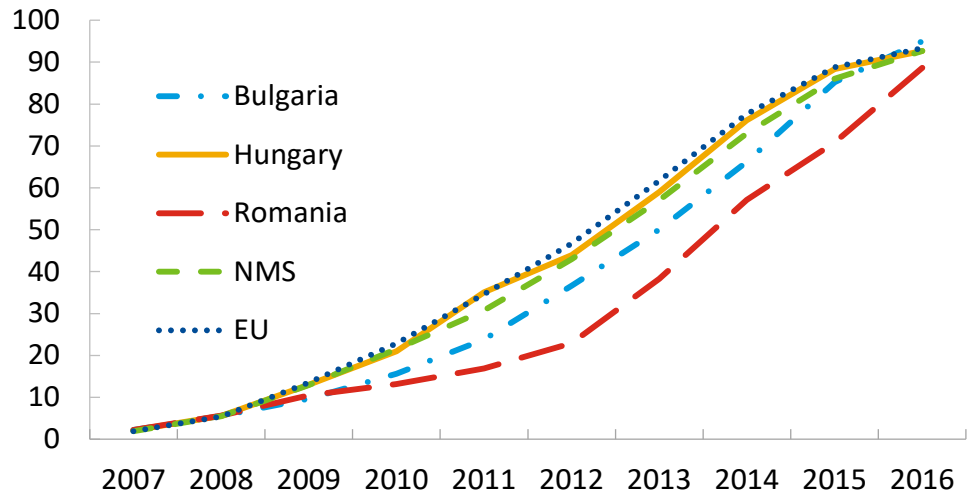
Bulgaria's trend in absorbing EU funds has been similar to comparator countries (Figure 5). The absorption of EU funds is characterized by low absorption at the start of the program cycle and accelerated spending at the end of the program cycle. The delay in capital spending at the start of the EU cycle can be

[2] Bulgaria took additional steps toward improving its absorption of EU funds during the first EU cycle (Paliova and Lybek 2014).

explained by the time it takes to plan and implement the projects, and then to be reimbursed for all eligible expenditures by the European Commission (EC). The absorption of EU funds in Bulgaria was 6 percent in the first three years of the EU cycle (2007-2009) and 36 percent in the last three years of the EU cycle (2011-13). Similarly, the absorption rate in NMS and EU countries was around 7 percent in 2007-2009, before increasing to over 40 percent during 2011-13. In the three years following the EU cycle (2015-17), countries increased capital spending substantially to utilize all the funds in the previous program and avoid receiving lower future allocation. As a result, spending was around 92 percent in EU and NMS, which is similar to the absorption rate in Bulgaria. The absorption of EU funding was similar in Hungary (91 percent) but lower in Romania (83 percent) during 2015-17.

Figure 5. EU Fund Absorption Rates

(Percent)



Source: European Commission.

Bulgaria allocates the largest share of capital spending to economic affairs (Table 3)**.** Although spending on economic affairs decreased from 2.8 percent of GDP in 2010-14 to 1.9 percent of GDP in 2015-19, it still represents the largest share of capital spending in Bulgaria. Similarly, investment spending on economic affairs decreased among CESEE and EU countries over the period but remained the largest share. By contrast, in Hungary, capital spending on economic affairs increased substantially from 2.7 percent of GDP in 2010-14 to 3.2 percent of GDP in 2015-19. The second largest share of capital spending in Bulgaria is allocated to housing and community amenities, which represented 1.2 percent of GDP in 2015-19. This allocation is more than twice the average in CESEE and EU countries. In comparison to peers, capital spending on general public services is the lowest in Bulgaria. In Bulgaria, capital spending on education has remained relatively unchanged between 2010-14 (0.4 percent of GDP) and 2015-19 (0.3 percent of GDP) and is similar to the average in EU, but lower than the average in CESEE.

Table 3. Public Investment by Function (in percent of GDP)

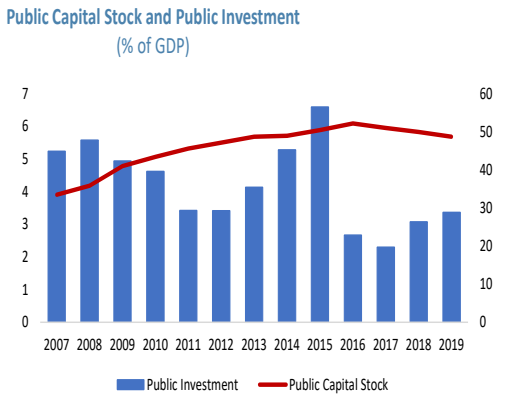
	Bulgaria		Hungary		Romania		CESEE		EU	
	2010-14	2015-19	2010-14	2015-19	2010-14	2015-19	2010-14	2015-19	2010-14	2015-19
Capital spending	5.3	4.7	5.8	7.5	6.4	4.6	5.7	5.0	5.3	4.4
Economic affairs	2.8	1.9	2.7	3.2	3.3	2.0	2.6	2.1	2.4	1.8
Housing and community amenities	0.8	1.2	0.3	0.3	0.7	0.6	0.5	0.4	0.3	0.2
Education	0.4	0.3	0.4	0.4	0.6	0.5	0.6	0.5	0.4	0.4
Health	0.3	0.3	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.2
Defence	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.3	0.2	0.2
General public services	0.2	0.2	0.9	1.1	0.4	0.4	0.6	0.5	0.7	0.7
Public order and safety	0.2	0.2	0.4	1.0	0.3	0.2	0.3	0.4	0.3	0.2
Recreation, culture and religion	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.1
Environment protection	0.2	0.1	0.6	0.4	0.4	0.3	0.4	0.2	0.3	0.2
Social protection	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1

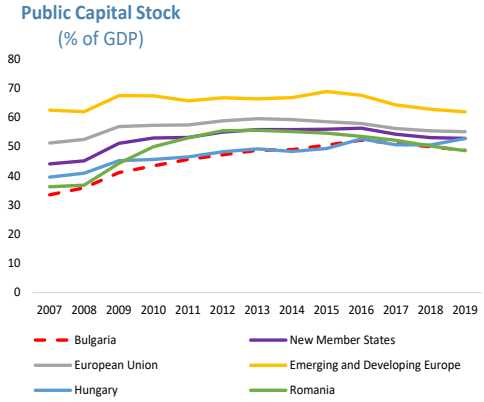
Sources: Haver and IMF staff calculation.

B. Levels of Public Capital Stock

In terms of public capital stock[3] levels, Bulgaria has been catching up with its peers, though it still remains at the lower end. On average, public capital stock in Bulgaria was 46 percent of GDP during 2007-2019, compared to 57 percent of GDP in the EU and 53 percent of GDP in NMS (Figure 6). Public capital stock levels in Romania and Hungary have also been higher than Bulgaria over the period 2007-2019, on average. Despite the increase in capital stock levels, in per capita terms, Bulgaria records the lowest level of public capital stock among NMS (Figure 7).

Figure 6. Public Investment and Public Capital Stock in Bulgaria and Comparator Countries



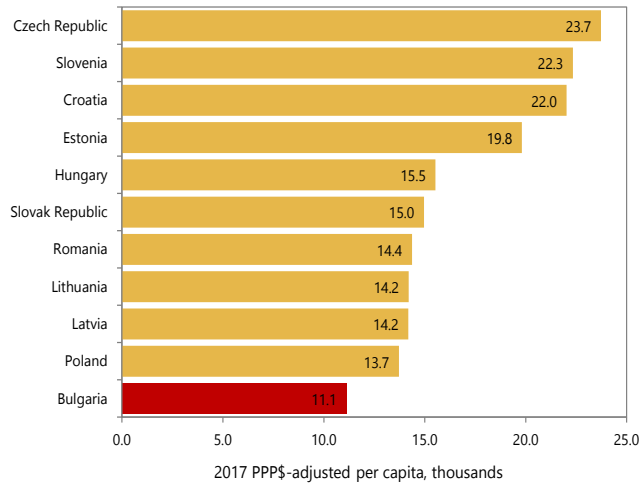


Sources: IMF FAD Template for Investment and Efficiency; Haver Analytics.

[3] The public capital stock is the accumulated value of public investment over time, adjusted for depreciation (which varies by income group and over time), and is the principal input into the production of public infrastructure (IMF, 2015).

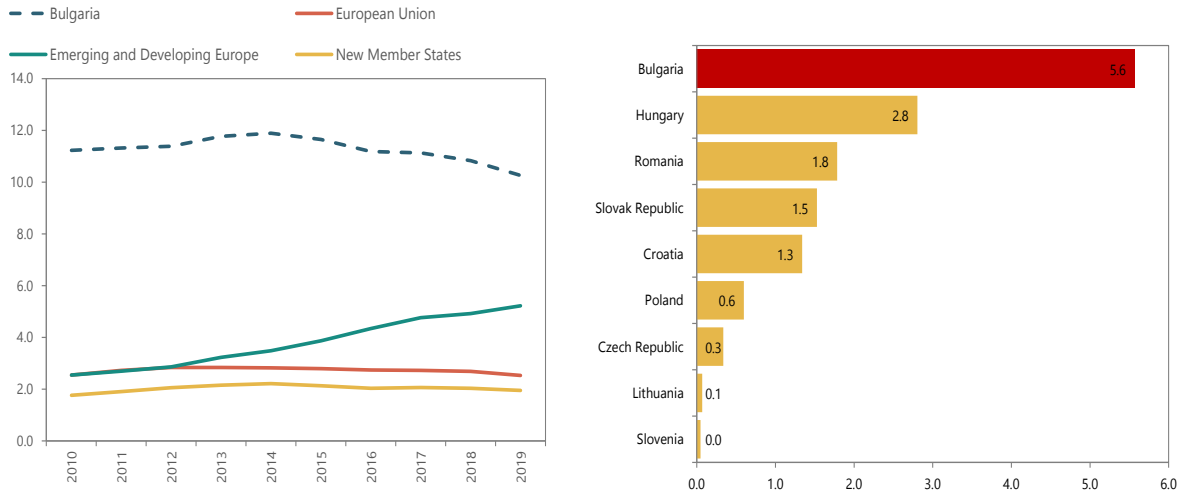
Assets invested through PPP arrangements account for a sizable share of GDP in Bulgaria (Figure 8). The latest data show that PPP capital stock in Bulgaria is 11 percent of public and PPP capital stock on average during 2010-19, compared to 3 percent in EU countries and 2 percent in NMS. Although there has been a decline in Bulgaria's PPP capital stock as a share of GDP since 2016, the levels remain higher than comparator countries. In 2019, Bulgaria's PPP capital stock was 5.6 percent of GDP, compared to 2.8 percent of GDP in Hungary and 1.8 percent of GDP in Romania.

Figure 7. Public Capital Stock per capita in Newer Member States (2017)



Source: IMF FAD Template for Investment and Efficiency.

Figure 8. Public-Private Partnerships: Capital Stock1/



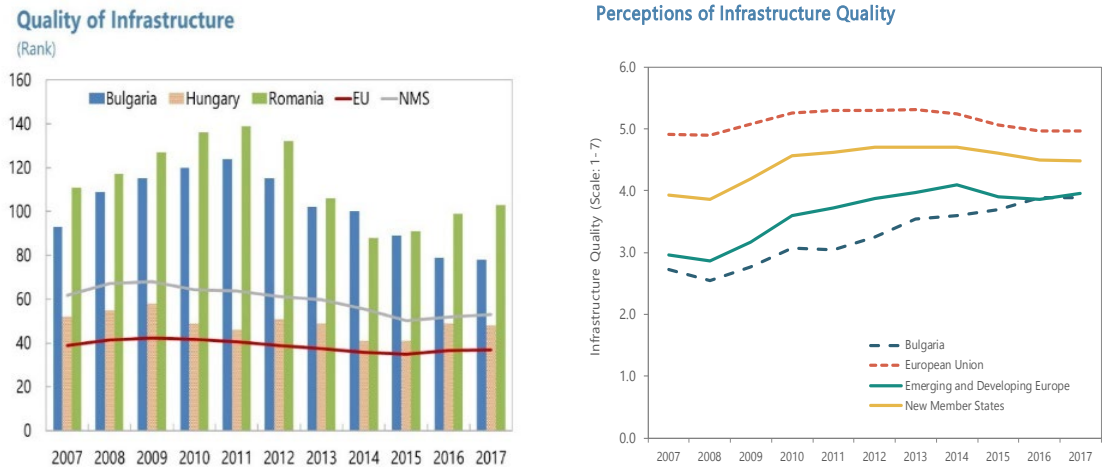
Source: IMF FAD Template for Investment and Efficiency.

1/: Left chart is in percent of Public + PPP capital stock. Right chart shows 2019 data in percent of GDP.

C. Quality of Public Infrastructure

Perceptions of overall infrastructure quality continue to improve, with scope for further improvement. According to the World Economic Forum, the perceived infrastructure rank for Bulgaria has shown notable improvement (Figure 9). The survey shows that Bulgaria's rank increased from 93 in 2007 to 78 in 2017.[4] However, Bulgaria's perceived infrastructure quality remained below the averages of NMS and the EU. Bulgaria is also ranked below NMS and the EU in quality of infrastructure. Improvements in infrastructure could help Bulgaria raise the productivity of human and physical capital—for example, roads to provide access to remote areas making private investment possible (Straub 2008).

Figure 9. Infrastructure Quality



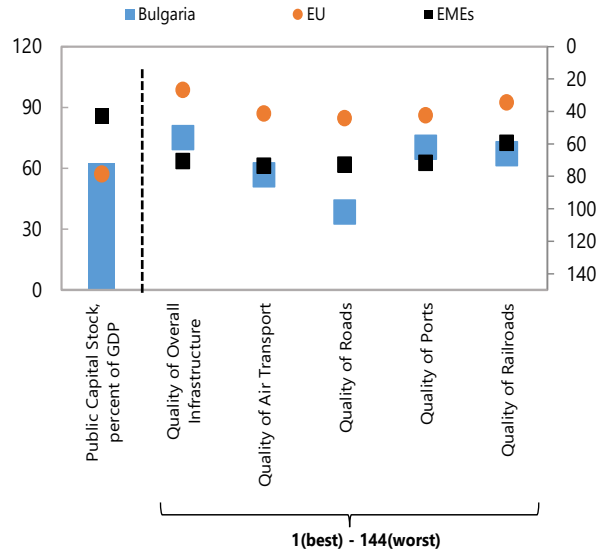
Sources: World Economic Forum, and IMF staff calculation.

Notes: (i) Left chart: shows the country rankings for the quality of overall infrastructure (1 = highest rank). (ii) Right chart: the infrastructure quality scale captures the general state of infrastructure in a country (1 = extremely underdeveloped; 7 = extensive and efficient).

Although there have been improvements in the quality of Bulgaria's infrastructure, the gains remain uneven across sectors (Figures 10 and 11). Infrastructure indicators relating to electricity production and public health outperform comparator countries. However, the quality of infrastructure in education, air transport, roads, ports, and railroads, is below comparators—particularly the EU average.

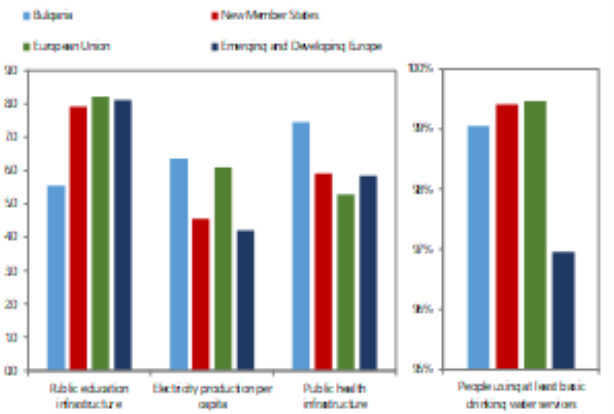
[4] Bulgaria's rank for the quality of infrastructure increased from 93 (out of [131] countries) in 2007, to 78 (out of 137 countries) in 2017. The improvement in the quality of overall infrastructure can be attributed to increased investment in infrastructure over the years.

Figure 10. Capital Stock and Infrastructure Quality
(in percent of GDP and ranking)



Source: IMF FAD Expenditure Assessment Tool.

Figure 11. Infrastructure Access
(most recent year)



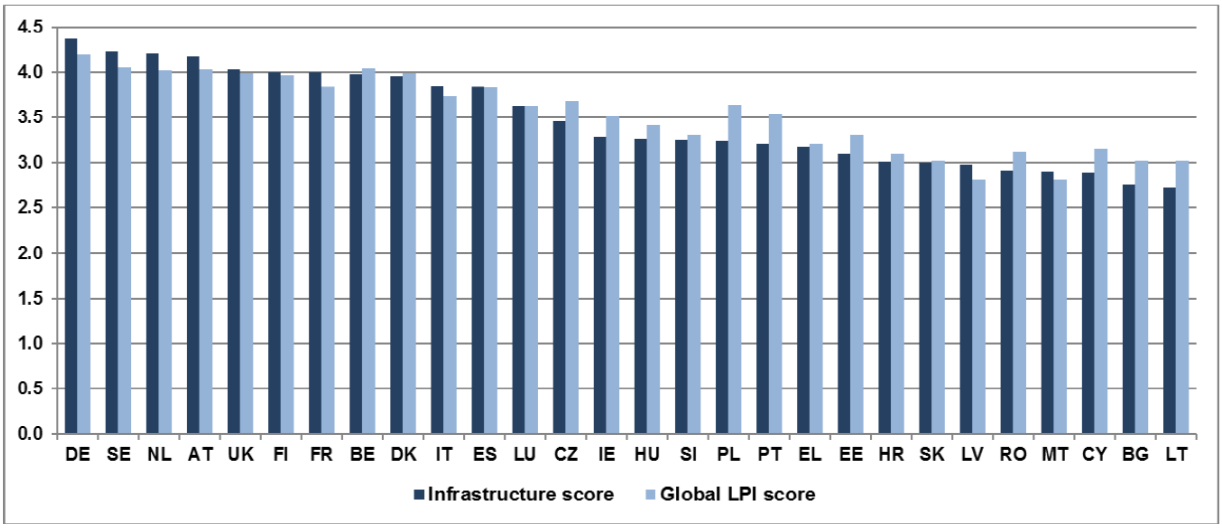
Source: IMF FAD Template for Investment and Efficiency.

Notes: (i) Infrastructure indicators for Bulgaria reflect data over the period 2017-2019. (ii) Left hand axis: Public education infrastructure is measured as secondary teachers per 1,000 persons; electricity production per capita as thousands of KWh per person; and public heath infrastructure as hospital beds per 1,000 persons. (iii) Right axis: Access to treated water is measured as the percent of population.

There is significant scope to improve the quality of Bulgaria's transport-related infrastructure. The risks posed by inadequate road, rail, and port infrastructure will remain a cause for concern, as the transport network in many instances seems both inadequately maintained and insufficient to meet business needs. The road and rail network require substantial investment (OECD 2021). Low transport infrastructure development and poor quality of existing road and railways are barriers for Bulgaria to benefit from being a transit country, as well as for internal integration of regions (European Commission 2019). Bulgaria scored the second lowest among EU countries on the World Bank's logistic performance index[5] (Figure 12), which assesses the quality of trade and transport-related infrastructure (e.g., ports, railroads, roads) in countries. Transport infrastructure needs to be improved to allow Bulgaria to have better connectivity with its neighbors, to increase its attractiveness as a transit zone and to better connect its regions (OECD 2021).

[5] The logistics performance index (LPI) is the weighted average of the country scores on the six key dimensions: efficiency of the clearance process, quality of trade and transport related infrastructure, ease of arranging competitively priced shipments, competence and quality of logistics services, ability to track and trace consignments, and timeliness of shipments in reaching their destination within the scheduled or expected delivery time.

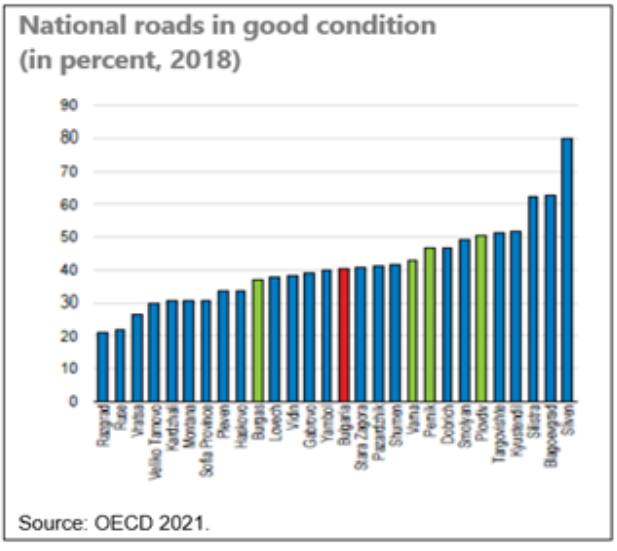
Figure 12. Infrastructure Quality under Logistic Performance Indicator (2018)



Source: European Commission (2019).

