

Scaling Up Quality Public Investment for Stronger Growth

Vahram Stepanyan and Iglia Vassileva

SIP/2025/149

IMF Selected Issues Papers are prepared by IMF staff as background documentation for periodic consultations with member countries. It is based on the information available at the time it was completed on November 3, 2025. This paper is also published separately as IMF Country Report No. 25/307.

**2025
DEC**



IMF Selected Issues Paper
European Department

Scaling Up Quality Public Investment for Stronger Growth
Prepared by Vahram Stepanyan and Iglia Vassileva

Authorized for distribution by Fabian Bornhorst
December 2025

IMF Selected Issues Papers are prepared by IMF staff as background documentation for periodic consultations with member countries. It is based on the information available at the time it was completed on November 3, 2025. This paper is also published separately as IMF Country Report No 25/307.

ABSTRACT: The paper discusses Bulgaria's public investment needs and its efficiency and assesses prospects for accelerating economic growth and income convergence through scaling up quality public investment. Utilizing substantial EU grants to fund public investment offers Bulgaria a unique opportunity to finance important infrastructure projects without relying on debt. However, slow absorption of these grant funds and inefficiencies in public investment management remain significant challenges. The analysis highlights the critical role of efficient public investment in boosting productivity and fostering sustainable growth. Using the DIGNAR model calibrated to Bulgaria's economy, simulations suggest that full EU funds absorption and improved public investment efficiency could boost GDP by 2.3 percent in 2030. The findings underscore the importance of steadfast reforms to accelerate EU fund absorption and improve efficiency, including through enhanced investment planning and procurement processes, to boost growth.

RECOMMENDED CITATION: Vahram Stepanyan and Iglia Vassileva (2025) "Scaling Up Quality Public Investment for Stronger Growth", Washington DC: International Monetary Fund, Selected Issues Paper, SIP/2025/149.

JEL Classification Numbers:	C68, E62, H54, O40, O52
Keywords:	Bulgaria, economic growth, public investment, EU funds, dynamic general equilibrium modelling, DIGNAR model
Author's E-Mail Address:	VStepanyan@imf.org ; IVassileva@imf.org

SELECTED ISSUES PAPERS

Scaling Up Quality Public Investment for Stronger Growth

Bulgaria

Prepared by Vahram Stepanyan and Iglia Vassileva



BULGARIA

SELECTED ISSUES

November 3, 2025

Approved By
European Department

Prepared by Vahram Stepanyan and Iglika Vassileva.
Sabiha Mohona and Cheryl Li provided research support.

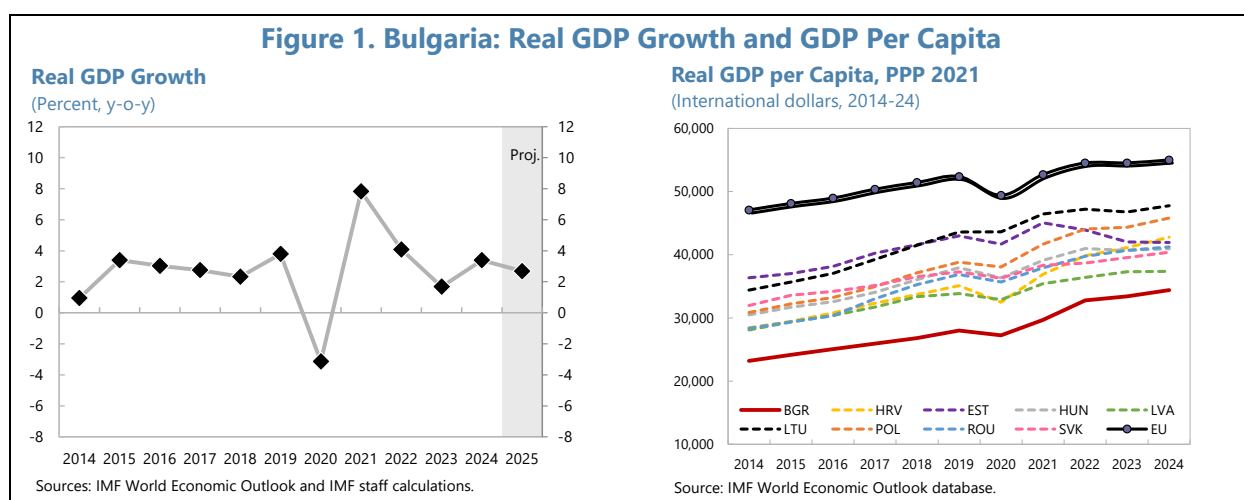
CONTENTS

SCALING UP QUALITY PUBLIC INVESTMENT FOR STRONGER GROWTH	2
A. Introduction	2
B. Public Investment Needs and Efficiency	3
C. Availability and Absorption of EU Funds	5
D. Simulating the Impact of Scaled Up Quality Public Investment	7
E. Concluding Remarks	9
FIGURES	
1. Real GDP Growth and GDP Per Capita	2
2. Availability and Quality of Infrastructure	4
3. Capital Stock and Public Investment	5
4. EU Funds Absorption	6
5. Public Investment Scenarios	8
6. Selected Macroeconomic Indicators' Difference from Baseline	9
ANNEX	
I. Baseline Model Calibration for Bulgaria	10
References	11

