

BULGARIA: SELECTED ISSUES PAPER



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November, 2016

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BULGARIA

SELECTED ISSUES

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BULGARIA—STATE-OWNED ENTERPRISES IN A REGIONAL PERSPECTIVE¹

A. Introduction

1. State-owned enterprises (SOEs) play an important role in Bulgaria’s economy. They are especially important in network industries, such as energy, water management, and transportation. The purpose of this paper is to shed light on Bulgaria’s SOE sector and to assess its performance in a regional perspective. A detailed and rich firm-level dataset of state-owned and private firms was compiled for this note to compare key performance indicators of SOEs to private firms in the same sector and to similar firms in Croatia and Romania for a regional comparison.²

2. The main findings of the analysis are as follows:

- In some network industries, such as energy, SOEs are heavily loss-making. Large amounts of debt have been piled up notably in the energy and transport sectors which, to the extent that it is classified outside the general government accounts, can pose significant risk to public finances in the form of contingent liabilities if the SOEs run into financial difficulties.
- SOE profitability and resource allocation efficiency largely lag private firms in the same sectors, even when isolating SOEs engaged in competitive market activities and hence classified outside of general government. Coupled with comparably poor output quality, these challenges have the potential to impair competitiveness and productivity across the economy.
- Corporate governance of SOEs is perceived as weak in Bulgaria, pointing to substantial room for institutional reform, mainly in the areas of the SOE ownership policy, financial oversight, and professionalizing SOE boards. Bulgaria would also benefit from a more structured dividend policy, such as broad guidelines or pre-defined pay-out ratios, similar to peer countries.
- Taken together, these findings highlight the importance of improving the financial performance, efficiency, output quality, and governance of SOEs.

3. The remainder of this paper is organized as follows. It first sets the scene by reviewing the broader SOE landscape in Bulgaria, Croatia and Romania. It then assesses the profitability and efficiency of SOEs compared with private firms in the same sectors, with a focus on the Bulgarian

¹ Prepared by Uwe Böwer and Iana Paliova.

² Bulgaria, Croatia and Romania form the subset of Southeast European countries which are members of the European Union (SEE-EU countries) in IMF surveillance, among the emerging economies of Central, Eastern and Southeastern Europe (CESEE).

energy and transport sectors. Lastly, the paper discusses SOE governance issues in the context of international best practices and proposes policy recommendations for Bulgaria.

B. The Role of SOEs—Some Stylized Facts

4. The analysis of SOEs is based on a rich firm-level dataset,

which was constructed for this paper using the Orbis database provided by Bureau Van Dijk. The data represent the most recent picture currently available, referring to end-2014. After cleaning for inactive companies, outliers and double entries, the maximum number of observations amounts to

171,883 companies for Bulgaria, out of which 782 are state- and municipality-owned;³ 32,627 companies for Croatia (176 SOEs); 262,022 firms for Romania (679 SOEs). Although the coverage of the Orbis database is extensive, it cannot be regarded as fully exhaustive, so the presented aggregate figures of SOE activity should be understood as indicative. The available 4-digit NACE-2 sectoral identifiers are aggregated into eight economic sectors.⁴

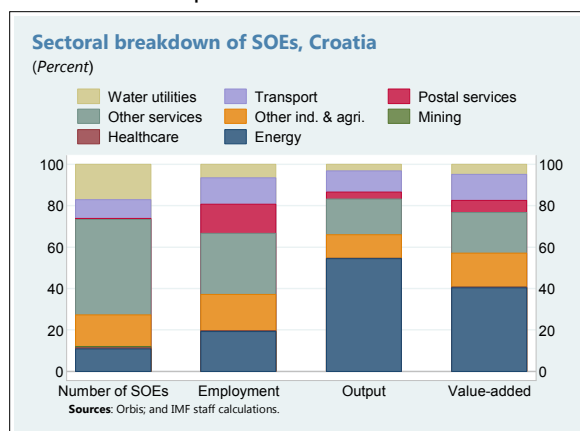
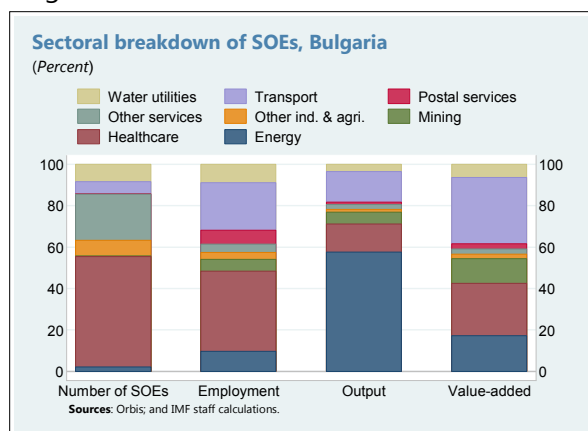
SOE dataset

	Bulgaria	Croatia	Romania
Total number of firms	171,883	32,627	262,022
Number of SOEs	782	176	679
Total SOE employment	169,089	67,688	113,216
Total SOE output (€ bn)	5.9	5.6	4.6
Total SOE value-added (€ bn)	1.7	2.3	2.3

Source: Orbis; and IMF staff calculations.

5. The SOE landscape is characterized by a large variety of entities.

SOEs vary in size from small local entities with only a few employees to large-scale companies, notably in the network industries. The chart illustrates the diversity of SOEs in Bulgaria, in comparison with Croatia and Romania. Overall, healthcare entities make up a large share of SOEs and of SOE employment in Bulgaria while services, water utilities and other industries are more prominent in Croatia and



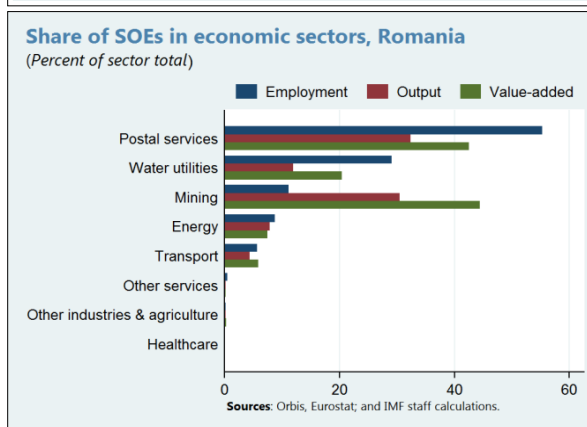
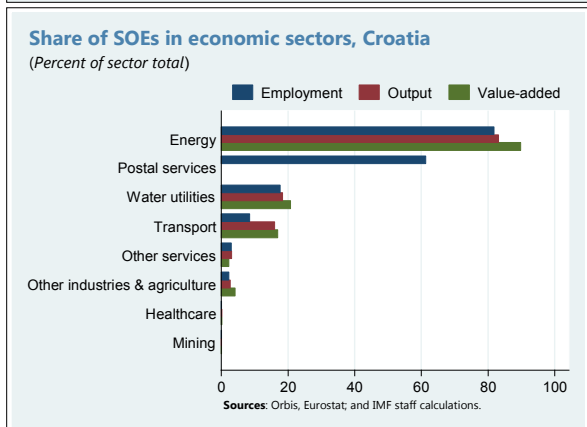
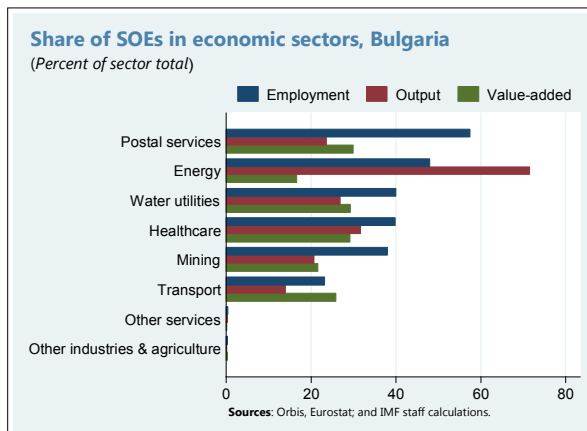
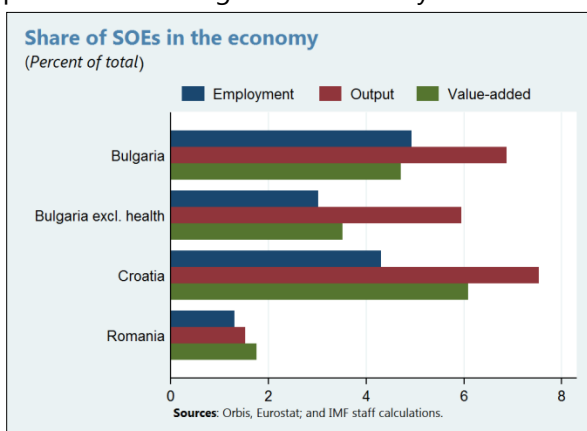
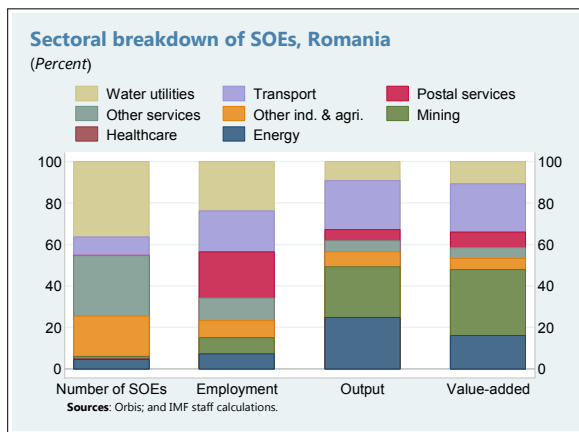
³ For simplicity, the remainder of this note will refer to "SOEs" as state- and municipality-owned enterprises.

⁴ Sectors are defined in line with NACE-2 sections as follows: Mining (B – mining & quarrying), other industries & agriculture (A – agriculture, C – manufacturing, F – construction), energy (D – electricity, gas, steam and air conditioning supply), water utilities (E – water supply, sewerage, waste management and remediation activities), transport (H49-H52 – land, water and air transport and warehousing/support activities for transportation), postal services (H53 – postal and courier services), healthcare (Q – human health and social work activities), other services (G – wholesale and retail trade, I – accommodation, J – ICT services, K – financial services, L – real estate services, M – professional activities, N – administrative and support services, P – education, R – arts & entertainment, S – other service activities).

Romania. For output and value-added, however, the typical network industries – energy and transport – as well as mining cover the largest part of SOE activity in all three countries.

6. SOEs have an important weight in Bulgaria’s economy.⁵ Aggregating over all sectors, SOEs contribute 4.9 percent to total employment, 6.9 percent to total output and 4.7 percent to gross value-added in Bulgaria. This compares roughly to the figures for Croatia while ranging significantly above those for Romania.

Subtracting the healthcare sector from Bulgaria’s figures – as it includes largely state and municipal hospitals that are not encoded as SOEs in the Croatia and Romania datasets – facilitates cross-country comparison.⁶ As a result, Bulgaria’s contributions fall mainly in terms of employment (down to 3.0 percent) and value-added (down to 3.5 percent), while the contribution to output is still at 6.0 percent due to high labor intensity and



⁵ Employment data are available for 766 SOEs in Bulgaria, 167 SOEs in Croatia, and 676 SOEs in Romania. Turnover data are available for 782 SOEs in Bulgaria, 176 SOEs in Croatia, and 679 SOEs in Romania. Value-added data are available for 689 SOEs in Bulgaria, 169 SOEs in Croatia, and 526 SOEs in Romania.

⁶ Since the healthcare reform of 2000, Bulgaria’s hospitals are set up trade companies.

presumably non-market pricing in the medical profession. This still ranges above the 2 percent average employment share of SOEs in countries which are members of both the EU and the OECD (OECD, 2012).

7. In network industries, SOEs play a dominating role. SOEs have a significant presence in the energy sector in Bulgaria and Croatia while being less prominent in Romania. SOEs in the water and mining sectors make important sectoral contributions in Bulgaria and Romania, less so in Croatia. The transport sector features an SOE employment share of more than 20 percent in Bulgaria. The prominence of SOEs in Bulgaria's healthcare sector, however, is due to a different legal basis of hospitals and medical centers compared to peer countries.

C. Performance of SOEs

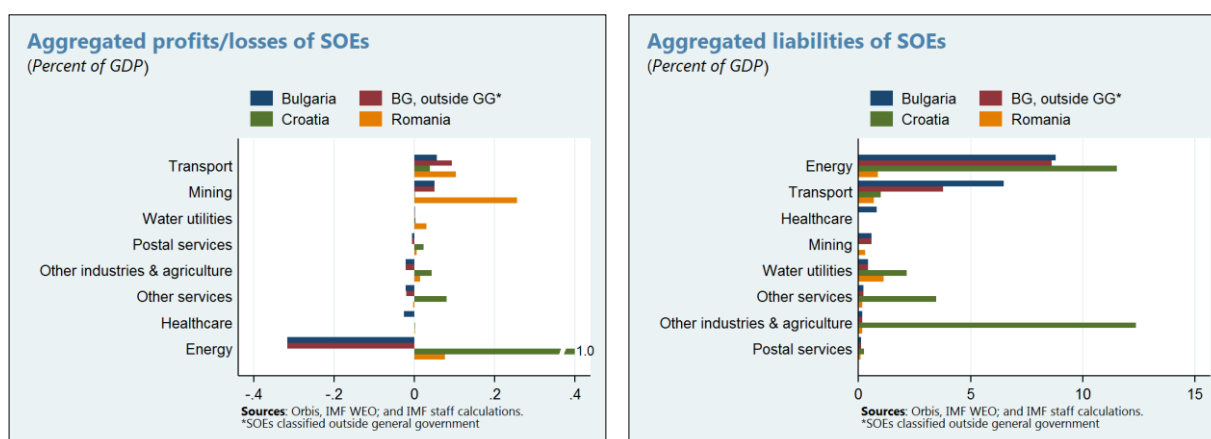
8. Assessing the financial performance of SOEs is not straightforward. While many SOEs operate in a market environment, others are constrained by public service obligations, characterized by natural monopoly conditions, or set up as administrative institutional units. Those non-market firms are typically less able to generate profits and to compete successfully against private companies. For that reason, they tend to be classified in fiscal accounts as "general government units" while SOEs operating in competitive markets are classified as "public corporations", outside the general government sector. The distinction is made annually on the basis of a "market test" in line with Eurostat's government debt guidelines, determining whether an SOE's operational revenues cover its operational costs by at least 50 percent. To facilitate the analysis and enable a meaningful comparison with private firms, Bulgaria's public corporations, i.e. its "market SOEs" outside of general government are reported separately in the following charts.⁷

9. Energy SOEs recorded substantial losses in Bulgaria but large profits in Croatia.⁸ In 2014, Bulgaria's National Electricity Company (NEK) alone accounted for an operational loss before tax of 0.7 percent of GDP which was only partly compensated by profits of other energy companies. By contrast, the energy SOEs in Croatia managed to generate a substantial profit of 1.0 percent of GDP in the same year, based on cost-efficient hydro power and low energy input prices. Moderate profits were recorded in Bulgaria's transport and mining SOEs while other sectors showed minor losses. Among the transport sector, four SOEs are classified within general government – including the loss-making railway passenger service and infrastructure companies. Excluding these firms results in slightly larger aggregate profits of Bulgaria's transport SOEs. Croatia's SOEs yielded

⁷ In Bulgaria, hospitals and medical centers, which are funded by the Ministry of Health or the National Health Insurance Fund, can be considered part of general government, affecting all 416 state-owned entities in the healthcare sector of the Orbis dataset. Furthermore, the Bulgarian authorities explicitly classified 17 SOEs other than healthcare as part of the general government sector in 2014, out of which 9 are covered by the Orbis dataset – 4 firms operating in the transport sector, 2 in the service sector, 1 in mining, energy and water utilities, respectively. For Croatia and Romania, the distinction between SOEs within and outside the general government sector is not included in this paper.

⁸ Data on profits and losses before tax are available for 782 SOEs in Bulgaria, of which 357 are classified outside general government, for 176 SOEs in Croatia, and for 679 SOEs in Romania.

positive results in postal services, other services and other industries. In Romania, notable profits were generated in the mining, transport and energy sectors.



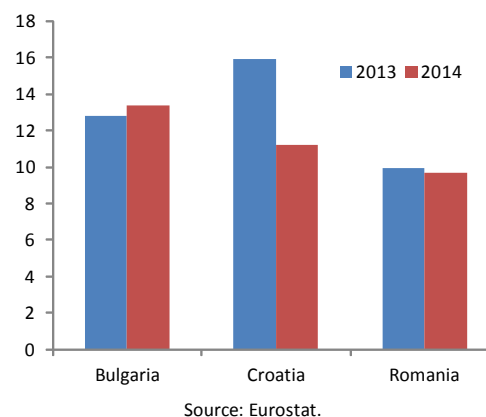
10. Bulgarian and Croatian SOEs account for large liabilities in selected sectors.⁹ The Bulgarian electricity company NEK and its parent company BEH hold liabilities of around 4.2 percent of GDP. Additional debt by nuclear power, heating and gas companies contribute to the overall energy SOE liabilities of 8.6 percent of GDP. Excluding the debt of the radioactive waste company – the only energy-sector SOE included in general government accounts – reduces the aggregated debt of the sector slightly. The difference between SOEs within and outside the general government is more striking in the transport sector, given that the two railway SOEs within general government account for liabilities of 2.6 percent of GDP. In Croatia, outstanding liabilities are on account of the national electricity company HEP (“energy”), the Zagreb Holding company – a conglomerate that also operates water, electricity and transport services (“other services”) – as well as various highway development and maintenance companies (“other industries”). To the contrary, Romania’s SOEs have not accumulated liabilities of comparable size. While the debt of SOEs classified as general government units is explicitly accounted for in fiscal accounts, the debt of public corporations, i.e. SOEs outside general government, can imply significant risk to public finances through contingent liabilities (see Box 1).

⁹ Data on liabilities are available for 782 SOEs in Bulgaria, out of which 357 are classified outside general government, for 176 SOEs in Croatia, and for 679 SOEs in Romania.

Box 1. SOEs and Contingent Liabilities

Contingent liabilities from SOEs pose potential risk for Bulgaria. Aggregated firm-level data from Orbis indicate a total amount of liabilities of SOEs outside general government of 13.9 percent of GDP in 2014. This number is similar to national accounts data from Eurostat which state an amount of 13.4 percent of GDP in the same year. As of 2014, Bulgaria's contingent liabilities exceed those of peer countries (see graph) and, if triggered, would be a considerable burden for Bulgaria's public finances. While Croatia reduced its contingent liabilities significantly between 2013 and 2014, and Romania achieved a small reduction, Bulgaria's contingent liabilities increased during the same period.¹

Total outstanding liabilities of government entities classified outside general government (percent of GDP)



In historical perspective, the share of SOEs in the Bulgarian economy has decreased, hence reducing contingent liabilities over the years. Enterprise restructuring started in the 1990s, when SOEs accumulated large losses and arrears. In order to break the inter-enterprise chain of arrears leading to accumulation of tax arrears, the government implemented a strategy to recapitalize enterprises and thus enabled them to pay suppliers (typically the gas and energy public monopolies), which would in turn pay tax and social contributions arrears to the budget. In order to limit moral hazard, this operation was available as a one-off option at the time of privatization.