Note: The scores demonstrate comparative performance (lowest score to highest score) from 1 to 5.

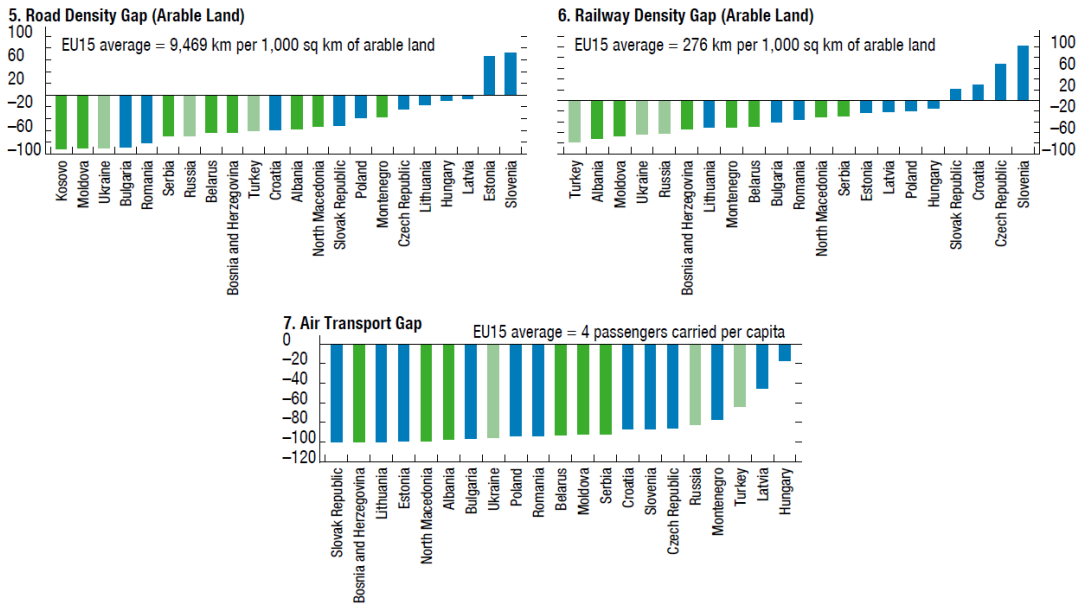
Despite significant investments supported by the European Structural and Investment Funds, the quality of roads in Bulgaria is still poor. Bulgaria has gaps of about 80 percent in roads (Figure 13). And only about 40% of all national roads have good quality surface (text chart). Although Bulgaria's rank for the quality of road infrastructure improved from 129 (out of 144 countries) in 2012-13 to 102 (out of 141 countries) in 2019, there is still substantial room for improvement (World Economic Forum Global Competitiveness Report). The low level of Bulgaria's road network is largely due to the low coverage of rural roads, where 15 percent of the network is unpaved, and 50 percent is in poor condition.[6] Low spending on road maintenance is responsible for poor road infrastructure. In Bulgaria, the share of road infrastructure maintenance expenditure in total investment spending is estimated at 9 percent on average during 2016-2018 (ITF 2021). Thus, in Bulgaria, there is a widespread problem of under-maintenance of the existing road infrastructure which is deteriorating fast (Milatovic and Szczurek 2019). It is important to note that EU infrastructure funds are reserved for construction of new roads and parts of existing roads but are not available for maintenance (OECD 2021).



[6] Roads Infrastructure Agency Strategic Plan (2017).

Maintenance funding in Bulgaria suffers from under-investment. The persistent underbudgeting of maintenance expenditure compared with needs could denote broader budget pressures or prioritization issues. Insufficient spending on maintenance is the main reason for the poor condition of roads and railway infrastructure. Low spending on maintenance is a downside of heavy dependence on external grants under the EU program—which are earmarked for new investment and major overhaul (OECD 2021). It is important for Bulgaria to estimate the cost of maintenance requirements and include maintenance allocations in the annual budget.

Figure 13. Public Infrastructure Gaps: Basic Benchmarking (Percent of EU15 average)



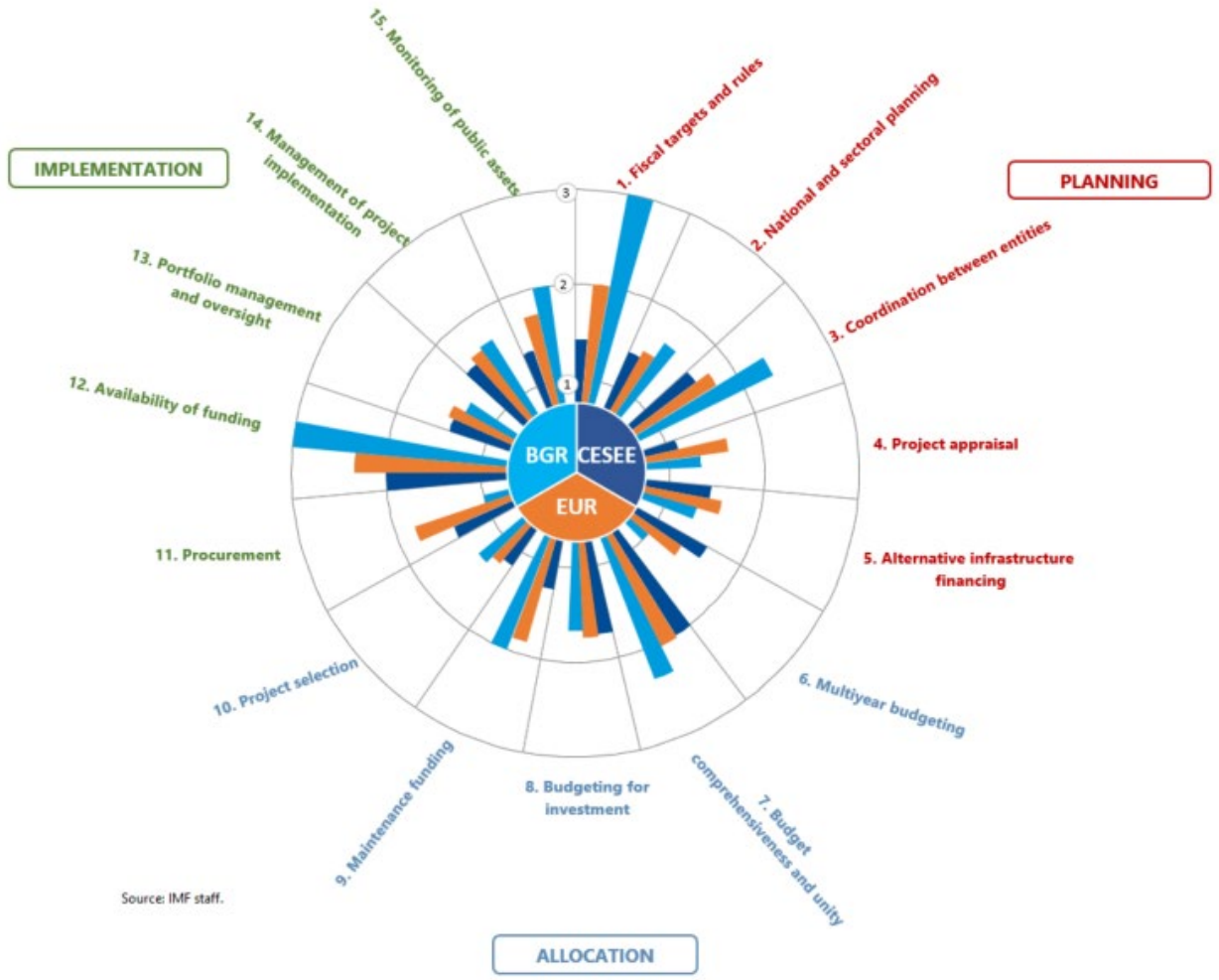
Source: IMF 2020c.

D. Public Investment Management and Efficiency

The strength of Bulgaria's public investment management institutions broadly compares with peers but could be strengthened in some elements. IMF's staff estimates of the Public Investment Management Assessment (PIMA)[7] scores showed a positive assessment of the quality of Bulgaria's public investment institutions in some dimensions of the investment cycle (Figure 14). Even though Bulgaria's scores outperform comparators in the effectiveness of some institutional indicators, such as the ability to drive capital spending and fiscal targets and rules, they remain lower than best international practices. Meanwhile, there are some challenges that limit the impact of public investment and lead to low output quality measures. In particular:(i) investment planning relies on the EU funding cycle and does not adequately inform the budget process; (ii) multiyear capital expenditure forecasts are unreliable and provide limited guidance for investment decisions; (iii) project appraisal and selection are weak, particularly for projects funded by the national budget; (iv) there is no standard methodology for determining maintenance needs and costs; and (v) project portfolio management and oversight are weak.

[7] See also IMF (2018).

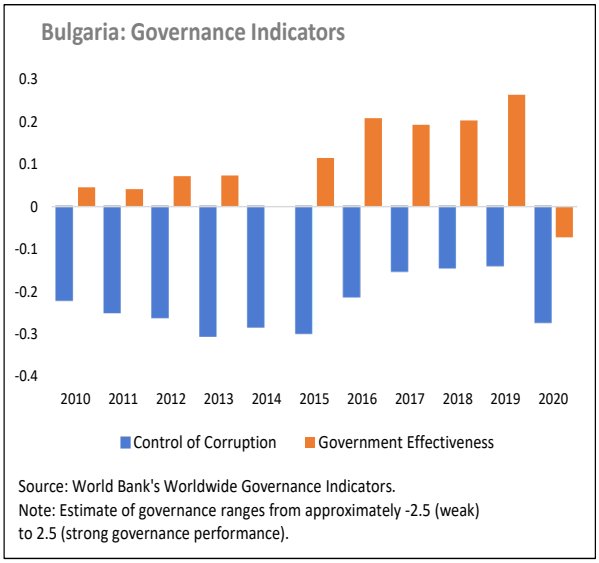
Figure 14. Effectiveness of Public Investment Institutions in Bulgaria, CESEE, and Europe 1/



Source: IMF staff analysis based on PIMA scores (2015-21).

Notes: (i) Three possible scores are assigned to each dimension (1: not met, 2: partially met, 3: fully met) and their average within an institution produces a score for that institution. (ii) EUR and CESEE represent a sub-group of countries for which PIMA assessments were conducted and not the overall set of EU or CESEE countries.

Strengthening governance could help to improve Bulgaria's procurement score, which is below comparators.[8] Bulgaria's procurement process appears to be characterized by delays and it could be affected by irregularities from procurement breaches (Republic of Bulgaria 2015). Although the recent implementation of a nation-wide application of the electronic procurement system marks significant progress, there is further scope for strengthening public procurement. Institutional and governance indicators (control of corruption and government effectiveness) have shown weaknesses in public management (text chart). Over the last decade, the control of corruption index has remained in negative territory, indicating insufficient control of corruption. In procurement, public investment is particularly vulnerable to corruption.[9] Therefore, strengthening the procurement process could help to reduce vulnerabilities to corruption and improve the efficiency of public investment.



Source: World Bank's Worldwide Governance Indicators.
Note: Estimate of governance ranges from approximately -2.5 (weak) to 2.5 (strong governance performance).

There is scope to improve the efficiency and quality of public investment further (Figure 15). Taking the measures of infrastructure output—infrastructure access and quality—and mapping them against the public capital stock shows an investment efficiency frontier (see IMF 2015). The frontier follows the path of the countries that deliver the highest level of infrastructure outputs for the lowest amount of infrastructure investment over time. Bulgaria's efficiency gap at the output level (physical infrastructure [10]) is above other Emerging Market Economies (EMEs) with comparable levels of capital stock per capita. Nonetheless, Bulgaria has a significant distance from the frontier as there is an efficiency gap of 23 percent (right top chart). The assessment of quality of infrastructure [11] (right bottom chart) shows that Bulgaria is below most EMEs and has a quality efficiency gap of 37 percent.

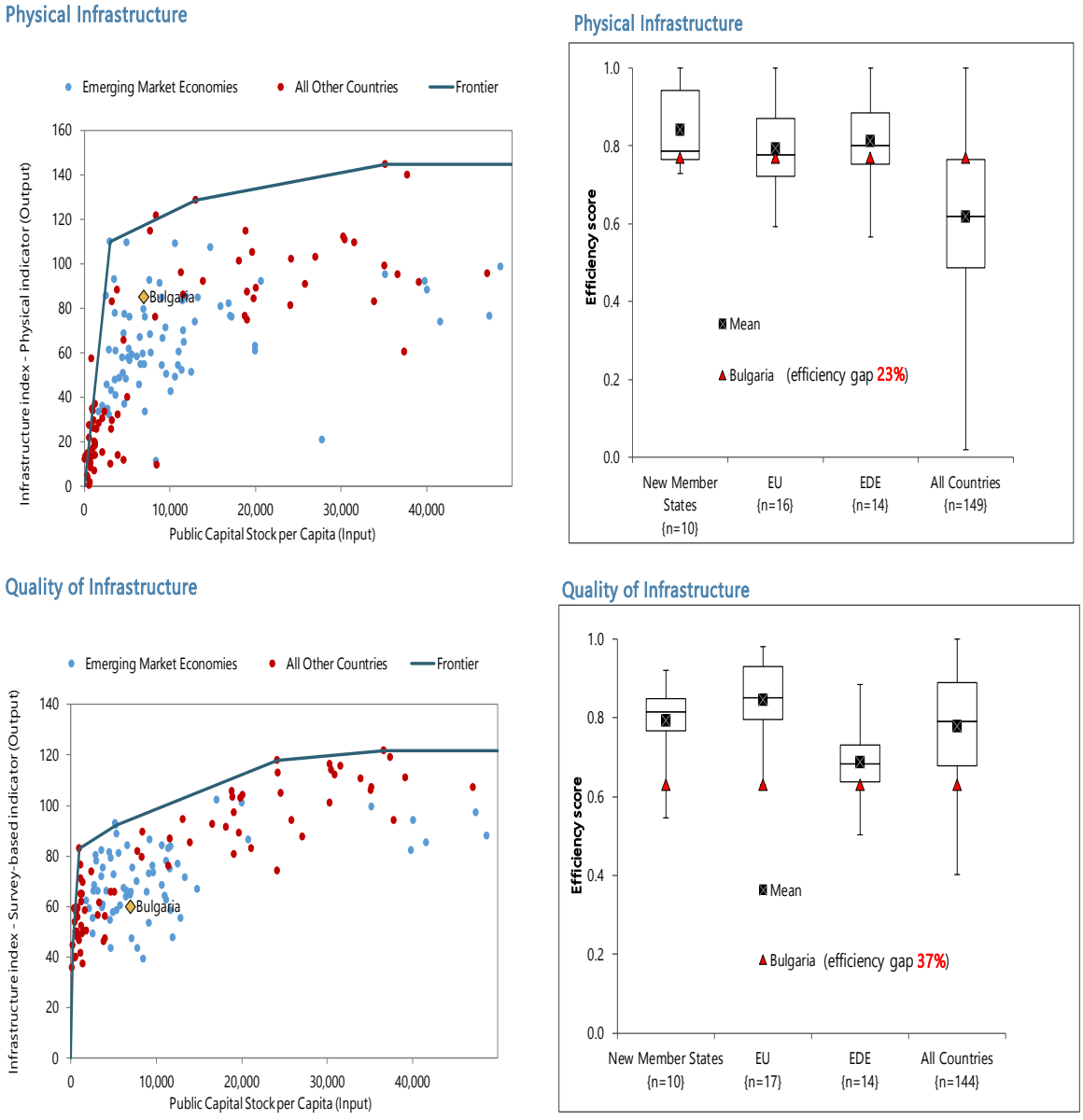
[8] Improving public investment governance and institutions can boost public investment (IMF 2016; IMF 2019b).

[9] As noted in EC (2016b), "Bulgaria struggles with corruption issues in many aspects of the political-economic system of the country, and procurement is a critical area in this respect." See also EC (2016a).

[10] The physical infrastructure indicator combines data on the volume of economic infrastructure (length of road network, electricity production, and access to water) and social infrastructure (number of secondary teachers and hospital beds).

[11] The quality of infrastructure is a survey-based indicator based on the World Economic Forum's survey of business leader's impressions of the quality of key infrastructure services.

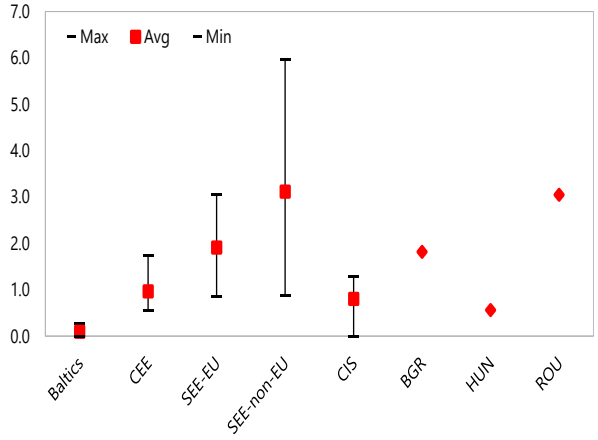
Figure 15. Public Investment - Efficiency Frontier and Efficiency Gap



Sources: IMF staff estimates and IMF FAD Template for Investment and Efficiency.

In sum, the benchmarking exercise shows that Bulgaria's significant investment needs could be supported by improving the efficiency and effectiveness of public investment. Improved efficiency and effectiveness of public spending could help Bulgaria to achieve better outcomes at the same level of spending. The analysis shows that Bulgaria could save about 1.8 percent of GDP by improving the efficiency of public investment (Figure 16). Part of the fiscal saving achieved could be used to increase public investment in areas where quality and efficiency could be improved significantly (transport, rail, and roads). Moreover, infrastructure governance is intrinsically linked to the efficiency of public investment (IMF 2020b). A previous study noted that good governance in public institutions could help Bulgaria to enhance efficiency (IMF 2019b).[12]

Figure 16. Potential Savings from Efficiency Improvement in Public Investment
(In percent of GDP)



Source: IMF staff calculations.

The findings also reveal that there is room for further improvement in public investment management. To fully catch up with others in terms of public infrastructure, it would be important for Bulgaria to efficiently allocate resources for priority areas. Also, projects funded from domestic sources could be monitored in the Unified Management Information System and standard guidelines could be adopted for project appraisals. Developing a project pipeline and selection criteria could be useful to track all major projects. Furthermore, it would be useful to develop common procedures for ex-post reviews of projects and improve the quality of capital spending forecasts. More focus on maintenance would help to improve the quality of infrastructure (which lags behind peers) and the perception of public infrastructure. For instance, central guidelines could be used to estimate maintenance requirements and costings, and the medium-term budget could include forecasts for maintenance spending. Finally, more attention could be paid to strengthening the procurement process to help reduce corruption vulnerabilities. This could be achieved by publishing procurement plans regularly, introducing penalties for frivolous procurement appeals, and ensuring that there is full adherence to all procurement rules.

Further strengthening public investment management would play a key role in increasing efficiency. Notably, strengthening public investment management institutions would help improve the efficiency of public investment, reduce the efficiency gap, and make public investment more productive. Bulgaria is one of the largest beneficiaries of EU support (European Commission 2020b) and of the forthcoming Next Generation EU funds (NGEU). It is therefore important for Bulgaria to strengthen public investment management and efficiency to maximize the investment returns from the large volume of planned EU-financed investment under the NGEU (about 12 percent of 2019 GDP) and the EU 2021–27 multiannual budget. Investment decisions should also be based on robust project selection and management. Furthermore, strengthening investment planning would help improve the effectiveness of public investment and the traditionally low absorption of EU funds in the early years of the program period.

[12] Control of corruption and an independent judicial system are a basis for sound governance in all institutions, including for public investment management.

IV. Social Spending

Social spending accounts for a large part of total government spending.[13] Yet, at about one fifth of Bulgaria's GDP in 2019, it was lower than for all comparators and slightly lower than in 2010 (Table 4).

Table 4. Social Spending (in percent)

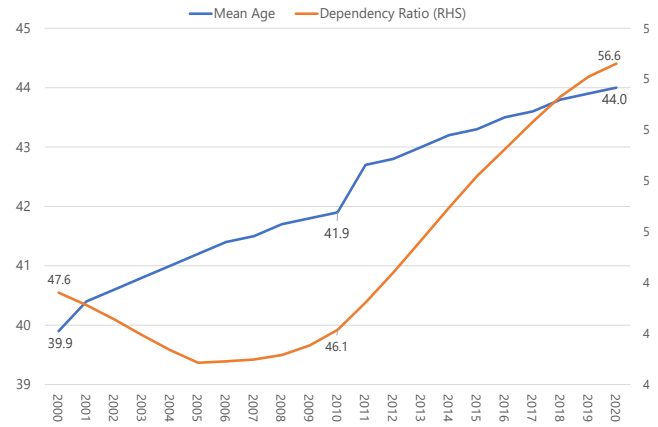
	Percent of GDP			Percent of government Spending		
	2010	2019	Difference	2010	2019	Difference
Bulgaria	21.0	20.4	-0.6	57.7	56.2	-1.5
Romania	21.4	20.5	-0.9	53.5	56.7	3.2
Hungary	27.7	22.0	-5.8	56.7	48.2	-8.5
CEESE	25.3	23.6	-1.7	58.3	58.7	0.3
EU	29.2	27.3	-1.9	60.8	63.4	2.6

Sources: Eurostat and IMF staff calculation.