SCALING UP QUALITY PUBLIC INVESTMENT FOR STRONGER GROWTH¹

A. Introduction

1. Economic momentum has been strong despite an uncertain environment, yet a more robust growth is needed for faster income convergence. While convergence has been advancing, incomes in Bulgaria still lag most of its peers (Figure 1), and inflationary pressures are emerging pointing to the need to boost the supply side of the economy. Furthermore, Bulgaria has regional income disparities exceeding those in most Organization for Economic Co-operation and Development (OECD) countries (World Bank, 2024). To increase equitable access to infrastructure and public goods and to accelerate income convergence, Bulgaria will require higher investment and real growth rates that surpass its currently estimated potential.²



2. Bulgaria can boost economic growth and income convergence by scaling up quality public investment. High quality public investment can be a catalyst for sustainable economic growth and development (IMF, 2020). Better availability and higher quality of infrastructure could help raise the productivity of the economy and boost potential growth, including by possibly crowding in private investment, both domestic and foreign.

3. Increasing the efficiency of public investment will yield even higher growth dividends. The significant investment needs could be better addressed and the impact on growth magnified by

¹ The authors thank Helge Berger, Fabian Bornhorst, Jean-François Dauphin, and Giacomo Magistretti (all EUR), Azar Sultanov (RES) and Zamid Aligishiev (WHD) for their useful comments and suggestions, and the participants at a seminar at the Ministry of Finance for useful discussions.

² The IMF projects potential growth between 2 and 3 percent per year for the medium term (IMF, 2024). For the long term, the European Commission projects growth rates between 1 and 1.5 percent (EC, 2023).

improving the efficiency of public investment. Estimates show that Bulgaria could achieve about 1.8 percent of GDP in savings by improving the efficiency of public investment (Hallaert et al, 2022).

4. There are substantial EU funds available to finance a significant increase in public investment. Bulgaria has a major opportunity to benefit from EU funds totaling around Euro 18.7 billion³ (about 18 percent of 2024 GDP) to scale up quality public investment. These funds are primarily grants, available within a given timeframe, and disbursed upon completion of agreed reform milestones and investment projects.

5. The remainder of this paper is structured as follows: Section B looks at the quality of the infrastructure in certain areas, discusses the state of public investment and its efficiency, and outlines areas for improvement as well as possible reforms to that end; Section C discusses the availability of the EU funds, their slow absorption and reasons; Section D presents a model that is used to simulate the growth impact of scaling up public investment as well as the role of higher spending efficiency in boosting the impact; and the last section provides concluding remarks.

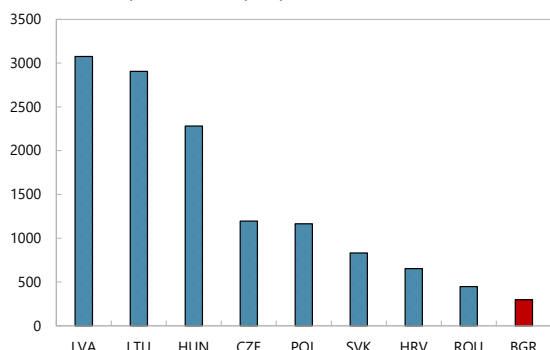
B. Public Investment Needs and Efficiency

6. There is substantial room to improve the availability and quality of infrastructure, and higher and more efficient public investment is key to achieving this. Bulgaria's quality and availability of infrastructure in many areas lag the EU average (Ari et al, 2020). For example, there is substantial room to improve the quality of transport-related infrastructure as the transport network appears both inadequately maintained and insufficient to meet business needs (Hallaert et al, 2022). Adequate road and public transportation infrastructure is needed to connect remote and less-developed regions to the rest of the country (OECD, 2023) and realize the potential for Bulgaria as a transit country. Furthermore, airports and seaport infrastructure are important for the development of the travel and tourism industry (Figure 2). With respect to water infrastructure, Bulgaria fares relatively well in terms of population connected to water and wastewater infrastructure but also reports one of the highest loss rates during transport in the EU (based on 2021 data published by Eurostat). In recent years the poor condition of the water supply system, coupled with impact from climate change, has resulted in water scarcity in multiple communities.