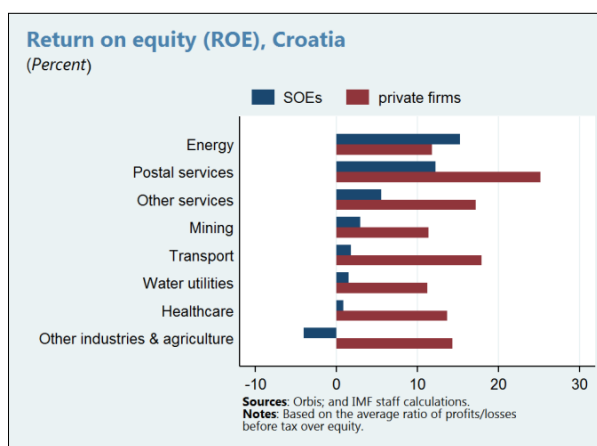
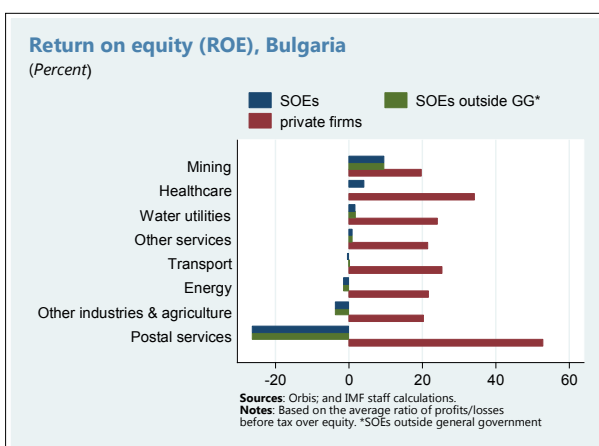
State guarantees could drain public finances and hamper economic activity. While their size in Bulgaria is currently not significant (0.01 percent of GDP in May 2016), some of the main beneficiaries – like the railway company BDZ – have been incurring losses and accumulating arrears to their suppliers. Arrears to suppliers may have contributed to the rise of nonperforming loans of the banking system.

¹ In Romania's case, around 70 percent of the reported contingent liabilities in 2014 stem from arrears to the government, so the fiscal risk from the contingent liabilities is considerably lower. In Bulgaria, however, the liabilities are largely due to the private sector, so the contingent liabilities do reflect fiscal risks.

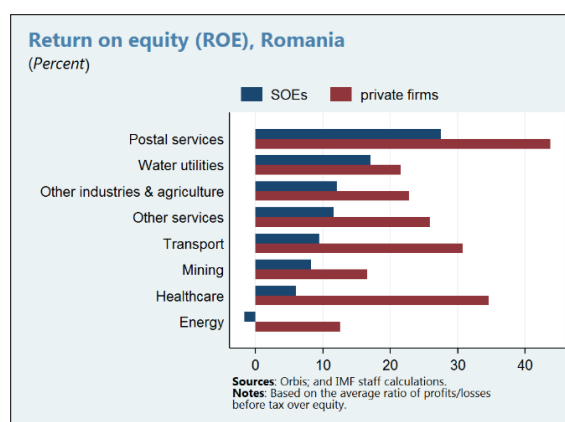
11. SOEs in all three countries tend to be less profitable than private companies, partly due to public service obligations. The return on equity (ROE) measures a firm's profitability in terms of profits and losses before taxes as a percentage of shareholders' equity, indicating the ability of a company to generate profits with the money that shareholders have invested.¹⁰ The underperformance of SOEs was widespread in all three countries in 2014, yet most striking in

¹⁰ ROE data are available for 637 SOEs (out of which 296 are classified outside general government) and 130,865 private firms in Bulgaria, for 147 SOEs and 21,582 private firms in Croatia, and 427 SOEs and 116,437 private firms in Romania.

Bulgaria. Excluding the non-market SOEs classified within general government would imply that the remaining SOEs engage in market activities and should hence be able to compete with private firms. Indeed, the ROE ratios for the individual SOEs within general government point to worse-than-average performance within their sectors, most notably the railway passenger service company. However, the sectoral averages are hardly affected due to the small number of general government SOEs, and private firms' profitability remains way ahead of SOEs. In Croatia, the energy SOEs outperform private firms based on profits in the hydro sector and low-cost energy inputs. The state-owned postal sector, although classified as market companies by the authorities and thus not included in general government, is disadvantaged by its public service obligation as private competitors are free to specialize on the most profitable routes. In contrast to the large negative ROE of 26 percent in Bulgaria, however, postal service SOEs in Croatia and Romania managed to yield positive ROE ratios, even though lagging behind private peers.

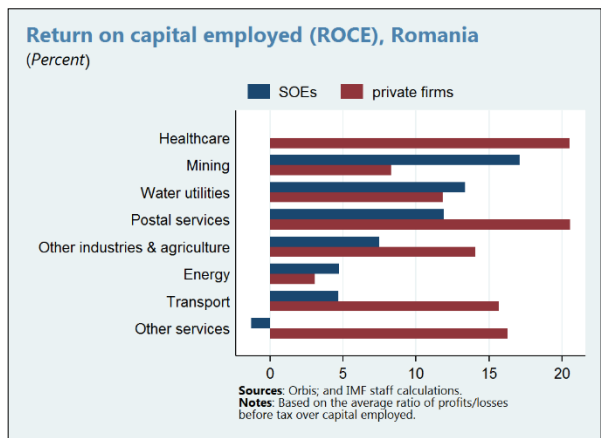
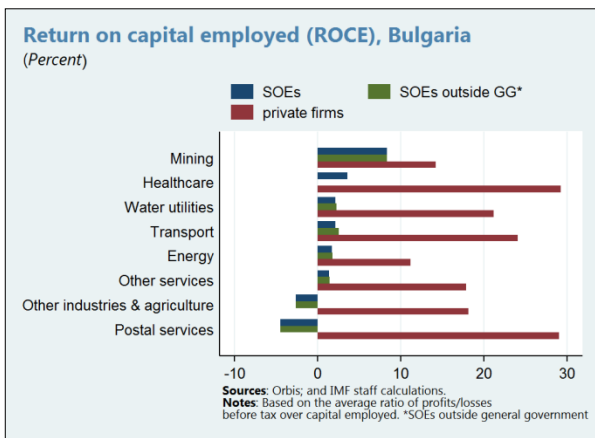


12. Bulgarian SOEs appear to have lower allocative efficiency of capital as measured by the return on capital employed (ROCE), defined as the operating profit or loss before taxes as a share of capital employed.¹¹ This measure indicates the efficiency by which the sum of shareholders' equity and debt are deployed to generate profits. In Bulgaria, SOEs are less efficient in employing their capital resources than private peer companies in all sectors. While mining is the most profitable and efficient SOE sector, private companies operate even more efficiently with their capital. In the other sectors, the shortfall is even more striking, with postal services again at the end of the scale. When excluding SOEs within general government, the affected sectors display slightly more favorable numbers as the ROCE ratios of all

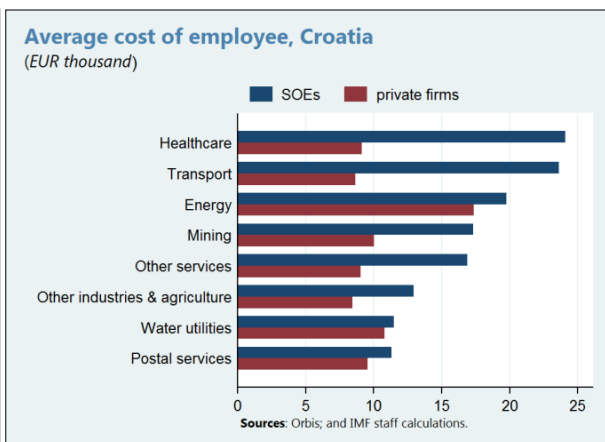
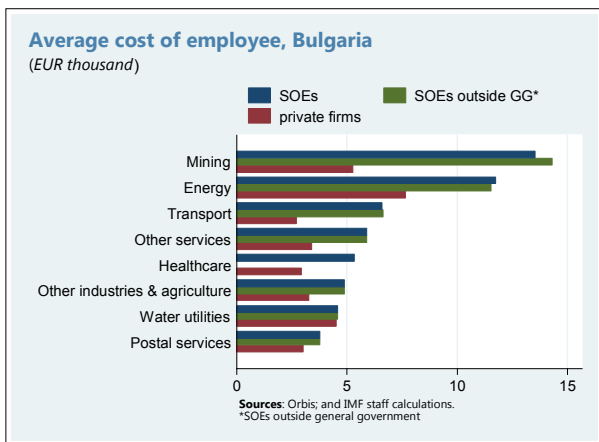


¹¹ ROCE data are available for 470 SOEs (out of which 224 are classified outside general government) and 57,099 private firms in Bulgaria, and for 144 SOEs and 46,906 private firms in Romania. For Croatia, there are no ROCE data available for SOEs.

general government SOEs point to worse capital efficiency than their sectoral averages; however, the general picture compared to private firms remains unchanged. While comparable data for Croatia are not available, the situation in Romania is more nuanced; mining, water and energy SOEs display larger ROCE ratios than private companies do, pointing to more efficient capital allocation in SOEs.



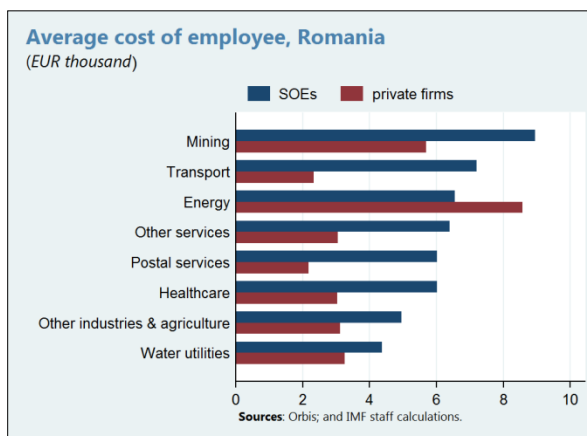
13. Similarly, private firms do better than SOEs in labor resource allocation. This difference appears in higher average cost of labor per capita in SOEs than in private firms in all sectors of the three countries, with the notable exception of the Romanian energy sector.¹² Bulgarian non-market SOEs would be expected to display higher costs than SOEs outside general government subject to competitive pressure. Yet, this assumption is not supported unequivocally by the data as labor costs in the SOEs within general government undercut the sectoral average in the mining, transport and water sectors. Compared with private firms, however, the evidence points to lower efficiency and competitiveness in SOEs overall.



¹² Data for cost of employees are available for 756 SOEs (out of which 345 are classified outside of general government) and 113,324 private firms in Bulgaria, for 168 SOEs and 26,233 private firms in Croatia, and 635 SOEs and 193,085 private firms in Romania.

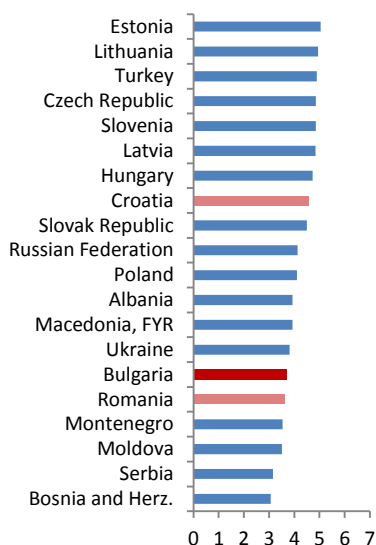
14. Bulgaria’s and Romania’s network SOEs deliver partly poor infrastructure quality.

The World Economic Forum’s Global Competitiveness Indicators assess Bulgaria’s quality of overall infrastructure is relatively weak among Central, Eastern, and Southeastern European (CESEE) countries. While Romania’s performance is broadly similar to Bulgaria’s, Croatia achieves a more favorable result. Bulgaria’s electricity supply quality is particularly poor. The quality of railroads is better in Bulgaria than in Croatia and Romania, but compared to the region, Bulgaria ranges only mid-field. This evidence seems to indicate that there is ample room for Bulgarian and Romanian SOEs to improve their output quality to avoid wider risks to the economy’s competitiveness.



Quality of overall infrastructure

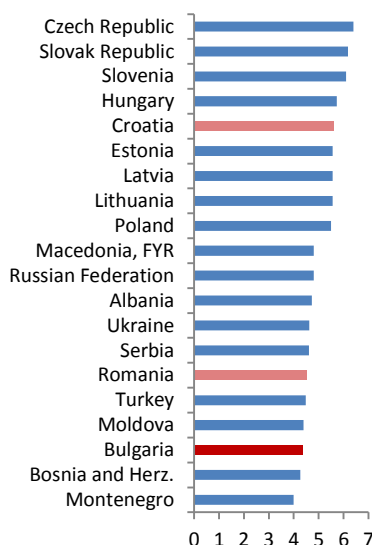
(higher denotes better quality)



Note: Composite indicator of energy, transport, and ICT infrastructure. Source: WEF Global Competitiveness Indicators (2015-2016).

Quality of electricity supply

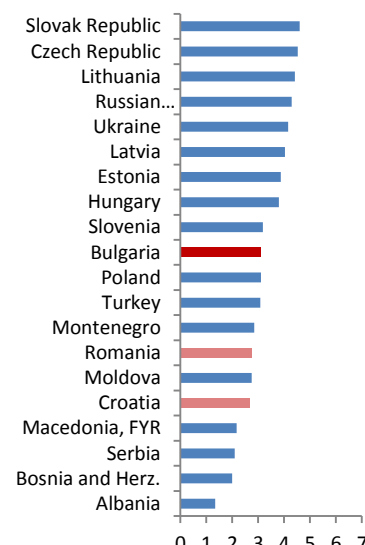
(higher denotes better quality)



Note: Reliability of electricity supply, i.e. lack of interruptions and lack of voltage fluctuations, from 1 = extremely unreliable, to 7 = extremely reliable. Source: WEF GCI (2015-2016).

Quality of railroads

(higher denotes better quality)



Note: Quality of the railroad system, from 1 = extremely underdeveloped, to 7 = extensive and efficient. Source: WEF GCI (2015-2016).

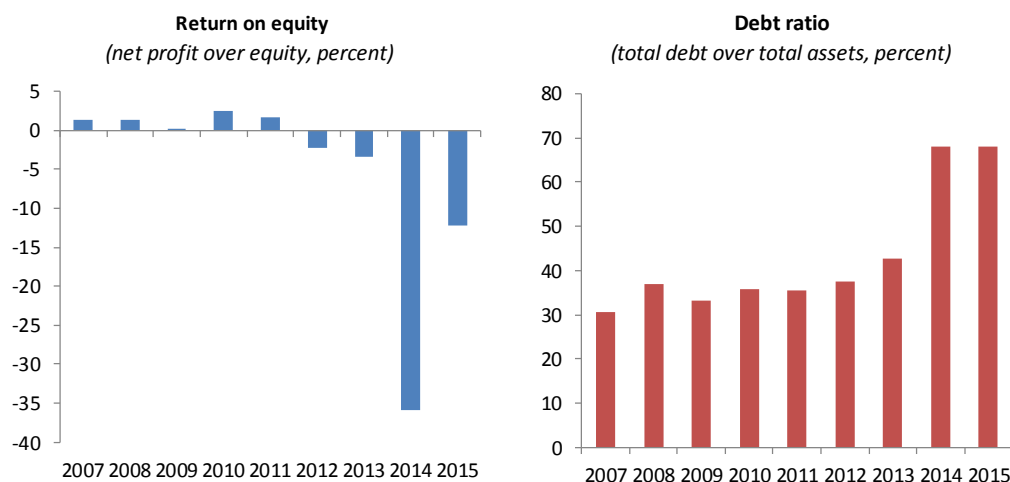
15. The performance of SOE-dominated network sectors affects productivity also in other sectors of the economy. Recent World Bank analysis based on Bulgarian firm-level data shows that structural reforms in SOE-dominated network service sectors have significantly positive effects on firm productivity also in manufacturing and other downstream sectors which rely on service inputs (World Bank, 2015). The identified reforms include service-sector liberalization and deregulation as specified in the EBRD Structural Change Indicators, measuring reform progress in transition

economies against the standards of advanced economies. The authors also test the impact of the presence of foreign service firms, the level of competition, and the extent to which service providers are also exporters – given that productivity in exporting companies tends to exceed that of non-exporters. Liberalization and deregulation reforms turn out to be particularly strong in the electricity sector, and also likely in the transport sector, although the analysis of the latter suffers from data shortages. Both sectors are heavily dominated by SOEs in Bulgaria. Opening these sectors up to foreign investors, increasing competition and, to a lesser extent, promoting export activity among network sector firms, leads to improved firm-level total factor productivity in downstream firms. In sum, the evidence suggests that improving the performance of SOE-dominated service sectors, notably energy, bears the potential to boost productivity across the economy as a whole.

Box 2. Challenges in Bulgaria's Energy and Transport Sectors

Energy

The state-owned electricity sector continues to face financial challenges, mainly on account of a tariff deficit at the National Electricity Company (NEK). This deficit arises as the difference between excessive costs on the one hand, given preferential prices for US-owned thermal power plants, green energy producers and co-generators, and artificially reduced retail prices set by the energy regulator on the other, at which NEK sells electricity to electro distribution companies. As a result, NEK's revenues range below its cost which has led to a negative return on equity since 2012. In 2015, NEK's debt level decreased slightly on the back of reduced intra-holding loans but it is still subject to substantial risk, due to the recent arbitration court decision about the Belene nuclear power plant. The decision obliges NEK to pay EUR 550 million plus interest to Russia's Atomstroyexport as a compensation for the equipment already produced. NEK's financial loss amounted to BGN 196.7 million as of end-2015. Loss write-offs further consumed its equity in 2015. Short-term liabilities to suppliers reached BGN 2.2 billion in 2015. NEK has high leverage, with an increasing debt-to-equity ratio of 213 percent and a debt-to-assets ratio of 68 percent.



Sources: CSD, NEK financial statements 2007-2015; and IMF staff calculations.

Box 2. Challenges in Bulgaria's Energy and Transport Sectors (continue)

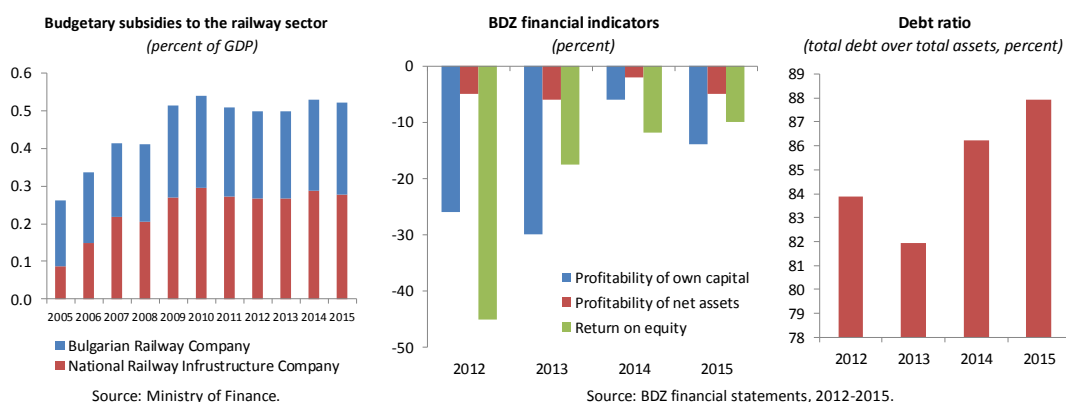
First steps have been taken to address the severe governance challenges in Bulgaria's energy sector. The efficiency and consistency of decision-making processes within the sector have been widely questioned and price liberalization has been called for, as the legislative framework for independence has been seen as inadequate to shield the sector from the influence of vested interests and political interference. The 2015 amendments to the Energy Act introducing tariffs changes and independence of the energy regulator served as steps in the right direction towards restoring financial sustainability and reducing the financial losses and indebtedness of NEK. These amendments have allowed NEK to stop buying electricity at excessive prices from inefficient coal producers (co-generators), having contributed to reducing NEK's deficit in 2015.

