

Mitigating the Economic Impact of an Aging Population

Options for Bulgaria



MITIGATING THE ECONOMIC IMPACT OF AN AGING POPULATION:

Options for Bulgaria

Poverty Reduction and Economic Management
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ACRONYMS AND ABBREVIATIONS

BGN	Bulgarian Lev	LTC	Long-term Care
BURS	Bulgarian University Ranking System	LTCI	Long-term Care Insurance
CCPs	Clinical Care Pathways	MEYS	Ministry of Education, Youth and Social Sciences
CEE	Central and Eastern Europe	MLSP	Ministry of Labor and Social Policy
DRGs	Diagnostic Related Groups	MoH	Ministry of Health
ECA	Europe and Central Asia	MoF	Ministry of Finance
EU	EU	NCDs	Non-communicable Diseases
EU10	Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, Slovenia	NEEA	National Evaluation and Accreditation Agency
EU15	EU of 15 member states: EU-12 plus Austria, Finland, and Sweden	NEET	Not in Employment, Education or Training
EU25	EU of 25 member states: EU15 plus Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia	NGO	Non-Governmental Organization
EU27	EU of 27 member states: plus Bulgaria and Romania	NHA	National Health Accounts
GDP	Gross Domestic Product	NHIF	National Health Insurance Fund
GNI	Gross National Income	NICE	National Institute for Health and Clinical Excellence, UK
HEI	Higher Education Institute	NMS	New Member States
HFA	Health For All	NSLL	National Strategy of Life-Long Learning
HiT	Health Systems in Transition	NTA	National Transfer Account
ILO	International Labour Organization	NYS	National Youth Strategy
LE	Life Expectancy	OOP	Out-of-Pocket Expenditure
LFP	Labor Force Participation	PDL	Positive Drug List
LLL	Life-long Learning	PHE	Public Health Expenditure
LOD	Labor Offices Directorate	PIRLS	Progress in International Literacy Study
		PISA	Program for International Students Assessments
		PROST	Pension Reforms Options Simulation Toolkit

R&D	Research and Development	TVET	Technical and Vocational
QOF	Quality and Outcomes		Education Training
	Framework	UN	United Nations
SDR	Standard Death Rate	USAID	United States Agency for
SHA	System of Health Accounts		International Development
TFR	Total Fertility Rate	WHO	World Health Organization
TFP	Total Factor Productivity		

Currency Equivalents

Exchange Rate as of August 27, 2013

Currency Unit	Bulgarian Lev
US\$ 1.00	BGN 1.47

Government Fiscal Year

January 1–December 31

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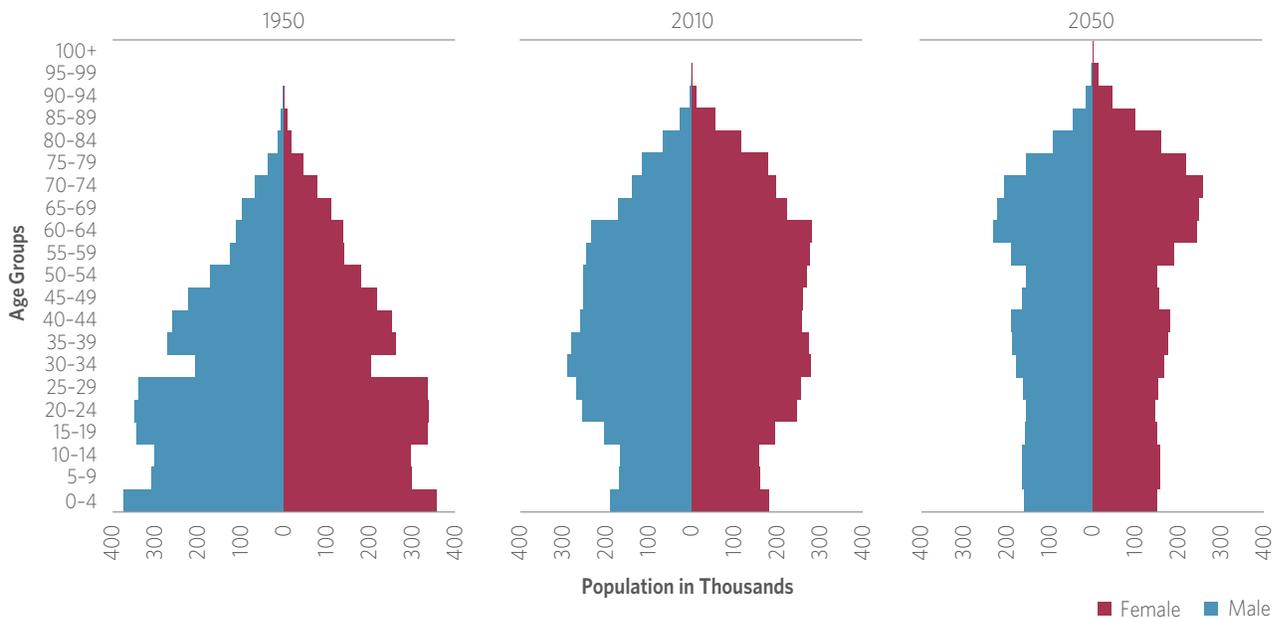
EXECUTIVE SUMMARY

Challenges

1. **Bulgaria is undergoing a profound socio-economic transformation brought about by extraordinary demographic change.** Between 1950 and 1990, its population grew from 7.3 million to 8.8 million and then fell in half the time to 7.5 million by 2010. Low birth rates, high mortality rates and significant emigration explained

the slow population growth before the 1990s as well as its steep decline over the last two decades. Emigration alone contributed to a 10 percent decline of the economically active population since the 1990s. Bulgaria’s age structure has changed radically (Figure 1). Its median age increased from 30.3 in 1960 to 42.7 in 2012, the third-highest median age in the EU, surpassed only by Germany and Italy.

FIGURE 1: ONE CENTURY OF DEMOGRAPHIC CHANGE



Source: Authors’ calculations based on data from the United Nations Population Division (2011).

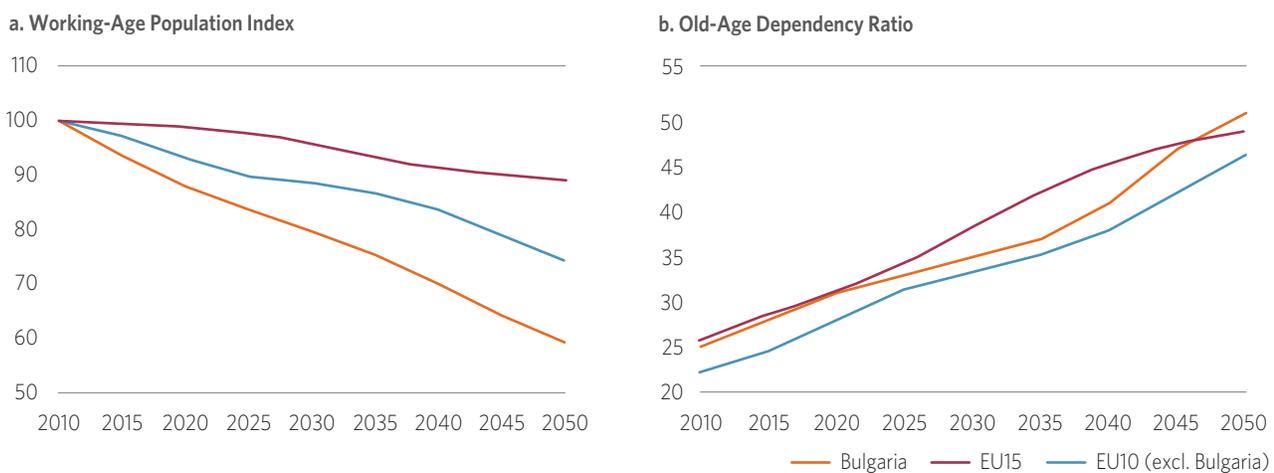
2. **Bulgaria is heading for the steepest drop in the working-age population of any country, and it will impose a heavy burden on the economy.** According to UN population projections, its labor supply is projected to decline by up to 40 percent till 2050 (Figure 2). Its old-age dependency ratio, i.e. the share of elderly in the total population, is expected to double over the next four decades. By 2050, one in three Bulgarians is projected to be older than 65 and only one in two Bulgarians will be of working age. Since the proportion of the population that works is a key determinant of a country's income level, its decline is likely to depress growth.