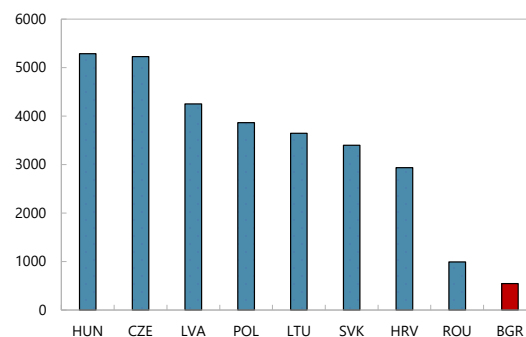
³ The amount reflects available funds under the 2021–27 EU Multiannual Financial Framework and the Recovery and Resilience Facility, including REPowerEU.

Figure 2. Bulgaria: Availability and Quality of Infrastructure**Total Length of Paved and Unpaved Roads**

(Kilometres per 100,000 people, 2023)



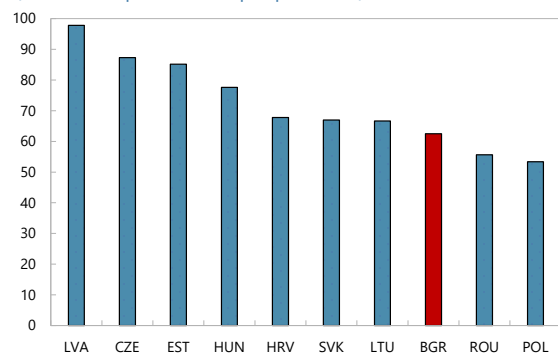
Sources: Eurostat, World Development Indicators and IMF staff calculations.

Total Length of Paved and Unpaved Roads(Kilometres per 1,000 km² of arable land, 2023)

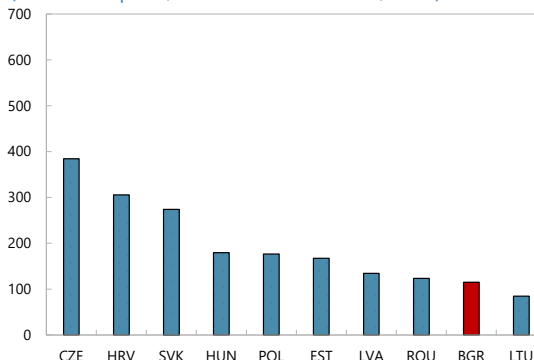
Sources: Eurostat, World Development Indicators and IMF staff calculations.

Total Length of Railway Lines

(Kilometres per 100,000 people, 2023)



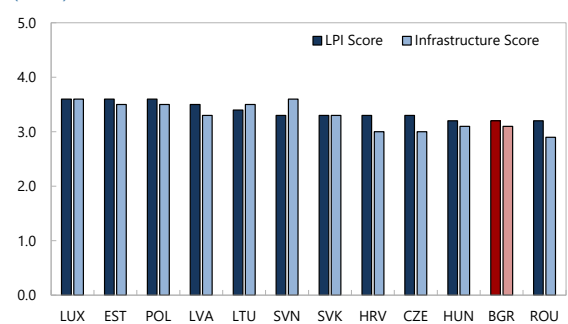
Sources: Eurostat, World Development Indicators and IMF staff calculations.

Total Length of Railway Lines(Kilometres per 1,000 km² of arable land, 2023)

Sources: Eurostat, World Development Indicators and IMF staff calculations.

Infrastructure Quality under Logistic**Performance Indicator**

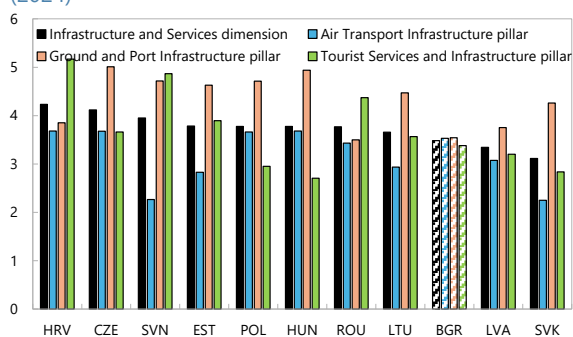
(2023)



Source: World Bank. Based on surveys. May provide an incomplete picture of logistics performance.