A new Energy System Sustainability Fund has been created in 2015 to reduce NEK's deficit gradually. The fund collects 5 percent of the revenues without VAT of energy producers with the aim of covering revenue shortfalls due to the tariff deficit. The regulator does not consider this type of cross-financing as state aid, but after the envisaged liberalization of the electricity market, the approval of the European Commission's competition authority will be required. The fund is expected to raise additional revenues for NEK amounting to BGN 400 million per year.

Excessive electricity wholesale prices are set to be renegotiated. After NEK's parent holding company BEH secured a bridge loan of EUR 535 million in April 2016 and placed a Eurobond of EUR 550 million in July 2015, the envisaged agreement with the US-owned thermal power plants to bring down high wholesale prices in return for repayment of arrears is expected to be implemented.¹

Railways

Railway SOEs stand out with weak performance. The railway companies' underperformance is reflected in fiscal accounts by subsidy transfers amounting to around 0.5 percent of GDP on average since 2009. Losses are now reflected in the government's budget deficit on an accrual basis, following the reclassification of the Bulgarian State Railways (BDZ) passenger services to the general government sector according to Eurostat-ESA2010 rules. BDZ's profitability remained negative in through 2015. The debt-to-assets ratio slightly increased from 2014 to 2015, reaching 88 percent.



Box 2. Challenges in Bulgaria's Energy and Transport Sectors (concluded)

In the presence of structural challenges, railway reform progress has been sluggish.

Performance and efficiency of the railway sector have been held down by limited own revenue, underachieving management, a large and inefficient network, weak rehabilitation, outdated signaling and safety systems, lack of lines and slots dedicated to freight carriers, poor condition of the vehicles, and lack of large border stations. All these factors make it difficult to compete successfully with other means of transportation. The governance reform started in 2010 had envisaged a restructuring of BDZ and disposal of non-core loss-making business but progress has been limited and the privatization of the freight services company has failed despite the intentions of several governments.

¹ The arrears amounted to BGN 950mn in 2015, or BGN 600mn if netted from the US firms' arrears to state-owned coal producers.

D. SOE Governance

16. Good corporate governance is at the heart of healthy SOEs. Given their special role as providers of key public services, the effectiveness of SOEs has a strong impact on the welfare of citizens and on the competitiveness of the economy at large. As SOEs often operate with dual goals of economic market activity and public policy obligations, a functioning governance environment for SOEs is crucial. Well-designed governance structures are also needed to address the frequent challenge of undue hands-on and politically motivated ownership interference in SOEs.

17. The OECD guidelines on SOE governance provide an international benchmark of best practices. Agreed between OECD member states in 2005 and further developed in 2015, the guidelines are recommendations to governments towards efficient, transparent and accountable operation of SOEs. They aim at professionalizing the state as an owner, making SOEs operate with similar good practices as private enterprises, and ensuring competition between public and private firms at level playing field. Box 3 presents the overall guidelines in brief (OECD, 2015a). Due to their general relevance, these SOE guidelines constitute useful yardsticks also for countries like Bulgaria, Croatia and Romania, which are currently not members of the OECD.

Box 3. OECD Guidelines on Corporate Governance of SOEs

Rationales for state ownership: The state exercises the ownership of SOEs in the interest of the general public. It should carefully evaluate and disclose the objectives that justify state ownership and subject these to a recurrent review.

The state's role as an owner: The state should act as an informed and active owner, ensuring that the governance of SOEs is carried out in a transparent and accountable manner, with a high degree of professionalism and effectiveness.

SOEs in the marketplace: Consistent with the rationale for state ownership, the legal and regulatory framework for SOEs should ensure a level playing field and fair competition in the marketplace when SOEs undertake economic activities.

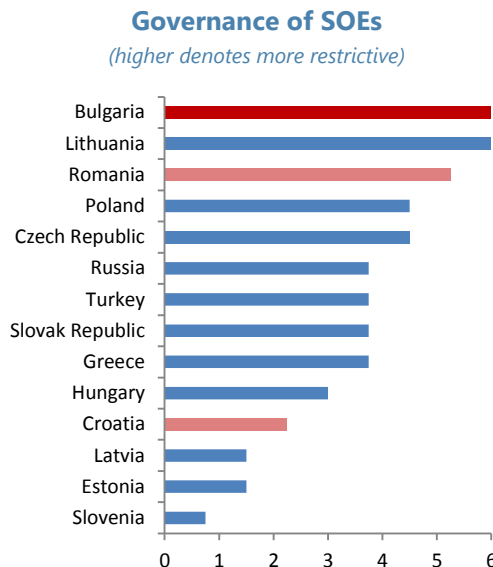
Equitable treatment of shareholders: Where SOEs are listed or otherwise include non-state investors among their owners, the state and the enterprises should recognize the rights of all shareholders and ensure shareholders' equitable treatment and equal access to corporate information.

Stakeholder relations and responsible business: The state ownership policy should fully recognize SOEs' responsibilities towards stakeholders and request that SOEs report on their relations with stakeholders. It should make clear any expectations the state has in respect of responsible business conduct by SOEs.

Disclosure and transparency: SOEs should observe high standards of transparency and be subject to the same high quality accounting, disclosure, compliance and auditing standards as listed companies.

The responsibilities of boards: The boards of SOEs should have the necessary authority, competencies and objectivity to carry out their functions of strategic guidance and monitoring of management. They should act with integrity and be held accountable for their actions.

18. Qualitative SOE governance indicators point to room for improvement, notably in Bulgaria and Romania. Comparing the OECD’s state control indicators for available CESEE countries shows Bulgaria on top of the list of most restrictive SOE governance environments. This indicator gauges the insulation of SOEs from market discipline and the political interference in the management of SOEs. Romania follows two ranks behind Bulgaria while Croatia scores more favorably.



Note: Degree of insulation of SOEs from market discipline and degree of political interference in the management of SOEs. Source: OECD Product Market Regulation Indicators (2013).

19. Bulgaria’s main SOE governance challenges stem from the overall ownership policy, financial oversight, and governance of SOE boards and CEOs. The following sub-sections address these issues in turn, each highlighting first the current challenges in Bulgaria, then outlining OECD guidance and experience in peer countries, before proposing policy recommendations to improve the situation in Bulgaria. The chart summarizes the reform recommendations.



Clearly Articulated Ownership Policy

20. Bulgaria’s ownership policy is currently not articulated with full clarity, and the SOE governance structure seems fragmented. Even after large-scale privatization during the transition phase, today’s SOE landscape in Bulgaria remains characterized by legacy issues. A clear rationale for state ownership of individual companies and a coherent strategy for exercising the state’s SOE ownership function are largely absent. SOEs report to their respective line ministries or to subnational government bodies, without effective coordination and oversight within the

government. There is no explicit SOE framework law to clarify and govern the respective roles of different government bodies in relation to SOEs.

21. OECD guidance recommends to develop an explicit ownership policy. The government should specify, and regularly review, the overall rationales for state ownership and its policy objectives, such as the creation of value, the provision of public services, or strategic goals like keeping certain industries under national ownership. It should also clarify how the state intends to articulate its ownership role, notably by defining the respective roles and responsibilities of government bodies involved. The OECD recommends to exercise SOE ownership rights in a dedicated, accountable entity within the government, ensuring consistency and allowing for concentrating relevant experts on key issues in one place. The ownership policy should ideally be embodied in a specific high-level document which should reference and synthesize the elements of policies, laws, and regulations applicable to SOEs.

22. Some regional peer countries have formulated ownership policy documents. Lithuania adopted an ownership policy in 2012 by issuing Ownership Guidelines. These guidelines outline the rationales and objectives for different categories of SOEs, including those who are expected to maximize profits; fulfil objectives in the national strategic interest; and reach national social or political goals. The document also specifies the rights and responsibilities of state ownership entities for the implementation of SOE governance arrangements (OECD 2015b). In Latvia, the ownership policy is articulated in the State Administration Structure Law, stipulating the rationale for the state to own commercial enterprises in cases of market failure, natural monopoly, strategically important sectors, sectors which require large capital investments, and sectors in which the public interest requires higher quality standards (OECD 2015c).

23. Developing a clear ownership policy would help making Bulgaria's SOE governance framework more coherent. Bulgaria's fragmented SOE sector calls for a clear and consistent ownership policy. Such a document should reflect the overall rationale for state ownership, based on the objectives for individual SOEs, and set out a review process to explore whether to maintain or change the ownership status of individual SOEs. It should also specify and motivate the respective roles of the Ministry of Finance, sectoral line ministries, municipalities and other government bodies in executing the state ownership role for SOEs, and duly motivate whether a centralized, decentralized, or hybrid ownership model is best placed for Bulgaria. The government could consider putting forward a designated SOE framework law, or incorporate these elements in the existing Public Finance Act.

Effective Financial Oversight

24. Bulgaria's performance and evaluation frameworks for SOEs appear not sufficiently systematic. Performance control and monitoring practices for SOEs rest largely with the respective line ministries and varies considerably as internal rules and well-specified performance targets are generally not in place (Park et al., 2016). Areas which are centrally managed, such as the dividend policy, suffer from ad-hoc decision-making, at the detriment of investment and innovation activities within the SOEs. In terms of output evaluation, there are no systematic consumer satisfaction

surveys or other evaluation systems of the performance of SOEs in operation which would allow horizontal quality control in line with standardized index measures. Although the Ministry of Finance collects and puts online the quarterly financial statements of individual SOEs, it neither provides SOE data in a comprehensive and consistent format, nor publishes any systematic assessments of fiscal risks or economic implications stemming from SOE performance.

25. The OECD recommends to specify performance objectives, followed up by regular monitoring. Performance objectives typically set out financial and operational targets, including on rates of return, capital appropriateness, and dividend policy, creating a stable planning framework for long-term investment and public service obligations and limiting state interference in operational issues. The fulfillment of performance targets should be closely monitored by internal and external reporting and evaluation systems. Performance benchmarking with private and public sector entities at domestic and international levels can be a powerful tool to ensure appropriate productivity and resource allocation efficiency.

26. Experience in peer countries points to beneficial effects of performance objectives and monitoring. Lithuania's SOE reform in 2010 put ROE targets and monitoring in place, contributing to the significant progress of SOE reform in Lithuania as attested by the EU (European Commission, 2015). Romania and Slovenia have adopted performance monitoring concepts for SOEs while Croatia is working on improving company-specific objectives (European Commission, 2016). Dividend policies in regional peers vary substantially between ad-hoc pay-outs and more formalized mechanisms (see Box 4). Among OECD countries, Korea applies a particularly informative and rigorous SOE monitoring system, including customer satisfactions surveys and index-based evaluations which are seen as key factors for the exemplary efficiency and performance of Korea's SOEs (Park et al., 2016). To ensure consistent financial oversight of SOEs across the government, many countries operate dedicated monitoring units. These units are often placed within the Ministry of Finance to make best use of expertise in corporate finance, financial analysis and corporate governance, for instance in Chile and South Africa. They frequently publish annual monitoring reports to shed light on SOEs' financial performance and emanating fiscal risks (IMF, forthcoming).

27. Financial oversight of SOEs in Bulgaria would benefit from a comprehensive monitoring approach and strengthened capacities at the Ministry of Finance. Performance targets for SOEs should be clearly defined and closely monitored. These indicators could include financial performance ratios, such as the profit margin (earnings/revenues), return on equity (earnings/equity) and return on assets (earnings/assets), as well as financial risk indicators, such as liquidity (current assets/current liabilities), leverage (assets/equity), and solvency (liabilities/revenue). The monitoring framework could comprise sanctions with various degrees of severity, including additional reporting requirements and controls or administrative measures imposed on SOE boards (IMF, forthcoming). The Ministry of Finance would benefit from reinforced capacities for monitoring and analyzing the performance of SOEs. To improve the monitoring of fiscal risks at all levels of government, the SOE oversight role of the Ministry of Finance could be further strengthened by ensuring that the Public Finance Act and its fiscal rules cover the monitoring also of municipally-owned SOEs more explicitly. Finally, customer satisfactions surveys and other forms of output quality

control could be developed and executed by external, independent consultants, using consistent methodologies across SOEs.

Box 4. Dividend Policies Applied in SOE Sectors of Peer Countries

Dividend policies need to strike a balance between government interests for fiscal revenue and company interests for financial sustainability. While the state as the owner has a legitimate interest in collecting a share of SOE profit, the companies' needs to retain earnings for achieving a solid capital structure and for making long-term investments to spur innovation and productivity should not be neglected. The OECD guidelines do not recommend a specific dividend policy. A recent OECD member survey highlights the diversity of existing dividend policy approaches (OECD, 2014).

- **No explicit dividend policy.** Dividends are negotiated on a case-by-case basis between the SOE boards and the state. Some countries acknowledge that government budget needs influence the ad-hoc decisions on dividend levels, while others point to SOE profitability and future capital needs as relevant factors. In the CESEE region, the Czech Republic, Estonia, and Hungary are included in this group. Although not covered by the OECD survey, Bulgaria, Croatia and Romania seem to fall under this category as well. This approach appears particularly prone to excessive dividend collection.
- **Broad guidelines.** The entire SOE sector is subject to a set of broad guidelines determining factors which should be taken into account in setting dividend levels. In Poland, the Treasury's guidelines for SOEs stipulate that annual dividend decisions should be guided by the need to recover prior losses, long-term investment strategies, privatization procedures, and firm indebtedness. The dividend levels are determined in relation to rate-of-return indicators and liquidity ratios.
- **Explicit dividend ratios.** Pre-defined target percentages are applied. In Lithuania, the state expects dividends from limited liability firms of at least 7 percent of equity and at most 80 percent of company profits while statutory corporations are expected to pay out 50 percent of annual profits. Slovenia's general dividend policy foresees an annual pay-out of at least one third of net profits. Extraordinary dividend pay-outs have also occurred in both countries.
- **Links to optimal capital structure.** Dividend payments are explicitly linked to achieving a desired capital structure, reflected by a certain target credit rating. While not applied in CESEE countries, the Netherlands expects all SOEs to maintain an investment grade credit rating. In Australia, company profitability and future capital expenditure needs are the guiding factors for dividend consultations between SOE boards and the government, in view of a targeted BBB credit rating.

Bulgaria's dividend policy would benefit from a more structured approach. While the link to

Box 4. Dividend Policies Applied in SOE Sectors of Peer Countries (concluded)

optimal capital structure might be too demanding for Bulgaria's SOEs, the establishment of broad guidelines for the setting of annual dividend payments would already reduce the uncertainty related to pay-out decisions. Whether an explicit dividend ratio should be prescribed could be the object of consultations between SOEs and the relevant government bodies.

Transparent and Professional SOE Board and CEO Governance

- 28. SOE board and CEO appointments in Bulgaria lack professional mechanisms.** CEOs and boards of fully state-owned companies are typically appointed directly by the responsible line ministry, without compulsory selection procedures and well-defined job descriptions. As a result, CEO recruitment is prone to frequent change and political intervention, leading to management with often inappropriate qualification and experience (Park et al., 2016).
- 29. OECD guidance calls for efficient and well-functioning professional boards.** The nomination process should be structured and based on skill, competence, and experience, and operationalized through competitive selection procedures. Involving professional staffing agencies can help safeguarding private-sector expertise and international experience among potential candidates. Clear remuneration policies can address the trade-off between attracting qualified professionals and ensuring long-term company interests while avoiding excessive remuneration. Endowed with a clear mandate, boards should be enabled to exercise their operational functions independently and without undue state intervention. Boards should have the power to appoint and remove the CEO, potentially in concurrence with the relevant government body exercising the state's ownership role. CEO compensation should be tied to performance and duly disclosed.
- 30. Peer countries have been making efforts towards more professional SOE boards.** Lithuania's 2010 SOE governance reform included measures to improve the nomination process and create a database of potential board members. Croatia adopted a new framework for board selection in 2015, aimed at improving qualification requirements and opening up for private-sector candidates. Romania has been making efforts to depoliticize and professionalize SOE boards, using transparent selection procedures and, in case of large companies, contracting the selection process to an independent external advisor (European Commission, 2016). While practical implementation of these measures has partly still some way to go, they point in the right direction.
- 31. Professionalizing boards would improve efficiency and accountability in Bulgaria's SOEs.** As competitive selection procedures for board nominations are not mandatory and in practice rather uncommon in Bulgaria, adhering to OECD guidance and best practice in other countries would imply a clear improvement for Bulgarian SOEs. Moving CEO appointments from line ministers to SOE boards, possibly in cooperation with the government body endowed with the state ownership function, would reduce the potential for political interference and improve

operational efficiency. Formulating a clear and merit-based remuneration policy across SOEs and monitoring CEO performance would further improve transparency and accountability.

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FISCAL IMPLICATIONS OF DEMOGRAPHIC CHANGES IN BULGARIA¹

A. Introduction

1. **Bulgaria's population has been shrinking since 1984 due mainly to emigration and declining fertility rates, leading to its high old-age dependency ratio² (Figure 1).** Bulgaria's population trend is in contrast to population developments in Europe—including advanced and developing Europe—where population has continued to grow over the last 50 years.

2. **While demographic projections are surrounded by significant uncertainty, the old-age dependency ratio is expected to increase in the coming decades in all the European countries (Figure 2).** At around 30 percent, Bulgaria's old-age dependency ratio is currently the highest among Central, Eastern, and Southeastern Europe (CESEE), and comparable to that in the Eurozone. According to the United Nation's medium-fertility scenario, Bulgaria's old-age dependency ratio is expected to peak around 2055 at about 54 percent, which would then decline to below 50 percent by 2100. Such a projection is in contrast to the projection in Albania and Turkey where the old-age dependency ratio is currently low (11 percent for Turkey and 18 percent for Albania) and but would increase rapidly in between 2055 and 2100.

3. **Demographic changes can pose significant fiscal challenges going forward.** Population aging, stemming from declining fertility and increasing longevity and emigration, is expected to raise the old-age dependency ratios and

Figure 1. Europe: Population (In million)

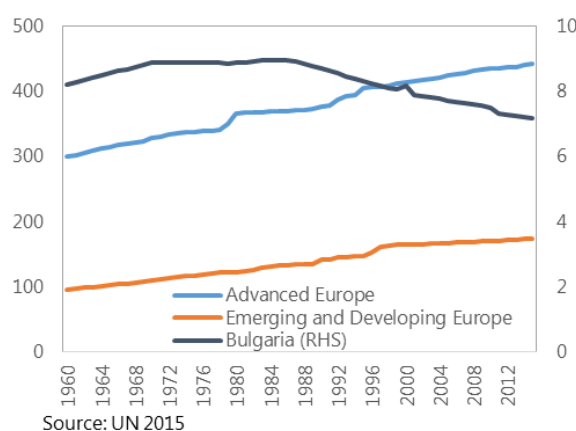
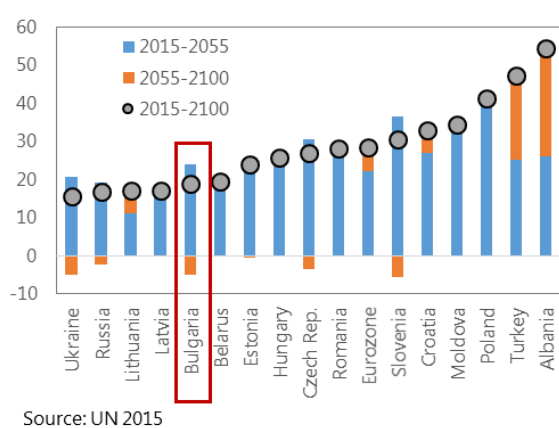


Figure 2. Change in Old-Dependency Ratio (In percent)



¹ Prepared by Aiko Mineshima.