Social spending has a critical role to play in protecting the population against unexpected shocks, promoting inclusive growth, building human capital, and fostering productivity. Though the three components of social spending (social protection, health, and education) are complementary in many respects (for example, they all contribute, in different ways, to reducing inequalities), this section analyzes the efficiency of each of them separately as they face different challenges and increasing their efficiency requires specific policies.

Increasing the efficiency of social spending would increase the impact of existing spending but could also free resources to face long-term pressures (IMF 2019c). Particularly relevant for Bulgaria is population ageing (Figure 17) and net emigration of working age population, which will put pressure on pension and health systems making, in the absence of reforms, the already relatively high old age poverty and unmet medical needs of elderly increasingly problematic (Republic of Bulgaria 2020). Labor market developments, such as the development of non-standard forms of work[14] and post-pandemic transformations, also call for revising the financing and the design of social protection system, whose weaknesses were highlighted during the Global Financial Crisis and the COVID-19 pandemic. (Chen and others 2018,

Figure 17. Bulgaria - Population Ageing 1/



Sources: NSI (2021a) and World Bank.

1/ Mean age is in years. Dependency ratio is the ratio of dependents—people younger than 15 or older than 64—to the working-age population--those ages 15-64. Data are the proportion of dependents per 100 working-age population.

[13] Social spending covers social protection, education, and health.

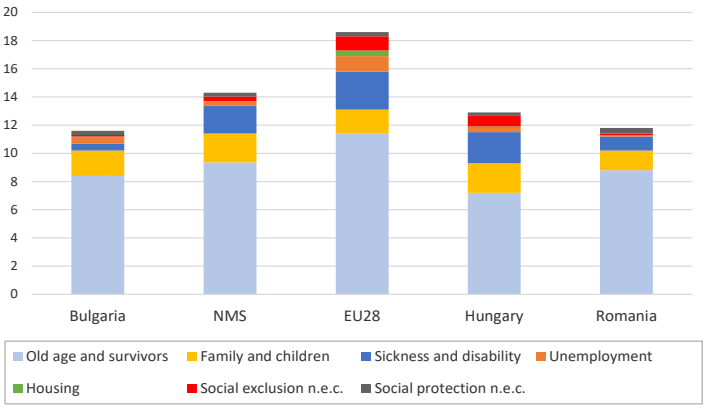
[14] Non-standard jobs include jobs such as self-employment, temporary job, and work through temporary agencies.

OECD 2020, Ando and others 2022). The pandemic, as previous crises, is also likely to accelerate automation and boost the adoption of artificial intelligence (Hershbein and Kahn 2018, Jaimovich and Siu 2020) making the need to improve IT skills and adjust education curricula and training policies more pressing. These developments are challenging but the EU's economic recovery package known as NGEU will support Bulgaria in financing the reforms and investments needed to address them.

A. Social Protection: Alleviating Poverty and Reducing Inequalities

Bulgaria spends relatively little on social protection. Both as a share of GDP and as a share of total public expenditure, Bulgaria spends less on social protection than peers. As a share of GDP, social protection is 7 percentage point lower than in the EU and 2.7 percentage point lower than in NMS. Social protection accounts for 31½ percent of total government spending in Bulgaria compared to 40½ percent in the EU and 37½ percent in NMS. This low level of spending is driven by a more limited coverage of some social risks in Bulgaria than in peers, notably sickness and disability and social exclusion (Figure 18). [15]

Figure 18. Composition of Social Protection Spending
(2019, in percent of GDP)



Sources: Eurostat (COFOG) and IMF staff calculation.

The recent reduction in social protection spending allowed an increase in other spending. Despite its relatively low initial level, Bulgaria's social protection spending declined by 1.4 percent of GDP between 2010 and 2019. This was a more than in the EU or in NMS (though less than in Hungary and Romania). While for comparators the decline in the social protection spending ratio contributing to a reduction in total government spending, in Bulgaria it allowed other types of spending to increase [16] leaving the government-spending-to-GDP ratio in 2019 at its 2010 level (Table 5).

[15] See Tosheva and others (2018) and Tasseva (2016) for a description of the various social protection programs.

[16] The functional classification points to an increase in spending in economic affairs by 1.4 percent of GDP while the economic classification points to a doubling in subsidies and to an increase in compensation of employees (Table 1).

More than for peers, the decline in Bulgaria's social protection spending ratio was structural. Over 85 percent of the decline in the EU's social protection spending ratio in the 2010s was due to a reduction in spending on unemployment benefits (25 percent in NMS). In contrast, in Bulgaria, the reduction in social protection spending ratio is explained by over components (e.g., the reduction in unemployment benefits contributes to only 7 percent of the total reduction in social protection spending – Table 5) driven by policy changes and structural factors such the absence of indexation of social benefits and the pension reform.

Table 5. Change in Social Protection Spending
(2019 vs. 2010, in percent of GDP)

	Bulgaria	EU28	NMS	Hungary	Romania
Social protection	-1.4	-0.7	-1.2	-4.6	-2.0
Sickness and disability	0.3	0.0	-0.5	-1.6	-0.2
Old age and survivors	-1.3	0.0	-0.6	-1.3	-1.6
Family and children	-0.2	-0.2	0.4	-0.5	0.2
Unemployment	-0.1	-0.6	-0.3	-0.5	-0.1
Housing	-0.1	-0.1	-0.1	-0.5	0.0
Social exclusion n.e.c.	0.1	0.3	-0.1	0.0	-0.2
Social protection n.e.c.	0.0	0.0	-0.1	0.0	-0.1
Other Spending	1.4	-3.6	-2.4	1.3	-1.8
Total Spending	0.0	-4.3	-3.6	-3.3	-3.8

Sources: Eurostat (COFOG) and IMF staff calculation.

The absence of automatic indexation of benefits has contributed to the fall in social protection spending. With the exception of pensions (and to some extent the heating allowance),[17] benefits levels are not adjusted by indexation but by discretionary adjustments. Social transfers (notably the guaranteed minimum income that, beyond its role for income support, serves as a basis for the calculation of many other social assistance benefits)[18] were often kept unchanged in nominal terms for several years (Table 6). Hence, as social benefits tend to increase less than wages, they are now low compared to income.[19]

[17] The increase in the heating allowance is determined by the Minister of Labor and Social Policy but is subject to a minimum increase.

[18] Guaranteed minimum income (GMI) are means-tested benefits that play the role of last-resort income support programs aimed at protecting working-age households from poverty. Coady and others (2021) point that "although Bulgaria operates a single, universal GMI scheme incorporating means testing and a system of reference values capturing different household needs, the absence of mechanisms for indexing key policy parameters to economic conditions combined with one-for-one reductions in payments with employment income has led to erosion in coverage and adequacy of the scheme over time […]. Restrictive eligibility criteria, such as stipulations on the number of rooms in a home per household member, also result in large numbers of poor people being inadequately covered by the scheme."

[19] For example, pensions are low compared to wage (Figure 19) and the minimum income benefits represent only 12 percent of median disposable income for a single person without children and 19 percent for a couple with two children compared to 21 and 23 percent in NMS excluding Croatia (OECD 2021)

Table 6. Increase in Selected Social Protection Benefits (in percent, end of period)

			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Real increase (annual average)	
															2014-19	2014-21
Guaranteed minimum income 1/			0	0	0	0	0	0	0	0	15.4	0	0	0	1.7	0.3
Heating Allowance 2/			...	...	...	...	...	0	0.4	0.8	2.5	24.5	6.4	5.6	4.0	3.6
Monthly child allowance 3/																
	Family with one child		...	...	...	...	...	0	5.7	0	8.1	0	0	0	1.5	0.2
	Family with 2 children		...	...	...	...	...	0	70.0	0	5.9	0	0	0	11.2	6.9
Pensions																
	Minimum 4/	without bonus 5/	0	0	6.6	3.4	3.0	1.9	2.5	23.9	3.8	5.7	13.9	48.0	6.0	11.3
		with bonus 5/											36.7	63.3	6.0	15.9
	Average	without bonus 5/	1.3	2.2	0.7	18.3	3.3	4.0	2.4	5.9	3.8	7.3	14.6	25.2	3.5	6.9
		with bonus 5/											26.5	36.0	3.5	9.7
	Maximum	without bonus 5/	0	0	0	10.0	9.1	8.3	0	0	0	31.9	0	25.0	6.2	6.8
		with bonus 5/											4.2	29.6	6.2	8.0
Memorandum item																
	Maximum insurance income		0	0	0	10.0	9.1	8.3	0	0	0	15.4	0	0	3.4	1.5
	Inflation (HCPI)		4.4	2.0	2.8	-0.9	-2.0	-0.9	-0.5	1.8	2.3	3.1	0.0	6.6	...	...
	Average monthly wage		6.4	5.8	6.6	6.0	6.0	6.8	8.0	9.4	9.4	11.7	9.4	11.8	7.8	10.8

Sources: NSSI, Ordinances of the Minister of Labor and Social Affairs, Social Security Budget, and Reports to the State Budget Act, IMF staff calculation.

1/ The guaranteed minimum income also serves as a basis for the calculation of many social assistance benefits.

2/ 2015 refers to winter 21015/16.

3/ Amount of monthly allowance for raising a child until completion of secondary education, but no more than 20 years of age.

4/ For 2021: the minimum old age pension is BGN 300 up to 24 December (20 percent increase compared to end 2020) and BGN 370 from 25 to 31 December (48 percent increase compared to end 2020).

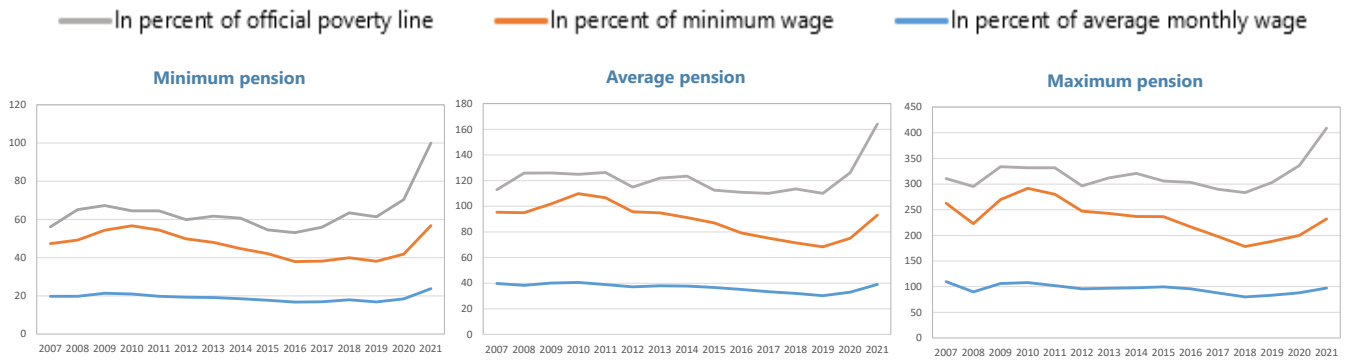
5/ As part of the fiscal measure taken during the COVID-19 pandemic. Lump sum pension supplement for all pensioners amounting to BGN 50 from August 2020 to September 2021 and to BGN 120 in from October to December 2021.

The reduction in old-age spending was another key driver of the decline in social protection spending. Old-age and survivors spending declined from 9.7 percent of GDP in 2010 to 8.4 percent of GDP in 2019 contributing to almost 93 percent of the decline in social protection spending ratio over the period. A rapidly ageing country like Bulgaria faces the challenge of ensuring the financial sustainability of its pension system (Republic of Bulgaria 2020), while providing adequate pensions to avoid old-age poverty. Bulgaria has chosen to ensure financial sustainability through a deindexation of pensions in the early 2010s followed by a pension reform implemented starting in 2016. As a result:

- *Access to pension has been reduced*. Because the pension reform increased the retirement age and the required retirement contribution, the number of pensioners declined by 2.1 percent in Bulgaria between 2016 and 2019 but it increased by about 2 percent in both the EU(27) and NMS. During the period, the share of the population of 65 years and over increased by 0.9 percentage point in Bulgaria and in the EU(27) and by 1.2 percentage point on average in NMS.

- *Pensions are low*. Despite automatic indexation,[20] average pension growth has been lower than wage growth and has become significantly lower than minimum wage.[21] Pensions are also subject to maximum and minimum levels, which are not indexed and were adjusted irregularly, including large ad hoc increases as a fiscal support to households during the COVID-19 pandemic (Table 6 and Figure 19). The minimum pension, which was received by one third of pensioners in 2019,[22] was equivalent to 57 percent of minimum wage in 2010 but only 38 percent in 2019 and is persistently significantly below the poverty line.

Figure 19. Pensions vs. Wages and Poverty Line (end of period)1/



Sources: NSI, NSSI, 2020 budget, Ministry of Labor and Social Policy, and IMF staff calculation.
1/ Includes in 2020 and 2021 the temporary bonuses (see Table 6 for details).

About 10 percent of pensioners continue to work to supplement their pension (Republic of Bulgaria 2020). This reduces the impact of low pensions on old-age poverty, which, nonetheless, is high: 34 percent of pensioners were at risk of poverty in 2019 (about 4 percentage points more than in 2010), compared to 15 percent in the EU(27), 19 percent in NMS, 11 percent in Hungary, and 21½ percent in Romania.

Limited social protection spending leads to a concentration on a two social risks: pensions and children and family (Figure 18*)*. Despite their low level, pensions account for a larger share of social protection spending in Bulgaria than in peers (73 percent of in 2019 compared to 66 percent in NMS and 61 percent in the EU). As most of the remaining resources is allocated to "family and children",[23] few resources (11 percent of social protection spending in 2019 compared to 20 percent in NMS and 30 percent in the EU) are left to protect the population against other social risks. In 2019, the share in GDP dedicated to spending on sickness and disability was 5½ times lower than in the EU and almost 4 times lower than in NMS. Social exclusion spending was 4 times lower than in the EU and 3 times lower than in NMS and Bulgaria relies on EU programs to supplement its limited spending dedicated to the fight against extreme poverty (Box 1).

[20] "Pensions […] shall be updated annually [by …] a percentage equal to the sum of 50 percent of the increase in insurance income and 50 percent of the consumer price index in the previous calendar year" (Social Security Code).

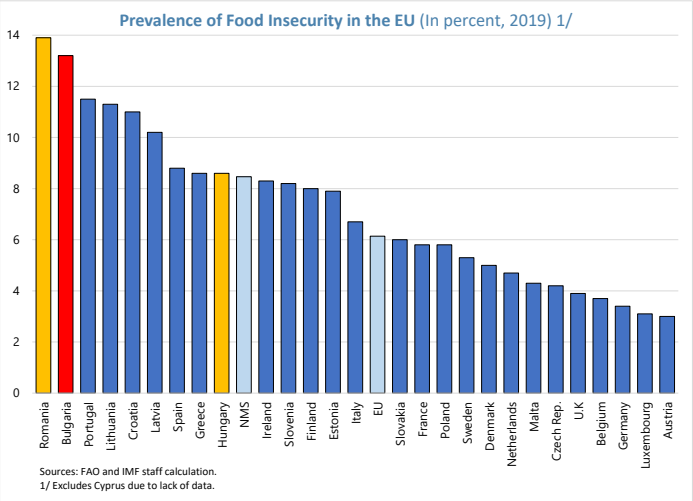
[21] According to the projection of the 2021 ageing report, the "indexation rule will continue to lead to a lower percentage increase in pension than the projected wage growth for the period 2019-70 (Republic of Bulgaria 2020).

[22] Due to the significant pension increase implemented in response to the COVID-19 crisis (Table 6 and Figure 19), the authorities expect this share to exceed 52 percent in 2022.

[23] On average during 2010-19, spending on "family and children" was 0.2 percent of GDP higher each year than in the EU, 0.6 percent of GDP higher than in NMS.

Box 1. Relying on External Support to Fight Extreme Poverty: The Case of Food Aid

The FAO estimates that 3 percent of the Bulgarian population in 2019 was undernourished[1/] and that the prevalence of food insecurity[2/] reached 13.2 percent of the population.



The Fund for European Aid to the Most Deprived (FEAD) offers food assistance for those living in poverty, particularly children, older people, migrants, and marginalized communities such as Roma, and the unemployed (EC, 2018). Each year during 2016-18, this program provided food aid to between 7.2 and 9.5 percent of the Bulgarian population (EC 2020). During the COVID-19 pandemic, the FEAD increased its support by 0.03 percent of GDP (ESF 2021).

1/ Population whose food intake is insufficient to meet dietary energy requirements continuously.

2/ percent of population who lives in households where at least one adult has reported to have been exposed, at times during the year, to low quality diets and might have been forced to also reduce the quantity of food they would normally eat because of a lack of money or other resources.

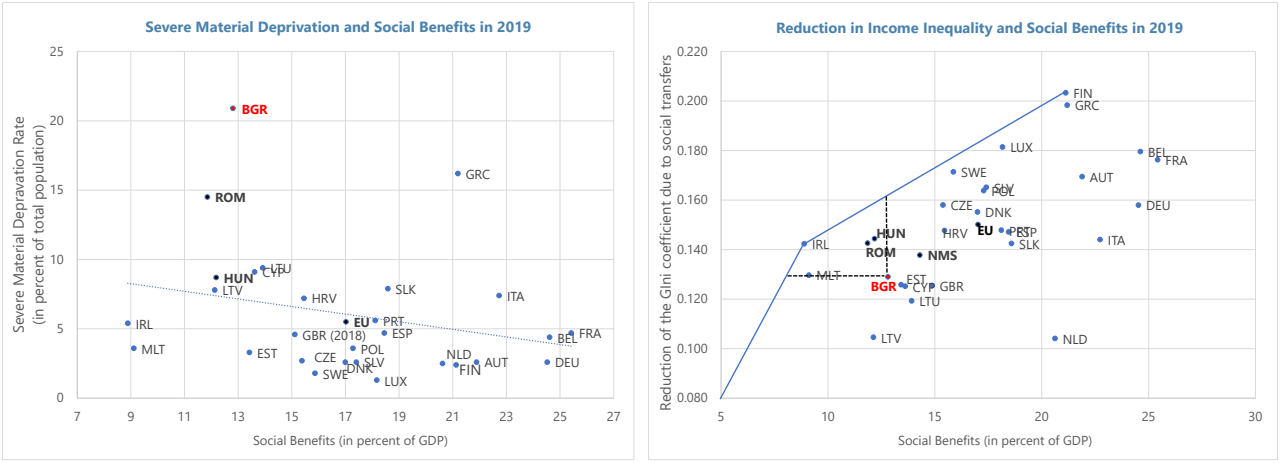
This concentration reduces the impact of social spending on poverty. In a country where wealth levels are relatively low (Hallaert 2020), individuals who experience personal or economic shocks could easily fall into poverty when social protection is limited. This is notably the case of disability: 35 percent of people with disability were suffering from severe material deprivation in 2019 (4 times more than for the EU) or were at risk of poverty (61 percent more than in the EU).

Moreover, allocating limited resources leads to some rationing through stringent eligibility criteria. For example, only 32 percent of the registered unemployed received unemployment benefits (2010–19 average)[24] and, in 2019, 59 percent of unemployed were at risk of poverty (NSI 2021b). As discussed below, a substantial share of poorest households does not benefit from means-tested benefits due to stringent and complex procedures and screening criteria.

[24] As unemployed non-eligible to unemployment benefits have little incentives to register, the share of total unemployed receiving unemployment benefits is smaller.

Concentration on a few risks and rationing reduce the efficiency of social protection spending. Bulgaria has a significantly higher share of the population suffering from severe material deprivation than any of the other EU countries with a similar level of social benefits spending (Figure 20).[25] More than one Bulgarian out of five suffered from severe material deprivation or was at-risk of poverty in 2019. (Figure 21).[26] Reflecting the low level of pensions, the poverty rate was particularly high for the elderly. Suggesting efficiency issues with the means testing of the child allowance (see below), the at-risk-of-poverty rate of children is also high and increased between 2010 and 2019. Furthermore, poverty affects more minority groups than others. In 2019, severe material deprivation affected about 15 percent of the Bulgarian ethnic group but 22 percent of the Turkish ethnic group and 63 percent of the Roma (NSI 2020). Similarly, almost 65 percent of the Roma were at-risk-of- poverty in 2018 compared to 31½ percent for the Turkish ethnic group and less than 17 percent for the Bulgarian ethnic group (OECD 2021).