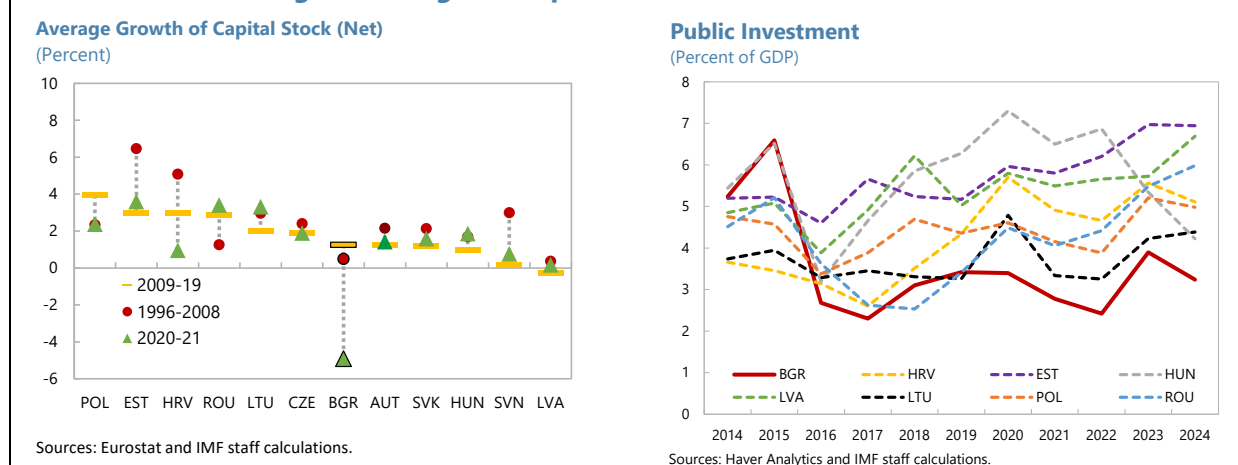
Travel & Tourism Development Index

(2024)



Sources: World Economic Forum. Based on statistical data and WEF's annual Executive Opinion Survey. Scores on each indicator are first normalized and rated on a common scale of 1 to 7, with 7 being the best outcome.

7. Both the capital stock and public investment have been relatively low during recent years. The capital stock is low compared to OECD countries, both relative to GDP and the population (OECD, 2023). Additionally, public investment has lagged peers during most of the past decade (text figure). While public investment was mainly driven by the EU-funded projects, their absorption slowed substantially during 2022–24 (Section C).

Figure 3. Bulgaria: Capital Stock and Public Investment

8. Improving the efficiency of public investment is critical to ensure greater returns for public spending, particularly in infrastructure. According to the IMF's Public Investment Management Assessment (PIMA), the Bulgarian public investment management system performs relatively well in regional comparison, supported by stable fiscal framework and ample funding availability. However, despite recent progress, the effectiveness and efficiency of public investment can be improved, including through better forecasting and prioritizing multiannual capital expenditures and adequately informing the budget, strengthening the project appraisal and selection, and implementing procurement reforms. Furthermore, strengthening investment planning and prioritization would help improve the effectiveness of public investment amid the relatively low absorption of EU funds recently. Key PIMA recommendations emphasize the need for strengthening public investment management institutions to reduce the efficiency gap and make public investment more productive.⁴

9. Public procurement, including for capital expenditure, is an area with potentially significant inefficiencies and non-negligible savings, if processes are improved. A recent review of Bulgaria's public finances found high and increasing risks of noncompetitive practices and corruption in public procurement compared to EU peers (World Bank, 2023). Furthermore, the World Bank's analysis estimates potential savings of 5.3 percent of the total value of public procurement contracts during 2007–22. The largest savings can be achieved by increasing the number of bidders as single bidder and negotiated outcomes remain prevalent ([EC 2025 Country Report](#)).

C. Availability and Absorption of EU Funds

10. Bulgaria, like many other EU member states, benefited substantially from EU funds in the past, and there are large amounts of untapped funds available. The total amount of grant funds available to Bulgaria for disbursement is EUR 18.7 billion, of which EUR 6.2 billion are funds under the Recovery and Resilience Plan (RRP), which includes EUR 480 million under RePowerEU