² Defined as the ratio of population ages 65 and older to population ages 15 to 64.

shrink the working age population. The accompanying surge in age-related spending, lower economic growth, and potentially lower government revenues, could place considerable pressures on public finances. While the near-term fiscal effects of these demographic developments are likely to be small, their long-term fiscal implications could be significant. Moreover, given the uncertainty surrounding demographic projections, an even faster transition to a declining workforce cannot be ruled out. Therefore, policy-makers in countries affected by adverse demographic dynamics need to be cognizant of fiscal risks from demographic developments

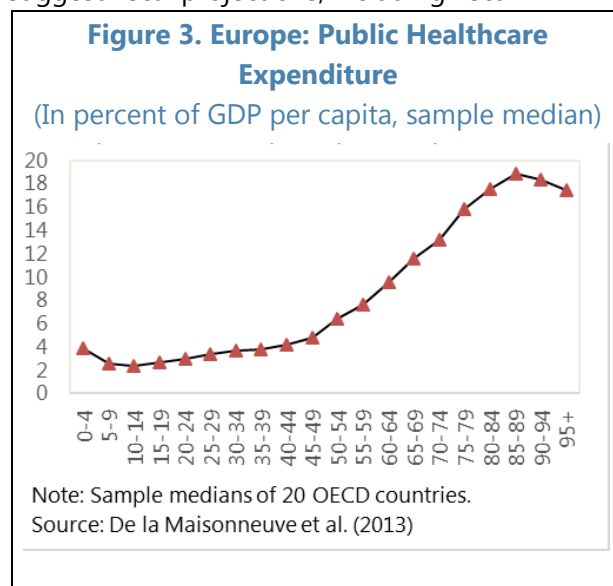
4. A shrinking population could have a large direct impact on budgetary expenditures and revenues.

- **Expenditures.** Spending on old-age pensions and health and long-term care would rise. Because pensions target specific age groups, pension spending increases as the share of the population within these age groups rises. Although healthcare is universal across age groups, per capita health spending tends to increase with age. Therefore, aging will increase public health spending as well. Unlike pensions and healthcare, the potential impact of demographic changes on other types of spending (e.g., education) tends to be uncertain.
- **Revenues.** Individual income and consumption spending patterns tend to change over the lifecycle. For example, workers' incomes tend to increase from early in their careers until the middle age and decline towards retirement. Consumption spending follows a similar pattern, although in the very early years of one's career consumption may exceed income (Thurow, 1969). Government revenues are likely to reflect these developments as well as changes in the overall size of the population. More generally, lower economic growth, following a slowdown in population growth and a shift in the age-gender structure towards less active cohorts, would translate into lower revenues, assuming unchanged policies.

5. The aim of this paper is to simulate the fiscal impact of demographic changes in Bulgaria using a simple framework recently published by the Amaglobeli and Shi (2016). The framework allows for a granular approach in projecting the impact of demographic changes—both the composition and size of population—on output by taking into account differences in labor force participation and employment rates by age group and gender. Regarding demographic projections, this paper relies largely on those from the United Nations (*2015 Revision of the UN World Population Prospect*). The UN 2015 reflects past demographic trends and country-specific information to inform projections, taking into account all currently available information. Nonetheless, these projections must be taken with caution. Like past projections have been subject to large errors, future realizations of fertility, mortality, and migration rates may differ substantially from the predicted levels. Given the significant uncertainties associated with population projections and other factors driving growth, the main aim of the paper is not to accurately project additional fiscal burden from the aging population, but rather to simulate how sensitive the results could be depending on demographic assumptions under the assumption of no policy reaction.

6. There are two main contributions in this paper, over and above the analysis in the European Commission's Aging Report. First, using the UN population projections allows for a

longer projection period—through 2100—compared to the EC’s Aging Report, which covers projections through 2060. Good public finance practices suggest fiscal projections, including fiscal risks, for a period that covers an individual’s life time. Given the current life expectancy of around 80 years old, 45-year projections covered by the EC’s Aging Report may not be sufficiently long. At the same time, extending a projection horizon increases uncertainties, therefore results—especially those closer to the end of the projection horizon—should be interpreted with caution. Second, this paper factors in a relatively per capital public healthcare spending of the elderly to that of the prime age groups in the baseline scenario based on the experience in OECD countries (Figure 3). The EC’s Ageing Report assumes such excess cost as one of the alternative scenario.

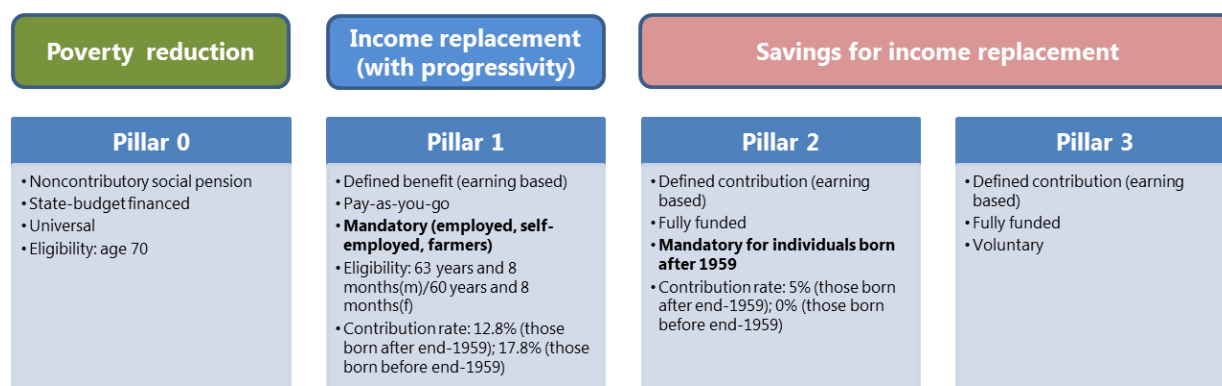


7. The structure of the paper is as follows: Section B reviews Bulgaria’s pension system, including the 2015 reforms. Section C discusses in detail the analytical framework to estimate fiscal implications of aging population, including the estimation of potential output under different demographic scenarios and long-term fiscal spending on pension and healthcare. Section D discusses key takeaways and recommendations.

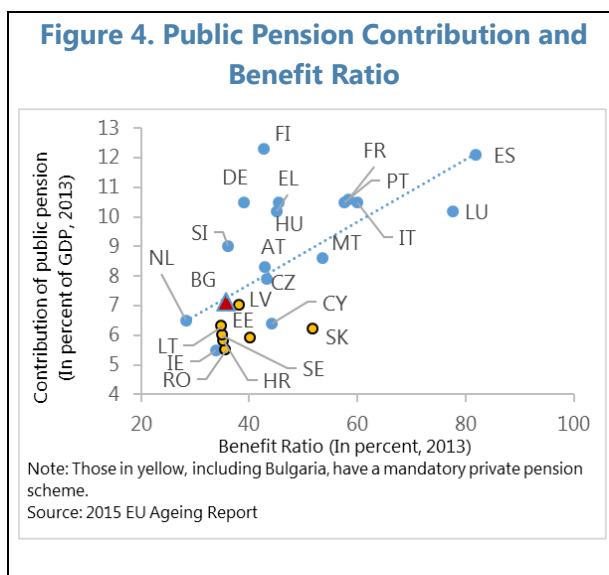
B. Bulgaria’s Pension and Healthcare System

8. Bulgaria currently has a three-pillar contributory pension system supplemented with noncontributory social pension scheme (Figure 3). Earners—i.e., the employed, self-employed, and farmers—born after 1959 are obliged to contribute 17.8 percent of their social security income to Pillar 1 defined benefit public pension system and Pillar 2 defined contribution private pension system. As discussed later (Paragraph 6), from the beginning of 2016, earners can choose whether to contribute to both Pillar 1 and Pillar 2 or to Pillar 1 only (Paragraph 10).

Bulgaria: Multi-Pillar Pensions System in 2016



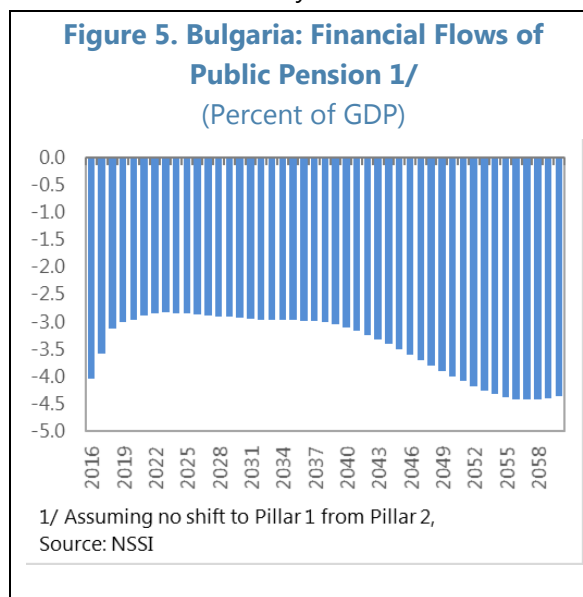
9. Bulgaria's current public pension system is characterized as having relatively low (i) low statutory retirement ages; (ii) pension contributions; and (iii) benefit ratio. At 63.7 years for men and 60.7 years for women, Bulgaria's current statutory retirement ages are below the EU medians of 65 years for men and 63.5 years for women. The collection of contributions to the public pension were 7 percent of GDP in 2013, below the EU median of about 8 percent of GDP, and Bulgaria's benefit ratio—average pensions in relation to average wages—is also low. The low contributions and benefit ratio are due mainly to the existence of Pillar 2 to which serves as mandatory savings. Indeed, the benefit ratio is comparable to the countries that also have Pillar 2 schemes while the contributions are on a high end among them.



10. To address the sustainability concerns of the pension system from aging population and migration while enhancing the adequacy of pension benefits, Bulgaria implemented pension reforms in 2015. The reforms consist of (i) parametric reforms to the Pillar 1 public pension system and (ii) the introduction of an option for unlimited shifts between the Pillar 1 and Pillar 2 pension systems.

- **Parametric reforms to the Pillar 1 pension system.** These include (i) increasing the social security contribution rate by 2 percent by 2018, (ii) raising the retirement age to 65 years by 2029 for men and by 2037 for women, and (iii) extending the minimum required service length to 40 years for men and 37 years for women by 2027; and (iv) increasing the accrual rate—the weight of one year of service—gradually from 1.2 to 1.5 by 2026.
- **Introduction of an option for unlimited shifts between Pillar 1 and 2 pension systems.** The option allows an individual to unlimitedly shift between Pillar 1 and 2 pension systems through five years before the retirement. Regardless of the time vested in Pillar 2, an individual whose final decision is to permanently shift to the Pillar 1 system will receive undiscounted amount of pension benefits from Pillar 1. In such case, the pension benefit would be broadly equivalent to 60 percent of his social security income.

11. The 2015 pension reforms are expected to moderately reduce public pension deficits in the next decade, but do not address long-term sustainability concerns. Although the parametric reforms are expected to reduce Pillar 1 annual deficits moderately in the next decade, the expected increase in the income replacement rate of pension benefits will likely more than offset the combined positive impact from raising the contribution rate and retirement ages afterwards (Figure 5). Even after the reforms, the National Social Security Institute (NSSI)—which manages the state social security including the Pillar 1 pension—is expected to carry deficit, indicating a continued need for additional budget transfers every year.³ The newly-established option guarantees full Pillar 1 benefits, suggesting a shift of downside risks from individuals to the public system.



12. In addition, relatively inefficient healthcare system in Bulgaria could augment fiscal challenges as the demand increases in line with population aging. Bulgaria's healthcare system is generally less efficient compared to the frontier mainly because of underutilization of preventive measures, excess use of costly inpatient services, and inefficient pharmaceutical pricing. Fragmented legislations on long-term care services also create inefficiency in the system.

C. Long-Term Fiscal Implications of Demographic Changes

ANALYTICAL FRAMEWORK

13. The framework has two components: estimating the growth impact of demographic changes, and projecting age-related spending. The basic unit of the analysis is a five-year cohort from the disaggregation of the population by age and gender. The focus on five-year age-gender cohorts allows to capture the life-cycle behavior of labor supply: low for youth, increasing and flattening during prime age, and decreasing closer to retirement. This life cycle pattern can also differ for men and women. Projected changes in long-term output and available long-term population projections are then used to estimate government revenues and expenditures and derive net fiscal effect.

³ Budget transfers to the NSSI have been twofold: (i) ex-ante annual regular transfers of 12 percent of projected insured income, and (ii) ex-post additional transfers to finance the NSSI's deficit. Starting from 2016, there will be a single item called "transfer for shortage," which combines the above two types of transfers.

(continued)

14. Several demographic scenarios—both upside and downside—are considered.

- **The UN scenarios.** There are eight different scenarios published by the UN based on different assumptions on fertility, mortality, and international migration: the scenarios include medium, high, low, and constant fertility, instant-replacement-fertility, zero-migration, constant-mortality, and no-change (i.e., constant-fertility and constant-mortality).⁴ The UN's central projection is the medium-fertility variant scenario, which can be considered as the most probable scenario. The scenario assumes a decline of fertility for countries where large families are still prevalent while a slight increase of fertility in countries with fewer than two children per women on average. In addition to the medium-fertility scenario, this paper considers low- and high-fertility scenarios from the UN database.
- **Bulgaria-specific scenario.** Given Bulgaria's unique challenge from brain drain, emigration of work-age population: more concretely, population aged 15-64 is assumed to be 1 percent below the medium-fertility scenario throughout the projection period. The emigration of the work-age population is also assumed affect the total productivity.

ESTIMATING THE GROWTH IMPACT

15. A production function approach is used to estimate long-term output, taking into account demographic developments. A key intended contribution of this paper is to endogenize the effect of demographic change on output growth. Following the standard specification of the Cobb-Douglas production function with constant returns to scale, output can be expressed as the product of basic factor inputs and productivity. Specifically,

$$Y_t = TFP_t \times K_t^{1-\beta} \times L_t^\beta \quad (1)$$

Where, Y_t is real output, TFP_t is the total factor productivity, K_t is the stock of capital, L_t is the aggregate labor, and β is the share of labor in output. Following EC (2012) and IMF WEO (2015), age-gender cohort specific information is used to decompose aggregate employment (L_t) into four elements. In particular, rewriting equation (1) in logarithmic terms, output is expressed as:

$$\text{Log}(Y_t) = \text{Log}(TFP_t) + (1 - \beta) \times \text{Log}(K_t) + \beta \times \text{Log} \sum_{j=1} N_t^j \times LFP_t^j \times E_t^j \times w_t^j \quad (2)$$

where j indicates the age-gender cohort, N is the number of individuals in each cohort, LFP and E denote cohort-specific labor force participation and employment rates, respectively, and w is the weight factor to adjust for the difference between number of employees and the effective units of labor supplied.⁵

⁴ The eight scenarios include medium, high, low, and constant fertility, instant-replacement-fertility, zero-migration, constant-mortality, and no-change (i.e., constant-fertility and constant-mortality).

⁵ Average hours worked for each cohort can be a proxy for the weight factor. Other desirable weights would be to adjust for labor productivity, possibly utilizing the average education attainment for each cohort as a proxy.

(continued)

16. Equation (2) can be used to obtain historical TFP estimates.⁶ Historical labor force participation and employment rates for each age-gender cohort are combined with the evolution of the size of each individual cohort to estimate aggregate labor. The coefficient β can be obtained by calculating the share of wage bill in GDP.⁷ Capital stock is estimated using the perpetual inventory method, with the capital stock in each period equal to net capital formation plus the estimated stock in the previous period (equation 3).

$$K_t = (1 - \delta) \times K_{t-1} + I_t \quad (3)$$

17. Using equation (2) and TFP estimates, long-term projections for potential GDP are calculated under different demographic scenarios. Aggregate labor is assumed to evolve in line with total population and its age-gender composition under different demographic scenarios. The age- and gender-specific labor-force participation rates up to age 54 are assumed to remain unchanged from the 15-year historical averages while the participation rates for age 55 and above are assumed to rise as the statutory retirement ages increase.⁸ Yet, the labor force participation rates for older age cohorts tend to remain below those for younger age cohorts, therefore population aging will contribute to the reduction in aggregate labor force participation. Abstracting from policy changes, TFP is assumed to grow at its three-year historical average, while capital accumulation is assumed to follow the balanced-growth condition:

$$1 + g_t^K = (1 + g_t^{TFP})^{1/\beta} \cdot (1 + g_t^L) \quad (4)$$

The share of labor in output (β) is assumed to gradually increase from the three-year historical average (0.35) to 0.37 by 2100.⁹

ESTIMATING AGE-RELATED SPENDING

18. Pension spending as percent of GDP is decomposed into four key elements and expressed as an identity (following Clements and others, 2014). These components are: (i) the replacement rate (RR), which is calculated as the average pension over average output per worker; (ii) the coverage ratio (CR), which measures the share of pensioners in the total population above the retirement age (above 65); (iii) the old age dependency ratio (ODR), which is measured as the

The literature shows that labor productivity significantly differs across age groups (e.g., Göbel and Zwick, 2009, Skirbekk, 2004). Due to the lack of data feasibility for Bulgaria, this paper assumes 1 for the weight factor for all the cohorts.

⁶ It should be noted that TFP is measured as a residual, and any measurement errors in the labor and capital series will be captured in the estimate of TFP.

⁷ Alternatively, this parameter could be obtained from the Penn World Tables or other country-specific estimates.

⁸ More concretely, for example, the labor force participation rate of age 55-59 is assumed to rise to the rate of age 50-54 by 2030 for men and by 2035 for women. The rate of ages 60-64, 65-69, and 70-74 are also assumed to rise to the level of the one notch younger cohort by 2030 for men and 2035 for women and remain constant thereafter.

⁹ These are clearly simplifications, as demographic factors could also affect productivity (see, for example, Feyrer, 2007) and investment (see, for example, Higgins, 1998).

ratio of population above 65 and the working age population (15-64); and (iv) the inverse of labor participation (LP), defined here as the share of workers in the total working age population—different from the definition of labor force participation in (2).

$$PE = RR \times CR \times ODR \times \frac{1}{LP} \quad (5)$$

Where,

$$PE = \frac{\text{Pension expenditure}}{GDP}; RR = \frac{PE/\text{pensioners}}{GDP/\text{workers}}; CR = \frac{\text{Pensioners}}{\text{Popul 65 +}}; ODR = \frac{\text{Popul 65 +}}{\text{Popul 15 - 64}}$$

$$LP = \frac{\text{Workers}}{\text{Popul 15 - 64}}$$

Each of the four terms in (5) is influenced either by demographics or by policy changes. This paper uses implied replacement rate (RR) and coverage ratio (CR) calculated with the authorities' baseline projections on pension spending in percent of GDP and the UN mid-fertility demographic projections.¹⁰ The remaining variables are determined by demographic assumptions.