3. **The higher productivity growth, the easier it will be for Bulgaria to manage this demographic challenge.** Given its declining working-age population, Bulgaria will have to rely on productivity growth to sustain growth in aggregate income. Productivity growth means that a country is able to produce more output with the same input factors, such as capital and labor.

As output per worker increases, fewer workers will be effectively required to pay for existing health sector, pension and long-term care liabilities. Higher growth is also likely to generate better employment opportunities inducing more workers to participate in the labor force and to stay in or move to Bulgaria. It is also required to raise household savings, which are needed to ensure that the elderly can afford a decent standard of living.

4. **Bulgaria's demographic change is however likely to depress productivity growth through three main channels:** First, a low population density may reduce the exploitation of human capital externalities and economies of scale. Second, aging may depress entrepreneurial activity and innovation. Third, there is a danger that population aging will depress fiscal savings as age-sensitive expenditures such as health, pensions and long-term care will increase and tax revenue will decline, reducing the fiscal savings needed for productivity-enhancing public investments.

FIGURE 2: WORKING-AGE POPULATION AND OLD-AGE DEPENDENCY RATIO



Source: Authors' calculations based on United Nations Population Division (2011).

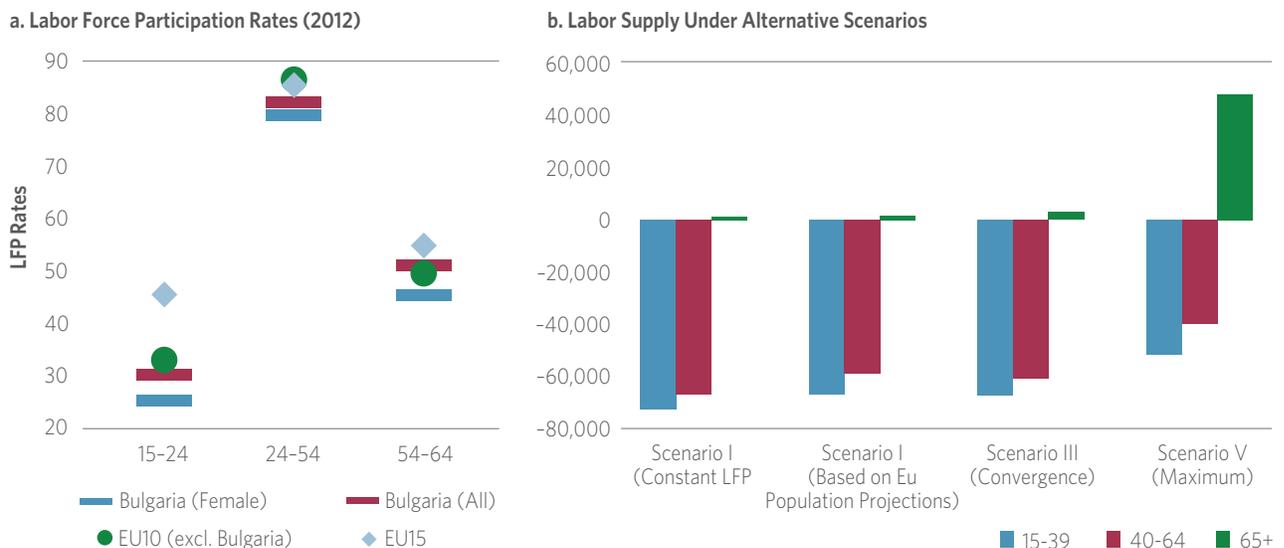
Note: Index is calculated as 2010 equal 100. Working-age population is population aged 15–65. Old-age dependency ratio is calculated as the population age 65 as a share of total population.

5. **There may be some potential to mitigate the impact of the declining working-age population by expanding the work force.** Women, elderly and young people have low Labor Force Participation (LFP) rates in Bulgaria. In 2012, the LFP rate of women aged 15 to 24 was 25.3 percent. This compares to an overall LFP rate of 30.4 percent in Bulgaria, 33.1 in the EU10 and 45.6 in the EU15 (Figure 3a). The LFP rate of elderly Bulgarian women aged 54 to 64 is nearly 10 percentage points below the EU15 average. Still, even under the most optimistic scenario that assumes an increase of LFP rates of women, elderly and young workers beyond the highest LFP rates observed in Europe today, this decline cannot be fully stemmed. The most effective way to stop the labor force from shrinking further is to stanch emigration.
6. **As Bulgaria ages, its work force will become radically different.** The share of older workers is likely to increase. This will require changes in the labor market,

education and health care. More flexible work arrangements would need to be promoted and work-places adapted to the needs of an older work force. The education sector would need to expand investment in lifelong learning to keep an aging work-force productive at a time of fast technological change. The health sector would need to become more efficient to ensure that older people remain healthy. Not only would the share of older workers increase but also the proportion of workers from the Roma population. Roma already provide between 9 and 19 percent of new labor market entrants. This is likely to increase in the future, requiring public services to adapt better to their needs.

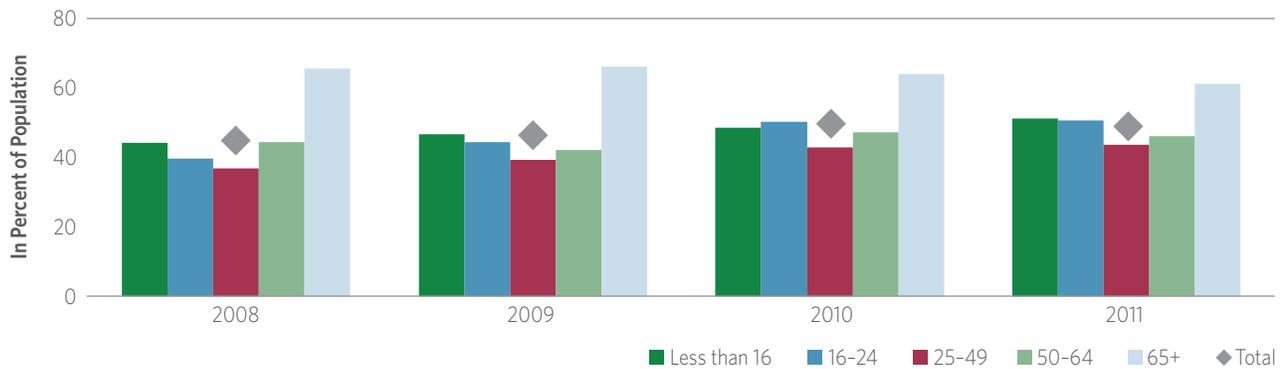
7. **The high incidence of old-age poverty in Bulgaria and the currently rapid aging of its population also raise the question how an acceptable standard of living for its elderly can be funded.** In 2011, nearly half of Bulgaria's population of 7.3 million was poor or at risk of social exclusion,

FIGURE 3: LABOR FORCE PARTICIPATION RATES AND LABOR SUPPLY SCENARIO BY AGE-GROUPS



Source: Figure 3a: Authors' calculations based on data from Eurostat (2012); Figure 3b: Authors' simulations based on data from ILO (2012), United Nations Population Division (2011) and ILO (2012).