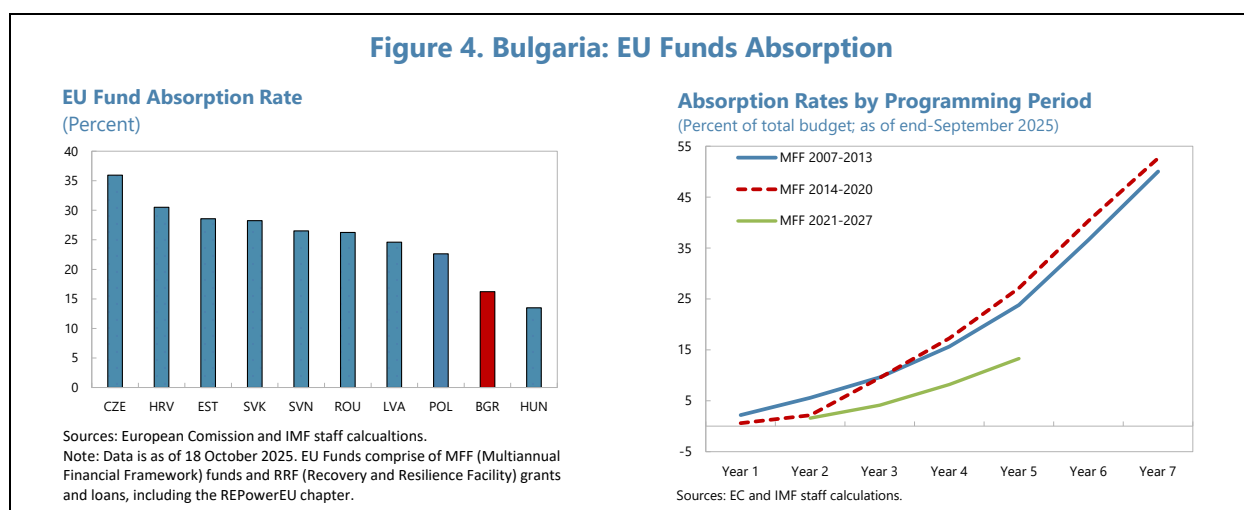
⁴ In September 2025, the government launched a project to improve the efficiency and quality of public investment, as part of a reform aiming to establish a sustainable framework for planning and managing public investments.

chapter. All milestones and targets under the RRP need to be completed by end-August 2026. Separately, grants amounting to EUR 12.5 billion are available under the Multiannual Financial Framework (MFF) 2021–27 with utilization date of end-2030 (Crucitti et al, 2021).

11. The absorption of the EU funds in the 2021–27 programming period has been slow.

With only about 16 percent of the total funds disbursed,⁵ Bulgaria is lagging its peers (Figure 4). Additionally, the implementation under the 2021–27 MFF is slower compared to the achievements in the previous two programming periods. These results can only partly be attributed to the impact of the supply shock and administrative bottlenecks related to the COVID-19 pandemic.

12. RRP implementation is facing delays due to stalled reforms. Frequent snap elections, the implications for the functioning of Parliament, and the reversal of some reforms—such as electricity market liberalization—have contributed to delays. About 22 percent of available funds were disbursed as of September 2025. With the RRP’s implementation deadline approaching, there is a risk of underutilizing available funds. This puts advances in the green and digital transitions and the strengthening of human capital in jeopardy. The government has made progress renegotiating the RRP and implementing reforms and investments, and an acceleration of disbursements is expected.



13. More broadly, structural deficiencies continue to hinder the effective utilization of cohesion policy funds. Ciffolilli et al. (2024) highlights prolonged implementation timelines for large infrastructure projects, often due to procurement-related delays. Many projects begin with only pre-feasibility studies and require substantial overhauls during the technical design phase. Absorption is further constrained by fragmented project structures, frequent changes to national regulations, and complex procurement appeals procedures. Bottlenecks in administrative capacity—such as delays in evaluating project proposals and excessive red tape—also contribute to inefficiencies in managing EU funds.

⁵ As of mid-October 2025. Total funds comprise the MFF 2021–27 and the RRP including REPowerEU chapter.

D. Simulating the Impact of Scaled Up Quality Public Investment

14. Macroeconomic effects from scaling up public investment are simulated using the Debt Investment Growth and Natural Resources (DIGNAR) model (Melina et al., 2016).⁶ It is a small open economy dynamic general equilibrium model, developed by the IMF staff. The DIGNAR model is particularly suitable for modelling the public investment-growth nexus in Bulgaria because public capital enters production technologies along with private capital, and public investment is subject to inefficiencies. DIGNAR is solved with perfect foresight method in Matlab using Dynare package (Juillard, 1996).

15. The DIGNAR models a three-sector economy, with tradable, non-tradable, and a natural resource sector.⁷ The first two sectors are modeled through representative firms that choose their labor and investment to maximize their profit. Public capital is also included as a production factor. Here, importantly, private investment is subject to adjustment costs, while public investment is undertaken with exogenously determined efficiency rates. There are two types of households in the economy—an optimizing Ricardian household and a rule-of-thumb household.⁸ They maximize their utility by choosing labor supply. The Ricardian household also chooses its level of consumption, government bonds and borrowing from abroad. The government levies taxes on consumption, labor and capital and receives grants from abroad and toll fees from the use of public capital. Public expenditures consist of government consumption and investment, transfers and interest payments. The fiscal gap can be financed by public domestic, external concessional or commercial debt. The model is closed via balance of payments and market clearing identities.

16. The DIGNAR model has been calibrated to the Bulgarian economy, using key economic ratios and parameter values. Most of the ratios correspond to the reported data for 2024, which is used as a reference year for the start of the simulations. Meanwhile, the parameter values are largely based on relevant existing literature (Melina et al, 2016; Blotevogel et al, 2024; Pfeiffer et al, 2021; and Kapsoli et al, 2023). Annex 1 provides the values of the calibrated parameters and ratios.