19. Healthcare spending is expressed as the product of three elements (following Clements and others, 2015). These are: (i) relative generosity of the healthcare package for the younger population expressed as per capita health cost for younger population divided by the per worker GDP (GHP); (ii) the inverse of the labor participation (LP) rate for population between 0 and 64 years of age; and (iii) the dependency ratio (DR) times a coefficient (α). The latter measures the ratio of per capita health cost for older population over per capita health cost for younger population.

$$HE = GHP \times \frac{1}{LP} \times (1 + \alpha \times DR) \quad (6)$$

Where,

$$HE = \frac{\text{Health expenditure}}{GDP}; GHP = \frac{\frac{HE_{0-64}}{\text{Popul 0 - 64}}}{\frac{GDP}{\text{Workers}}}; LP = \frac{\text{Workers}}{\text{Popul 0 - 64}}; \alpha = \frac{\frac{HE_{65+}}{\text{Popul 65 +}}}{\frac{HE_{0-64}}{\text{Popul 0 - 64}}};$$

$$DR = \frac{\text{Popul 65 +}}{\text{Popul 0 - 64}}$$

¹⁰ Since the authorities' projections are available only through 2060, the implied replacement rate (RR) and coverage ratio (CR) are assumed to stay constant at the implied 2060 levels.

Similar to pension expenditure projections, each term of (6) is affected either by policy changes or by demographics. In addition to its direct effect through changes in dependency ratio and labor participation rates, population aging also affects the generosity of the healthcare package indirectly through growth. The coefficient α is exogenously determined and could be calculated from available sources. Data on public health care expenditure is available for a group of OECD countries from de la Maisonneuve and others (2013). If no country specific information is available, the average for countries at similar income levels could be used.¹¹ To isolate the demographic effects, the generosity of healthcare package (historical data) and the α coefficient are kept constant across scenarios, implying no policy measures.

Assumptions Underpinning Estimates

- The capital stock depreciation rate, which is used for the historical growth accounting exercise, is set at 5.9 percent per year in line with Nadiri and Prucha (1993).
- Long-term non-age expenditure elasticity to nominal GDP is set at one.
- The default ratio of per capita health spending of individuals above older than 65 years relative to those younger than 65 years is 3.5, which is the average for a group of OECD countries for which data was available (De la Maisonneuve and others, 2013). Alternatively, estimates of country specific ratios from the country authorities could be used.

PUT THEM TOGETHER

20. Bulgaria's growth prospect depends largely on the assumption of future productivity and demography (Figure 6).¹²

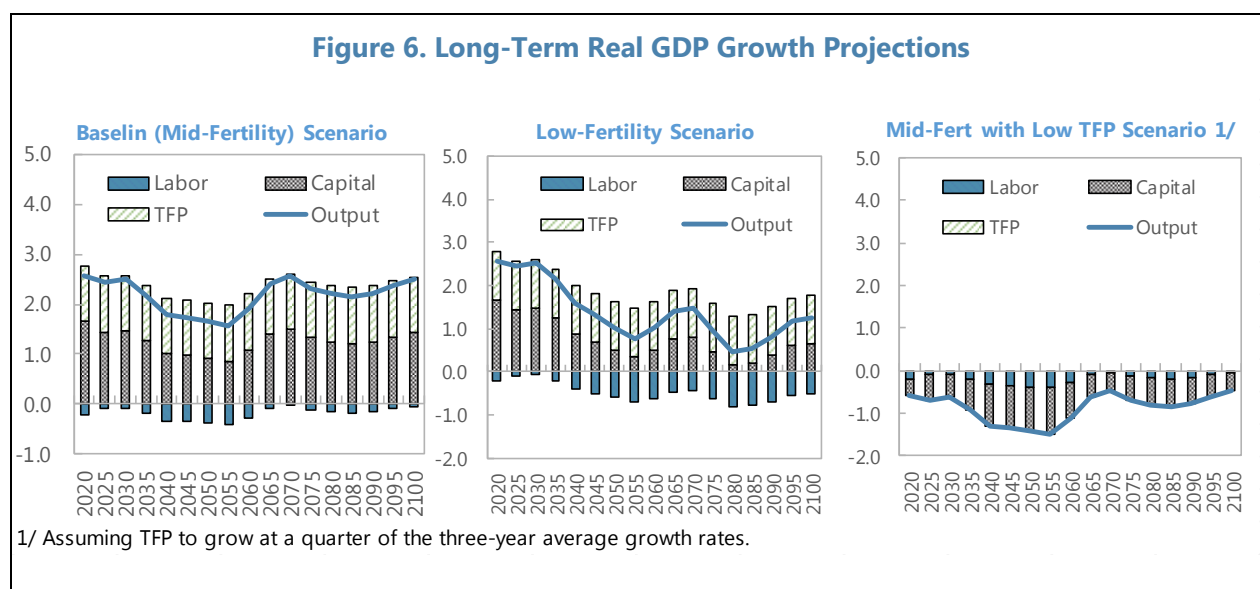
- **Baseline (mid-fertility) scenario (left panel).** The scenario assumes the UN's medium-fertility rate, the three-year historical average of TFP growth rates of 1.1 percent, the balanced growth of capital, and a gradual increase in the share of labor in output. Under this scenario, Bulgaria's potential growth rate would decline from 2½ percent in 2020 to 1⅓ percent by 2055 then return to around 2½ percent by 2100.
- **Low-fertility scenario (middle panel).** The scenario assumes the UN's low-fertility rate, the three-year historical average of TFP growth rates of 1.1 percent, the balanced growth of capital, and a gradual increase in the share of labor in output. Under this scenario, Bulgaria's

¹¹ The α coefficient could be estimated as the weighted average of public health care expenditure for age cohorts 65 years and above divided by the weighted average of public health care expenditure for younger cohorts. The relative size of each age cohort could be used as weights. Using this approach, the α coefficient is expected to gradually rise over time as the share of older cohorts in the group 65 years and above increases. According to the available country-specific data, public health care per capita GDP costs continuously rise after the age of 45.

¹² Historical data on labor force participation rates are from Eurostat. Historical and projected data on gross fixed capital formation are from World Economic Outlook. Historical data on compensation of employees are proxies by the nominal average wage multiplied by the number of employed persons from National Statistical Institute.

potential growth rate would decline from 2½ percent in 2020 to ½ percent by 2080 then return to around 1¼ percent by 2100.

- **Mid-fertility with low TFP growth scenario (left panel).** To show the sensitivity of growth projections to the assumption of TFP growth rates, the scenario assumes the UN's medium-fertility rate, zero TFP growth, the balanced growth of capital, and a gradual increase in the share of labor in output. Under this scenario, Bulgaria's potential growth rate would remain negative (between around -½ and -1½ percent) through 2100.

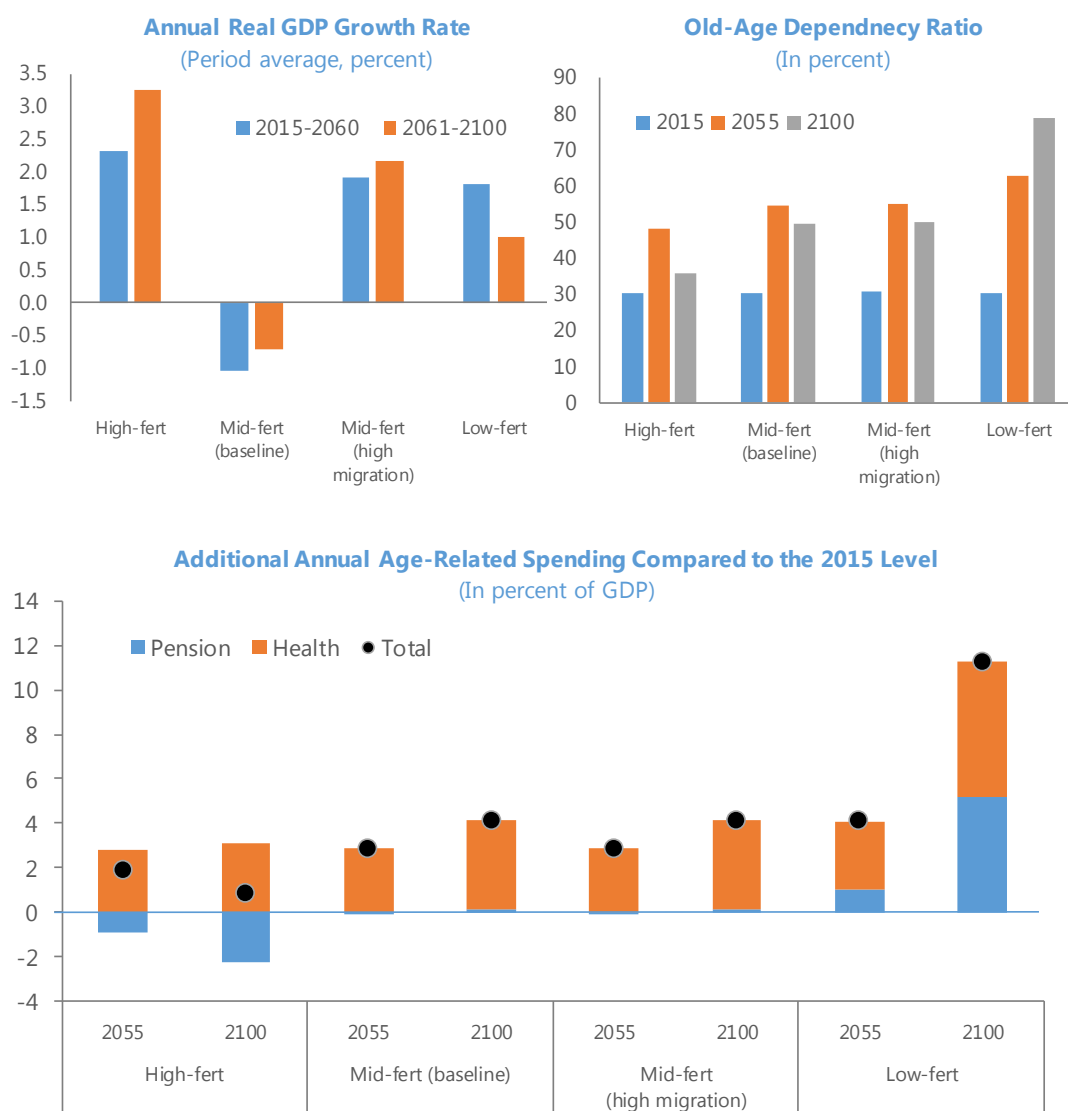


21. The fiscal implications vary greatly depending on demographic projections, as well as the nominal rigidity of pension benefits (Figure 7). All the below scenarios, except the last one, assume the baseline growth parameters defined in Paragraph 17, combined with various demographic assumptions.

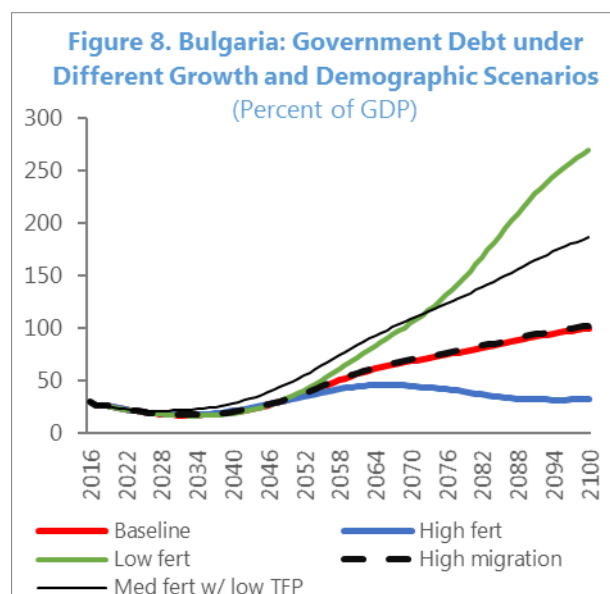
- **Baseline scenario.** The scenario assumes the baseline growth parameters and the UN's medium-fertility scenario, which projects a decrease in population to 3.4 million and an increase in the old-age dependency ratio to 49 percent by 2100. Under this scenario, additional annual age-related spending would be 3 percent of GDP by 2055 and 4 percent of GDP by 2100. The increase is mostly driven by health spending, while there is minimal increase in pension spending projected thanks to the recent parametric reforms.
- **Low-fertility scenario.** The scenario assumes the baseline growth parameters and the UN's low-fertility scenario, which assumes a decrease in population to 1.8 million and an increase in the old-age dependency ratio to 78 percent by 2100. Under this scenario, additional annual age-related spending would increase by 4 percent of GDP by 2055 and 11 percent of GDP by 2100.

- High-fertility scenario.** The scenario assumes the baseline growth parameters and the UN’s high fertility scenario, which assumes a decrease in population to 5.6 million and an increase in the old-age dependency ratio to 35 percent by 2100. Under this scenario, additional annual age-related spending would increase by 2 percent of GDP by 2055, which would then decline to 1 percent of GDP by 2100.
- High-migration scenario.** The scenario assumes the baseline growth parameters, population aged 15-65 to be below the UN’s mid-fertility scenario by 1 percent, and TFP growth rate to be below the baseline by 5 percent. Under this scenario, additional annual age-related spending would be generally same as the baseline scenario.

Figure 7. Macro-Fiscal Variables Under Various Population Scenarios

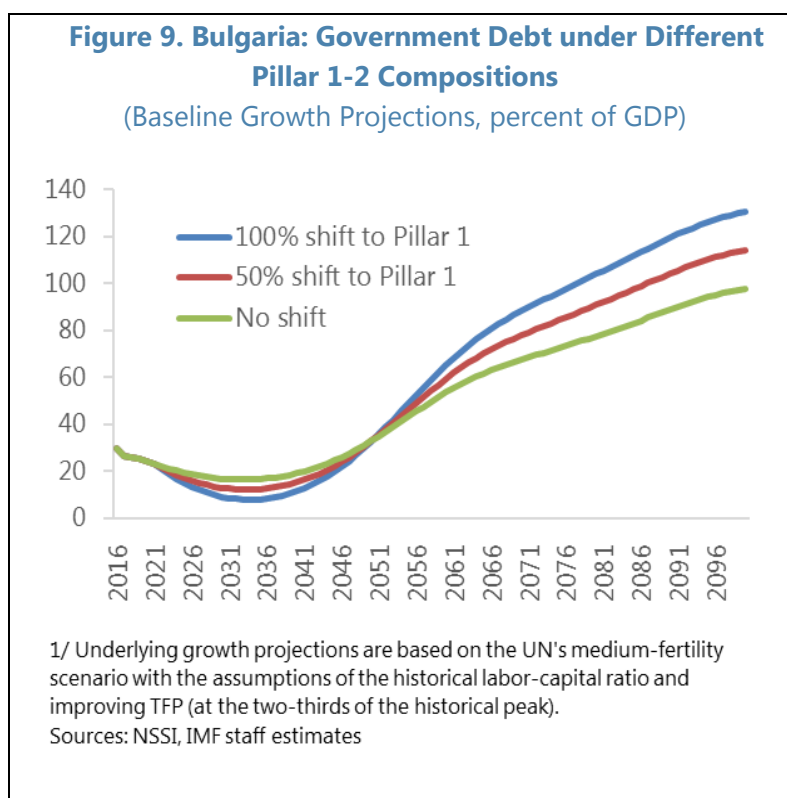


22. The impact of age-related spending on government debt depends on long-term growth assumptions.¹³ By construction, two scenarios with same demographic assumptions yield same additional age-related spending in percent of GDP even if their growth projections differ owing to different productivity assumptions. For example, the baseline scenario (medium fertility) and a scenario with the medium-fertility low TFP growth rates project same additional age-related spending in percent of GDP. However, those two scenarios have substantially different debt implications due to their different debt dynamics driven by different GDP growth rates (Figure 8). For all the scenarios, government debt is projected to gradually decline during the next 10-20 years, which will start rising thereafter. Under the baseline scenario, government debt would decline from 30 percent of GDP in 2016 to around 16 percent of GDP by 2035, which will then increase to above 60 percent of GDP by 2064 and close to 100 percent of GDP by 2100. Under the low-fertility scenario, debt would exceed 60 percent of GDP by 2059, followed by a rapid increase to above 250 percent of GDP by 2100. Under the high-fertility scenario, debt would peak at around 45 percent of GDP in the 2060s, which would then start declining toward 30 percent of GDP by 2100.



23. The newly-established option for unlimited shifts between Pillar 1 and Pillar 2 could further increase fiscal pressures. According to the authorities' estimates, if 100 (50) percent of the workers decide to shift to Pillar 1 in 2016, Pillar 1 pension spending would increase by 3 (1.5) percent of GDP compared to Pillar 1 pending without any shifts by 2060. However, the net fiscal impact of the shift scenarios is positive compared to the no-shift scenario in the medium term because the government will receive additional social security contributions from the individuals who shift to Pillar 1. Assuming the baseline growth projections, government debt in percent of GDP for both shift scenarios is projected to remain below that for the no-shift scenario through 2050, but exceed thereafter. Government debt could be higher than the no-shift scenario by around 12 (6) percent of GDP by 2060 and 33 (16½) percent by 2100 assuming 100 (50) percent shift to Pillar 1 in 2016 (Figure 9).

¹³ Debt projections are calculated with the standard debt equation: $D_t = D_{t-1} / (1 + \text{nominal GDP growth}_t) - \text{OB}_t + \text{SFA}_t$ where nominal GDP growth rates are calculated with the assumption of annual inflation of 2 percent while the stock-flow adjustments (SFA) is assumed zero. The overall fiscal balances (OB) for 2022-2100 are assumed to be driven only by the age-related spending, starting from the balanced budget in 2021.



D. Key Takeaways and Policy Recommendations

24. Given the significant uncertainties with demographic projections and the risks related to additional aging related fiscal spending, Bulgaria would benefit from further reforms to the pension system. Several options can be considered:

- **Raise the social security contribution rate.** To prevent an increase in old-age poverty, the social contribution rates could be raised further while paying attention to potential impact on competitiveness.
- **Increase the statutory retirement ages.** Bulgaria's statutory retirement ages for men and women are expected to remain below the EU medians even after reaching the statutory retirement age of 65 years for both men and women by 2037. To leave scope for further increases in retirement ages, the 2015 pension reforms introduced the concept of automatic link between the statutory retirement ages and life expectancy once the statutory retirement ages reach 65 years. However, to de-politicize further parametric reforms, the modalities of adjusting the retirement ages (e.g., what conditions trigger a revision of the statutory ages, what coefficients determine new retirement ages) need to be fleshed out. Raising the retirement age, however, should be accompanied by various measures—such as active labor market policies or wage subsidies—to ensure old-age employment. In addition, the government should be alert that increasing the retirement age could disproportionately affect low-income earners' beneficiary period given their typically shorter life expectancy, thereby reducing the progressivity of public pension systems.

- **Improve the viability of Pillar 2 and 3 private pension schemes.** In response to a general concern about the viability of the Pillar 2 scheme, the government (FSC) has initiated a review of Pillar 2 assets, which is expected to help the government identify the weaknesses of the system and policy options going forward. Sound defined-contribution pension schemes will help prevent old-age poverty, or large adjustment in lifestyle or consumption after retirement while minimizing the sustainability concerns of public finances.

25. Further pension reforms, however, should strike a right balance between ensuring fiscal sustainability and preventing old-age poverty. In particular, raising the retirement age should be accompanied by various measures—such as active labor market policies or wage subsidies—to ensure old-age employment. In addition, the government should be alert that increasing the retirement age could disproportionately affect low-income earners’ beneficiary period given their typically shorter life expectancy, thereby reducing the progressivity of public pension systems.

26. Boosting long-term growth through enhancing fertility rates, promoting labor force participation, and mitigating brain drain can help mitigate fiscal pressures from aging population. Bulgaria’s labor-force participation rate is below the EU median although its participation gap between male and female (including that for fulltime) is among the lowest. The gradual increase in the statutory retirement ages would increase the participation rate. At the same time, policies to encourage people to participate in the labor market (e.g., provision vocational training) should also be explored. Promoting child-care support would help prevent a decline in the fertility rate from an increase in labor-force participation. Return migration can yield significant benefits by bringing back skills and contributing to the diffusion of organizational and technical knowledge acquired by emigrants abroad. Policies should focus on removing barriers to reintegration of return migrants into the workforce, including, by recognizing foreign credentials and experience, and opening access to the service sector by deregulating professions.