Figure 20. Efficiency of Social Benefits



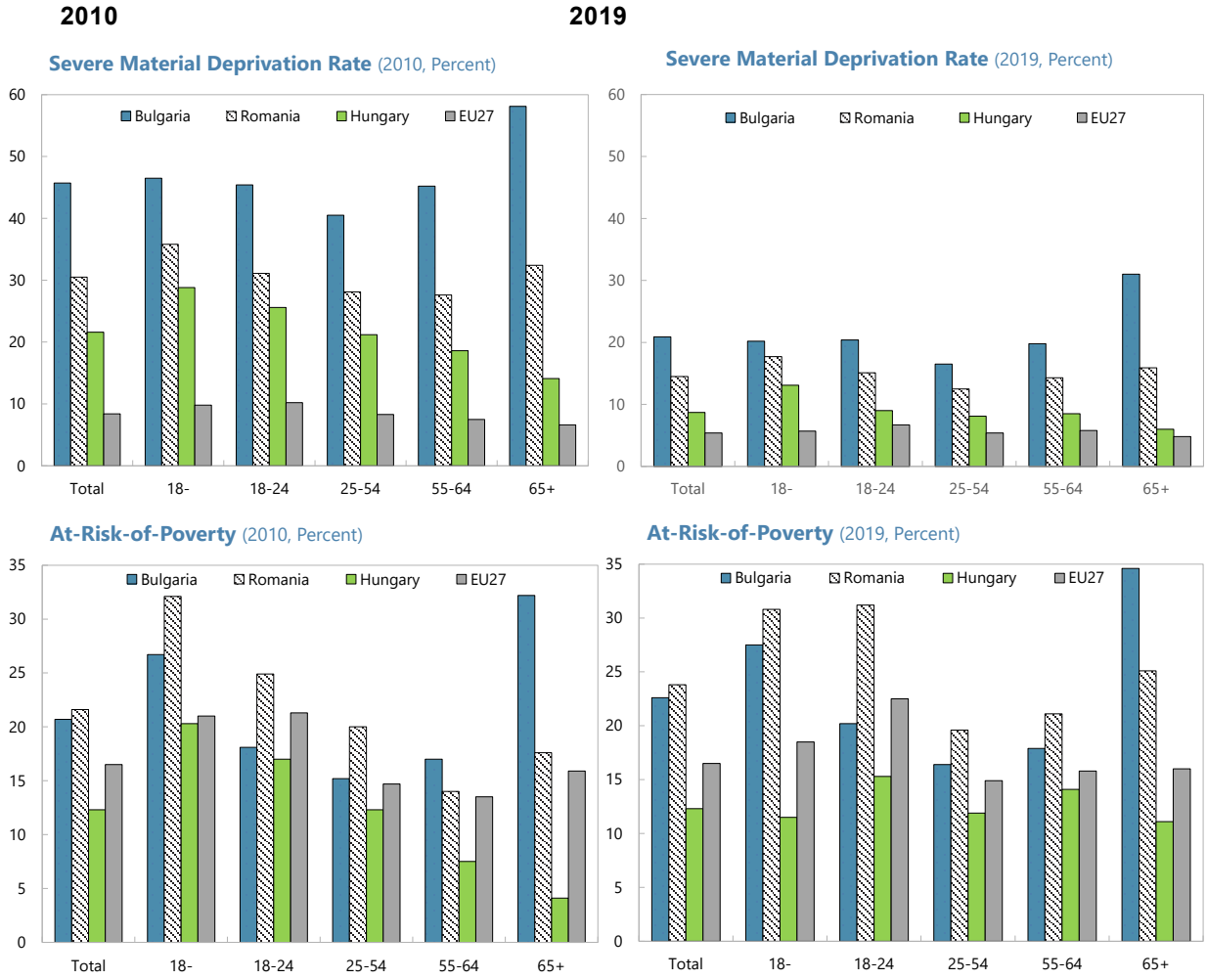
Source: Eurostat.

Note: The GINI coefficient ranges from 0 to 1.

[25] When the at-risk-of-poverty rate is considered, Bulgaria is less of an outlier: the outcome is similar to Latvia and Romania.

[26] For more details on poverty and inequality development, see Hallaert (2020).

Figure 21. Poverty indicators

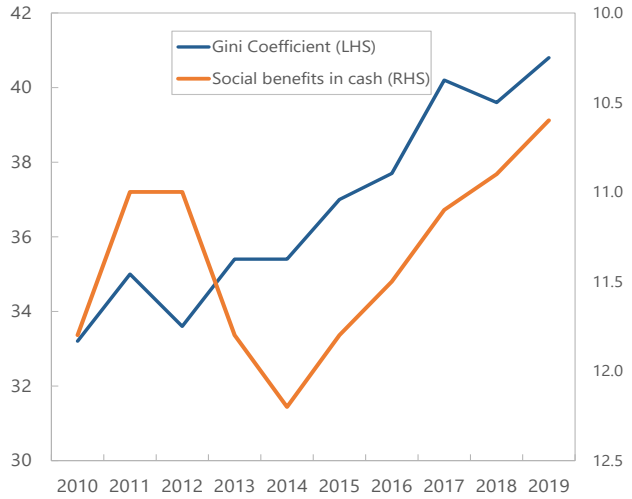


Source: Eurostat.

Note: Cut-off point for the at-risk-of-poverty indicator is 60 percent of median equivalized income after social transfers.

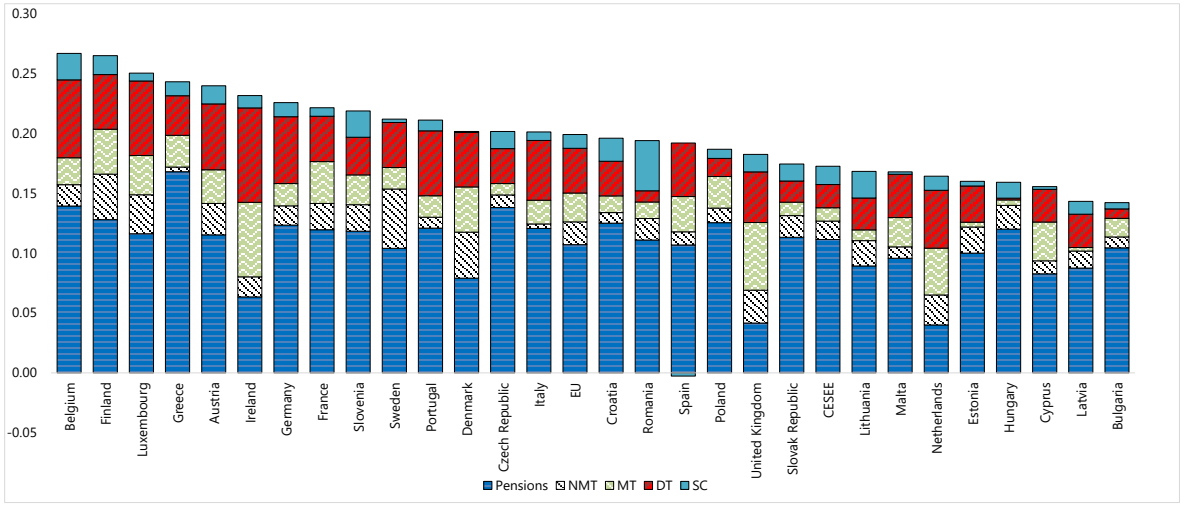
Reversing the cuts and increasing the efficiency of social transfers could reduce income inequalities. As taxes have a limited redistributive role , fiscal redistribution relies mostly on social transfers (Figure 23). The cut in social benefits since 2015 have been strongly associated with the rise in income inequality (Figure 22 where the axis for social benefits is inverted) and Bulgaria has become both the EU country with the lowest fiscal redistribution and, since 2016, the most inequal EU country (Figures 23 and 24). Besides reversing the cuts (as a share of GDP), there are also potentially large efficiency gains. A frontier analysis shows that if Bulgaria was among the best EU performers, its current level of social benefits would result in a 27 percent larger reduction in the GINI coefficient of income (vertical dotted line in Figure 20). Alternatively, Bulgaria would achieve the current reduction in inequality at a lower cost (social benefit spending would be 38 percent lower or about 4.9 percent of GDP lower, horizontal dotted line in Figure 20).[27] These efficiency gains could be largely achieved through administrative reforms and an improvement in their means-testing.

Figure 22. Income Inequality and Social Benefits in Cash (Gini Coefficient of Equivalized Disposable Income from 0 to 100, in percent of GDP)



Source: Eurostat.
Note: the axis for social benefits is inverted.

Figure 23. Fiscal Redistribution by Instrument (2019, Reduction in the Gini Coefficient, Scale: 0 to 1)1/, 2/

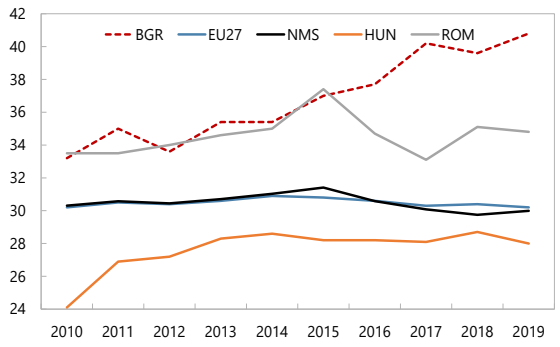


Sources: Euromod and IMF Staff calculation.
1/ SC= Social Contributions; DT=Direct Taxes; MT=Means-tested social spending; NMT=Non-means-tested social spending.
2/ CESEE are NMS excluding Slovenia.

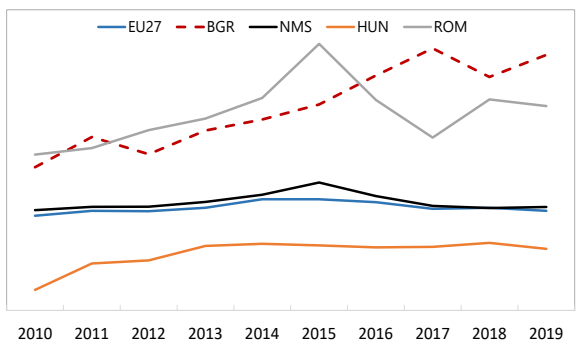
[27] For a review of literature of frontier analyses applied to public spending and its limits, see Ditu and Sicari (2016).

Figure 24. Income Inequality (Equivalized Disposable Income)

Gini Coefficient
(Scale from 0 to 100)



Income Quintile Share Ratio
(S80/S20)



Sources: Eurostat (EU-SILC survey) and IMF staff calculation.

The fragmentation of the social protection system is a source of inefficiencies. With social transfers managed by different agencies, the provision of social services is fragmented. Moreover, the distribution of responsibilities is sometimes unclear and suffers from a lack of coordination. This contributes to an uneven distribution of resources across regions and to an incomplete and weak support of the most vulnerable (World Bank 2019; OECD 2021). Social housing provides an illustration. It is provided by municipalities but due to insufficient resources, one third of municipalities have no social housing at all and social housing accounts for 2.4 percent of the housing stock, well below the needs estimated by the government. Moreover, as the eligibility criteria are set by municipalities, they vary across the territory and tend to exclude the poorest households, Roma, and migrants (European Commission 2019a, Littlewood 2021, OECD 2021). As a result, close to 9 percent of Bulgarians, and 23 percent of the population at risk of poverty, suffered from severe housing deprivation in 2019, [28] more than twice the EU level.

Improving the design of means-testing could also increase the efficiency of social protection spending. Means-tested benefits are an important source of income for the poorest (Tasseva 2016, World Bank 2009) and account for most of the reduction in inequality achieved by non-pension transfers (Figure 23). But, because procedures and screening criteria are complex, [29] disincentives to apply for means-tested benefits, risks to inappropriately disqualify recipients while allowing non-eligible households to receive the benefits; and administrative costs are all high. The case of the child allowance shows how increasing the income-test level and simplifying procedures and eligibility criteria would increase the impact of means-tested benefit on poverty and inequality, while freeing resources for currently underfunded other social risks. The relatively generous income test level for the child allowance contributes to relatively high spending on "family and children" (Figure 18) and explains why only one quarter of recipients are households in the two lowest income deciles. At

[28] Severe housing deprivation rate is the percentage of population living in an overcrowded dwelling, while also exhibiting at least one of the housing-deprivation measures. Housing deprivation is a measure of poor amenities such as a leaking roof, no bath/shower and no indoor toilet, or a dwelling considered too dark.

[29] In assessing the needs of an applicant, the administration considers his/her income but also other factors such as property ownership and the ability of relatives (including in-laws) to provide support.

the same time, due to the complex allocation process, the child allowance does not reach about 30 percent of poor households with children and about 19 percent of recipients are estimated to be non-eligible (Tasseva 2016).[30]

In sum, social protection spending appears too low to have a significant impact on poverty and inequality but could also be made more efficient. Low spending leads to weak outcomes in three important functions of social protection: (i) providing adequate income to those with low (or no) market income such as pensioners and children, (ii) providing adequate protection against various social risks, and (iii) reducing income inequality.[31] Increasing social protection spending and efficiency gains from rationalizing the delivery of social benefits and improving the design of means-testing would allow to broaden the social risks covered by the social protection system and, through a more systematic adjustment of existing benefits, ensure that existing benefits such as minimum pensions are sufficient so that beneficiaries do not fall into poverty. Improving the delivery and quality of social services is part of the new Social Services Act of 2019 entered into force in July 2020. The impact of this act will depend on its implementation notably in ensuring that each municipality has the needed resources and administrative capacity.

B. Education and Health: Building Human Capital and Fostering Inclusive Growth through Pre-Distributive Policies

Public spending on education and health is crucial for achieving income convergence and reducing inequalities. Education and health policies contribute to the accumulation of human capital and, thus, foster innovation[32] and underpin productivity growth, which are all necessary to achieve the "strategic goal of convergence of the Bulgarian economy and income levels with the European average" (Bulgarian Government 2021). For the same reason, education and health policies affect income inequality and social mobility (Blanchard and Rodrik 2021, Bruroni and others 2013, Chancel 2021, Corak 2013, Rodrik and Stantcheva 2021).[33] As the Bulgarian authorities rely on education as the main tool to reduce inequalities (Bulgarian Government 2021, IMF 2021a), efficiency and adequate financing of education policies is particularly important.

The outcome of health and education policies is low compared to peers and is declining. While both the relatively low level of the Human Capital Index and its decline during the past decade are driven by education (Box 2), this section provides evidence that efficiency gains are possible in both the education and the health sectors.

[30] The World Bank (2009) estimates that 60.6 percent of the poor do not receive a child compensation and that 69.9 percent of the individuals receiving a child compensation are not poor.

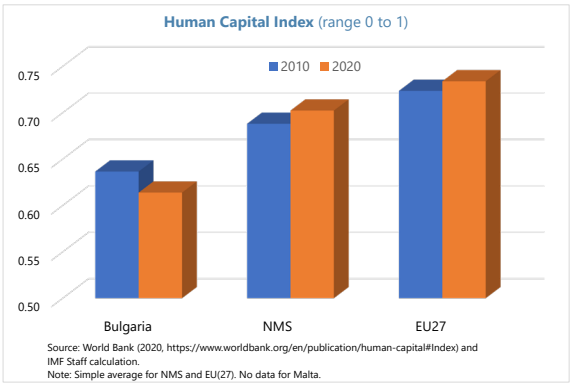
[31] EU countries give different priorities to the various functions of social protection and more generally of the whole tax-benefit system (Hammer and others 2021). These social choices affect the allocation of social protection spending (Figure 18) and both the magnitude of fiscal redistribution and how it is achieved (Figure 23).

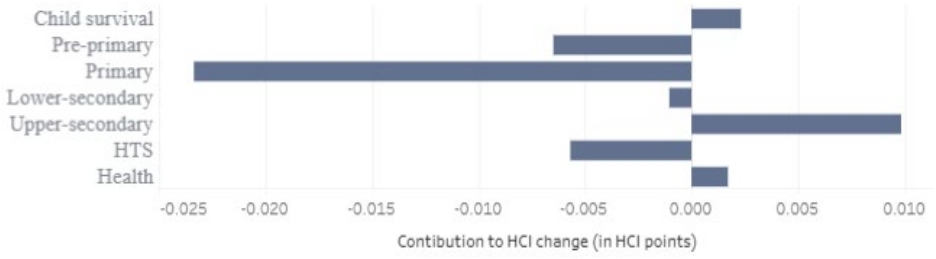
[32] Boosting innovation, where Bulgaria performance persistently lags all other EU members except Romania (European Commission 2021), is a priority for the Bulgarian authorities and an important component for the reform of tertiary education (Bulgarian Government 2014 and 2021). For a review of literature on the link between education and innovation, see Biasi and others (2021).

[33] Economic literature has provided evidence that, in advanced economies, equal access to education and health lifts pre-redistribution incomes for those at the bottom of the distribution (Chancel 2021) contributing to reducing income inequality, which is strongly associated with intergenerational social mobility.

Box. 2. Benchmarking Bulgaria's Human Capital

The World Bank estimates Bulgaria's Human Capital Index at 0.61 in 2020 with little difference between boys (0.60) and girls (0.63). In other terms, it is estimated that a Bulgarian child born in 2020 will enter adulthood (age 18) about 60 percent as productive as a peer who receives a complete education and proper health care. Bulgaria's index is the second lowest in the EU. It has declined over the past decade in contrast to the improvement for the NMS and EU and for the world as a whole. A decomposition of this decline shows that it is driven by a drop in education performance that more than offsets progress in health performance. Child survival (probability of survival to age 5) and improvement in health (proxied by adult survival) both increased while measured learning (Harmonized Test Score - HTS) and enrollment rates decline (except upper-secondary) declined.





Source: World Bank (https://www.worldbank.org/en/publication/human-capital#Index).

i. Education

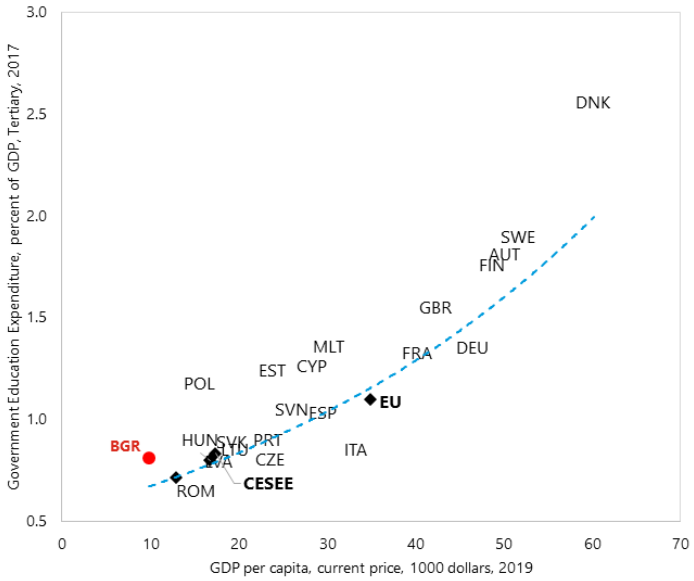
Bulgaria's public spending on education is in line with its income level. Bulgaria's government dedicated in 2019 a smaller share of GDP to education than other EU countries (Table 7), but this was in line with what can be expected when its relatively low GDP per capita is considered and spending on education accounted for a similar share of total public expenditure as the EU (Figure 25).

Table 7. Government Spending on Education (in percent of GDP)

	Estonia	Latvia	Slovenia	Poland	Czech Rep.	Croatia	EU28	Hungary	Lithuania	Slovakia	Bulgaria	Romania
2019	6.0	5.8	5.5	5.0	4.9	4.8	4.7	4.7	4.6	4.2	3.9	3.6
2010	6.5	6.2	6.5	5.5	4.6	4.7	5.2	5.5	5.9	4.6	3.6	3.3

Source: Eurostat (COFOG).