FIGURE 4: BULGARIA'S POPULATION AT RISK OF POVERTY OR SOCIAL EXCLUSION BY AGE GROUP



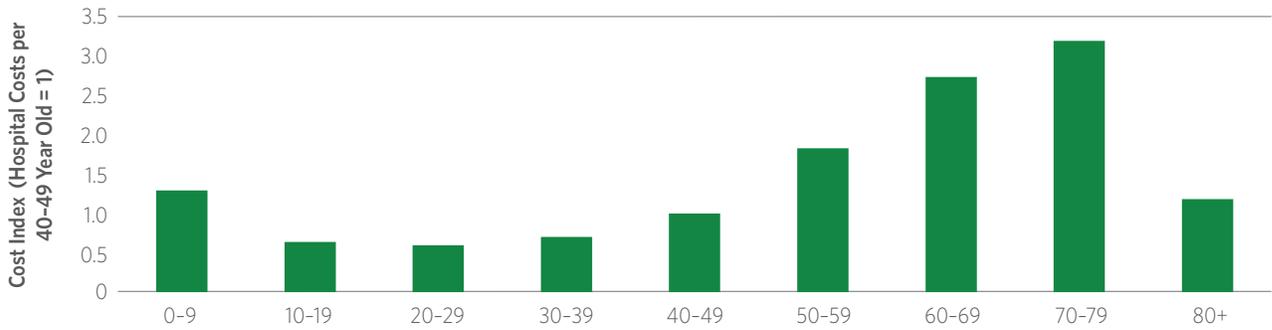
Source: Eurostat (2012).

the highest percentage of all EU countries. Poverty is much more prevalent among the elderly. Sixty percent of the population aged 65 or above is at risk of poverty or social exclusion (Figure 4), posing challenges to fund an acceptable standard of living for the elderly. Options include relying on family or the community; delaying retirement; increasing public transfers to the old and encouraging savings. Relying on family is likely to become increasingly costly for Bulgaria's economy as the working-age population shrinks. It will thus become imperative to encourage savings, including by further delaying retirement as life expectancy increases. In Bulgaria, household savings have been negative since 2005. Other European countries, including those in Eastern Europe, have achieved positive household savings rates; for example, Hungary and Poland have maintained average rates of 10.6 and 7.3 percent, respectively, for the period 2005–10. Bulgaria has been implementing some measures to encourage household savings in the long term. For example, it recently introduced a gradual increase in the retirement age to reach 65 for men and 63 for women by 2017 and 2020, respectively. The government has also put in place measures to increase the employment rate. Despite these ac-

tions, household savings are unlikely to increase significantly given continued high unemployment, weak growth and a pervasive risk of poverty.

- 8. Aging will affect the demand for key public services.** Demand for health services and long-term care tend to increase with age. Older people tend to consume more health care as illnesses, chronic diseases and hospital visits become more frequent in old age. Only at a very old age does the health care demand tend to decline (Figure 5). In Bulgaria, people in their seventies have the largest public health care costs per person. Similarly, demand for long-term care tends to increase steeply after people turn 65 years of age. Only the old can benefit from old-age pensions. As the population ages, public expenditures on health, long-term care and pensions can thus be expected to increase. On the other hand, demand for education tends to be concentrated at younger ages. In general, younger people are also more likely to commit crimes. Population aging is therefore expected to reduce public expenditure for education as well as public order and safety.
- 9. Population aging will place unprecedented demands on the provision**

FIGURE 5: BULGARIA'S HOSPITAL EXPENDITURE – AGE PROFILE

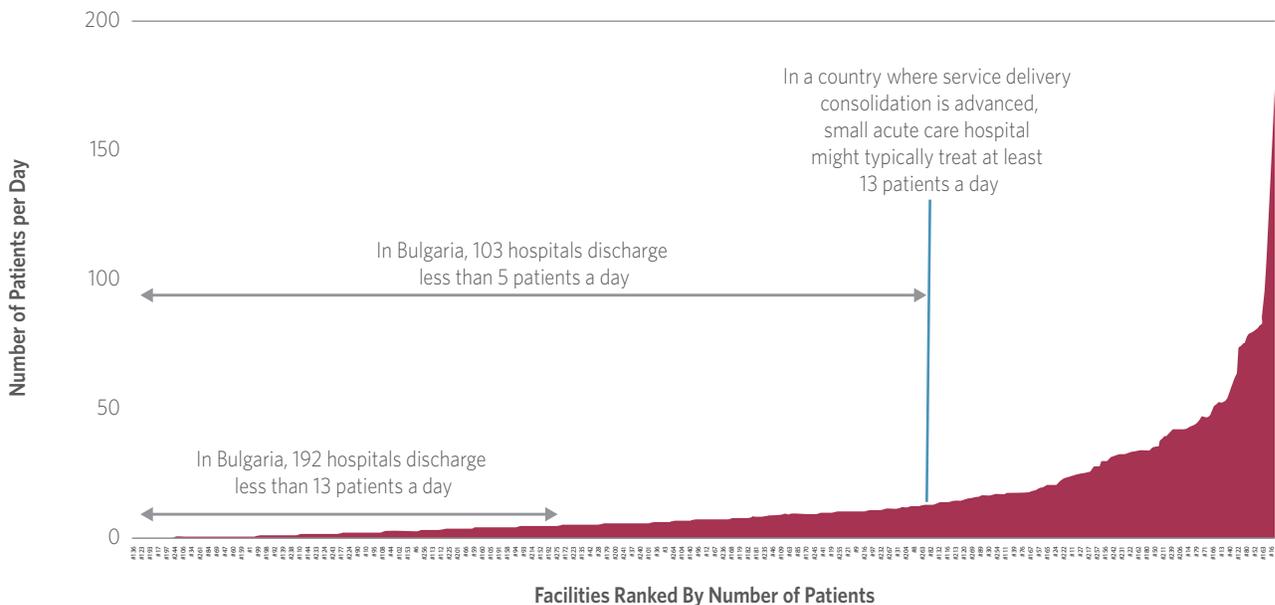


Source: Author's calculations based on hospital data from MoH.

of health care. The performance of Bulgaria's health system is lagging in many ways and Bulgarians are increasingly dissatisfied with it. This is likely to increase pressure to invest more in its various components. Though the health sector has undergone a number of reforms over the past few years, these have been unable to stem a rise in out-of-pocket expenditures and improve the health of Bulgarians relative to other EU countries. Inefficiencies in the sys-

tem abound. Bulgaria has a low coverage of preventive measures, a low use of outpatient services and high hospitalization rates. Hospitals are very fragmented, with a large number of hospitals treating a low number of patients. Among 275 Bulgarian hospital facilities ranked by number of patients discharged per month, 193 discharge less than 13 patients a day, which would be considered the discharge of a small acute care hospital in a country where service de-

FIGURE 6: MONTHLY DISTRIBUTION OF NUMBER OF BULGARIAN HOSPITAL PATIENTS



Source: Author's calculations based on National Center of Health Informatics Data.

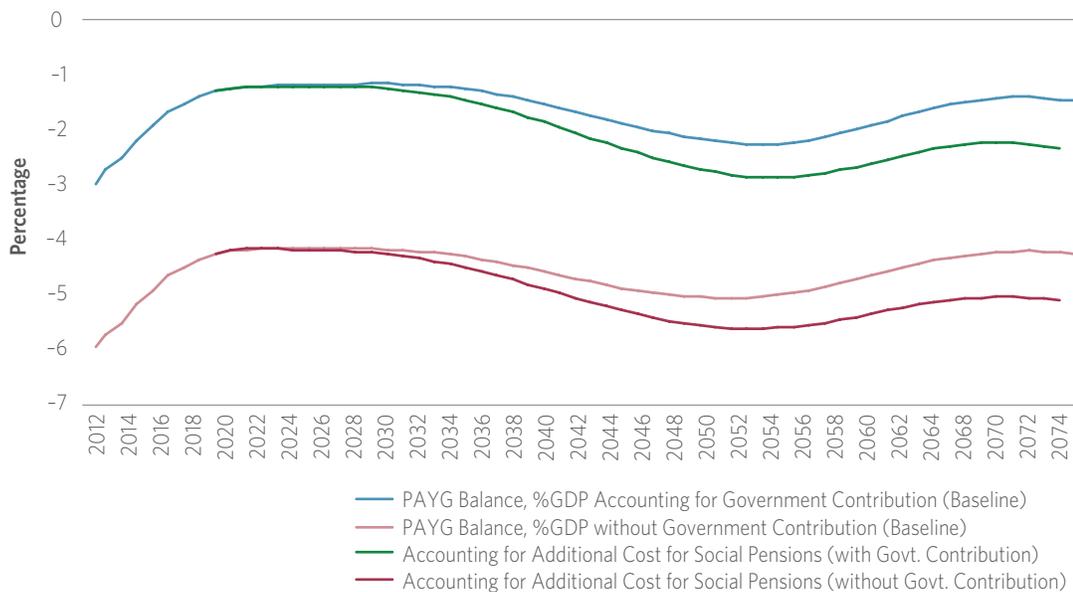
livery consolidation is advanced (Figure 6). Hospital data also suggest that around 20 percent of hospital admissions correspond to conditions which international standards suggest could be routinely treated on an outpatient basis. The aging population creates a pressing need to bring about improvements in the delivery of public health services.