27. The newly-established option for unlimited shifts between Pillar 1 and 2 systems—that was introduced due to public concerns about the performance of the Pillar 2 system—raises a number of concerns.

- **The reform will increase budget uncertainty.** For example, unpredicted shifts from Pillar 1 to Pillar 2, due to concerns about the viability of private pension funds, would require unbudgeted state transfers to the NSSI, adding complication to the public finance management. Uncertainty also remains in the management of the Pillar 2 assets transferred to the Silver Fund. If mismanaged—for example, used for financing budgetary expansion in the short run—the sustainability of Pillar 1 would be jeopardized.¹⁴
- **Abrupt large shifts are anticipated when the economy is in an extreme situation, such as a sharp economic downturn or an asset pricing boom.** People will decide on whether

¹⁴ During periods of economic downturn, the government could be tempted to use the additional assets acquired to the state.

to switch to Pillar 1 or not by comparing the amount of Pillar 2 assets to give up and projected additional Pillar 1 benefits to receive from switching (see Annex 1). This would suggest that in normal times, frequent switches between Pillar 1 and 2 may be limited especially given no interest will be earned on the assets transferred from Pillar 2 to the Silver Fund (people have less incentive to shift back to Pillar 2 after leaving their assets with zero earnings).¹⁵ When the economy experiences a sharp recession where the performance of financial markets plummets, people could shift from Pillar 2 to Pillar 1 as investment performance drops and preference to rely on the public sector increases. This would suggest that the government is absorbing the downside risks and standing behind Pillar 2.

- **The reform could thwart the productivity of defined-contribution schemes** during a period when private pension funds are already facing substantial challenges given the unfavorable demographic changes projected in the coming decades.
 - a) Unlimited switches could create a fiscally costly quasi-competition between the state and the financial sector: the scheme creates perverse incentives for the government to try to attract more contributors to the public system to gain in the short run, but at a cost in the long run, generating long-term cost potentially exceeding short-term fiscal gains. There may also be incentives for the government to regulate private pension schemes in a way to disadvantage them.
 - b) Uncertainty associated with the size and timing of switches could make Pillar 2 asset management more complicated, and would also make long-term sustainability analyses of Pillar 1 less reliable.

28. Continued efforts are also need to contain healthcare costs, especially related to pharmaceutical and long-term care. Measures to address Bulgaria's low use of preventive measures and outpatient services and overuse of inpatient care could improve the health outcomes. In addition, recently-introduced measures to address the over-supply of hospitals treating a low number of patients and contain pharmaceutical pricing would help. Demand for long-term care services is bound to increase strongly with aging. Providing high-quality long-term care services while ensuring financial sustainability would call for a legislative amendment to enhance a synergy between social services system and health care system, including private provision of long-term care services. Introducing a long-term care insurance program is also an option.

¹⁵ Transfer of Pillar 2 assets to the Silver Fund should be treated as a financial transaction (below-the-line) in accordance with the Eurostat manual (I.3.4 "Transfer of pension entitlements from the second pillar" of Eurostat's *Manual on Government Deficit and Debt: Implementation of ESA2010*).

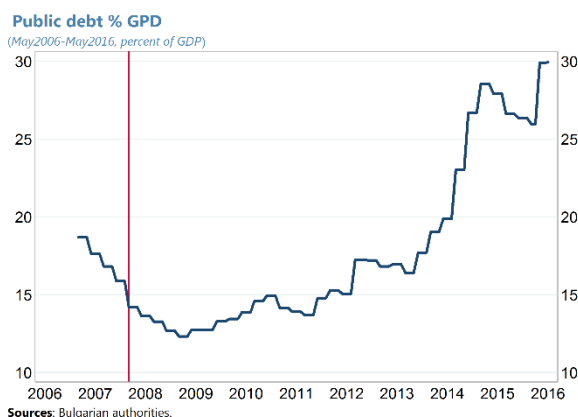
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BULGARIA: DETERMINANTS OF LOCAL CURRENCY BOND YIELDS¹

A. Context

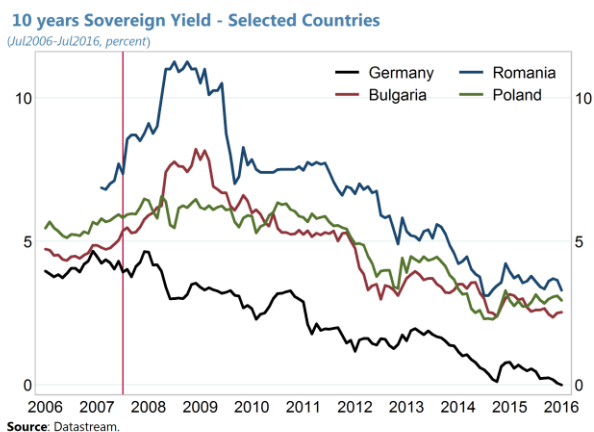
1. Bulgaria has a modest public debt level and, like many other emerging market economies, has enjoyed favorable financing conditions in recent years, both in terms of access and yields. Nevertheless, the stock of public debt in Bulgaria has increased considerably since 2014, with sizable gross financing needs expected in the coming years. This, coupled with ongoing policy actions by the US Federal Reserves and ECB, creates non-trivial uncertainties about the financing environment Bulgaria is likely to face going forward. Against this backdrop, this paper explores how Bulgaria's local currency bond yields have reacted to domestic and global factors in the past as well as the likely outlook in the near future. Our analysis suggests that local currency bond yields in Bulgaria are most influenced by external factors. The model also allows for simulating bond yields under different assumptions on future external factors. Overall, the analysis in this paper highlights the importance of being prepared for sudden and potentially large changes in financing costs.



2. This paper is organized as follows. Section II presents some stylized facts; section III summarizes the model and estimation results; section IV discusses the outlook; and the last section concludes.

B. Stylized Facts

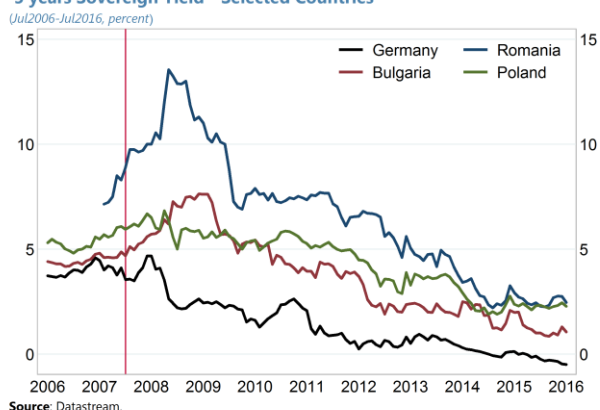
3. Bulgaria's local currency bond yields are currently around the lowest levels since consistent data were published by the Reuters. Despite some generally mild ups and downs, Bulgaria's yields have broadly trended downward from the peaks immediately after the global financial crisis. Consistent with literature findings, the yield declines in Bulgaria have been much larger than those in advanced



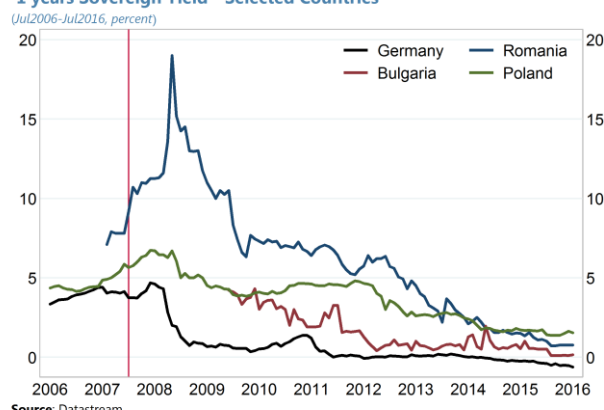
¹ Prepared by Shan Chen and Zaijin Zhan.

economies, such as Germany. The yield for Bulgaria's 10-year generic local currency bond currently stands at about 2¼ percent, only a small fraction of the peak level achieved right after the global financial crisis, and less than the half of the average for 2006–10. The yields for 5-year and 1-year bonds, at below 0.5 percent and close to 0 percent, respectively, are also at the historically low levels.

5 years Sovereign Yield - Selected Countries



1 years Sovereign Yield - Selected Countries



4. Nevertheless, the inflation-adjusted real financing cost for Bulgaria is broadly comparable with those countries that have similar sovereign ratings by the S&P. As of March 2016, Bulgaria 10-year local currency bonds averaged the nominal yield of 2.3 percent, much lower than the average for the 11 economies that have a rating ranging from one notch above and one notch below Bulgaria's. However, after adjusting for inflation (y-o-y), the real yield for Bulgaria's ten-year bond was in the middle 50 percentile of this group of countries.

S & P Sovereign Ratings and Bond Yields, June 2016

Country	L-T local currency rating	10-year bond yield (Nominal)	10-year bond yield (Real)
Bulgaria	BB+	2.26	3.56
Brazil	BBB-	11.95	2.46
Croatia	BB	3.80	5.39
Hungary	BB+	2.97	3.13
India	BBB-	7.25	1.48
Indonesia	BB+	7.06	3.60
Italy	BBB-	1.22	1.42
Morocco	BBB-	2.94	0.68
Portugal	BB+	3.00	2.32
Romania	BBB-	3.23	3.94
Russia	BBB-	8.66	1.18
Turkey	BBB-	9.66	2.02

Sources: Bloomberg, S&P, and IMF staff calculations.

C. Determinants of Local Currency Bond Yields in Bulgaria

Model specification and data

5. Following the case study of Poland by Ebeke and Lu (2015), we use a simple error-correction framework as the baseline model, relating the bond yields in Bulgaria to two types of determinants: global factors and domestic factors. Global factors can be further divided into two groups: liquidity indicators (ECB policy rates, US Federal funds rate, etc.) and risk indicators (e.g., VIX). Domestic factors can also be divided into two categories: politic risks and economic fundamentals. For political risks, like Comelli (2012) and Csonto and Ivaschenko (2013), we use the political risk indicator from the International Country Risk Guide (ICRG) database, which contains monthly data for 140 countries. For economic fundamentals, we tried a wide range of variables although difficulties often arise as such series often come at lower frequency than yields, with substantial volatility, and subject to multiple round revisions. The error-correction model will allow us to explore not only the long-run co-integration relationship, but also the short-run dynamics, which should be of particular interest to the policy makers as the US Federal Reserve has recently started to hike the short-term policy rate.

6. This section will focus on the 10-year local currency bond yields and the baseline error-correction specification is as follows:

Long-term dynamics:

$$BGR10Y_t = a_0 + a_1PR_t + a_2FRPR_t + a_3\log(VIX_t) + a_4PRR_t + X_t\theta + e_t$$

$$FRPR_t = FR12X15_t - PR_t$$

Short-run dynamics:

$$\Delta BGR10Y_t = \beta_0 + \beta_1\Delta PR_t + \beta_2\Delta LRPR_t + \beta_3\Delta\log(VIX_t) + \beta_5\Delta PRR_t + \Delta X_t\delta + \beta_6e_{t-1} + \varepsilon_t$$

where $BGR10Y_t$ is the nominal yield of the 10-year local currency bond in Bulgaria, PR_t is the 3-month euro-area interbank market rate,² $FR12X15$ is the euro forward interest rate applied for the future period between twelve and fifteen months. The differences between the interbank market rate and forward rates are used to signal market's expectation on the potential direction of the policy rate. $\log(VIX_t)$ represents the natural logarithm of VIX, which is used to approximate the perceived risks of investing in Bulgarian securities from the impacts of global financial stress. PRR_t is

² The inter-bank rate is chosen instead of the ECB's policy interest rates because it is linked to the policy rate but has more variation.

(continued)

political risk rating and X_t is a vector of economic fundamental variables.³ e_t is the error term, and its one-period lag is used in the short-run dynamics as the error correction term.

Estimation results:

Long-run relations⁴

The results are summarized in the text table below. Column (1) reports the results with 3-month interbank market rate and interest rate outlook, defined as the differences between the interbank market rate and forward rates, as the explanatory variables. The estimated coefficients are significant and these two variables could account for 20 percent of the variation of the 10-year local currency bond yield. The explanatory power of the long-term dynamics becomes much higher when VIX is added to regression. Variation in all of the variables in column (2) could account for 78 percent of the variation in the yield. The estimated coefficient of VIX is highly significant with expected positive signs—high VIX is associated with high bond yield. In column (3), we further added the indicators that approximate the domestic fundamentals. The estimated coefficients have the right signs but are significant only for political risks.^{5,6} Nevertheless, their overall contribution to explaining the variation of the dependent variable is rather limited. specification (3) is used as the starting point for derived the errors for estimating the short-term dynamics. The effective fed fund rate⁷ and VSTOXX, the euro zone equivalent of VIX, were also tried to represent the monetary policy stance and expected market volatility, respectively. They, however, did not perform as well as euro area interbank bank rate and VIX, which were used in specification (3).

³ A wide range of indicators on growth, inflation, fiscal balance, and public debt have been tried.

⁴ Unit root tests suggest that the series are non-stationary in levels and Johansen co-integration tests do not reject the null hypothesis of the existence of a cointegration vector.

⁵ High risk rating numbers denote smaller risks.

⁶ Public debt as share of GDP is among the macro variables we tried, but it came back with a negative sign, likely reflecting the coincidence of increasing public debt and declining yields in recent years.

⁷ The effective federal funds rate, published by the New York Fed, is calculated as a volume-weighted median of overnight federal funds transactions reported in the FR 2420 Report of Selected Money Market Rates.

Bulgaria Yield Regressions: Long-Run Dynamics				Bulgaria Yield Regressions: Short-Run Dynamics	
Dependent Variable: Local Currency 10Y Bond Yield				Dependent Variable: ΔLocal Currency 10Y Bond Yield	
	(1)	(2)	(3)		
Reference rate	0.41*** [0.06]	0.32*** [0.04]	0.52*** [0.125]	Δ Interest rate outlook	-0.04 [0.159]
Interest rate outlook	0.72** [0.316]	1.65*** [0.14]	1.7*** [0.198]	Δ Log(VIX)	0.64*** [0.187]
Log(VIX)		3.77*** [0.198]	3.64*** [0.233]	Δ Political risk rating	0.02 [0.051]
Political risk rating			-0.12*** [0.044]	Δ Inflation Expectation	0.01 [0.008]
Inflation Expectation			0.01 [0.009]	Δ Fiscal balance(% GDP)	-0.06 [0.044]
Fiscal balance(% GDP)			-0.06 [0.048]	Error correction term (one lag)	-0.13*** [0.046]
				Intercept	-0.03 [0.026]
No. of Obs.	123	123	123	No. of Obs.	122
R-Squared	0.202	0.78	0.817	R-Squared	0.195

Notes: Standard error in brackets.
* p<0.10, ** p<0.05, ***p<0.01

Short-term dynamics:

The most significant impact on short-term yield dynamics are from the changes of the VIX with the estimated coefficient having the expected positive sign and statistically significant. Same as in the long-run relation, higher VIX is positively associated with an increase in bond yield, which confirms the intuition that Bulgaria, being a small open economy with a rather open capital account, is sensitive to global financial development. The estimated coefficient for the error term derived from the long-run dynamics is significant with the negative sign as expected, suggesting a stable dynamic, but its magnitude is on the small side. The estimated coefficients for other variables are small and statistically insignificant.⁸

⁸ The estimated coefficient for the change in reference rate, if included in the short-term regression, is negative, which is unexpected. This could indicate that short-term rate changes for the euro area, affected by factors that have little to do with Bulgaria, may not be a reliable indicator for Bulgaria's local currency bond yield in the short run.

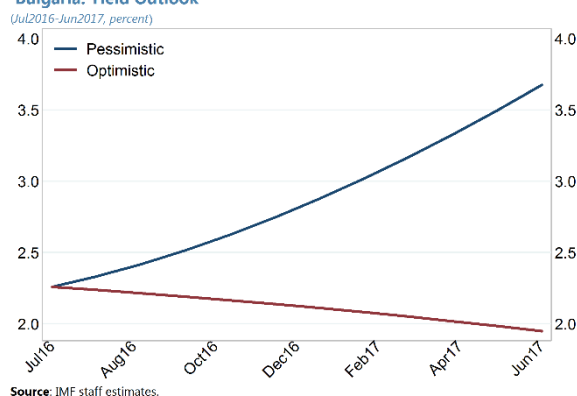
D. Outlook

7. Building on the findings in the preceding discussion, this section will consider two simulations for Bulgaria's sovereign yields with different scenarios for global factors in the next 12 months. For

simplicity purpose, we will assume that domestic factors will remain stable; and in outlining short-term dynamics, we will only include the variables that have statistically significant coefficients (i.e., VIX and error correction term). For illustration

purpose, we will consider two extreme scenarios. In the optimistic scenario, global financial condition will steadily improve, with the VIX gradually reaching the lowest values observed during 2006–15, and ECB will hold the policy rate stable. In the pessimistic scenario, global financial stress spikes with the VIX steadily rising to the highest readings observed during 2006–15, and the ECB will cut its policy rate by another 20 basis points in two steps. In both scenarios, it is assumed that the interbank market rates move in parallel with the ECB policy rate and the financial market perfectly forecast and price in the timing and magnitude of the ECB policy actions. In the pessimistic scenario, the 10-year local currency bond yield will likely steadily move up and reach close to 4 percent. The projected peak yield is expected to be significantly lower than that during the global financial crisis, mainly due to lower ECB policy rate and downward expectation about the policy rate. In optimistic scenario, Bulgaria's yield is expected to slightly decline to around 2 percent, mainly due to the declining global financial stress as represented by VIX.

Bulgaria: Yield Outlook

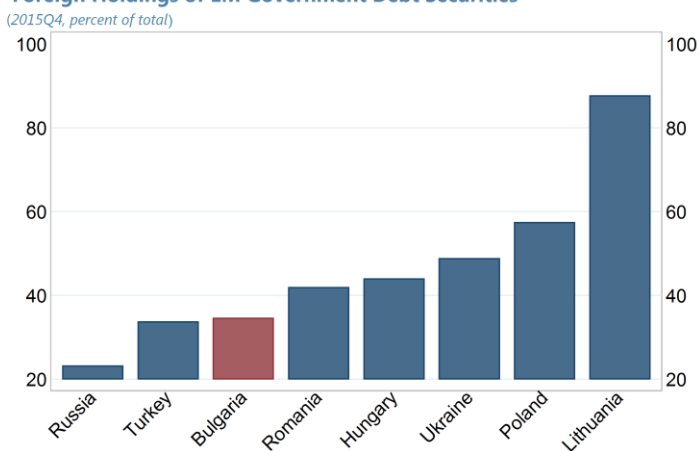


E. Conclusion and Implication

8. This paper finds that Bulgaria's sovereign yields have been driven predominantly by

external factors. In the long run, the variation of global financial condition, represented by VIX, counts for most of the variation of sovereign yields. In the short term, the change of global financial conditions, together with the distance from the long-term equilibrium, has a large and immediate impact on the sovereign yields. This is not surprising given that Bulgaria is a small open economy with close integration into the world market, although foreign participation in Bulgaria's local bond market is relatively limited.⁹

Foreign Holdings of EM Government Debt Securities



⁹ However, it should be noted that the sample period covers the global financial crisis and its aftermath, which may have downplayed the importance of the domestic factors relative to external factors.