Figure 25. Government Education Expenditure in the EU
(in percent of GDP)

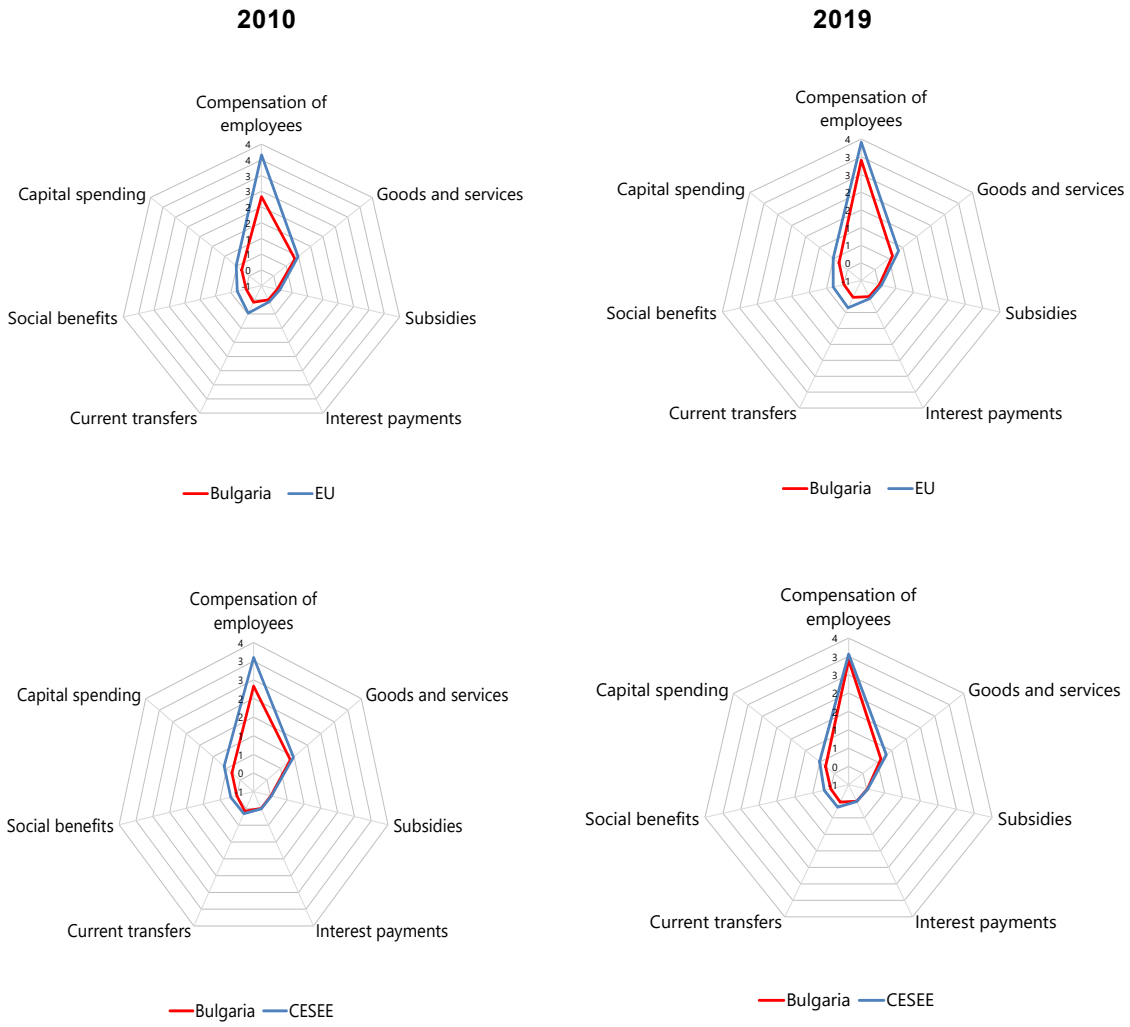


Sources: Haver, World Bank, and IMF Staff calculation.

Over the past decade, government spending on education has come closer to peers in its composition. Bulgaria was spending less than peers for most sub-categories of education in 2010 (Figure 26). Notably, compensation of employees accounted for a markedly smaller share of GDP than in peers. In 2019, with the policy of progressive doubling of teacher wages,[34] the gap has been filled and the composition of education spending has become close to that of regional peers.

[34] After the doubling, teachers' wage are 120 percent of average salary. The 2022 budget will increase them further to 125 percent of average wage.

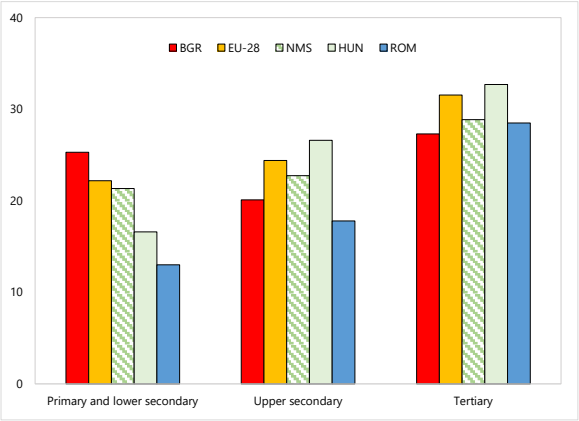
Figure 26. Breakdown of Public Education Spending (in percent of GDP)



Sources: Eurostat, Haver, and IMF staff calculation.

The allocation of public spending is skewed toward basic education. Bulgaria dedicates a higher share of its GDP to primary and lower secondary education than comparators. In contrast, a smaller share of GDP is dedicated to upper secondary and tertiary education (Figure 27) and public spending per student (in PPP$) is relatively at these levels (Figure 28).

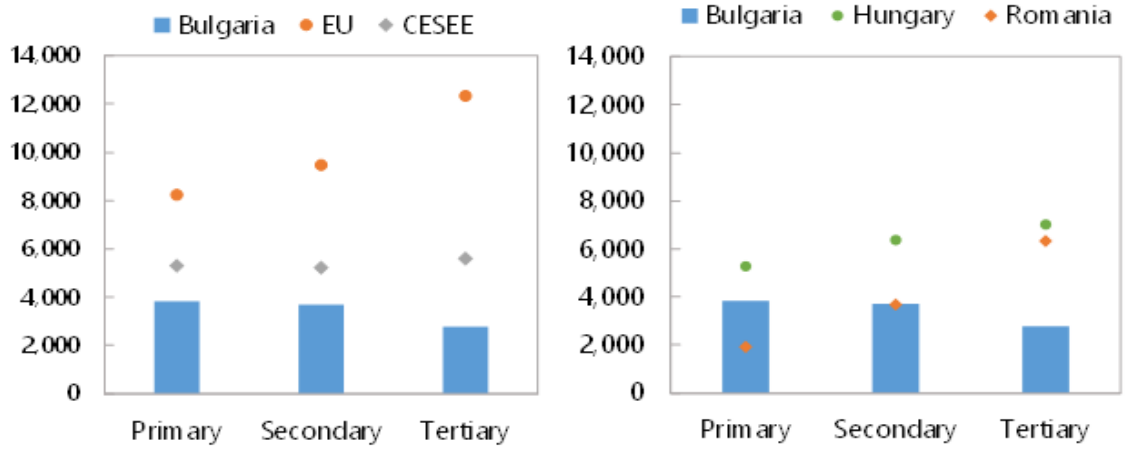
Figure 27. Public Expenditure by Level of Education (2018, Percent of GDP Per Capita)



Sources: Eurostat and IMF staff calculation.

Despite this stronger focus of spending on primary and lower secondary education than in peers, Bulgaria's PISA scores are lower, suggesting potential efficiency gains.[35] The overall PISA score is low in all three areas considered (reading, mathematics, and science) compared to European peers (Figures 29 and 30). A frontier analysis suggests that a more efficient use of existing spending could increase Bulgaria's overall PISA score by 11 percent (Figure 29). The bottom right chart of Figure 29 also suggests that increasing spending per student could increase overall learning outcome. Indeed, up to about 8,000 USD$ PPP per student (a level significantly higher than Bulgaria's spending), higher spending is associated with higher PISA score while, above this level, additional spending does not appear to have a significant impact on PISA score.

Figure 28. Public Spending on Education per Student (PPP$, Latest Value Available)



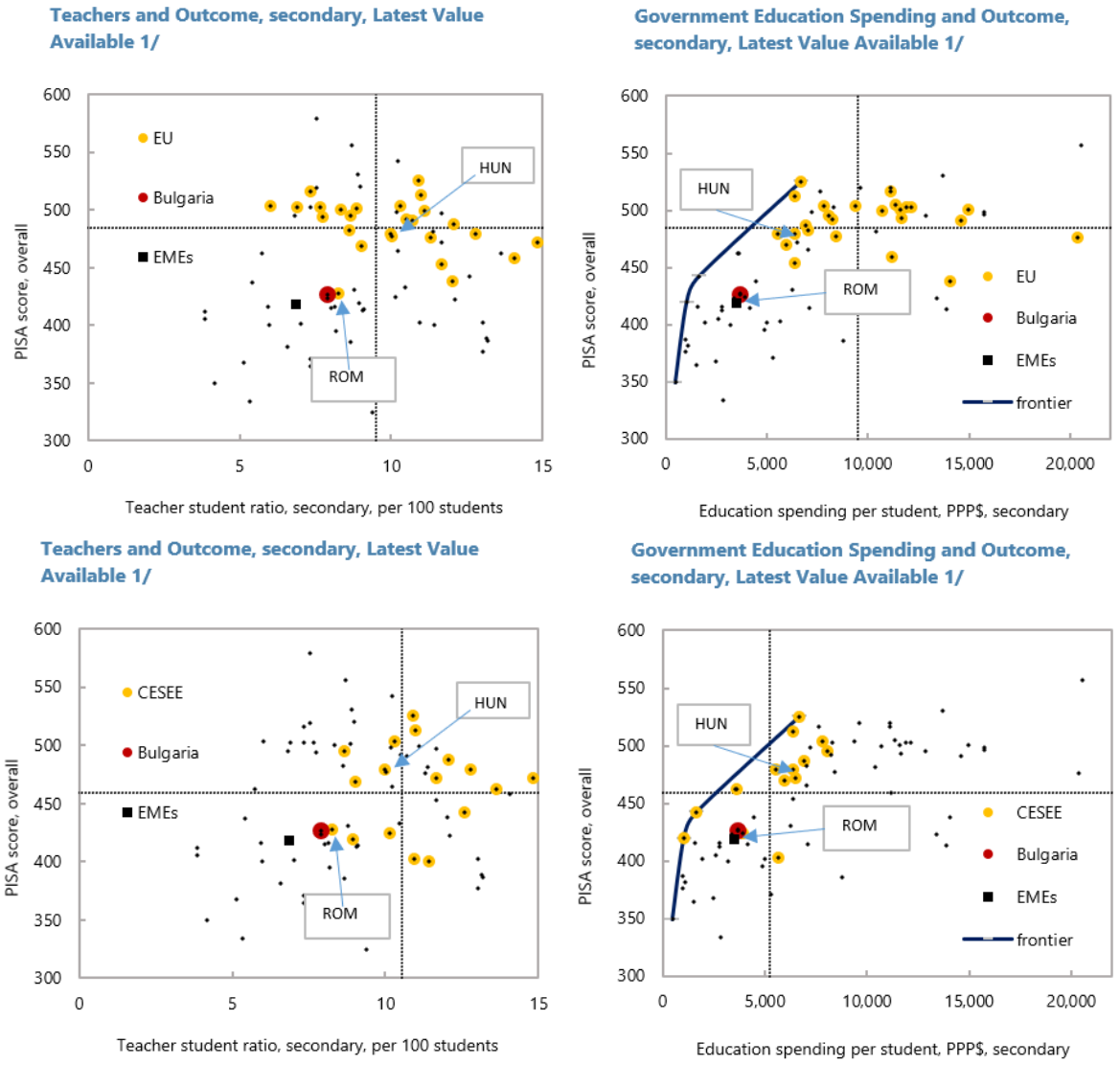
Source: World Bank.

PISA scores declined in recent years. Breaking down the overall PISA score shows that Bulgaria's score is significantly lower than peers in all three areas considered (Figure 30). Moreover, the score declined during the 2010s in reading and science and this decline tends to be larger than in peers. The decline in science between 2015 and 29 was actually "one of the largest observed over this (short) period amongst all PISA participating

[35] PISA provides data on 15-year-olds' performance in reading, mathematics, and sciences. As a result, it can be used as an outcome of spending up to that age (i.e. spending on primary and secondary education).

countries and economies" (OECD 2019a). In contrast, the score in mathematics improved in Bulgaria and more so than for peers. However, it has declined in recent years and is now below its 2012 level.

Figure 29. PISA Score and Resources Dedicated to Secondary Education



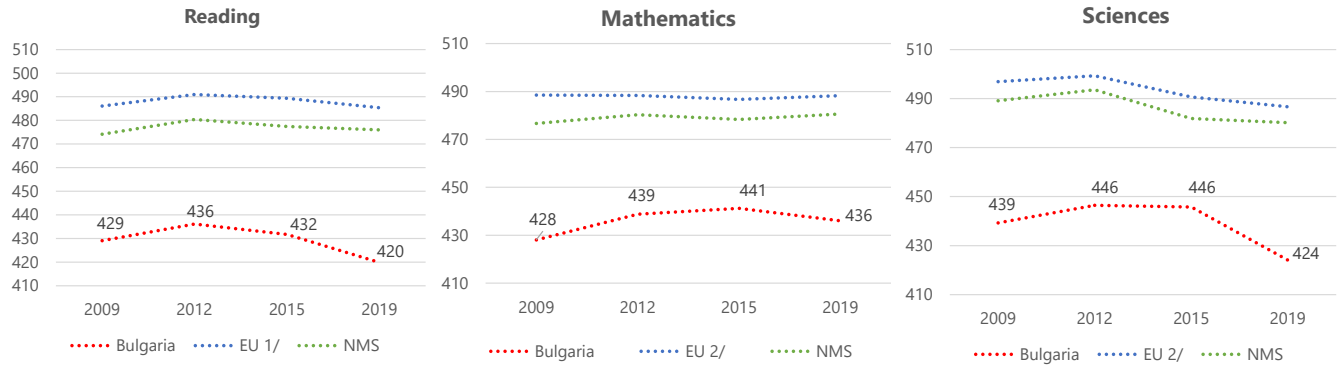
1/ Dash lines are EU average. 2/ Dash lines are CESEE average.

Country groupings:

- CESEE groups the 11 NMS, Albania, Belarus, Bosnia Herzegovina, Kosovo, Macedonia, Serbia, Slovakia, and Ukraine.
- EMDEs are European emerging countries and corresponds to CESEE countries excluding the Czech Republic, Estonia, Latvia, Lithuania, Slovakia, and Slovenia which are advanced economies but include Russia and Turkey.

Sources: IMF FAD Expenditure Assessment Tool, World Bank.

Figure 30. Evolution of Mean PISA Scores (2009-19)



Sources: OECD and IMF staff calculation.
1/ Excludes Austria, Cyprus, Malta, and Spain due to data limitations.
2/ Excludes Austria, Cyprus, and Malta due to data limitations.

The share of low achievers in Bulgaria is relatively high.[36] Compared to the EU and NMS, a smaller share of Bulgarian students performed at the highest levels of proficiency and, more striking, a significant proportion of students do not achieve a minimum level of proficiency (Table 8). The share of low achievers is about twice the share in the EU for any of the three areas and, except in mathematics, this share has increased over the past decade. This situation has important macroeconomic implications as insufficient skills are a drag on productivity, income convergence, and makes it harder for Bulgaria to compete in an increasingly knowledge-based economy.

Table 8. Share of Low and High Achievers 1/

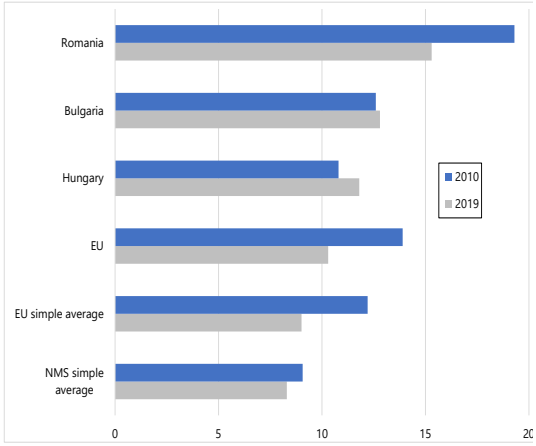
	Share top performer 2018			Change between 2009 and 2018		
	Reading	Mathematics	Science	Reading	Mathematics	Science
Bulgaria	1.7	3.0	1.1	-0.3	0.3	-0.8
EU 2/	7.2	9.5	5.6	1.8	-0.1	-1.0
NMS	5.8	8.7	4.9	2.1	1.1	-0.2
Hungary	5.1	7.1	4.2	-0.2	-1.7	-0.5
Romania	1.0	2.3	0.7	0.5	1.4	0.4
	Share low achievers 2018			Change between 2009 and 2018		
	Reading	Mathematics	Science	Reading	Mathematics	Science
Bulgaria	61.9	60.0	61.5	4.5	-1.9	5.6
EU 2/	30.9	30.8	30.3	0.8	-1.6	2.1
NMS	33.7	33.6	32.6	-0.2	-3.0	2.0
Hungary	33.1	33.4	32.0	4.9	1.1	6.8
Romania	57.0	61.2	59.3	-2.1	-2.5	-0.5

Sources: OECD (PISA) and IMF Staff Calculation
1/ Share for all 15-year-olds including those not in secondary schools.
2/ Due to data availability excludes Austria, Cyprus, and for reading only Spain.

[36] PISA proficiency scale ranges from 1 to 6. Top performers are students reaching the highest levels of proficiency (levels 5 and 6) while low achievers are those that do not reach the minimum level of proficiency (level 2 and above).

Education outcome suffers from a low enrollment rate and high dropout / early leaver rate. At the age of 4, the enrollment rate was 20 percentage point lower than for the EU in 2019. This was also 3 percentage points lower than in 2013, while the enrollment rate increased by over 10 points in the EU.[37,38] At 89 percent, the secondary school enrollment rate was again lower than EU level (and NMS average) by almost 2½ percentage points but has increased from 84 percent in 2010. As in other NMS, the enrollment rate in tertiary education is declining (-19 percent over 2013-19 compared to -22 percent on average in NMS)[39] and the enrollment in tertiary education is insufficient to fill all positions opened (Bulgarian government 2014). Early leavers rate is the fourth highest in the EU (after Malta, Spain, and Romania) and, in contrast to most other EU countries, it has increased in the 2010s (Figure 31). It is particularly high in rural areas and among the Roma ethnic group (EC 2020).

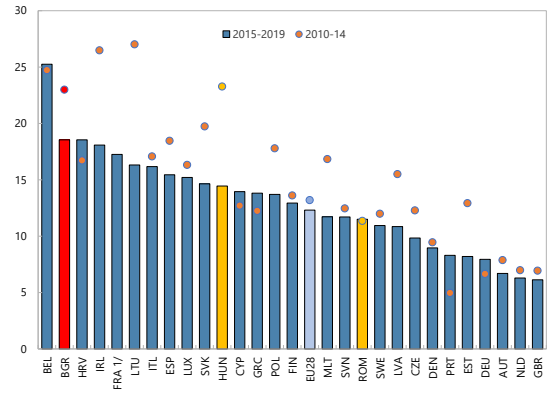
Figure 31. Early Leavers from Education and Training (in percent) **1/**



Sources: Eurostat and IMF staff calculation.
1/ Early leavers from education and training denotes the percentage of the population aged 18 to 24 having attained at most lower secondary education and not being involved in further education or training.

The education system also suffers from an ageing and shortage of qualified teachers. The teaching profession is not attractive because it is not perceived as socially valued (less than 18 percent of teachers believe it is (OECD 2019b)), wages are low, career prospects are limited and, for tertiary professors, research opportunities are lacking in part due to insufficient funding (EC 2021, Bulgarian Government 2014, Ministry of Education and Sciences 2020). Due to this lack of attractivity, only 60 percent of teaching graduates actually enter the profession (EC 2020) and the teacher corps is ageing (about half of the teachers are above 50) and is reported to lack motivation (Ministry of Education and Sciences 2020, EC 2020). Moreover, there is a shortage of teachers with up-to-date knowledge notably in vocational training. Bulgarian teachers report the highest needs of continuing professional development in the EU: 19 percent stress a need in continuing professional development in knowledge of their subject field (EU:

Figure 32. Skill Mismatches in the EU 1/



Sources: Eurostat and IMF staff calculation.
1/ Data for France are not available before 2014.

[37] Public investment in childcare infrastructure is likely to have a larger impact than subsidies or additional child allowances. While there is a shortage of childcare, the net costs paid by parents for full-time center-based childcare, after any benefits designed to reduce the gross childcare fees, is lower in percentage of parents' wage in Bulgaria than on average in the EU for both couples and single parents (OECD 2021).

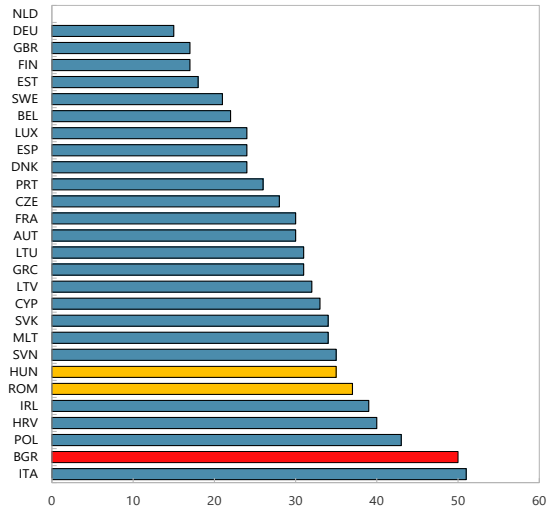
[38] Increasing enrollment in preschool could have long-run positive impact as evidence shows that the provision of public preschool for disadvantaged children leads to a large increase in adult human capital and economic self-sufficiency (e.g., Bailey and others, 2021).