10. **Demand for long-term care (LTC) services is bound to increase strongly with aging.** As the Bulgarian population ages, the number of dependent people in need of LTC will increase as the number of potential caregivers decreases. This raises the question of who will take care of the elderly in the future. More and more responsibility is likely to fall upon the government. First, the costs of becoming dependent and having to rely on the help of others can be very high and quickly impoverish elderly people. Since across the globe the experience with private providers of LTC insurance has not been very prom-

ising, some form of public risk-pooling—either in the form of tax-financed services or social insurance—will be necessary. Second, a sufficiently well-developed social sector for LTC services has important cost-efficiency effects on the health sector by shifting patients with low-intensity care needs out of the hospital sector. Third, given the expected increase in the scarcity of labor, informal caregivers—in particular stay-at-home women—will be less and less available, which will increase the demand for formal care services. The provision of private and public long-term care services, which is currently at a very low level in Bulgaria, would thus need to be scaled up.

11. **Bulgaria’s pension system is projected to remain in deficit throughout the projection horizon.** Though other EU countries spend similar portions of their GDP on pensions, have similar retirement ages and comparable benefits, Bulgaria’s low contribution

FIGURE 7: PROJECTED BASELINE FISCAL PAYG BALANCE (IN PERCENT OF GDP)



Source: Author’s calculations using PROST.

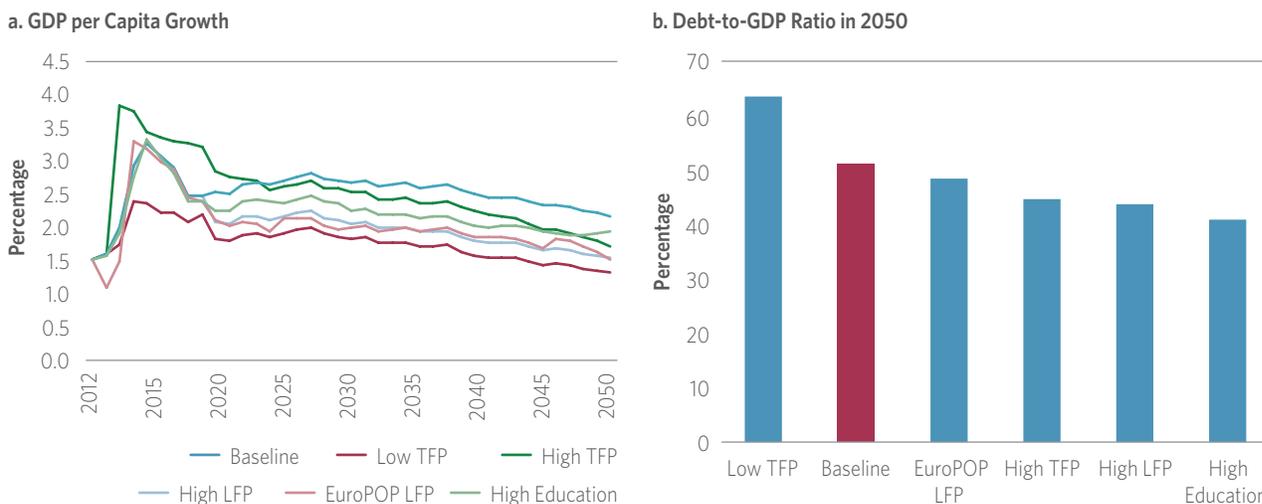
rates have led to declining revenues and increasing subsidies from the state budget. In 2011, employee and employer contributions financed only 53 percent of pension expenditures. The remaining liabilities were financed from general revenue. Since 2009, the Government has become a third insurer, paying contribution equal to 12 percent of the total contributory base. The Government also covers the additional remaining deficit beyond the 12 percent contribution. Going forward, the transfers from the general government budget to the pension funds are projected to decline from 6.1 percent of GDP in 2012 to 4.9 percent of GDP in the medium term before climbing to 5.6 percent by 2050.

12. **The current pension system also raises equity concerns.** Currently, the Bulgarian pension system covers only about 55 percent of the working-age population. Coverage is expected to decline as a result of high unemployment rates in the medium-term and sporadic contribution patterns due to a large informal work-force. As a result, the share of elderly with pension rights, who ben-

efit from the government subsidies to the pension fund, is projected to decline. Since citizens with pension rights are likely to be wealthier, having worked in the formal sector for at least 37 years in the case of women and 40 years in the case of men, than those without pension rights, government subsidies to the pension fund will benefit an increasingly small share of relatively well-off citizens.

13. **Simulations suggest that even under optimistic assumptions, Bulgaria's demographic transformation will exert steady fiscal pressures and depress economic growth.** As labor shrinks by close to 40 percent till 2050, real GDP growth is projected to slow down to 0.7 percent per year by the end of the projection horizon under the baseline scenario. Public expenditures as a share of GDP are expected to increase in the long term as a result of spending for public health care, long-term care and government transfers to the pension system, resulting in an increase in Bulgaria's debt-to-GDP ratio from 18 percent to 51 percent by the end of the projection horizon. Protracted primary deficits are

FIGURE 8: PROJECTIONS OF GDP GROWTH AND DEBT-TO-GDP RATIOS UNDER DIFFERENT SCENARIOS



Source: Authors' simulations.

the most prominent driver of the accumulation of public debt over the projection period, adding about 0.9 percentage points per year to the debt-to-GDP ratio.

14. **Scenario analyses show that the government can play a significant role in mitigating these effects.** Policies that induce higher labor force participation, promote productivity growth, and provide better education outcomes could counteract significantly the fiscal pressure arising from age-dependent fiscal expenditures. A low TFP scenario illustrates that downward risks are significant. Maintaining strong productivity growth, which will entail active policies and planning, is key for maintaining debt at a sustainable level.

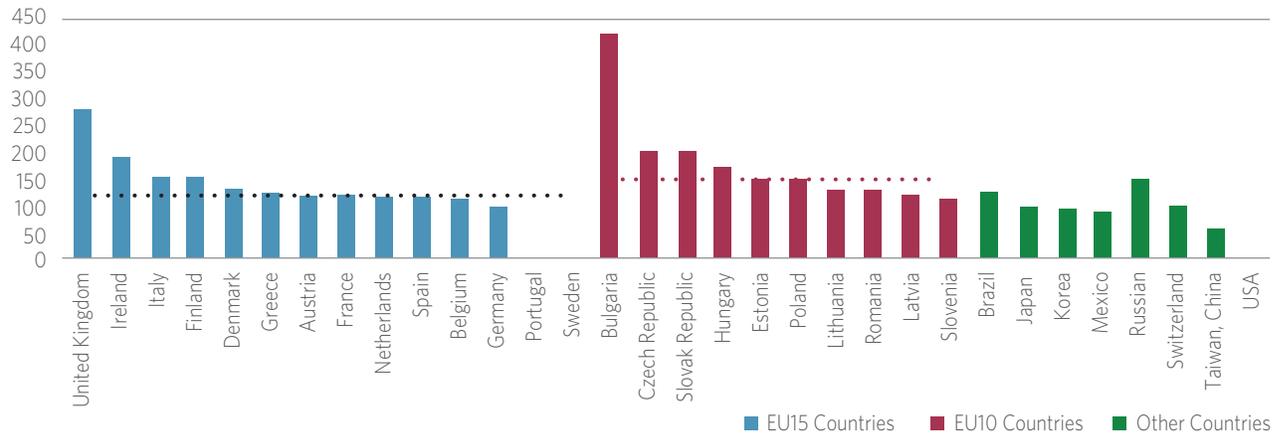
Opportunities

15. **As Bulgaria's labor force is projected to decline, measures to enhance productivity will become increasingly important to support labor demand, competitiveness and growth.** Given the magnitude of Bulgaria's demographic challenge, improvements in social sector policies alone are unlikely to suffice. The implementation of productivity-enhancing policies will be crucial for sustaining long-term growth. The latter could include policies in favor of strengthening Bulgaria's business climate, innovation and better access to infrastructure. These measures would not only support productivity growth but also positively affect labor demand which combined with active policies in support of higher labor force participation will be necessary to stem the workforce decline.
16. **General labor policies would need to be combined with policies tar-**

geted at older people, youth and the Roma. Job-creation policies span a wide range of demand- and supply-side measures that must work in tandem. These policies include: (i) promoting macroeconomic stability; (ii) improving the investment climate; (iii) refining labor market regulations; (iv) designing an employment-friendly tax system; and (v) developing an adaptable workforce through the education system. Still, since labor force participation rates in Bulgaria are particularly low for elderly and youth, in particular elderly and young women, as well as minorities, these general policies would need to be combined with policies specifically designed to increase employment among these groups. Providing affordable alternatives for child and elderly care services could boost LFP rates of young and elderly women by reducing the opportunity cost of working outside the home. Since Bulgaria is among the countries with the longest paid maternity leave in the world (Figure 9), it could also consider reducing it while scaling up of child care services. Promoting flexible work arrangements could draw more youth, older workers and women into employment. Expanding part-time and home-based employment opportunities may encourage older workers to remain in the labor market until the stipulated retirement age. Early-childhood programs for the Roma could help them join the labor force as adults.