9. The most direct policy implication from the finding seems to call for preparedness for potentially sudden spikes in borrowing costs due to exogenous changes in the external financing environment. This will require continued fiscal consolidation as envisaged in the government's medium-term fiscal framework so as to reduce gross financing needs and debt service burden. In the meantime, with external financial conditions remaining tranquil, Bulgaria will likely continue to benefit from historically low financing costs.

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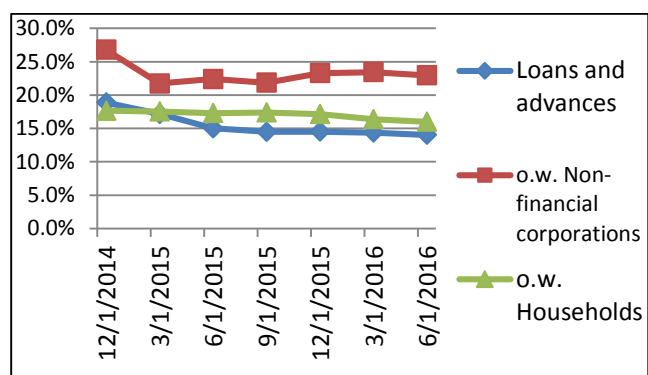
USING DATA TO ASSESS THE EFFICIENCY OF THE INSOLVENCY AND ENFORCEMENT SYSTEM IN BULGARIA¹

A. Background

1. An efficient debt resolution framework is an important element in addressing the high levels of debt in Bulgaria. While there has been some progress towards reduction of bad debts, banks report continued challenges with resolving the non-performing loans generated from pre-crisis credit exposures. Corporate NPLs represent the highest proportion of bad debts, significantly exceeding that of households (see Figure 1). High private sector indebtedness weighs on the Bulgarian economy and investment (see Figure 2). Institutional, legal, and market factors are all cited as factors contributing to the slow pace of debt resolution. Effective insolvency and debt enforcement frameworks are a necessary element to address high levels of private debt and the negative consequences of debt overhang.

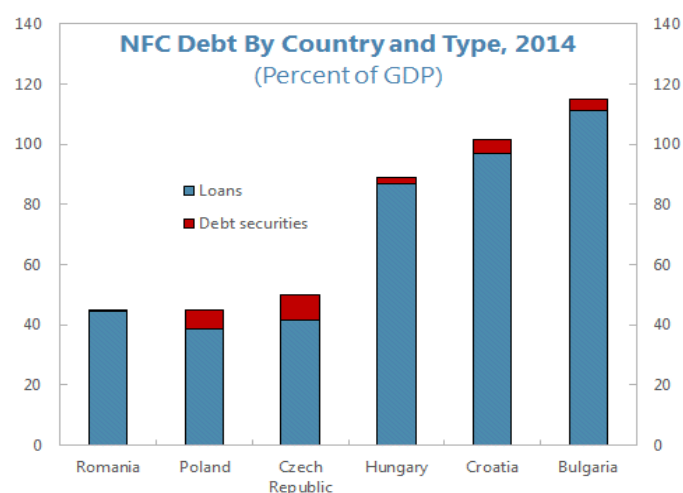
2. Debt resolution through judicial proceedings is generally perceived as lengthy and unpredictable. Inconsistent judicial practices often lead to high uncertainty and unpredictability of litigation outcomes. Some stakeholders also voiced concerns related to integrity of the judiciary. The high workload of certain courts, such as the courts in the Sofia district, translates into significant backlogs and delays. At the same time, in the absence of

Figure 1. NPLs in Bulgaria in % of Total Loans
(as reported by the Bulgarian National Bank) 1/



1/ Note that Q1 and Q2 ratios of 2015 are seriously affected by the new definition of NPLs applied as part of the EU harmonization of regulatory and financial information of credit.

Figure 2. Non-Financial Corporate Debt of Bulgaria as Compared to Selected Neighbor Countries



Source: Eurostat

¹ Prepared by José Garrido and Natalia Stetsenko (both LEG).

specialization in commercial matters, the lower provincial courts suffer from the lack of experience in adjudicating business disputes.

3. Some critical deficiencies in the insolvency system remain unresolved. As discussed in earlier Article IV staff reports for Bulgaria, the insolvency framework contains a number of gaps. While the latest 2013 reform has introduced a number of improvements, it did not fully address the existing problems². The deficiencies commonly pointed by legal experts and market participants include:

- (i) Wide-spread perception of the insolvency system as a vehicle used by debtors to evade obligations. Practices of forum shopping and claims fabrication are common and often result in allowing fictitious and/or related parties' creditors to take control over the insolvency process;
- (ii) Cumbersome requirements and lengthy procedures associated with the initiation of insolvency cases. For instance, the state of insolvency often has to be confirmed by an expert opinion due to the lack of insolvency presumptions; and filing by multiple creditors complicate the processing of the case;
- (iii) Absence of an adequate framework for business restructuring, which in turn disincentivizes timely insolvency filings;
- (iv) Lack of adequate rules on the stay of creditor actions and protection of post-petition finance undermining the possibility of reorganization of enterprises;
- (v) Inefficiency in the procedures of verification of creditors' claims. The inclusion of fabricated claims in the debtor's filings, and further litigation on the formation of the list of claims significantly delay insolvency processes;
- (vi) Lack of clarity in the interpretation of the rules on avoidance actions. The risks of nullifying legitimate transactions entered into in the period preceding the insolvency declaration pose impediments to lending to companies in financial difficulties; and
- (vii) Weak adherence by courts to the procedurally prescribed deadlines. Lack of application of procedural deadlines combined with multiple disputes and appeals within the insolvency procedure, creates long delays, undermining credit recovery through insolvency processes.

The system for the individual enforcement of debts also faces some challenges. The enforcement system is based on judicial processes and the intervention of bailiffs (except for special pledges, which do not require a judicial decision for their enforcement). Market participants have raised the issue of the burdensome costs of debt enforcement: filing a debt claim in Bulgaria is subject to the upfront payment of a court fee of two percent of the claim, which is accompanied by

² It is understood that there is ongoing work on additional amendments to the insolvency framework which may address some of the identified weaknesses.

another two percent fee in case of contested procedures. Objections and appeals are frequent, and this results in longer delays of the recovery of claims. Small and medium-sized enterprises (SMEs) in need of collecting substantial claims are particularly affected by such costs which, combined with the protracted time for litigation and the related legal and procedural expenses, complicate access to justice and the efficient recovery of claims. In addition, the enforcement of unsecured claims is subject to long delays. Mortgage enforcement seems marginally better; and the enforcement of special pledges is fast, but recovery rates are reportedly low, due to asset-stripping and dissipation of collateral. The extent to which market factors contribute to the slow pace of asset disposal and credit recovery is not fully clear. Stakeholders generally note the rebound in asset prices in Bulgarian central cities. However, weak market conditions appear to persist in rural areas.

B. The Importance and Multiple Uses of Insolvency and Enforcement Statistics

4. The relative impact of various deficiencies of the insolvency and enforcement system in Bulgaria would require a rigorous analysis of the data. The issues raised by the stakeholders point to a number of significant shortcomings of the system. Although there is broad consensus about the main problems and their negative impact, many claims relating to the inefficiency of the system cannot be backed by specific data. The lack of data impedes the effective measuring of the role and relative impact of different factors to the well-functioning of the system.

5. Bulgaria's current statistical system does not allow a comprehensive analysis of the efficiency of the insolvency and enforcement procedures. Currently, Bulgaria has no reliable mechanism to measure the efficiency of the debt resolution framework and identify issues and bottlenecks based on actual performance data. At the court level, Bulgaria collects significant amount of data relative to different types of filed, ongoing, and closed cases. However, the use of such court-collected data is primarily limited to the monitoring of general workloads of the courts. The National Statistics Institute (**NSI**) also collects a substantial amount of data on insolvent corporates via the Trade Registry but does not publish or use this data in any analytical work.

6. Refining the methods for data collection and analysis could bring significant benefits. In order to enable a comprehensive assessment of the efficiency of insolvency and enforcement procedures, a more granular data collection is required. Availability of data could bring more clarity to the issues affecting the credit recovery process, which in turn could guide and inform targeted reforms of the legal and institutional framework, and also assist in the design of supervisory and regulatory actions in the banking sector.

7. Depending on the objectives pursued, different systems for data collection and analysis can be considered. The definition of clear objectives of data collection should determine any design considerations. Different models and methodologies for data collection used by countries also heavily depend on domestic specificities. The information related to the insolvency and enforcement system can be organized according to different methods, to serve different purposes: (i) general statistics on the number and type of insolvencies and mortgage foreclosures to monitor general economic trends; (ii) data collection focusing on the financial credit recovery

mechanisms could provide a targeted assessment of the key issues faced by the banking sector in the context of NPL resolution; and (iii) data measuring the duration and costs of insolvency and debt enforcement proceedings, for the continuous assessment of the efficiency of the insolvency and enforcement system. These three approaches are discussed in greater detail below.

I. General Statistics on Insolvency and Enforcement

8. General statistics on insolvency allow for the continued monitoring of trends in the economy. Collection of statistical data on insolvency processes represents a widespread practice in advanced economies. Virtually all developed countries collect and publish insolvency statistics for the purposes of basic economic analysis. There are different models for the collection, elaboration and dissemination of general insolvency statistics (see text box below). The most common methodological approach is to rely on the collection of data by the courts, business registries or insolvency supervisory agencies. The data are then compiled by the national statistics agency. The degree of detail of these general statistics is variable, but at the very least, countries publish information about the global number of insolvency processes that have been initiated in the course of one year.³ A regular (i.e. year to year) comparison in the numbers and types of the newly initiated insolvency cases serves as a useful indicator of the evolution of the economic situation in a given country.

9. Bulgaria already disposes of efficient venues for data collection within the current system. Bulgaria's NSI collects a significant amount of information related to corporates, including insolvency related information, via the Trade Registry. In particular, the information on the size of companies, number of employees, age of the enterprise, economic sector and region is already at the disposal of the NSI. However, the NSI does not publish any such data or conduct a basic economic analysis based on the information received.

10. Enabling the periodic aggregation and analysis of general insolvency statistics would contribute to a more effective monitoring of macro-economic trends. Using the current system of data collection, the NSI could provide for periodic publication of insolvency data which may usefully include: (i) number of newly filed insolvencies per period; (ii) number of pending insolvency cases; (iii) breakdown of insolvency filings by region, economic sector, size (e.g., by assets and turnover), and age of the company, and (iv) analysis of trends and any significant variation from period to period. Considering that the relevant data is already collected within the existing framework, their periodic publication (e.g., quarterly, semi-annual, or annual) would require only minimal costs while bringing potentially important synergies. Such statistics would provide useful information on the general health of the economy and sectorial vulnerabilities, and can assist in guiding policy priorities.

³ In the systems where there are both procedures for enterprises (including companies and individual traders) and consumers (i.e., individuals who are not traders), it is imperative to distinguish between these procedures to provide an accurate image of the situation, since each type of procedures corresponds with entirely different economic circumstances.

Comparison of Select Systems of General Statistical Data on Insolvency

- Germany:** The Statistics Agency (Destatis) collects and publishes insolvency data monthly, distinguishing between enterprises/consumers cases and providing year-to-year variation and estimated amount of claims.⁴ The methodology is based on the monthly submission of data by the courts to the different states. The data are then compiled at the federal level by the Statistics Agency.⁵ The courts are obliged to submit information to the statistical offices of the Länder on the opening of the proceedings; the manner in which the opened proceedings have been terminated; the size of the claims determined and on the proceeds from the realization of the insolvent's property; and whether or not the residual debt has been discharged.

France: The Bank of France collects and publishes monthly data on enterprise insolvencies, including year-to-year variation, economic sector, segmentation between SMEs, and large enterprises; and percentage of claims in insolvency as of the total of exposures declared by banks in the credit registry (*central des risques*).⁶ The methodology includes criteria to determine the size and sector of the enterprise, as well as total exposures. The existence of multiple procedures to address enterprise insolvency (*redressement judiciaire, liquidation judiciaire, procédure de sauvegarde*) requires that all the different insolvency procedures are covered, and that cases where an enterprise undergoes two successive procedures are treated as separate.⁷
- England and Wales:** The Insolvency Service produces quarterly insolvency statistics with a breakdown between enterprises and consumers; types of procedures used; and industry classification.⁸ The methodology is based on collection of the data from the Companies House and from the Insolvency Service itself (for compulsory liquidations). The Insolvency Service performs standard validation checks. The raw data are then tabulated by case type, industry classification, and the year and calendar quarter of the case start date. There is a need for some adjustment due to the time lag between initiation of the case and registration with the Companies House.
- Spain:** The National Statistics Agency collects and publishes insolvency data quarterly, with

⁴ See <https://www.destatis.de/EN/FactsFigures/Indicators/ShortTermIndicators/Insolvencies/ins110.html>

⁵ See https://www.destatis.de/EN/Meta/abisz/Insolvenzstatistik_e.html

⁶ See <https://www.banque-france.fr/economie-et-statistiques/stats-info/detail/defaillances-dentreprises.html>

⁷ See https://www.banque-france.fr/fileadmin/user_upload/banque_de_france/Economie_et_Statistiques/Methode_Stat_info_defaillances_9-juin-2016.pdf

⁸ See <https://www.gov.uk/government/statistics/insolvency-statistics-january-to-march-2016>

(continued)

Comparison of Select Systems of General Statistical Data on Insolvency (concluded)

distinction between enterprises and consumers, type of initiation of the process (creditor-initiated and debtor-initiated), ordinary procedures and simplified procedures, legal form of the enterprise, economic sector, variation quarterly and yearly, size of the enterprise, number of employees, years in operation, region, and presentation of a plan proposal with the initiation of the procedure.⁹ The methodology is based on a standardized form that includes the following variables: number of bankruptcy proceedings presented at the court; number of bankruptcy orders (number of bankruptcies notified); tax identification number of the company declared bankrupt; type of procedure (ordinary/abbreviated); type of bankruptcy (voluntary/necessary); existence of anticipated proposals of agreement (Y/N); content of the proposal (debt reduction, rescheduling, arrangement with creditors, or another proposition); active mass of the company declared bankrupt (assets); and passive mass of the company declared bankrupt (liabilities).

11. Additional consideration could be given to the elaboration of mortgage foreclosure statistics. Such data, when collected continuously, are useful for monitoring developments in the real estate market; and are also used for social policy analysis. Spain provides a useful example of collection of statistics on mortgage foreclosures. The data are collected through the real estate registry at the stage of the initiation of enforcement proceedings and published quarterly, indicating the yearly variation, and disaggregated in residential and non-residential mortgages. The data on mortgage foreclosures could be further categorized by size/type of properties, country regions, time which took to finalize the property sale since it was first offered, and discount from original price. These specific data are helpful not only for the analysis of the real estate market trends but also an efficiency analysis of the enforcement regime (see below). The costs and complexity of setting-up such a system in Bulgaria require further analysis. Unlike the collection of insolvency-related data, the collection of foreclosure data in Bulgaria is not centralized and thus would be more difficult and costly to introduce this system in the short term.

II. Data Collection for Targeted Analysis and Assessment of Financial Credit Recovery Mechanisms

12. Data collection focused on financial credit recovery mechanisms is useful for assessing the specific impediments faced by banks in the process of NPL resolution. These data could enable the analysis of the relative use and economic efficiency of the different mechanisms used by banks to address NPLs. This, in turn, affords the opportunity of developing regulatory policies and supervisory actions adequately targeted to the problems affecting the behavior of banks as creditors.

13. The analysis of the efficiency of credit recovery is based on the fundamental indicators of time, cost, and recovery. The efficiency of credit recovery is measured, in the first place, by the time it takes to recover a claim. The cost of the use of credit recovery mechanisms represents the

⁹ See <http://www.ine.es/jaxi/menu.do?type=pcaxis&path=/t30/p219&file=inebase>

second consideration from the point of view of efficiency. Finally, credit recovery is determined by a number of different factors. In the case of secured credit, those factors are: the initial relation between the value of the loan and the value of collateral (over-secured, fully secured, or under-secured claims); the time and cost of the recovery mechanism; and the variations of value experienced by the collateral, due to depreciation, loss, or market trends.

14. Banks' surveys are the most appropriate method for assessing the effectiveness of the NPLs resolution strategies. Data are collected through surveys among the banks, and can be compiled and treated by the banking supervisor. The advantage of surveys is that they can offer a complete picture of the methods used to deal with NPLs (for instance, by including informal restructuring agreements, and sales of NPLs) and allow comparisons of their relative use and efficiency. Surveys are also the best method to collect information about the cost that the use of each mechanism for credit recovery entails for the creditor. Finally, surveys also permit the inclusion of opinions, assessments, and other qualitative indicators. An example of the use of surveys for the purpose of assessing credit recovery mechanisms can be found in the recent survey conducted in Italy (see text box below).

15. However, the data collected through targeted survey presents some limitations. As the data are produced by the banks themselves, rather than by a neutral, public organization a natural limitation of this technique is that these surveys do not capture the functioning of the system from the perspective of non-financial creditors. In addition, the data may not even capture all the banking sector. Finally, surveys can be costly to replicate: the lack of continuity of surveys and the changes in the survey contents prevent the comparability of results over time.

16. In case of Bulgaria the banks' survey approach could have benefits. In addition to enabling a focused assessment of the effectiveness of NPLs resolution, launching a banks' survey could help raising awareness about the need for integrated databases for NPL management and allow banks an opportunity to review their established practices. If properly designed, the survey could create incentives for the systematic storage and periodic benchmarking of the relevant information on NPLs (including the debt collection activity), which in turn could contribute to improve internal control systems and NPL strategies.

17. At the same time, a comprehensive assessment of the efficiency of Bulgarian debt resolution regime requires a broader analysis. An effective assessment and monitoring of the overall efficiency of the system would need to take a more general view, and not be limited to the banking sector alone. In this context, and taking into account the importance of corporate debt, the approach based on a broad assessment of the insolvency and enforcement processes would be most appropriate.

Italian Banks' NPL Survey

In 2015, the Bank of Italy conducted a survey on the efficiency of credit recovery procedures undertaken by 25 large banking groups in Italy, accounting for 78 percent of NPLs in the system. The survey was conducted via a questionnaire, which included:

- **Quantitative questions** designed to obtain collect data on: a) characteristics of the various credit recovery and restructuring procedures (amounts involving in-court and out-of-court procedures, average age of the procedures at the end of 2014, collateral used); b) final recovery rate by different mechanisms used (e.g., out-of-court agreements, bankruptcies, arrangements with creditors, and foreclosures) and the percentage of initial credit recovered in each year after the procedure was started); and c) change in debtor company's position in the four years following the start of the restructuring procedure.
- **Qualitative questions designed** to seek banks' opinions on factors negatively affecting the credit recovery process (e.g., court backlog, procedural complexity, lack of public creditors' participation in restructuring, professionals' fees, access to interim financing, and creditor coordination issues). Furthermore, the banks were asked for information on their internal organization and on credit recovery costs.

The results of the survey suggested the need for measures to shorten the procedures; and the desirability of regulatory changes that make it possible to close procedures formally. Furthermore, the survey revealed that the quality of the responses provided by banks occasionally reflected their lack of an integrated information system for NPL management, which in turn impacted the effectiveness of their respective NPLs strategies.

Source: Carpinelli, L., Cascarino, G., Giacomelli, S., and Vacca, V., 2016.

III. Statistics for the Assessment of the Efficiency of the Insolvency and Enforcement System

18. The analysis of the efficiency of the insolvency and enforcement system revolves around the basic concepts of time, cost and recovery rate.¹⁰ The measurement of the costs and recovery rates can present more practical complications than the measurement of time (see text box below), but time represents the most important indicator of efficiency of the system.