[39] The enrollment rate increased by about 3 percent for the EU.

6 percent)[40], 17 percent in pedagogical competences (EU: 8 percent) and 23 percent in ICT skills (EU: 16 percent) (EC 2020).

The education system does not provide students with adequate skills. All these issues, compounded with outdated curricula notably in vocational training needs (EC 2020, Bulgarian Government 2021), result in a substantial skill mismatch (Figure 32). Though it has declined over the decade, the overall skill mismatch remains the second largest in the EU. The digital skills mismatch is also substantial (Figure 33) and the share of population with at least basic IT skill is low by European standards and has declined in recent years (Table 9) (Miyamoto and Suphaphiphat 2020). To remedy this situation, in 2018-20, the authorities invested "in the construction of secure wireless networks […], in all state and municipal schools. […] In the last 5 years, more than 20,000 personal and laptop computers and tablets have been delivered to institutions in the preschool and school education system" (Ministry of Education 2020). Building infrastructure and providing equipment is necessary to increase students' IT skills but this will only have a significant impact if teachers are trained and the curriculum adjusted. Indeed, the literature has shown that otherwise teachers and students might not use technology even when it is available or use it in suboptimal ways (Biasi and others 2021). The EC (2020) reports evidence of such suboptimal use of ICT in Bulgarian schools.

Figure 33. Digital Skills Gaps in the EU (in percent) 1/



1/ Digital skill gaps are calculated by the difference between the level of ICT skills needed to do the job and percent of individuals who have at least basic or above basic overall digital skills in 2019.

Sources: Cedefop's European Skills and Jobs Survey, 2014; Eurostat; and IMF staff calculation

With little lifelong learning and continuing training, the skill mismatch upon graduation is likely to persist affecting productivity growth and career development prospects. In 2019, only 2 percent of working age population was engaged in lifelong training.[41] This was the second lowest share in the EU (after Romania) and well below EU level (about 11 percent) and NMS average (almost 7 percent). Moreover, Bulgarian firms provide less continuing training than their peers (Figure 34).

Table 9. Basic Digital Skills (Individuals Who Have Basic or Above Basic Overall Digital Skills, in Percent)

	2015	2019	Change
Bulgaria	31	29	-2
EU28	55	58	3
NMS	44	45	0
Hungary	50	49	-1
Romania	26	31	5

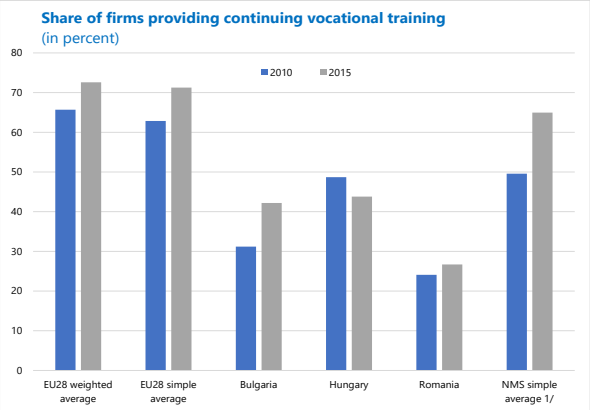
Sources: OECD (PISA) and IMF staff calculation.

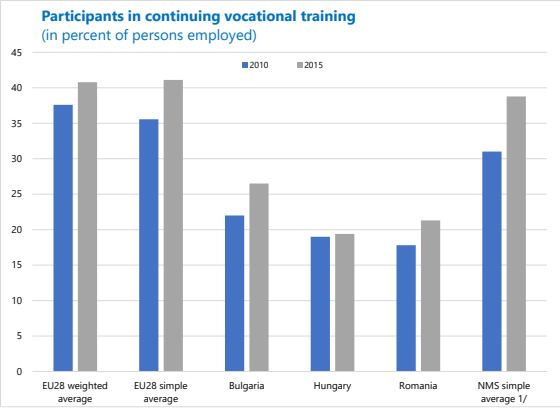
[40] EU data are available for 23 Member States.

[41] Lifelong learning encompasses all purposeful learning activity, whether formal, non-formal or informal, undertaken on an ongoing basis with the aim of improving knowledge, skills, and competence.

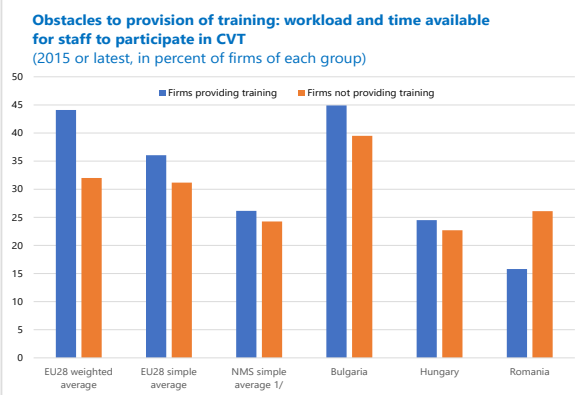
Figure 34. Continuing Training in Bulgaria and in the EU

Despite the substantial skill mismatch, relatively few Bulgarian firms provide continuing training (CVT), though this is more the case than a decade ago. Thus relatively few employees participate in CVT.

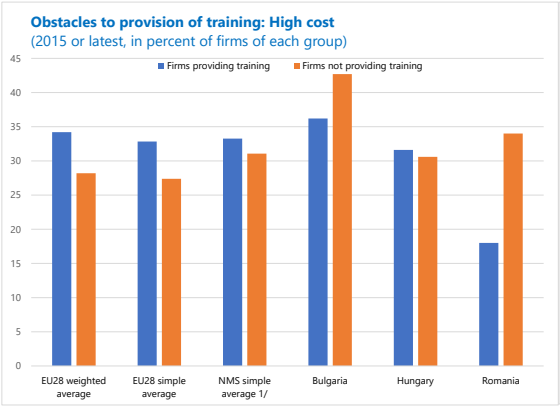


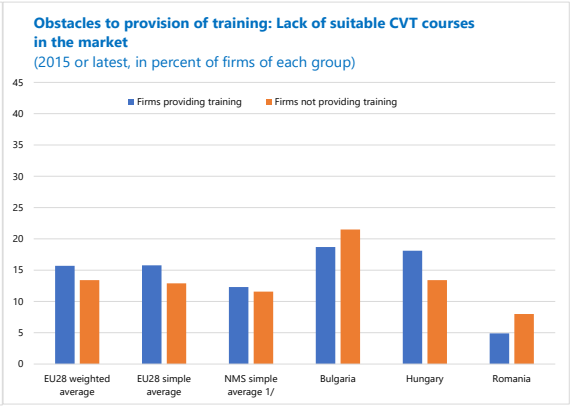


The main reason for the low provision of CVT is that firms do not perceive the need of training or interest in dedicating time to training.



Significantly, the cost and availability of training is more often mentioned as a reason for not providing training in Bulgaria than in peer countries. This suggests that public spending in this area may have beneficial impact.





Sources: Eurostat and IMF staff calculation.

1/ Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia.

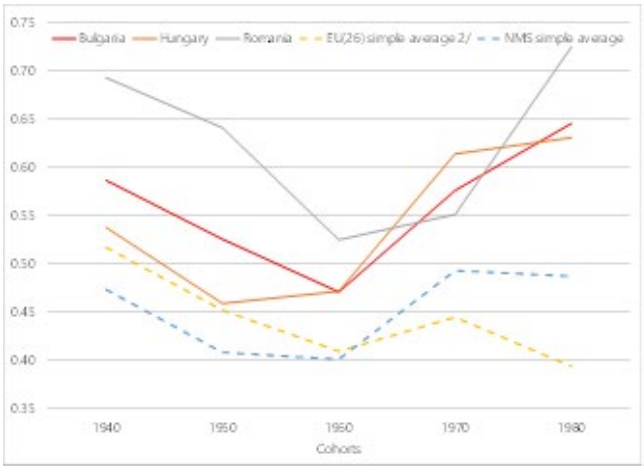
Access to education is the cornerstone of the authorities' strategy to fight inequalities. The Bulgarian authorities "prefer education to fiscal redistribution to better address inequality compared to higher direct social spending or the introduction of progressive taxation" (IMF 2021a). Improving access to education can contribute to a reduction in income inequality (Blanchet and others 2019; Blanchard and Rodrik 2021; IMF 2021b) but fiscal redistribution and education should be considered as complementary rather than as substitutes for two main reasons. First, the causality runs both ways. Increased equality in access to education impacts income inequality but income inequality also tends to reinforce to inequality in access to education. Second, fiscal redistribution has a rapid impact on income distribution, while reducing inequality through education will take time.

However, education is not contributing significantly to a reduction in inequality. Inequalities of opportunities remain substantial as indicated by:

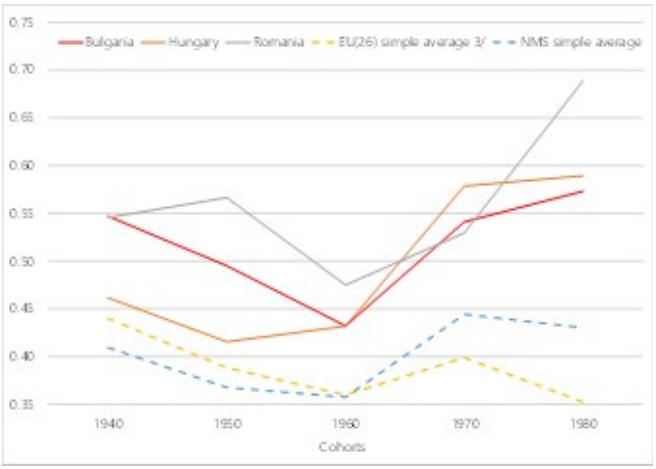
- A high and rising intergenerational persistence in education. Available estimates point that the extent to which the education of parents determines the education of children, which is closely associated to income inequality (Narayan and others 2018, IMF 2021b), is high in Bulgaria (Figure 35). Moreover, it has increased for the younger cohorts.

Figure 35. Intergenerational Persistence in Education 1/

A. World Bank Estimates



B. Equal Chance Estimates



Sources: World Bank GDIM Dataset and World Database on Equality of Opportunity and Social Mobility.

1/ Higher values of the coefficient indicate greater intergenerational persistence and, hence, lower relative mobility.

2/ No data for Luxembourg and Malta.

3/ No data for Luxembourg.

- *A strong influence of socio-economic status in education outcome*. In all countries, the socio-economic status of students is a strong predictor of educational achievement. However, it is more so in Bulgaria than on average in the NMS or in the EU for reading and science but less so for mathematics (OECD 2019). In Bulgaria, socio-economically advantaged students' reading score is 29 percent higher than disadvantaged students' (Table 10). This is much more than the 21 percent difference for the EU and NMS but broadly similar to Hungary (27 percent) and Romania (29 percent). The share of low performers in reading among the disadvantaged students reaches 70 percent. This is the highest share in the EU (EU average: 37.5 percent, NMS average: 41½ percent) and the percentage of students aged

15 who underperform in reading is about 45 percentage points higher for students with a low socio-economic background than for those of a high socio-economic background.

Table 10. Socio-economic Gap in Reading Performance (2018) 1/

	Mean score by socio-economic status				Share of top performers by socio-economic status		
	Bottom quarter of socio-economic status	Top quarter of socio-economic status	Top - Bottom quarter gap	All students	Bottom quarter of socio-economic status	Top quarter of socio-economic status	All students
Bulgaria	369	475	106	420	0.3	5.8	2.3
EU 2/	441	532	91	464	2.5	16.0	7.7
NMS	434	524	90	476	2.0	13.6	6.4
Hungary	420	534	113	476	0.7	14.1	5.7
Romania	375	484	109	428	0.1	4.0	1.4

Sources: OECD (PISA) and IMF staff calculation.

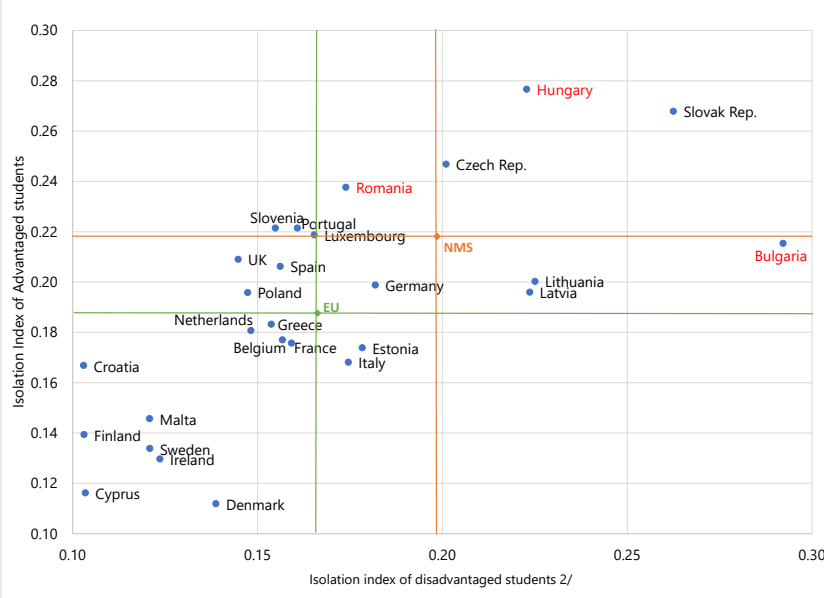
1/ Socio-economic status measured by the PISA index of economic, social, and cultural status (ESCS).

2/ Excludes Spain due to data availability issue.

Fostering the inclusion of disadvantaged students would increase social mobility and the impact of education on inequalities.

A typical disadvantaged student has less than a one-in-eight chance of attending the same school as high achievers. This is the lowest chance in the EU and, actually, the lowest in the 76 countries/economies for which the PISA data are available (OECD 2019). The main cause of this outcome is an unusually large isolation of disadvantaged students (Figure 36). Isolation is more important for minority groups. Indeed, the EC notes that "the share of Roma living in neighborhoods where all or most of their neighbors are of the same ethnic background is the highest (83 percent) among the EU Agency for Fundamental Rights surveyed countries, with direct impact on school segregation" (EC 2020).

Figure 36. Isolation of Advantaged and Disadvantaged Students in the EU (2018) 1/, 2/



Sources: OECD (PISA) and IMF staff calculation.

1/ A disadvantaged student is a student in the bottom quarter of the ESCS in his or her own country. An advantaged student is a student in the top quarter of the ESCS in his or her own country.

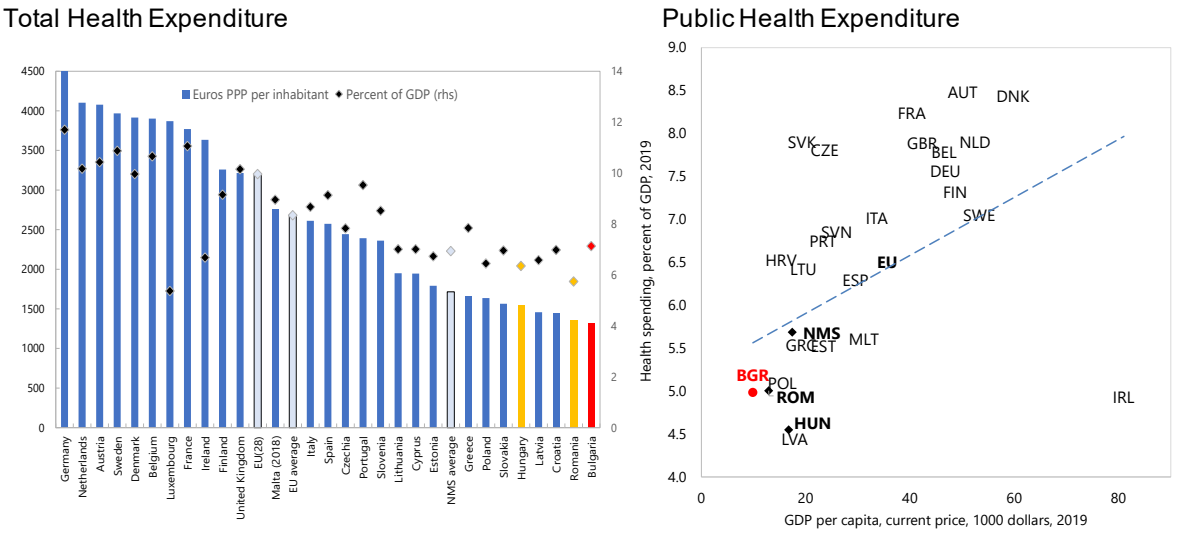
2/ The isolation index measures whether students of type (a) are more concentrated in some schools. It ranges from 0 to 1, with 0 corresponding to no isolation and 1 to full isolation.

In sum, increasing the efficiency of public spending on education and harnessing the potential of education to reduce inequalities require multi-pronged reforms. The need for "comprehensive reforms" of the education system is acknowledged by the authorities (Bulgarian government 2014 and 2021, Bulgarian Ministry of Education and Science 2020). The analysis presented here suggests that reforms should focus on (i) additional funding for research in tertiary education to boost attractiveness and stimulate innovation as well as for financial support for disadvantaged students to reduce the cost of education and the early leavers and dropout ratios, (ii) developing lifelong learning and continuing training, (iii) updating the curricula to reduce skill-mismatches and increase digital skills, (iv) improving teachers' motivation and career prospects, and (vi) fostering greater inclusion of disadvantaged students.

ii Health

Health care expenditure is low in Bulgaria due to limited public spending. Per inhabitant and in PPP terms, total health care expenditure was the lowest in the EU in 2019. This is largely due to limited public spending. Social protection dedicated to sickness and disability accounted for 0.5 percent of GDP (a quarter of the level in other NMS and one-fifth of the EU level) and public spending on health, at 5 percent of GDP, is lower than EU and NMS averages though comparable with countries with a similar GDP per capita (Figure 37).

Figure 37. Health Expenditure in the EU



Sources: Eurostat, Haver, and IMF staff calculation.

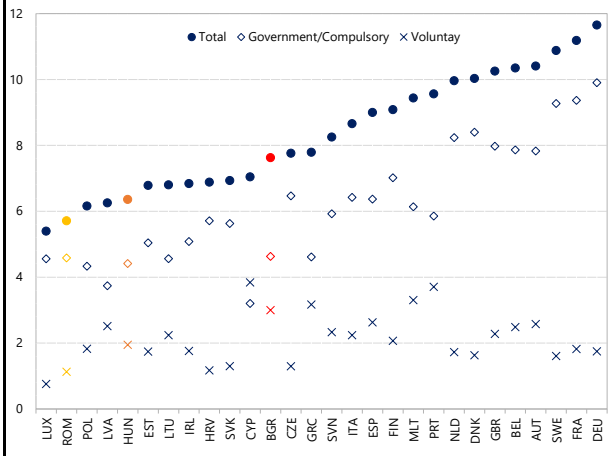
Private financing accounts for a larger share of total health care expenditure than in comparators. It amounts to 3 percent of GDP or almost 40 percent of current healthcare spending. This is one of the highest shares in the EU though it is slightly lower than in 2010 when private spending accounted to 3.2 percent of GDP or slightly less than 45 percent of the current healthcare spending (Figure 38).

Therefore, health spending represents a larger share of households spending than in peers. Due to limited coverage of the benefit package (notably long-term care and most dental care are excluded), co-payments (notably of medicines), and informal payments, the out-of-pocket accounts for the bulk of private financing of health care and for 6.3 percent of final household consumption in the mid-2010s (excluding long-

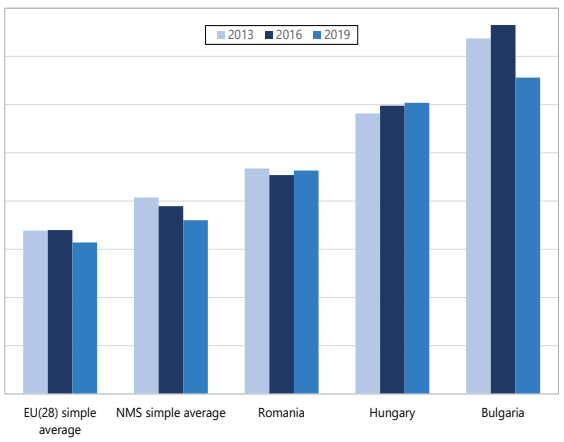
term care). This was by far the largest share in the EU where it accounted for 2.3 percent (3.0 percent for the simple average). In other NMS, the burden averaged 2.7 ranging from 1.7 percent in Romania to 4.4 percent in Hungary (OECD / European Observatory on Health Systems and Policies 2017).