17. The DIGNAR model is used to simulate two scenarios:

- **Impact of the full absorption of available EU funds** under the RRP (including REPowerEU) and the 2021–27 MFF. As mentioned above, the total available EU funds for the period until 2030 for Bulgaria amount to EUR 18.7 billion, and around 16 percent have been already disbursed as of mid-October 2025. The baseline scenario for public investment and grants is consistent with the macroframework projections of the 2025 Article IV consultation and assumes about Euro 4.6 billion underutilization of the available EU funds. The alternative scenario is based on the assumption that all remaining EU funds will be absorbed by 2029.

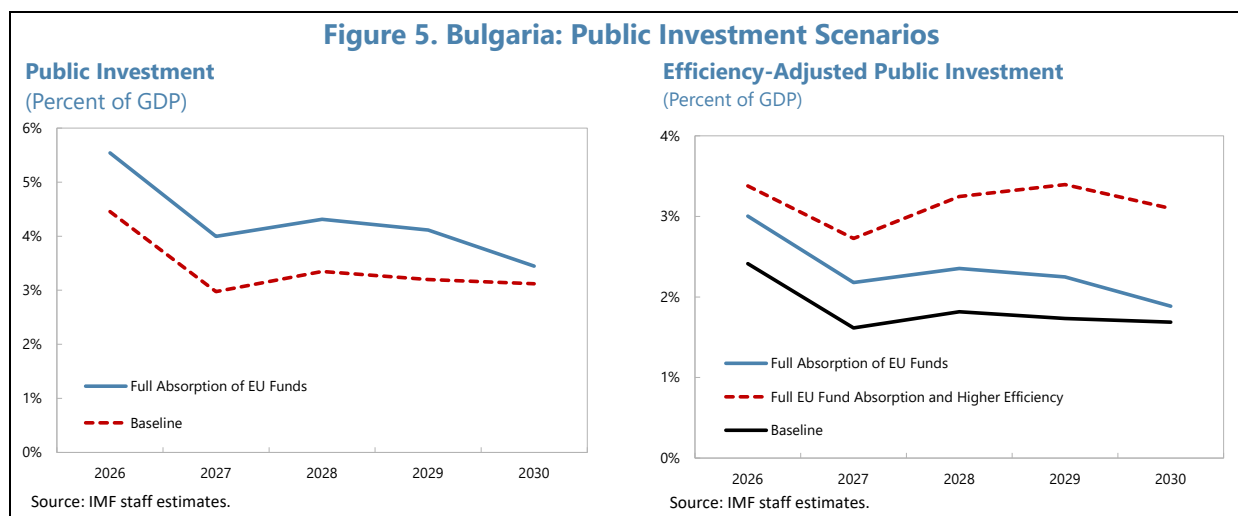
⁶ The DIGNAR-19 toolkit is available at <https://www.imf.org/en/Topics/sovereign-debt/dignar-19-toolkit>.

⁷ The resource sector is largely irrelevant for the case of Bulgaria and is not featured in the simulation results.

⁸ These are financially constrained households, which are not optimizing their utility dynamically, but at each point in time period spend all their labor income, remittances, and government transfers.

- **Gradual increase in the efficiency of public investment**, i.e. progressively reducing the efficiency gap from 54 percent to 25 percent in 2030 (see Kapsoli et al, 2023). This efficiency gain is added to the alternative scenario of full EU funds absorption.

Figure 5 depicts public investment and the efficiency-adjusted public investment⁹ in percent of GDP in the baseline and alternative scenarios.