17. **Since Bulgaria's youth work and study less than those in other EU countries, additional measures tailored to them are important.** More than one out of every five young Bulgarians is classified as not in employment, education or training (NEETs). NEETs have usually dropped out of school without qualifications and are likely to be dependent on welfare programs. Reducing

FIGURE 9: MANDATORY MINIMUM LENGTH OF PAID MATERNITY LEAVE



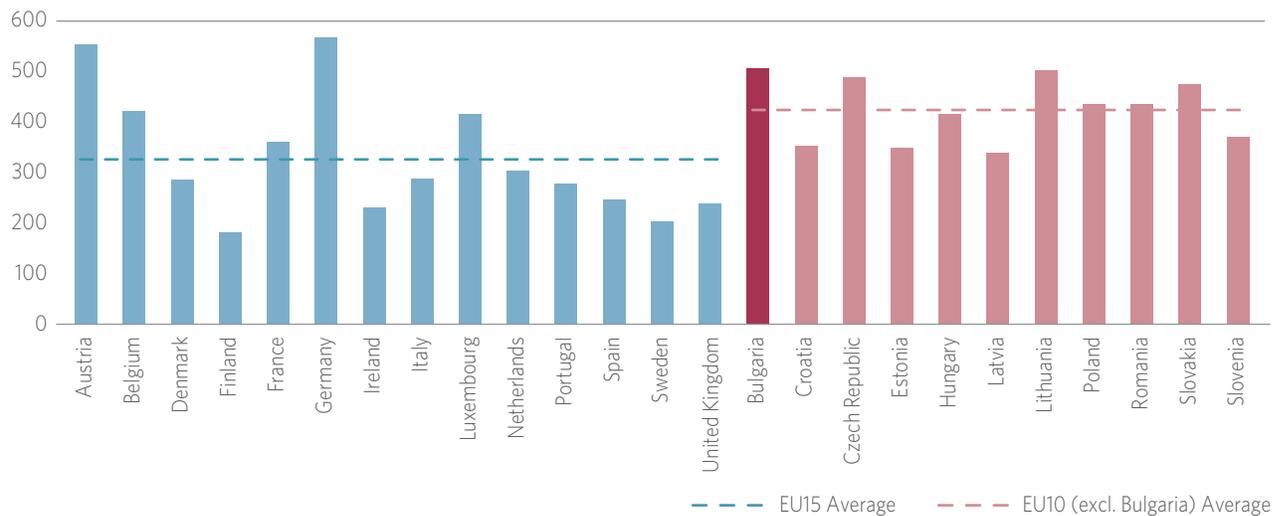
Source: World Bank (2012f).

the number of NEETs could result in significant productivity gains, fiscal savings and poverty reduction in the medium-term. In fact, it has been estimated that the lack of labor market participation by NEETs costs Bulgaria about 2.3 percent of GDP. An effective youth NEET strategy needs to focus on retaining young people in formal education and training, and be carefully targeted. Options include job placement services, training and remedial education for old-

er youth as well as, back-to-school programs that would enable youth to acquire valuable skills. The experience from other countries suggests that the impact of activation measures is mixed and hence, there is a strong case for all measures to be evaluated.

18. Reducing emigration, motivating Bulgarians to return from abroad and attracting immigrants will be important to slow the workforce

FIGURE 10: NEET RATE AMONG THE YOUTH (AGED 15-24) IN 2012



Source: Eurostat (2012).

decline. Policies in support of employment are also likely to reduce emigration and make Bulgaria more attractive for immigrants. Poorly functioning labor markets, weak public-service delivery and an uncertain business environment have all been found to be significant drivers of emigration in Eastern European countries. High unemployment rates, significant wage differentials between Bulgaria and neighboring countries and the lack of favorable employment and business opportunities for high-skilled people have all been found to be motives for Bulgarians to emigrate. Labor-market policies, education policies and health-sector reforms, if combined with policies in favor of improving the business climate could add to Bulgaria's labor supply by increasing LFP rates at the same time as reducing emigration.

19. **To ensure that elderly people of have decent standard of living, encouraging household savings will be important in the medium-term.** The government could take steps to encourage savings by further increasing the retirement age, encouraging supplementary voluntary pension insurance, and scaling up financial information and education.
20. **Strengthening long-term fiscal planning will be important to gauge the long-term policy impact of reforms in the context of a drastically changing population.** Institutions need time to evolve, but Bulgaria's population has aged very rapidly and continues to do so. The government thus needs to respond flexibly to changing demand and prudently reduce public services as they become obsolete. The introduction of per-capita spending in education in 2007, combined with the policy of protected schools, is a

good example. The government could also explore reductions in security-related public expenditures, which are significantly above other EU countries.

21. **Bulgaria has implemented significant education reforms over the past five years, paving the way for deeper changes.** In recent years, Bulgaria has reduced the number of schools and teachers in line with its declining student population. The quality of basic education has improved and the availability of tertiary education programs has risen. However, Bulgaria needs to develop an effective program of life-long learning (LLL) and to reduce today's high drop-out rates, especially among the Roma and other disadvantaged groups. LLL opportunities are still at an infant stage in Bulgaria and the government could develop a national system of validation of LLL programs. It could also create a comprehensive system involving all relevant stakeholders to promote a good match between the demands of employers and the availability of LLL opportunities. To cut drop-out rates, a first step would be the active implementation of Bulgaria's Strategy for the Prevention and Reduction in the Share of Drop-Outs and Early Leavers from the Education System (2013–2020). Requiring all students to complete general education program through age 16 would increase the availability of transversal skills. Continued efforts of improving the quality of and participation in education programs is particularly important in an aging society as workers that have benefited from higher quality education are more likely to be retrained in the course of their working lives. Bulgaria education is already well-supported by an extensive network of legal and strategic frameworks to deal with in this new era of demographic decline. If the implementa-

tion of these recently developed policy directives can focus on ensuring good access to education for all and on improving the quality of existing institutions, then the education sector is well-poised to serve the entire population of Bulgaria well in the decades to come.

22. **There are no easy or quick solutions to prepare Bulgaria’s health sector for population aging. Successful reform requires strong vision and leadership.** The fragmentation of the hospital sector is likely to lead to significant inefficiencies (Figure 11). A key action would be the implementation of a technically-driven hospital rationalization plan to support the reorganization of the hospital sector and the creation of referral networks while maintaining physical access to care. In this context, the National Health Insurance Fund needs to be able to purchase services selectively, i.e., it should be allowed to decide which entities it can contract. To support this process, information on the quality of care needs to be generated, collected and publicized. The implementation of a modern Diagnostic-Related Group (DRG) payment system has been under consideration for many years, but efforts to implement this have not succeeded. Accompanying the introduction of DRGs with expenditure caps and the development of outpatient alternatives through concerted efforts (regulatory and in terms of payment systems) would avoid further escalation of costs. Strengthening alternatives to hospital-based care would require improving the capacity of primary-care professionals to manage the prevailing burden of disease and to play an active role in the coordination of their patients’ care needs. The health-care sector’s specialty mix better needs to adjust to better serve the population. Although in Bulgaria the number of