Figure 38. Bulgaria: Private Financing of Healthcare in the EU

Financing of Total Health Spending
(2019, in percent of GDP) 1/



Out-of-pocket expenditure on healthcare
(in percent of total current health spending)



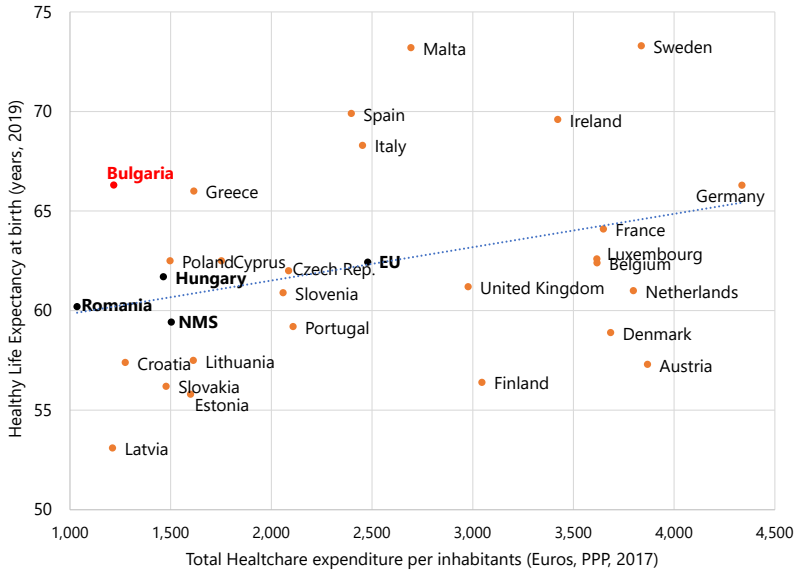
Sources: Eurostat, OECD (https://data.oecd.org/healthres/health-spending.htm), and IMF staff calculation.
1/ Health care is financed through a mix of arrangements including government spending and compulsory health insurance ("Government/compulsory") as well as voluntary health insurance and private funds such as households' out-of-pocket payments, NGOs, and private corporations ("Voluntary").

Low health spending…

… contributes to an ageing medical professional. Because low wages fail to attract new graduates and provide incentives to emigrate, the average age of nurses and midwives is 55 and more than 60 percent of general practitioners are above age 55 and approaching retirement (EC 2020, OECD / European Observatory on Health Systems and Policies 2019, OECD 2021).

… is associated with a low life expectancy. Bulgarian women have the lowest life expectancy at birth in the EU. At 78.8 years in 2019, it is 5 years less than for the EU(27) and 2¼ years lower than for NMS. At 71.6 years, life expectancy at birth of men is the lowest in the EU after Latvia. Moreover, there is no sign of convergence. Male life expectancy increased by 1.3 years over 2010-19 which is lower than the 1.8 years increase for both NMS and EU, and female life expectancy increased by 1.4 years which is more than for the EU (1.1 years) but less than for NMS (1.5 years). However, the number of years that a person can expect to live in a healthy condition is relatively high and is significantly higher than for other EU countries with the same amount of health spending (Figure 39).

Figure 39. Healthy Life Expectancy at Birth and Health Expenditure in the EU (2019)1/



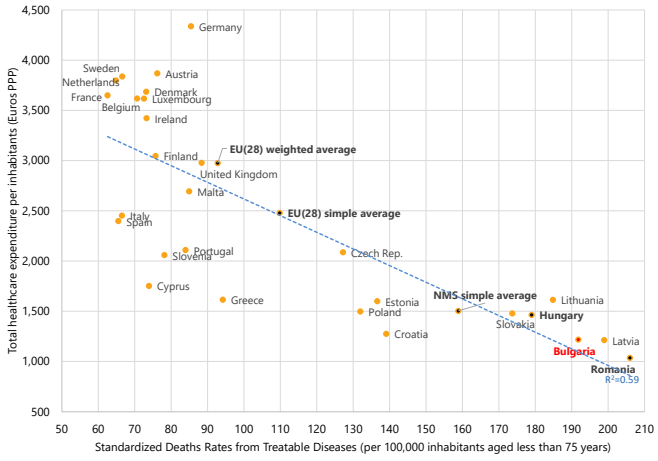
Sources: Eurostat and IMF staff calculation.
1/ UK's healthy life expectancy is for 2018, NMS and EU are simple averages.

… and is associated with relatively high avoidable mortality.[1] The standardized death rate from treatable diseases is strongly correlated with total healthcare spending per inhabitant. At 192 per 100,000 inhabitants, it is the third largest death rate in the EU, more than twice the death rate for the EU as a whole, and 21 percent higher than the NMS average. Spending is also strongly associated with preventable mortality. However, though preventable mortality in Bulgaria, is higher than in the EU by a significant margin it is lower than what the level of spending would suggest and is the fourth lowest death rate among NMS (Figure 40).

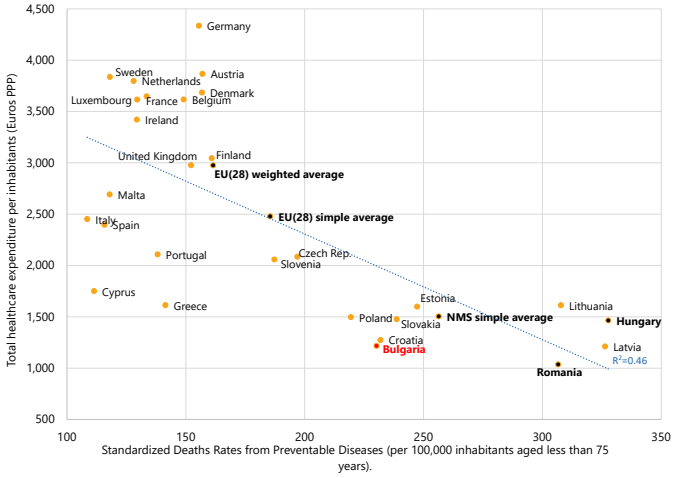
[1] *Treatable mortality* is deaths that could have been avoided through timely and effective health care interventions. Together with *preventable mortality* which measures death that could have been avoided through effective public health and primary prevention interventions (i.e. before the onset of diseases/injuries) they form *avoidable mortality* (OECD / Eurostat 2019, Eurostat 2020b).

Figure 40. Health Expenditure and Avoidable Mortality in the EU (2017)

A. Treatable Diseases



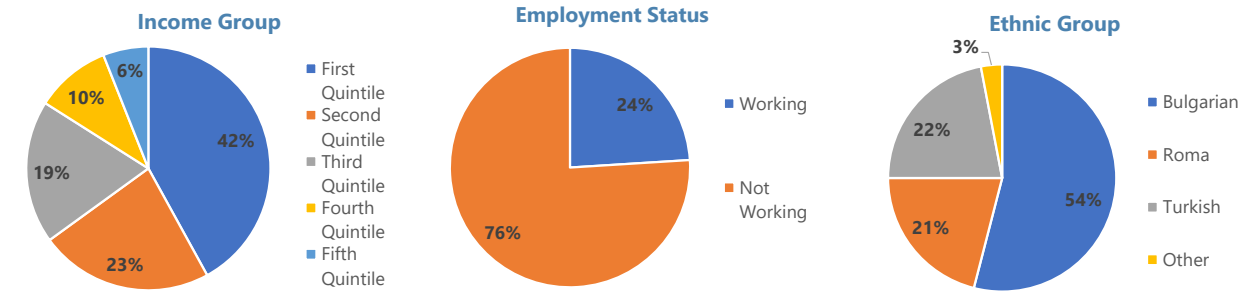
B. Preventable Diseases



Source: Eurostat.

People not benefiting from the National Health Insurance are mostly the ones who cannot afford healthcare. Between 7 and 14 percent of the population does not have and health insurance (World Bank 2015, EC 2020, OECD / European Observatory on Health Systems and Policies 2019, OECD 2021). As a result, they do not have access to the public health care system unless they visit an emergency center in a life-threatening situation. The population most at risk of poverty accounts for the bulk of the uninsured. The poorest account for 42 percent of the uninsured (Figure 41). 76 percent of the uninsured are unemployed in part because (i) health coverage is lost if the contribution is not paid three months in the previous 36 months and (ii) to restore health insurance rights, settling all contributions for the last 60 months is required (OECD 2021). Also, ethnic minorities, that face a more prevalent risk of poverty (NSI 2021b), are also more uninsured. The OECD (2021) reports that 55 percent of Roma did not have a health insurance compared to 14 percent for the whole population while the World Bank (2015) estimates that these shares at respectively 35 and 12 percent in 2013. Nonetheless, in absolute terms, the majority of the uninsured are ethnic Bulgarians.

Figure 41. Distribution of the Population Without Health Insurance (2013)



Source: World Bank (2015).

Therefore, the cost of healthcare is the main reason for unmet medical needs. The share of population reporting unmet medical and dental needs due to heath care cost has dropped significantly during the decade. Nonetheless, healthcare is often unaffordable to the poorest (even if they are covered by the National Health Insurance). 86 percent of the poorest reporting unmet medical needs related to the organization or functioning of the health sector (as captured by its cost ("too expansive"), geographical distribution ("too far"), and waiting time ("no time")) point to the financial cost. This is more than for the EU (62 percent) but lower than for NMS (92 percent). Moreover, sickness may be a source of poverty: "more than 4 percent of the population is impoverished each year by paying out-of-pocket" (World Bank 2015). As old age poverty is high (Figure 21), it is not surprising that the seniors face the highest share of people reporting unmet needs due to financial cost and more so than in any of the comparators. In contrast, financial cost is not a reason for unmet medical needs for the richest highlighting that, due to low public spending resulting in high out-of-pocket, inequality in access to health is associated to income inequality (Tables 11 to 13).

Table 11. Unmet Needs for Medical and Dental Care (in Percent of Population Aged 16 and Over)

		Too expensive or too far to travel or waiting list		o/w Too expensive		o/w Too far to travel		o/w No time		Other reasons 1/		No unmet needs to declare	
		2010	2019	2010	2019	2010	2019	2010	2019	2010	2019	2010	2019
						Medical examination and treatment							
Total	Bulgaria	10.5	1.4	7.1	1.1	0.7	0.2	1.2	0.1	4.0	1.0	85.5	97.6
	EU(28)	3.1	2.0	1.9	1.0	0.2	0.1	1.0	0.3	3.5	1.5	93.4	96.5
	NMS	7.0	3.3	4.2	1.2	0.5	0.3	1.4	0.9	4.5	3.2	88.5	93.5
	Hungary	1.7	1.0	1.2	0.4	0.2	0.2	1.5	1.6	6.1	5.5	92.2	93.5
	Romania	11.1	4.9	10.0	3.5	0.6	0.4	0.6	0.3	2.7	2.0	86.2	93.1
						Dental Care							
Total	Bulgaria	12.0	2.1	11.1	1.9	0.4	0.1	0.4	0.1	2.5	0.5	85.5	97.4
	EU(28)	4.6	2.8	4.0	2.5	0.1	0.0	0.6	0.3	2.6	1.1	92.8	96.1
	NMS	6.2	2.6	5.5	2.1	0.2	0.1	0.0	0.0	3.3	1.5	90.5	95.9
	Hungary	3.3	1.6	3.2	1.5	0.1	0.1	0.4	0.4	2.4	1.5	94.3	96.9
	Romania	11.3	5.0	11.0	4.7	0.2	0.1	0.6	0.4	2.4	1.8	86.3	93.2

Table 12. Distribution of Unmet Needs for Medical Examination and Treatment by Income (in Percent of Total Population 16 Years and Older)

		Whole population		Poorest Quintile		Richest Quintile		Change 2010-19 (in percentage points)			Gap poorest / richest (ratio of shares)	
		2010	2019	2010	2019	2010	2019	Total	Poorest	Richest	2010	2019 2/
Too expensive or too far to travel or waiting list	Bulgaria	10.5	1.4	23.0	4.3	4.3	0.0	-9.1	-18.7	-4.3	5.3	12.7
	EU(28)	3.1	2.0	5.7	3.4	1.3	0.9	-1.1	-2.3	-0.4	4.4	3.8
	NMS	7.0	3.3	11.3	5.0	3.4	2.1	-3.7	-6.3	-1.3	3.3	2.3
	Hungary	1.7	1.0	3.9	1.5	0.6	0.3	-0.7	-2.4	-0.3	6.5	5.0
	Romania	11.1	4.9	16.1	8.2	4.8	1.8	-6.2	-7.9	-3.0	3.4	4.6
o/w too expansive	Bulgaria	7.1	1.1	18.7	3.7	1.6	0.0	-6.0	-15.0	-1.6	11.7	33.0
	EU(28)	1.9	1.0	4.1	2.1	0.5	0.2	-0.9	-2.0	-0.3	8.2	10.5
	NMS	4.2	1.2	8.1	4.6	1.3	0.3	-3.0	-3.5	-1.0	6.2	17.4
	Hungary	1.2	0.4	3.2	1.1	0.4	0.2	-0.8	-2.1	-0.2	8.0	5.5
	Romania	10.0	3.5	14.5	7.2	4.1	0.8	-6.5	-7.3	-3.3	3.5	9.0
No unmet needs to declare	Bulgaria	85.5	97.6	74.2	94.0	90.4	99.7	12.1	19.8	9.3	0.82	0.94
	EU(28)	93.4	96.5	90.1	94.6	95.4	97.7	3.1	4.5	2.3	0.94	0.97
	NMS	88.5	93.5	84.2	91.3	91.5	94.3	5.1	7.0	2.8	0.92	0.97
	Hungary	92.2	93.5	88.3	91.9	95.2	92.8	1.3	3.6	-2.4	0.93	0.99
	Romania	86.2	93.1	81.9	88.9	91.9	96.7	6.9	7.0	4.8	0.89	0.92

Sources: Eurostat and IMF staff calculation.

1/ Calculated as 100 - (share of people with no unmet needs + share of people having unmet needs related to the organization and functioning of the health system).

2/ For Bulgaria, the ratios for "too expensive or too far or waiting list" and "too expensive" report data for 2020.

Table 13. Unmet Health Needs Due to Financial Reasons
(2014, in Percent of People Reporting a Need for Each Category) 1/

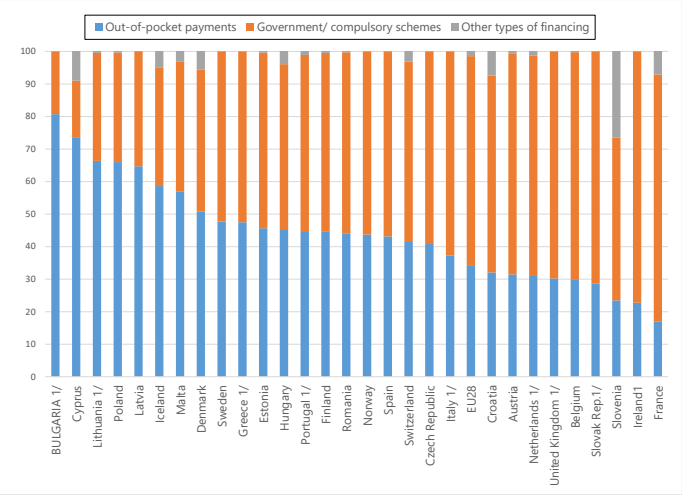
	Total	Medical care	Dental care	Mental health care	Prescribed medicines
			All population		
Bulgaria	**17.0**	**10.7**	**12.6**	2.3	**9.6**
EU(28)	14.8	5.9	12.3	2.7	4.6
NMS	14.5	7.4	11.1	**2.8**	7.0
Hungary	13.8	4.9	11.9	1.4	5.9
Romania	14.8	7.6	10.6	1.8	6.7
			By Age group		
			15-24		
Bulgaria	6.9	4.1	5.5	0.6	**4.3**
EU(28)	**12.1**	**4.3**	**9.7**	**3.5**	**4.3**
NMS	8.6	3.3	7.2	1.1	3.6
Hungary	7.4	2.3	5.7	1.0	3.5
Romania	9.0	4.0	7.3	1.2	4.1
			25-64		
Bulgaria	16.0	**10.0**	12.3	2.1	**8.0**
EU(28)	16.1	6.2	13.7	2.9	4.5
NMS	14.8	7.2	11.8	**3.0**	6.8
Hungary	**16.2**	5.6	**14.0**	1.5	6.9
Romania	14.0	6.5	10.8	1.8	5.4
			65-74		
Bulgaria	**21.8**	**13.1**	**15.9**	**3.4**	**13.6**
EU(28)	13.2	5.8	10.2	1.6	5.1
NMS	17.4	9.8	11.6	2.7	10.4
Hungary	12.0	5.1	10.1	0.9	4.4
Romania	18.4	10.1	13.2	1.2	8.8
			75 and over		
Bulgaria	**22.3**	**15.0**	**15.9**	**3.1**	**14.7**
EU(28)	11.3	5.2	8.2	1.7	5.1
NMS	16.4	9.4	9.4	**3.1**	11.2
Hungary	8.4	3.7	7.0	1.2	4.5
Romania	21.7	14.2	11.0	2.6	13.6

Source: Eurostat.

1/ Highest share among comparators is bolded.

The cost of pharmaceuticals is an important reason for unmet medical needs. Not only the price of pharmaceuticals is high in Bulgaria but, more than in any other EU country, it is paid out-of-pocket (Figure 42). As a result, pharmaceuticals accounted for more than three-quarters of total out-of-pocket spending in the middle of the decade (World Bank 2015) and is much more than in comparators a reason for unmet medical needs (Table 13). Cost of pharmaceuticals is particularly an issue for the elderly (which also face the largest share of poverty of all age groups) with almost 15 percent for the population 75 years old and over reporting unmet needs for that reason.

Figure 42. Expenditure on Retail Pharmaceuticals by Type of Financing
(2016, in percent)

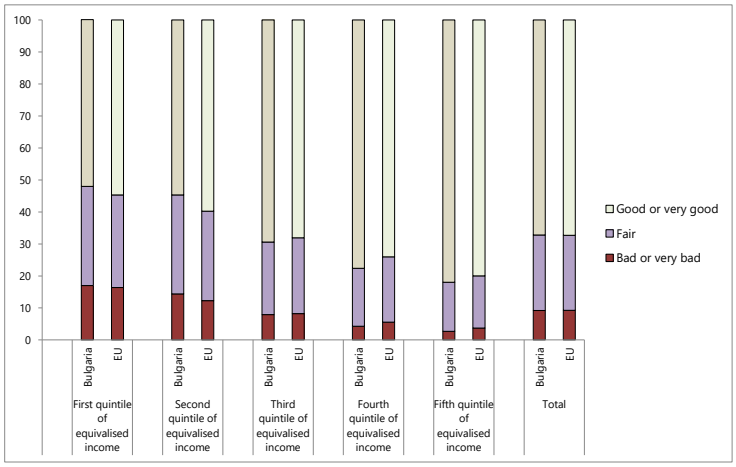


Source: OECD (2018).
1/ Includes expenditure on medical non-durables.

Thus, income level determines more the health status in Bulgaria than in the rest of the EU. A smaller share of the poorest report "good or very good health" in Bulgaria than in the EU, while the share of the richest reporting good and very good health is larger in Bulgaria than in the rest of the EU (Figure 43). The richest are 30 percentage points more likely to assess their health as good or very good than the poorest. This is significantly larger than in the EU, Hungary, and Romania though less than on average in NMS.

Though unmet medical needs remain high, considerable progress has been made in the last decade. In 2010, 14½ percent of the population 16 and older was reporting unmet medical or dental needs. This share as plummeted to about 2 ½ percent in 2019. Unmet needs depend on reasons related to the organization and the functioning of the health system and other reasons such as fear or lack of information on a good physician. On all dimensions and for all income quintiles, the share of population reporting unmet needs has declined and the share of the Bulgarian population reporting unmet needs for reasons related to the organization and functioning of the health system has fallen from 10.5 percent in 2010 to 1.4 percent in 2019, the lowest among comparators except Hungary (Tables 11 and 12).