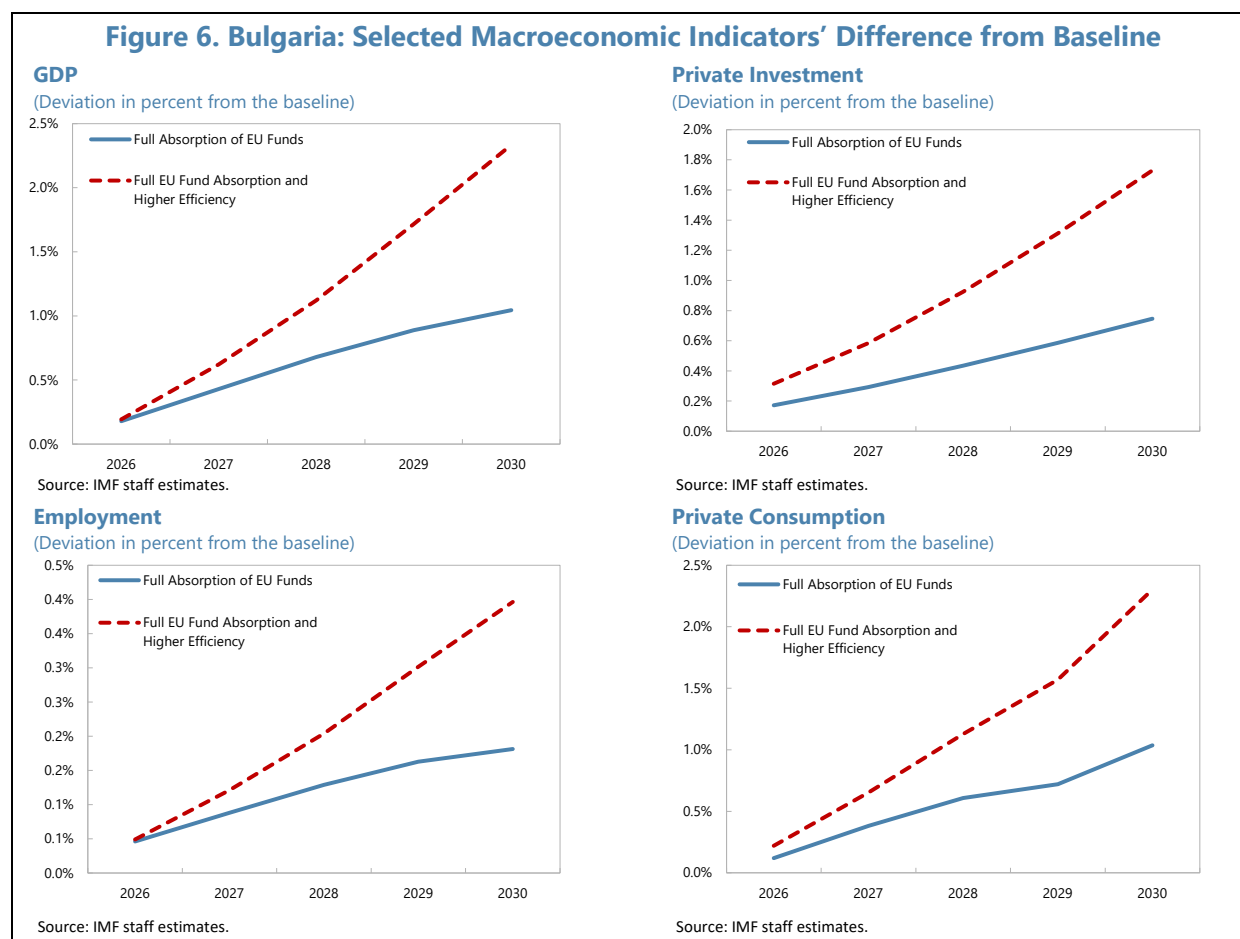
18. A scenario of full use of the available EU funds implies an average share of public capital expenditures of 4.3 percent of GDP annually in the period 2026–30, compared to the projected 3.4 percent in the baseline. It translates into an efficiency-adjusted investment of 1.9 percent of GDP in the baseline and 2.3 percent, if all EU funds are absorbed. If, on top of that, the efficiency of public investment is improved to 75 percent (i.e. the efficiency gap reduced to 25 percent) by 2030, the efficiency-adjusted public investment will amount to 3.2 percent of GDP on average in 2026–30.

19. Simulations show that GDP would be 1 percent higher in 2030 than in the baseline if all EU funds are utilized (Figure 6). This is equivalent to an acceleration of the GDP growth by 0.2 ppt on average in the five-year horizon from 2026 till 2030. Public capital accumulation also stimulates growth in private investment in both the tradable and non-tradable sectors. The income growth leads to an increase in private consumption, which is estimated to be also 1 percent higher in 2030. The fiscal position remains largely unchanged as higher public investment is financed by increased grants. Finally, over the next five years, the current account remains largely unchanged: public investment boosts imports, but exports also increase.

20. As can be expected, the higher-efficiency investment scenario shows a bigger economic impact, and GDP exceeds the baseline by 2.3 percent in 2030. Consumption is 2.3 percent higher, and private investment surpasses its baseline value by 1.7 percent. Furthermore, the gradual increase in the efficiency of public investment improves growth trajectories. In this

⁹ Efficiency is measured as the rate at which public investment expenditure translates into an increase in the productive public capital stock.

scenario, public debt is marginally lower than in the baseline, while the current account remains broadly unchanged.



E. Concluding Remarks

21. Scaling up quality public investment can serve as a powerful lever for accelerating income convergence with the EU and reducing disparities within the country. Accelerating the pace of absorption of EU funds and increasing public investment efficiency is critical and should be a top policy priority. Reforms that are pre-requisites for the EU funds disbursement need to be implemented steadfastly. At the same time, there is room to improve the effectiveness and efficiency of public investment, including by better planning and prioritizing multiannual capital expenditures, strengthening project appraisal and selection, and improving procurement.