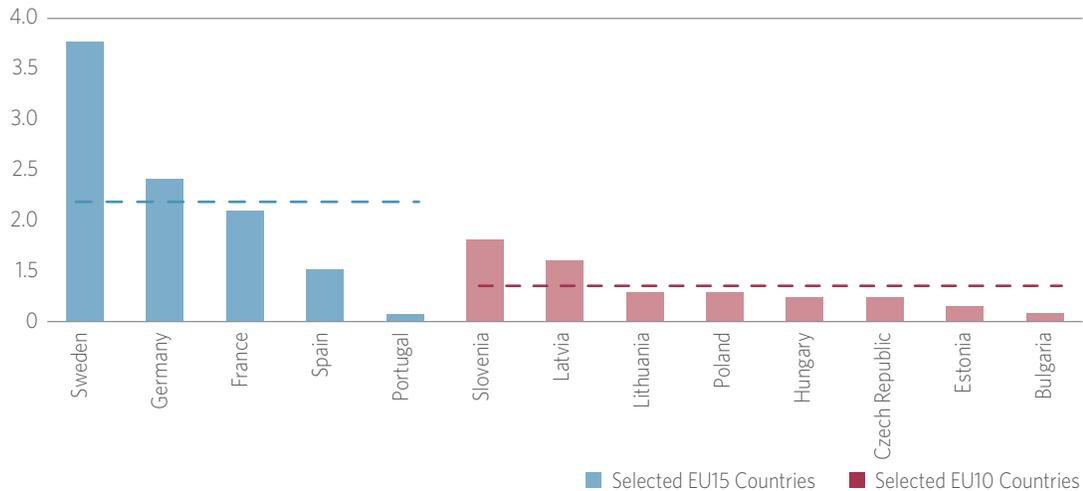
physicians per capita is high, the number of nurses per capita is by far the lowest in the region. Solutions could include planning for human resources, adapting training, and addressing financial and other constraints in order to retain qualified staff in Bulgaria.

23. **Providing financial protection to all—so that illness does not lead to poverty—is a core objective of the health-care system.** Financial protection provided by the National Health Insurance Fund has significant gaps and out-of-pocket (OOP) expenditures are large in Bulgaria. Large OOP expenditures on drugs, which are more problematic for the poor and the elderly, and exclusions from the regular insurance system introduce inefficiencies. Patients who forego care or do not manage their existing conditions are at higher risk of complication and ultimately end up costing more to the public system. Thus, improving financial protection is efficient in addition to being equitable.

24. **Bulgaria’s long-term care (LTC) is currently under-funded.** Any publicly funded investments in building up more LTC and rehabilitative service facilities, though, would need to be carefully evaluated. Because costs for LTC can be catastrophically high, some form of risk-pooling is desirable. As pay-as-you-go financing mechanisms are unsustainable in an aging society, earmarking private savings of young workers for LTC through, for example, financial LTC insurance is an option worth exploring. Finally, it is essential that Bulgaria improves its data collection and recording practices on LTC services in order to be able to develop effective and fiscally responsible policies in this area.

25. **Though Bulgaria has implemented systemic and parametric reforms in**

FIGURE 11: AVERAGE LONG-TERM CARE SPENDING 2003–2007 (IN % OF GDP)



Source: Eurostat (2010). Note: The 2005 value for Hungary (8.23 percent of GDP) was dismissed as an outlier.

recent years, its pension system depends on large government subsidies. Increasing the contribution rate levied on individual wages by 6 percentage points would close the financing gap. However, such a large increase may have potential negative effects on the labor market, given the large size of Bulgaria's informal economy. Bulgaria could, however, consider a smaller increase in the PAYG contribution of around 2 percentage points that would reduce government subsidies without introducing major labor market distortions. Moreover, in the context of a rapid demographic contraction, pursuing both poverty alleviation and income replacement inevitably leads to the compression of the income distribution among the elderly and reduces incentives to contribute.

26. **Several alternative financing mechanisms could reduce state subsidies and improve redistribution.** Equalizing retirement for men and women at age 65 and increasing retirement ages beyond 65, in the future, would be important to consider. Women tend to

contribute during a shorter period of time than men as they often stop working to raise children. Stipulating women to retire earlier than men results in smaller benefits. In addition, an earlier retirement age for women, who have a longer life expectancy than men, further increases the period of benefit receipt for women relative to men. Facing inevitably smaller pensions in the future, Bulgaria should further develop its financial infrastructure, which would enable people to save more for their retirement through different mandatory and voluntary pension saving vehicles.

27. **Strengthening disability certification processes would help to mitigate a potential increase in disability claims due to high unemployment and stricter eligibility conditions in the old age program.** Disability spending as a percentage of GDP more than doubled between 2001 and 2010. Despite the fact that the number of people who receive disability benefits has been stabilized since 2006, it is likely that the pressure on the disability program will intensify given further increases to

the retirement age and the presently difficult labor market conditions.

28. **Avoiding further ad-hoc pension increases would facilitate long-term fiscal planning.** In the past, the Government has recurrently opted for increasing pensions above the level prescribed by the law. Such practices make it difficult to accurately project financing needs and ultimately jeopardize the long-term fiscal sustainability of the pension fund. A pension reform is an inherently difficult undertaking from a political standpoint and reducing pensions, once they have been raised, is difficult to implement. Policymakers would thus be well-advised in refraining from resorting to ad-hoc measures.
29. **While demographic change poses different challenges and opportunities for each economic sector, sever-**

al reform options can create synergies. Further increases in the retirement age, for example, would support higher labor force participation among elderly workers, reduce public transfers to the pension fund and encourage household savings. Well-targeted, strategic health-sector reforms could help improve citizens' well-being, the efficiency of public health spending and increase the labor supply, especially among elderly workers. Well-designed investments in basic education could also raise labor force participation, make it easier to retrain workers at a later stage of their life, foster innovation and contribute to a healthier population. Reforms that exploit these synergies are likely to be particularly effective. Still, one-off reforms are unlikely to be enough. A sustained reform commitment in all relevant areas will be required to mitigate the economic impact of Bulgaria's demographic change.

SUMMARY OF POLICY RECOMMENDATIONS

Challenge	Urgent policy actions	Medium-term recommendations
Enhancing Growth		
Employment Policies		
Low employment rates among youth, older people, Roma and women	Facilitate part-time employment by expanding training opportunities, and increasing its use in the public sector; Reduce mandatory maternity leave from the current 410 days to a level closer to the ILO recommended minimum of 98 days.	Increase access to good quality and affordable childcare and elderly care.
Slow school-to-work transition	Pilot apprenticeships, internships and wage subsidy programs for young workers.	Carry out impact evaluations of the initiatives and take successful measures to scale.
Large number of youth who are not in employment, education or training (NEETs)	Taylor labor market activation measures to NEETs.	
Low household savings		Equalize the retirement age of men and women and increase retirement age beyond age 65; Incentivize participation in voluntary pension schemes; Improve financial education and information.
Education		
Low participation in life-long learning (LLL)	Identify key barriers to achieving increased participation in LLL.	Establish a tripartite partnership between graduates, career centers and employers to develop effective education programs.
High drop-out rates, particular among Roma and other disadvantaged groups	Actively implement the Strategy for Prevention and Reduction in the Share of Drop-outs and Early Leavers Provide better access to early child-hood programs for Roma and other disadvantaged groups.	
Lack of good teachers in under-served areas	Promote competitive hiring of best teachers in disadvantaged areas using available EU structural funds.	Create salary structures that provide incentives for quality teachers to move to under-served areas.
Low transversal skills in all students	End early selectivity and tracking of students into vocational education.	Maintain general education through age 16 before tracking into selective and vocation educational tracks.
Other productivity-enhancing policies		
Maintain high productivity growth and increase labor demand	Improve business climate, by better enforcing contracts, streamlining the issuance of construction permits, providing faster access to electricity and improving bankruptcy laws; Improve infrastructure; Improve energy policies; Enhance innovation policies	
Savings		
Negative household savings	Improve financial education and information	Increase retirement age beyond age 65; Incentivize participation in voluntary pension schemes..

(continued on next page)

SUMMARY OF POLICY RECOMMENDATIONS (continued)

Challenge	Urgent policy actions	Medium-term recommendations
Improving Efficiency of Fiscal Spending		
Fiscal Management		
Increasing fiscal pressures	Develop comprehensive long-term fiscal projections; Assess the long-term fiscal impact of policy changes.	
Health and Long-term Care		
Inefficient hospital-based care	Develop a hospital rationalization plan and a Diagnostic-Related Group (DRG) payment system.	Implement the hospital rationalization plan and the DRG payment system; Convert redundant municipal hospitals into community centers that provide a whole range of LTC and rehabilitative services.
Lack of alternatives to hospital-based care	Improve capacity of primary care health providers and provide incentives for care outside of hospitals	Improve human resource policies to develop profession's speciality mix that meets population's needs.
Lack of financial protection from risk of becoming dependent	Develop publicly provided LTC services with a focus on community and home-based services.	Develop financial LTC insurance.
Pensions		
Pension system is not self-sustaining	Explore a small increase in contribution rates.	Increase retirement age beyond age 65.
Ad-hoc increases in pension benefits	Refrain from further ad-hoc pension increases.	Improve long-term fiscal planning of the pension system.
Increased pressure to the disability program as eligibility conditions of the old-age program are tightened	Further strengthen the disability certification process.	
Low pension coverage		Consider an alternative financing mechanism to ensure equity, such as a universal pension financed from general revenues.