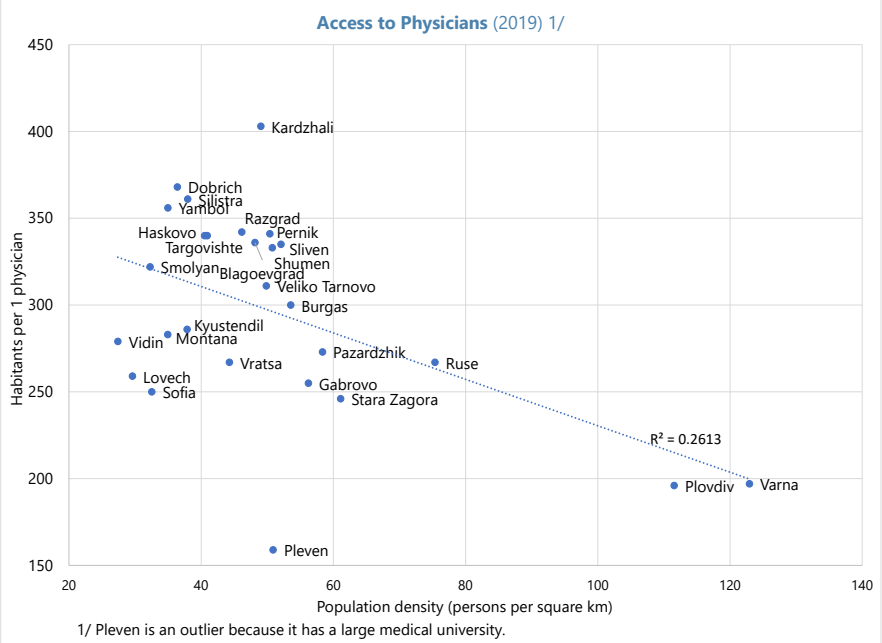
Figure 43. Self-Perception of Health by Level of income
(2019, in percent)



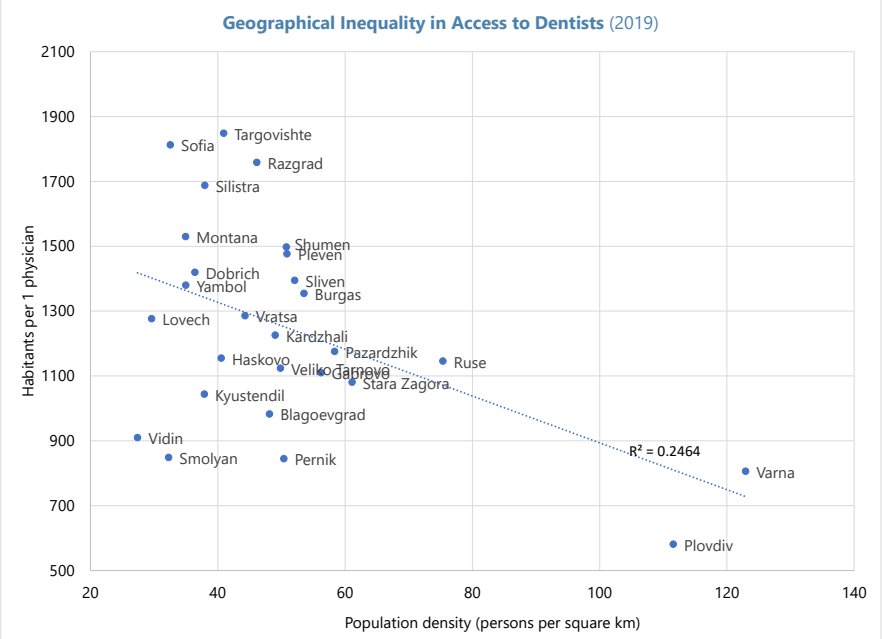
Source: Eurostat.

The organization of the health sector also leads to geographical inequality in access to healthcare. Medical personal is concentrated in more urbanized regions and rural areas with a lower population density

Figure 44. Geographic Inequality in Access to Healthcare



1/ Pleven is an outlier because it has a large medical university.

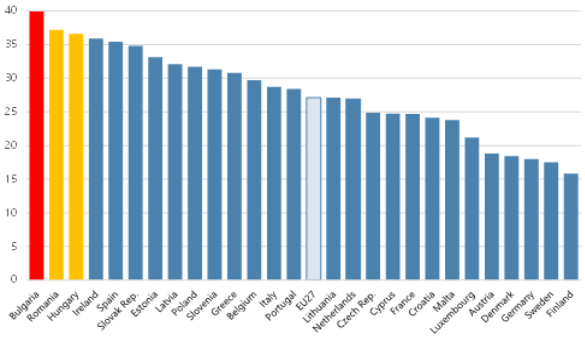


Sources: NSI and IMF staff calculation.

Notes: Sofia refers to "Sofia Region." For the sake of readability, "Sofia capital", which has a very high population density, is not plotted. Access to hospitals is not shown but though the availability and density are also negatively associated, it is less so than for access to dentists and physicians.

have a lower access to physicians or dentists (Figure 44) and "rural residents greatly depend on the infrastructure of the nearest main town for primary care or on Sofia, Plovdiv, and Varna for specialized care" (Littlewood 2020). As a result, rural areas have poorer health outcomes. They suffer from a higher death rate for all age groups. In particular, mortality among infants (less than 1 year old) in rural areas stands at 8.0 per thousand while in cities the rate is 4.7 per thousand (NSI 2020).

Figure 45. Health is a Policy Priority 1/
(August 2021 Survey)



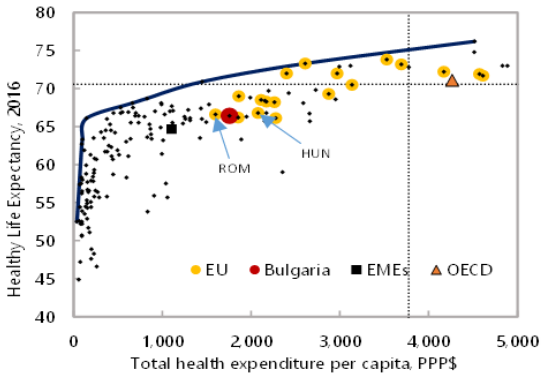
Source: European Parliament (2021).
1/ Answer to "Which of the following topics would you like to see addressed in priority by the European Parliament?"

Against this background, Bulgarians see the reform of the health sector as a priority. In the 2021 State of the European Union Survey (European Parliament 2021), health is more identified as a policy priority in Bulgaria than in any other EU country (Figure 45). It is also Bulgarians' third highest priority after "measures to fight inequality and social exclusion" and "measures to support to the economy and create new jobs."

A better use of public health resources could increase substantially health outcome. A frontier analysis suggests that a more efficient use of existing health expenditure could increase the healthy life expectancy by about 6 years (Figure 46).[2] Three reforms that are recommended by several observers (World Bank 2015, EC 2020, the OECD / European Observatory on Health Systems and Policies 2019) would help reap these efficiency gain.

- **Reduce the reliance on hospitals and develop outpatient and ambulatory care to reduce costs and inequality in access to care.** The health system is more "hospital-centered" in Bulgaria than in peers (Table 14). Bulgaria has more hospitals per inhabitant than any of the comparators.[3] Hospital bed density is high and, despite the authorities' plans,[4] has increased by 14.4 percent between 2010 and 2018, while it declined in almost all EU countries. Moreover, a substantial share of inpatient procedures (e.g., check-ups and tests) are performed in hospitals, while they are conducted in outpatient settings in other countries (EC 2020, OECD / European

Figure 46. Health Efficiency Frontier 1/
(Latest Available, 0 – 5,000 PP$)



Sources: IMF FAD Expenditure Assessment Tool and WHO.
1/ Dashes are EU average.

[2] This is a standard approach, see for example Dutu and Sicari (2016) and Joumard and others (2010).

[3] EU(28) and 9 non-EU European countries for which Eurostat collects data.

[4] For details on initiatives and implementation issues (including related to court rulings) and delays, see OECD / Observatory on Health Systems and Policies (2019).

Observatory on Health Systems and Policies 2019, OECD 2021).[5] An underdeveloped primary care system and administrative rules contribute to this heavy reliance on hospitals. In particular, "ceilings on some diagnostic referrals in primary care lead to patients being admitted for inpatient care" (OECD / Observatory on Health Systems and Policies 2017) and financial incentives encourage hospitals to treat more patients and patients to prefer inpatient care over outpatient settings (OECD / Observatory on Health Systems and Policies 2017) notably because of the difference in the out-of-pocket between hospital and outpatient care (Figure 47). Reducing the reliance on hospitals and developing (cheaper) outpatient care could also reduce inequality in access to health by reducing its healthcare cost for the population.

Table 14. A Hospital Centered Health System

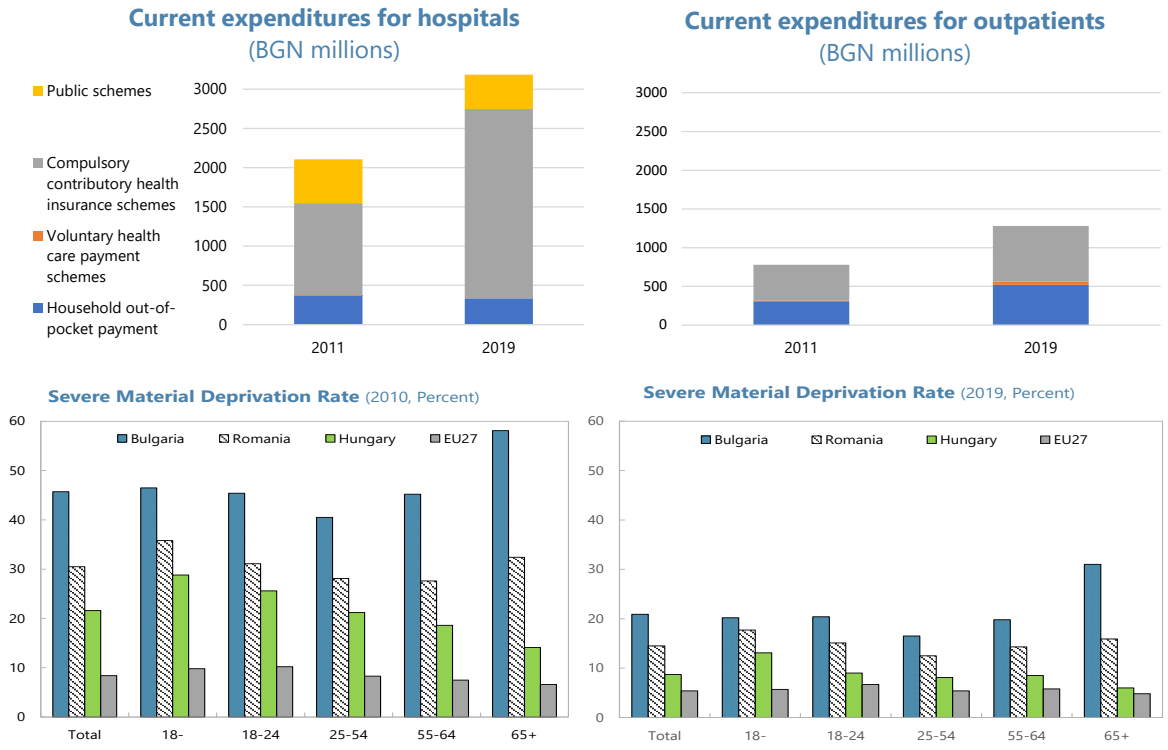
	Bulgaria	EU	NMS	Hungary	Romania
Hospitals per 100 thousand people	4.7	3.0	2.8	1.8	2.5
Hospitals beds per 100 thousand people	757	500	609	701	697
Average Length of Stay, All Hospitals	5.2	8.2	7.9	9.5	7.4
Percentage of Inpatient Care Discharges per 100	32.3	17.4	20.9	20.3	19.9
Percentage of Nurses Working in Hospitals 1/	67.2	59.0	62.8	54.8	50.9

Sources: World Bank, World Health Organization, Eurostat, NSI, and IMF staff calculation.
1/ Bulgaria has the lowest number of nurses per inhabitant in the EU (after Greece) and a larger share of them work in hospitals.

- **Reduce the cost of pharmaceuticals by reforming the price-setting mechanism of medicines and promoting the use of generic drugs.** "Pharmaceutical listing and pricing mechanisms fail to promote competition in the off-patent market and many prices for medicines compare unfavorably to prices elsewhere, even in wealthier countries" (World Bank 2015). Moreover, pharmacist fees' structure with low dispensation fees and commission proportional to price provides incentives to deliver the most expensive medicines and discourages the diffusion of generics. As a result, pharmaceuticals represent a much larger share of healthcare expenditure than in any other EU country (World Bank 2015). Reforms that would lead to a reduction in the cost of pharmaceuticals and in the diffusion of generic drugs would also dramatically increase access to treatment for the poorest and the elderly as the out-of-pocket for medicine is often prohibitive for then.

[5] As a result the average length of stay at the hospital is short and the proportions of nurses working in hospitals is high (Table 14).

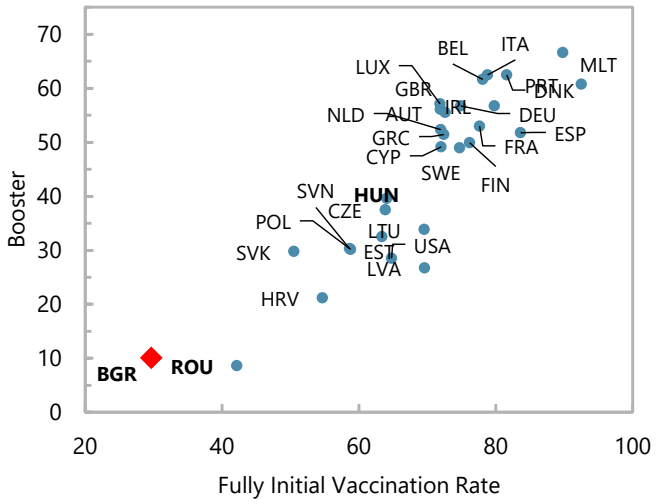
Figure 47. Bulgaria: Financing of Healthcare Expenditure



Source: NSI (https://monitorstat.nsi.bg/en/StrategyIndicator?StrategyId=861fd682-aa3b-45ce-b870-d01031701f99).

- **Reinforce prevention.** The efforts to promote prevention (World Bank 2015, OECD / European Observatory on Health Systems and Policies 2019) could be reinforced and would also help reduce hospitalization. Bulgaria spends around EUR 34 per person on preventive care, compared to the EU average of EUR 89 (OECD / European Observatory on Health Systems and Policies 2019). The rate of vaccination of children is below EU average and is declining (OECD / European Observatory on Health Systems and Policies 2019). The low vaccination contributes to explain why diseases from certain communicable diseases such as measles, chickenpox, mumps, meningitis are increasing (NSI 2020). Vaccination rate against the COVID-

Figure 48. Share of Population Vaccinated Against the COVID-19 (As of March 3, 2022; in percent)



Sources: European Centre for Disease Prevention and Control, Our World in Data.

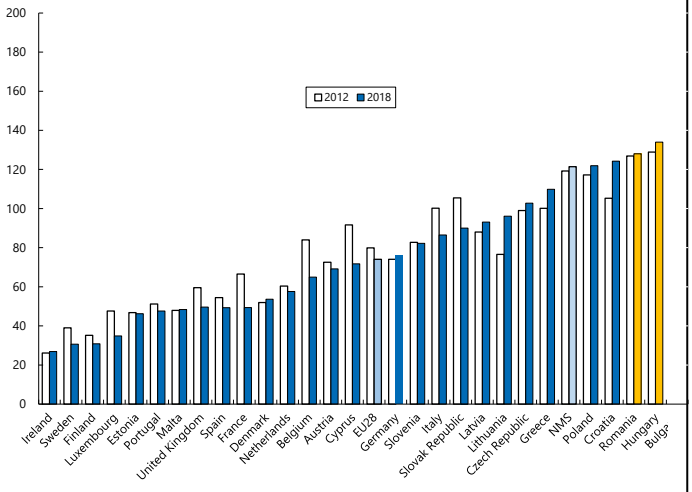
19 was also low (Figure 48) and, as of February 2022, Bulgaria was having the second death toll from COVID in the world per habitants. Developing prevention (e.g., screening, campaigns to reduce behavioral risks like smoking and stronger enforcement of smoking regulations) would increase efficiency in the fight against cancer, the second largest (and growing) reason for death after diseases of the circulatory system (NSI 2020, OECD / Observatory on Health Systems and Policies 2019). Prevention should be accompanied by campaign aiming at reducing behavior risks. Compared to other EU countries, Bulgaria performs poorly on most behavioral risk factors notably smoking, dietary habits and overweight, and alcohol consumption (OECD / European Observatory on Health Systems and Policies 2019, Bulgarian Government 2020). This contributes to make circulatory system diseases the leading cause of death.

Despite clear efficiency gains, an increase in public spending on health may be needed. As recognized in the National Health Strategy (Bulgarian Government 2020), Bulgaria "will continue to be under strong pressure to increase funding for healthcare" (including long-term care that is currently excluded from the health benefit package and is as a result unaffordable for many).[1] Already the elderly report more than any other age groups (and more than in comparators) unmet needs for financial reasons for all types of treatments (Table 13). Though efficiency gains could free resources, they may not be enough to address the challenge of an ageing population that and other challenges such as the need to develop outpatient care that is underfunded (Bulgarian Government 2021), to increase the coverage of the health insurance (which may require subsidizing health insurance for the most disadvantaged), and to make the medical profession more attractive financially. Therefore an increase in public health spending may not be avoided. The NGEU grants provide an opportunity to fund some of the challenges.

Policies aiming at improving the population's health should not be limited to health spending but also tackle address issues related to living environment. Despite a recent decline, the prevalence of premature deaths attributable to air pollution remains much higher in Bulgaria than in any other EU country suggesting that the green transition, insofar as it reduces air pollution, could also improve health income (Figure 49).[2]

Figure 49. Premature Death Rates Attributable to Outdoor Air Pollution in the EU

(Crude death rate per 100,000 inhabitants)



Source: Eurostat.

[1] The need to develop long-term care is recognized by the authorities. The 2014 national strategy for long-term care, followed by an accompanying action plan released in 2018 have not yet had "any substantial impact" (OECD / European Observatory on Health Systems and Policies 2019, OECD 2021).

[2] Reducing premature deaths attributable to air pollution is part of the European Green Deal. One of the 6 key targets of the EU Action Plan *Towards a Zero Pollution for Air, Water and Soil* (a deliverable of the European Green Deal) is to reduce by 2030 "by more than 55 percent the health impacts (premature deaths) of air pollution" from its 2005 level.

V. Conclusion

The analysis reveals that there is significant scope for increasing the efficiency of public expenditure in Bulgaria. The tax regime provides limited avenues for mobilizing revenue. Therefore, given the country's significant development and social needs, raising the efficiency of spending is crucial. Improving the efficiency of public spending is a key mechanism to free fiscal resources to improve transport infrastructure (roads, railways) and social outcomes in critical sectors (health and education) but in some areas may not be sufficient to address current and future challenges. The main findings from the benchmarking exercise can be summarized as follows:

Public investment: There is scope to improve the efficiency and quality of public investment. Bulgaria's level of public investment has been comparable to peers, but its infrastructure quality is perceived to be lower and there is a notable efficiency gap. Bulgaria's perceived quality of transport-related infrastructure and education infrastructure remains below comparator countries. Given the significant investment needs in these sectors, it is important to prioritize projects that can improve the quality of infrastructure, while allocating sufficient funds to maintain existing infrastructure (roads, railway), which is deteriorating fast. Moreover, public investment management of institutions could be strengthened to improve the efficiency of public investment and unlock resources to further develop infrastructure and improve its quality. Specifically, there is room to improve the accuracy and quality of capital spending forecasts. Also, a project pipeline and selection criteria could be developed for all major projects, and common procedures could be established for ex-post reviews of projects. 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 to reduce corruption vulnerabilities.

Social protection: Low social protection spending leads to outcomes in providing adequate income to persons in need, delivering protection against various social risks, and reducing income inequality that are weaker than peers and EU average. The level, targeting, and composition of social protection spending, as well as the share of social spending in public expenditure should all be reviewed. Efficiency gains would free resources to broaden the set of social risks covered by the social protection system and ensure that existing benefits such as minimum pensions are sufficient to reduce poverty and adequately funded and administered to avoid rationing. An increase in resources may also be needed to address long-term challenges notably ageing.

Education: Although Bulgaria's public spending on education has come closer to peers, educational outcomes remain lower. Increasing the efficiency of public spending on education and harnessing the potential of education to reduce inequalities require further efforts to improve the quality of and access to education. Specific reforms include: (i) additional funding for research in tertiary education, (ii) developing lifelong learning and continuing training, (iii) updating the curricula to reduce skill-mismatches and increase digital skills, (iv) improving teachers' motivation and career prospects, and (v) fostering greater inclusion of disadvantaged students.

Health: Low health spending is associated with a low life expectancy and a high mortality rate. Efficiency gains could be achieved by: (i) reducing the reliance on hospitals and developing (cheaper) outpatient care to reduce costs and inequality in access to healthcare, (ii) reducing the cost of pharmaceuticals by reforming the price-setting mechanism of medicines and promoting the use of generic drugs, and (iii) investing resources in prevention healthcare to reduce hospitalization and deaths. It is important to note that utilizing efficiency gains would unlock some resources but would not be sufficient to fund the substantial investment needs in the health

sector. More funding will be required to address critical needs in the health sector, to increase access to health insurance, and to attract and retain medical professionals.

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