22. Growth dividends from scaling up quality public investment are substantial. Simulations using models such as the DIGNAR illustrate the macroeconomic effects of scaled-up public investment and show that expanding and improving infrastructure will boost both current and potential growth. Furthermore, increasing the efficiency of public investment boosts growth dividends. Staff estimates that full absorption of EU Funds could boost GDP by 1 percent in 2030, compared to the baseline; paired with efficiency improvements, the gain could reach 2.3 percent.

Annex I. Baseline Model Calibration for Bulgaria

Definition	Value	Definition	Value
Key Ratios			
Government investment to GDP (%)	3.3	GDP real growth (%)	2.8
Government consumption to GDP (%)	12.00	Exports to GDP (%)	55.8
Government domestic debt (%)	5.9	Imports to GDP (%)	53.5
Government external commercial debt (%)	17.5	Private investment to GDP (%)	14.6
Concessional debt (%)	0.001	Private foreign debt to GDP (%)	33.0
Grants to GDP (%)	1.8	Domestic real interest rate (%)	0.02
Government revenue to GDP (%)	33.6	Real risk-free rate (%)	0.001
Share of labor taxes in total public revenue (%)	31.3	Real interest rate on external commercial debt (%)	0.02
Share of consumption taxes in total public revenue (%)	37.8	Share of tradables in consumption (%)	61.6
User fees of public infrastructure (in percent of recurrent costs)	68.2	Share of non-resource tradables in consumption of tradable goods (%)	78.9
Labor income share in traded sector (%)	43.3	Labor income share in non-traded sector (%)	47.9
Parameter Values			
Steady-state efficiency of public investment (%)	46.2	Private capital depreciation rate (%)	10
Share of optimizing households (%)	50	Public capital depreciation rate (%)	7
Elasticity of substitution between labor in tradable and non-tradable sectors	0.5	Output elasticity to public capital	0.12
Elasticity of substitution between traded and non-traded goods	0.99	Elasticity of portfolio adjustment costs	1
Inverse of Frisch labor elasticity	5	Investment adjustment cost	25
Inverse of the intertemporal elasticity of consumption	1.78	Elasticity of portfolio adjustment costs	1
Home bias for additional government spending	0.6	Elasticity of sovereign risk	0
Adjustment share by external commercial debt (%)	100		

References

- Aligishiev, Z. and R. Blotevogel, 2025, "No quick fix: The recovery and resilience plan and external position in Greece." *Economic Modelling* 151 (2025), 107186.
- Ciffolilli, A. and M. Pompili, 2024, Research for REGL Committee—Absorption rates of Cohesion Policy funds European Parliament, Policy Department for Structural and Cohesion Policies, Brussels
- Crucitti, F., N-J Lazarou, P. Monfort, and S. Salotti, 2021, "A scenario analysis of the 2021–2027 European Cohesion Policy in Bulgaria and its regions", JRC Working Papers on Territorial Modelling and Analysis, No. 06/2021, European Commission, Joint Research Centre (JRC), Seville.
- European Commission, 2023, "2024 Ageing Report: Underlying Assumptions and Projection Methodologies," European Economy Institutional Paper 257, European Union, 2023.
- Hallaert, J. and Primus, K., "Strengthening Public Expenditure Efficiency—Investment and Social Spending in Bulgaria," IMF Working Paper/22/100.
- IMF, 2024, "Bulgaria 2024 Article IV Consultation," IMF Country Report No. 24/163.
- IMF, 2020, "Well Spent: How Strong Infrastructure Governance Can End Waste in Public Investment," Edited by Gerd Schwartz, Manal Fouad, Torben Hansen, and Genevieve Verdier. Washington, D.C.: International Monetary Fund, 2020.
- Juillard, M., 1996, "Dynare: A program for the resolution and simulation of dynamic models with forward variables through the use of a relaxation algorithm," CEPREMAP, Couverture Orange, 9602.
- Kapsoli, J., Mogues, T., and Verdier, G., 2023, "Benchmarking Infrastructure Using Public Investment Efficiency Frontiers," IMF Working Paper 23/101.
- Melina, G., S. S. Yang, and L. Zanna, 2016, "Debt sustainability, public investment, and natural resources in developing countries: The DIGNAR model." *Economic Modelling* 52 (2016): 630–649.
- OECD, 2023, "OECD Economic Surveys: Bulgaria 2023," OECD Publishing, Paris, 2023.
- Pfeiffer P., J. Varga and J. in 't Veld, 2021, "Quantifying Spillovers of Next Generation EU Investment", EC discussion paper 144/2021.
- World Bank, 2024, "Bulgaria—Country Partnership Framework for the Period FY25-FY29," Washington, D.C.: World Bank Group.
- World Bank, 2023, "Bulgaria Public Finance Review 2023," World Bank, December 2023.