¹⁰ See Djankov et al., 2008. The conceptual analysis of the indicators of time, cost and recovery rate are at the base of the methodology of the Doing Business resolving insolvency indicator, although that indicator is based on the responses to a survey based on a standardized case scenario.

Measuring Time, Cost, and Recovery Rate in the Assessment of the Efficiency of Enforcement and Insolvency Procedures

Time: The appropriate way of measuring time would be from the formal initiation of the enforcement/insolvency process until credit recovery. The analysis of time in the process can be done at a much more detailed level, identifying the different phases of the process, including the delays derived from challenges and appeals inside the process. That analysis is especially helpful in identifying bottlenecks in the procedure. Furthermore, it may be possible to identify possible delays due to market factors, which may increase the time necessary for the sale of assets independently of the legal processes. Thus, distinguishing between time spent in legal proceedings and the time it takes to complete the sale of assets is important for the accuracy of the analysis of debt enforcement and insolvency.

Costs: The cost of debt recovery, as an indicator of efficiency, includes the global costs of the insolvency or debt enforcement proceedings. In the case of insolvency, the cost of the procedure can be reported as a percentage of the value of the assets/estate, and borne by all parties; the costs include court/bankruptcy authority fees, experts' fees, asset storage and preservation costs, auctioneer fees, government levies, and other associated costs. In insolvency procedures, it is possible to measure the general costs of the process thanks to the widespread practice of keeping accounts reflecting the operations in the insolvency process, which are formally approved at the completion of the proceedings. These general costs do not reflect all the complexity of the issue of the costs supported by creditors: first, not all creditors bear the burden of costs proportionately and second, the analysis described before includes only the costs of the process, but it does not account for the costs incurred by creditors on account of their individual actions (for instance, costs of lawyers or consultants providing advice to the creditor). These costs are supported by each creditor and are not reflected in the documentation of the insolvency process. Finally, the analysis of the costs of the insolvency process must integrate a dynamic analysis of the insolvent business: if the business continues operating, it will generate revenue and additional costs, and both need to be included. On the other hand, measuring the costs of debt enforcement may be more straightforward, since the procedural rules allow the creditor to charge all its costs, so that the creditor recoups all costs in case that the recovery proceeds of the enforcement action are sufficient for this purpose. In this regard, the costs that represent a hurdle to the creditor are the upfront costs to initiate enforcement actions, which are generally easy to identify and quantify.

Recovery rate: The recovery rate is particularly difficult to measure as an indicator of the efficiency of the enforcement/insolvency system. In the analytical model of efficiency of insolvency and enforcement, the recovery for creditors is mainly determined by the time and cost of the procedures. However, the recovery rate depends on the initial proportion between the insolvency estate and the creditor claims, and, in the case of secured credit, on the relation between the value of the loan and the value of the collateral. In the case of complex insolvency procedures, the rate of recovery may also be affected by the continuation of the activity of the business of the debtor, the existence of post-petition finance, the treatment of executory contracts, and, ultimately, the preservation of the business as a going concern and the repayment of debts through the income stream generated by the business itself. In addition, the recovery rates may

Measuring Time, Cost, and Recovery Rate in the Assessment of the Efficiency of Enforcement and Insolvency Procedures (concluded)

be affected by the depreciation of the assets of the insolvency estate, or by losses (including asset-stripping).

19. The data collection has to be tailored to the nature of the processes and the peculiarities of domestic legal framework. Examples in comparative practice are limited. There is a general trend to make use of the data produced by insolvency systems, which may be collected through the courts' statistics, the supervision regime of insolvency professionals, or the commercial registry. There is no standard or best practice in this area, but there are national models which include granular data and allow the elaboration of analytical work (see text box below on Spain and Australia). Recent reforms in countries like Latvia or Cyprus also took steps towards a more sophisticated use of statistical data to assess the effectiveness of the insolvency system. These statistics go beyond the usual scope of judicial statistics, and they represent a trend towards a better empirical analysis of the insolvency system to design targeted legal reforms. The lack of data for the design of reforms in insolvency and enforcement has been identified as a major weakness in the European context¹¹.

Analysis of Insolvency Statistics in Spain and in Australia

Spain: Judicial statistics in Spain include information on insolvency processes collected and presented on a quarterly basis.¹² The data include the number of insolvency procedures that are opened, the number of procedures closed for lack of assets (asset-less cases), and the milestones in the insolvency process (presentation of an insolvency plan, opening of the liquidation phase, initiation of a collective dismissal of workers, closure of the procedure). In addition, the data collected by the commercial registry (through the deposited accounts and other communications made by insolvent enterprises) allows for a granular and exact analysis of insolvency proceedings and insolvent enterprises. The analysis in Spain goes as far as to include a study of the financial variables of the insolvent companies, using the data included in the financial statements deposited with the commercial registry. These data go beyond the analysis of efficiency of the process, and could be used to check predictive models of insolvency of enterprises (Van Hemmen Almanzor, 2014).

Australia: In Australia, the Securities and Investments Commission (ASIC) prepares the general insolvency statistics. This is possible thanks to the supervisory role that ASIC has over corporate insolvency proceedings. At the same time, ASIC prepares a detailed analysis of the procedures. The Australian authorities compile exhaustive annual insolvency reports thanks to the compulsory filings that insolvency administrators need to submit. These data, arranged by economic sector

¹¹ See Aiyar et al., 2015.

¹² See <http://www.poderjudicial.es/cgpj/es/Temas/Estadistica-Judicial/Informes-estadisticos-periodicos/Datos-sobre-el-efecto-de-la-crisis-en-los-organos-judiciales---Datos-desde-2007-hasta-primer-trimestre-de-2016>

Analysis of Insolvency Statistics in Spain and in Australia (concluded)

and region, include: (i) size of the company; (ii) nominated causes of failure, (iii) possible misconduct and documentary evidence; (iv) assets, liabilities and deficiency; (v) unpaid employee entitlements; (vi) secured creditors; (vii) unpaid taxes and charges; (viii) unsecured creditors; and (ix) remuneration of administrators.

C. Developing a Model of Insolvency and Enforcement Statistics for Bulgaria

20. Bulgaria already has a system for the collection and production of judicial statistics; however, its use is currently limited to measuring the workload of the courts. Bulgaria, like most countries, collects judicial statistics to monitor the workload and general performance of its courts. These data are collected by the courts themselves, and statistics are compiled by judicial authorities. In the case of Bulgaria, judicial statistics are collected and published annually by the Supreme Judicial Council. As the current purpose of judicial statistics in Bulgaria primarily is to measure the courts' workload, the statistics are of limited use for a comprehensive assessment of the efficiency of the debt enforcement and insolvency regime¹³.

21. The lack of granularity in the judicial data limits the usefulness of the statistics for the specific purpose of monitoring the efficiency of enforcement and insolvency processes. For example, Bulgaria's insolvency-related statistics gathered by the courts currently include only the basic information on i.e., the number of cases pending at the beginning of reporting period, the number of new insolvency cases filed, the number of closed cases and the cases remaining at the end of the period. Furthermore, the statistics also provide for a three-year comparison of the number of judicial decisions taken in the context of different stages insolvency process (see Table 1, as published by the Supreme Judicial Council in its annual 2015 report).

22. The published data only allows discerning some trends in the workload of the courts in insolvency matters. Apart from that, the data raise more questions than answers and are not very useful for the assessment of the efficiency of the system. In particular, Table 1 shows a large number of assetless cases. In this context it would be useful to understand the duration of judicial review of such cases, as they in principle, should be promptly opened and closed rather than clogging the system. Separation of the assetless cases from others is also critical for a calculation of the average duration of insolvency proceedings to ensure the accuracy of analysis. Furthermore, it would be important to trace any delays in opening insolvency cases, which may be potentially connected with asset-stripping of the company and a subsequent closing of the insolvency due to the lack of assets.

¹³ See the CEPEJ Guidelines for Judicial Statistics (GOJUST), 2008.

Year	Declaration of Insolvency and Opening of Insolvency Procedure	Opening and Closing of Proceedings Due to No "No Assets"	Approval Restructuring Plans	Initiation of Asset Liquidation	Closing of the Insolvency Case	Total
2013	333	1029	2	169	60	1593
2014	231	898	101	120	96	1446
2015	203	1048	12	146	112	1521

23. To allow the identification of specific bottlenecks, the data need to enable the measurement of the length of key procedural stages of enforcement and insolvency processes. In insolvency, the data useful for these purposes could include, among others, the following: (i) time to open the insolvency procedure, (ii) time for the approval of the list of claims; (iii) time for the satisfaction of secured creditors and for the full completion of the liquidation; (iv) overall time for the completion insolvency processes in cases of liquidation and restructuring, with the impact of appeals.¹⁴ All these additional and specific indicators could improve the accuracy of the analysis. The compilation of data could be done distinguishing by size (e.g., assets and employees) of enterprises so as to allow accounting for the different complexity in procedures affecting SMEs and larger corporates. The collected data also allows discerning the number of companies which entered the insolvency process with no assets. The system could account for the time spent in appeals at different stages of the process and attempts of restructuring prior to the initiation of liquidation, and can offer also a success rate in reorganizations, as opposed to liquidations, as the outcome of the insolvency process.

24. The Bulgarian insolvency process provides anchors that can be used to collect data to assess the efficiency of the system (see Table 2). The collection of data can be structured around points in the process that are relevant for the measurement of time (milestones), such as petitions, judicial rulings, and appeals. At the same time, there are also points in the process where substantive information is generated (data points), such as the production of the insolvency administrators' report, or the submission of a reorganization plan. Both milestones and data points provide the anchors that would allow the identification of bottlenecks and the analysis of other problems and how they affect the functionality of the insolvency system. In particular, data points can be used to identify the petitioner of the insolvency case (the debtor, a financial creditor, the tax administration, suppliers, or workers), the causes for the insolvency of the enterprise (which are normally listed in the insolvency administrators' report); the amount and classes of claims and the assets in the insolvency estate (these are included in the documentation submitted by the debtor, revised later by the insolvency administrator and approved by the court); and the amount of claims

¹⁴According to the statistics collected by CEPEJ (2016), 49 percent of decisions in insolvency procedures in Bulgaria are appealed.

recovered (these can also be classified per category, and the information can be found in the accounts presented by the liquidator or in the contents of the reorganization plan).

Table 2. The Insolvency Process in Bulgaria: Possible Milestones and Data Points

Parties	Court	Insolvency Administrator
Petition (by debtor, by creditor(s) (625 Commercial Act (CA)	Preliminary measures (629a CA)	
	Insolvency Ruling (630 CA)	Appointment of provisional administrator (630 CA)
	[Suspension—no asset cases] (632 CA); [Renewal] (744 CA)	
	[Removal of debtor's management] (635(2) CA)	
Submission of claims		
First meeting of creditors (673 CA)		Confirmation of administrator
Challenge of claims (690 CA)	Decision on challenges; approval list of claims (692 CA)	Administrator files periodic performance reports (659 CA) Remuneration (661 CA)
Second meeting of creditors (673 CA)		
[Reorganization plan proposal] (678 CA)		
[Reorganization plan adoption] (703 CA)	[Confirmation reorganization plan] (704 CA)	
[Composition]	[Confirmation of composition] (740 CA)	
[Payments under the reorganization plan; or composition]		
	Opening of liquidation	Liquidation of assets, distributions to creditors
		Accounts of the liquidation (733 CA)
	Termination (707 CA)	

25. In addition, it would be useful to collect data on the cost and recovery rate in insolvency proceedings. Recognizing the limitations in the objective measurement of the costs of insolvency processes through judicial data, Bulgaria may consider gathering basic information, such

as the costs of the process as documented in the insolvency administrator's reports.¹⁵ For credit recovery, it would be possible to collect information at the end of the insolvency process as compared to the total value of the assets estimated at the commencement and the total value recovered at the end of liquidation process. In Bulgaria this information is documented by the insolvency administrator and filed and stored both with the court and the Trade Registry. The aggregated analysis of such information could point to any systemic deficiencies in the initial asset valuation and value lost in the insolvency process, for different causes. Finally, the statistical system could collect information on the aggregate and median recovery in insolvency cases.

26. There are different possibilities for the compilation of the necessary insolvency data.

The refinement of the current methodology of judicial statistics could provide a useful means for the collection and treatment of the data referred to insolvency processes. The Bulgarian insolvency framework foresees that all the acts related to an insolvency process should be included in a separate book at the court, which should be publicly available (art. 634 CA). The law foresees that this book can have an electronic format—which could particularly help for developing a more granular data collection system. There are also other alternatives: the main decisions of the insolvency process are recorded in the trade registry (arts. 623–624 CA), so the systems of the trade registry can also be used to collect and elaborate statistics. The Ministry of Justice, as the supervisor of the insolvency administrators, could also collect information relative to the insolvency cases through the establishment of information duties for the insolvency professionals. Finally, Bulgaria, as a member state of the European Union, should establish an insolvency register for cross-border insolvency cases, in accordance with the European Regulation on insolvency (see text box below). The establishment of this register offers another opportunity to set a modern and efficient data collection system. Given the need to coordinate efforts, it would seem appropriate to establish coordination mechanisms among the different authorities and agencies involved, possibly under the coordination of the Ministry of Justice, to produce insolvency and debt enforcement reports. The compilation and analysis of these data would result in a much more accurate picture of the insolvency and enforcement system, which could serve as the basis for future legislative interventions.

¹⁵ As per article 733 of the Bulgaria Commercial Code the insolvency administrator is mandated to produce the reports on his activities and an account on the distribution of payments obtained as a result of liquidating the estate, and on the remaining outstanding claims.

The Establishment of a National Insolvency Register According to the European Insolvency Regulation

The Regulation (EU) 2015/848 of the European Parliament and of the Council from May 20, 2015 on insolvency proceedings includes the obligation for member states to establish an insolvency register (art. 24). The national registers will be interconnected (art. 25).

The function of the register is to make publicly available information related to cross-border insolvency proceedings. According to the Regulation, the information needs to be published as soon as possible after the opening of such proceedings, and must include, among other data: (a) the date of the opening of insolvency proceedings; (b) the court opening insolvency proceedings and the case reference number, if any; (c) the type of insolvency proceedings; (d) if the debtor is a company or a legal person, the debtor's name, registration number, registered office or, if different, postal address; (e) if the debtor is an individual whether or not exercising an independent business or professional activity, the debtor's name, registration number, if any, and postal address or, where the address is protected, the debtor's place and date of birth; (f) the name, postal address or e-mail address of the insolvency practitioner, if any, appointed in the proceedings; (g) the time limit for lodging claims, if any, or a reference to the criteria for calculating that time limit; (h) the date of closing main insolvency proceedings, if any; and (i) the court before which and, where applicable, the time limit within which a challenge of the decision opening insolvency proceedings is to be lodged.

These information items are mandatory and serve an important purpose for the protection of the interests of creditors in the European Union, but the Regulation also indicates that member states can include additional information or documents in the register. Therefore, each member state can decide whether to include additional information in its national system. This offers an opportunity for setting up a system that captures the relevant data for the analysis of the efficiency and performance of the insolvency system. The establishment of the register offers an opportunity to structure similar information for cross-border and national insolvency cases, also in view of new demands on insolvency statistics in other European instruments.

27. A comprehensive system should also include statistics on debt enforcement procedures. Although the procedures present significant differences from the legal point of view, it is entirely appropriate to analyze these different types of procedures together in order to assess the efficiency of the overall system of credit recovery. Creditors need to analyze different strategies for the collection of claims, depending on the availability of procedures, and on the relations with the debtor and other creditors. Insolvency processes are generally the last recourse and their use is relatively rare compared to the simple enforcement processes.

28. For the analysis of the efficiency of debt enforcement procedures the system must distinguish the different types and stages of enforcement. As procedures are different, distinctions should be made between the enforcement of different types of claim: mortgages, special pledges, and unsecured claims. In most cases, it will be necessary to distinguish the time it

takes to complete the necessary judicial steps for enforcement, and the time it takes for the bailiff to complete enforcement until the creditor receives a payment. Time spent in different appeals within enforcement procedure should be calculated separately. In the cases of out-of-court enforcement (special pledge), only the bailiff's intervention needs to be measured. At the completion of each enforcement action, it is possible to record the cost and the recovery for the creditor.

29. Given the diversity of actors involved, in the compilation of enforcement statistics the data collection needs to be centralized. Since enforcement can be partly under the umbrella of the judicial system, and partly under the action of the bailiffs, a complete measurement of the efficiency of the enforcement process in Bulgaria would require the combination of the data from the courts and the data relative to the action of the bailiffs. In this regard, the Ministry of Justice is in the position of obtaining information from the bailiffs, who are regulated and supervised by that Ministry, and also in the position of connecting the information obtained by the courts with that provided by the bailiffs. Considering that the main concerns reported by the market participants relate to the processes within the judicial system, the initial focus of the debt enforcement statistics could be on monitoring such judicial processes.

30. Continuous monitoring and periodic publication of enforcement and insolvency statistics could increase accountability¹⁶, predictability and confidence in the system. Enabling a comprehensive analysis of the efficiency of procedures, both at a national level and at the level of the different judicial districts, with the support of data could help to identify weaknesses both in the legal framework and at the institutional level. It would also allow a more targeted approach in further reforms, backed by a sound impact assessment of the proposed changes¹⁷. Furthermore, the added transparency regarding the functioning of the procedures could increase predictability and confidence in the system. Benchmarking the performance of courts with comparable case-loads would also help to shape measures to strengthen judicial specialization and optimize the allocation of cases. The analysis can contribute in significant ways to improve the effectiveness of the insolvency and enforcement system.

D. Conclusion and Recommendations

31. Building on its existing mechanisms for statistical data collection, Bulgaria should develop a mechanism for the continuous monitoring of the efficiency of the insolvency and enforcement system. To achieve these goals, two different approaches should be followed:

- **To enable a continuous monitoring of the trends in insolvency cases,** Bulgaria should consider periodic publication of the data collected by the NSI aggregating such data along the categories of general number of insolvency cases newly filed, pending and closed, with

¹⁶ The OECD suggests a correlation between the intensity of reporting and the duration of trials: the more statistics the shorter the trials. See OECD (2013), 'What makes civil justice effective?', *OECD Economics Department Policy Notes*, No. 18 June 2013, at p.8.

¹⁷ Changes in the legal framework need to be reflected in the system for the collection of statistics: for instance, the introduction of a new pre-insolvency procedure, as foreseen in recent reform projects, will require to distinguish between pre-insolvency procedures and formal insolvency cases.

the breakdown by economic sector, geographical region, and size of the insolvent company. These data would contribute to the analysis of macro-economic trends and could inform economic and social policy considerations.

- **To analyze and monitor the performance of the insolvency and enforcement system,** Bulgaria should consider developing a mechanism for the continuous collection and analysis of data on duration, costs and recovery rate of different procedures of debt enforcement and insolvency. The analysis can vary in sophistication and granularity, and can be developed gradually by refining the current templates and methods for collecting and aggregating statistics on insolvency and debt enforcement procedures. The collected data should serve as the basis for the analysis and identification of bottlenecks and issues in the functioning of the system of debt collection. This analysis, in turn, can guide the design of targeted reforms. Publication of the relevant data and its analysis both at the national and regional level (i.e., by court district) could help to increase transparency, improving the predictability of the legal and judicial system. Ultimately, the monitoring exercise should contribute to improve Bulgaria's debt resolution framework, which would assist in addressing the high level of private sector indebtedness and would increase confidence in the legal system.

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