INTRODUCTION

After thousands of years of stagnant life expectancies, average longevity in developed countries doubled within a century and societies around the world are grappling with the question what life in an aging society would be like.

Prima facie aging tends to be associated with frailty and deteriorating quality of life. Not surprisingly, the elderly in Eastern European countries tend to be dissatisfied with their lives because many of their expectations have not been met (Deaton 2007). In richer many countries, though, the elderly tend to be more satisfied with their lives. Generally, psychological studies show that as people age, they tend to become happier as they focus more on priorities, become more open to reconciliation, are less prone to crime and have less tolerance for injustice. Thus, if a country with an aging population can solve the practical problems that older people face, it could be quite a happy place.

Contrary to most countries in the world with an aging population, Bulgaria has become old before becoming rich. Most developed countries with a high share of elderly had decades to adjust to changes in the age structure. It took more than hundred years in France, nearly 70 years in the US and more than 50 years in Hungary for the share of the older population (65 plus) to increase from 7 percent to 14 percent (Gagnolati et al. 2011). In

Bulgaria, this process was completed in just 36 years. As a result, this major demographic change has been straining Bulgaria's institutions, creating an urgent need for reforms.

For Bulgaria, aging is not a problem confined to the future. The old of the future are already entering the education system or the work-force. Current institutions and expectations influence their choices today and will affect economic growth. Going forward, ever-smaller cohorts of younger people will follow. Transferring resources from the young to the old without burdening future generations with unsustainable debt will become increasingly difficult. Postponing reforms today is likely to require more drastic responses in the future. Moreover, the median voter will age with the population, possibly making it more difficult in the future to garner public support for policy measures in support of the young or future generations. Many of the reforms discussed in this report would also benefit today's elderly. Old-age poverty in Bulgaria is widespread and providing better public services could improve the quality of life of the elderly.

This report is aimed at addressing the question of how the government can provide better public services for today's elderly while investing in Bulgaria's future. It responds to a request of the Bulgarian Minister of Finance in

November 2012 to assess the consequences that Bulgaria's population aging and the decline in the size of the work-force will have on public services and finance. It is envisioned as the first part of a two-pronged study, with the second report focusing on constraints to productivity growth at the macroeconomic and firm level. The decline in numbers of Bulgaria's labor force and the changes in its composition could weaken the country's growth prospects. Boosting productivity will therefore be crucial to accelerate income convergence. The discussion of productivity-enhancing reforms through channels other than improving education and health will take place in the second study. This study is also not intended to provide an in-depth examination of the links between private savings and demographic change, or of the impact of demographic change on public revenues and the geographical implications of demographic change. These areas will require separate analyses.

This report focuses on the impact of demographic change on public ser-

vices and public finance. It identifies the main channels, the risks and the challenges the government is likely to face. It discusses the implications of different policy options and identifies reform opportunities. It starts by describing Bulgaria's demographic transformation and how it is likely to affect economic behavior and macro-economic outcomes (Chapter I). Labor-market and education policies are important to stem the decline in the labor force and support productivity growth. They are discussed in Chapter II and III, respectively. Improving Bulgaria's health-care system, analyzed in Chapter IV, will be essential to address the health care demands of an aging population in a sustainable and equitable manner. How to meet the long-term care needs of an aging population will be discussed in Chapter V. The state of Bulgaria's pension system and options for reform are outlined in Chapter VI. The sector analysis of the preceding chapters will be combined in a coherent macro-model to simulate the impact of demographic change on growth under different scenarios and shocks in Chapter VII.

DEMOGRAPHIC CHANGE, LABOR SUPPLY AND THE ECONOMIC LIFE-CYCLE

Bulgaria is undergoing a profound socio-economic transformation brought about by extraordinary demographic change. Between 1950 and 1990, Bulgaria's population grew from 7.3 million to 8.8 million but then imploded, shrinking to 7.5 million by 2010. The population is projected to fall to 5.9 million according to Eurostat and to 5.5 million according to the projections according to the United Nations Population Division by 2050. This decline goes hand in hand with major shifts in the age structure of the population, which are driven by changes in fertility rates, mortality rates and migration. A graphic representation of Bulgaria's population is a pyramid in 1950, a globe in 2010 and expected to be an inverted pyramid by 2050 (Figure I-1).

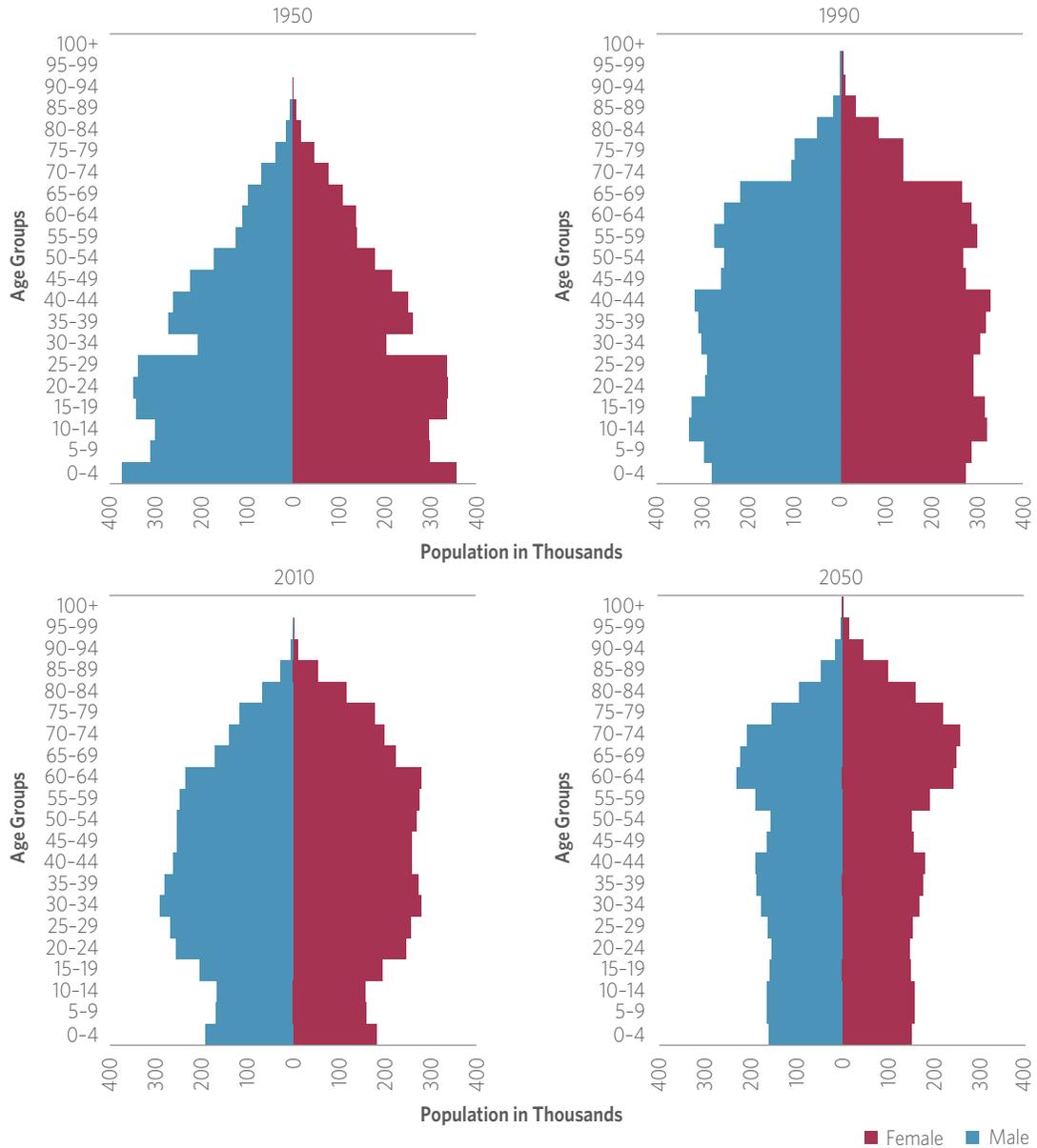
Demographic Trends and Projections

Bulgaria's demographic changes have been driven by three key forces in the past: A low total fertility rate (TFR), a stagnant life expectancy prior to 2000 and large emigration. After Bulgaria's TFR fell to exceptionally low levels by the end of the

1990s, it climbed to 1.5 in 2011, placing it close to the European (EU) average. Previously, it had declined steadily from 2.3 in 1960 to 1.09 in 1997, the lowest TFR ever recorded for a European country in peacetime (Vassilev 2005). Declining fertility rates play an important role in population aging, making more recent cohorts smaller than preceding ones and over time skewing the age distribution toward the older (Gavrilova and Gavrilov 2009). The recent increase in the fertility rate will therefore slow down the aging process in the medium term as the proportion of younger people in the population swells.

Life expectancy at birth has improved only slightly since the 1960s and Bulgaria has fallen behind other new EU states. It remained fairly constant from the 1960s until 2000 and has climbed slowly since then, going from 71.6 years in 2000 to 73.9 in 2011. This is one of the lowest life expectancies in the EU, where the 2011 average was 79.7 years. Bulgaria's low life expectancy is driven by stubbornly high infant mortality—the second-highest in the EU and twice the EU average – as well as a prevalence of non-communicable diseases. Heart attacks, heart failures, and strokes jointly are

FIGURE I-1: ONE CENTURY OF DEMOGRAPHIC CHANGE IN BULGARIA



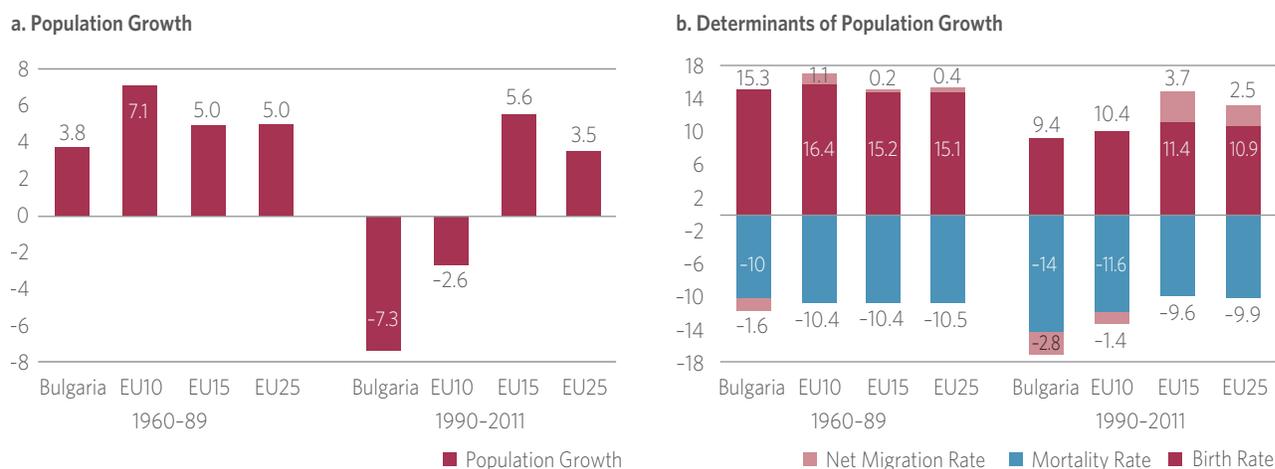
Source: Author's calculations based on data from the United Nations Population Division (2011).

the cause of 65 percent of all deaths in Bulgaria (Couffinhall 2012).¹

Significant emigration contributed to the steep population decline over the last two decades (Figure I-2). Since the beginning of the 1990s, emigration represented a 6 percent loss of Bulgaria's population and 10 percent decline of the economically active

¹ Any increase in life expectancy will slow the population decline but its impact on aging is ambiguous. If life expectancy rises due to declining infant mortality (or a more general decline in the mortality of people younger than the mean age of population) population aging—similar to an increase in TFR—will relent. If life expectancy rises due to a decrease in mortality rates among older age groups, population aging will accelerate.

FIGURE I-2: DETERMINANTS OF POPULATION GROWTH^a



Source: Author's calculations based on Eurostat.

^a EU10 excludes Bulgaria. Statistics are un-weighted averages for EU11 and EU15 and weighted average for EU25 of annual population growth.

population (OECD 2012a). Net emigration alone explains about 17 percent of Bulgaria's population decline since the 1990s. High unemployment rates, declining living standards during the 1990s and significant wage differentials between Bulgaria and its neighboring countries have been identified as key reasons for emigration. Also, the lack of favorable employment opportunities and infrastructure for high-skilled people interested in developing their own business have been stressed as another reason for migration (Rangelova and Vladimirova 2004).

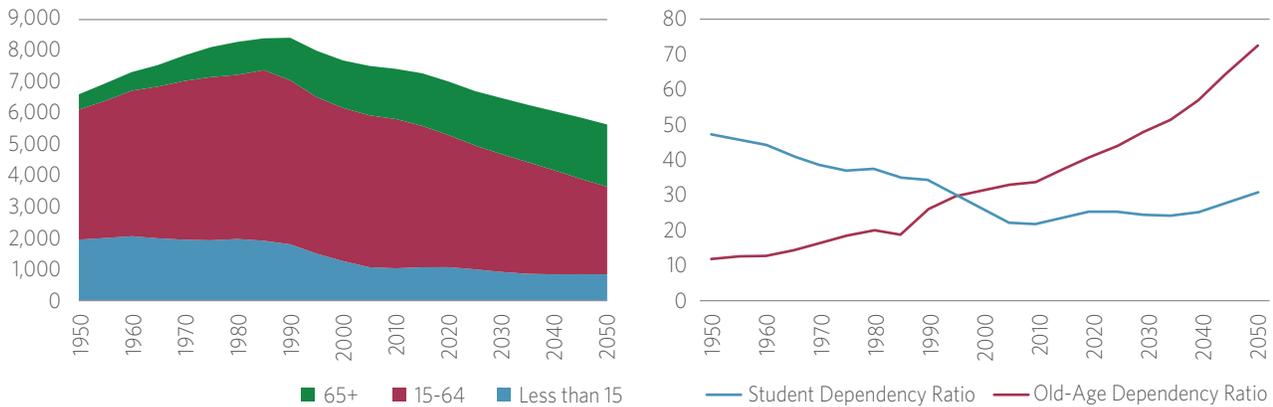
In recent years, demographics have become more unfavorable as Bulgaria heads for the steepest decline in the working-age population world-wide by 2050.² Until 2007, Bulgaria's working age population grew relative to the total population and the largest share of Bulgaria's population was of working age (Figure I-3). Since 2008, the working-age population as share of total population has started to decline. As a result, there will be fewer Bulgarians of working-age to support an increasingly larger share of dependent age groups (in this study, children under 15 and persons over age 64.). By 2050, one in three Bulgarians is

projected to be older than 65, while only one in two will be of working-age.

As Bulgaria's working-age population decreases, fewer workers will generate the national income for the entire population. Since the relative size of the labor force is a key determinant of a country's income level, this decline is likely to depress growth. Labor force participation rates in Bulgaria are low for some age groups and for women, so there may be some potential to stem the impact of a declining working-age population on labor supply by increasing, all things being equal, the labor force participation (LFP) rates among specific population groups, assuming there is sufficient labor demand. The most effective way to stop the labor force from shrinking further is however to stanch migration. In addition to mitigating the decline in the labor

² Calculated as the percentage decline in population aged 15 to 65 using the medium variant of world-wide population prospects from the United Nations Populations Division (2011). Information regarding the methodology underlying the projections and the data is available at <http://esa.un.org/unpd/wpp/Excel-Data/population.htm>

FIGURE I-3: CHANGE IN AGE STRUCTURE AND DEPENDENCY RATIOS



Source: Author's calculations based on data from the United Nations Populations Division (2011).

force, increasing productivity will be crucial to sustain future growth.

Labor Force Projections and Scenarios

In order to better understand the interaction between Bulgaria's demographic changes and the evolution in the size of the labor force, a detailed analysis of Labor Force Participation (LFP) rates across age and gender was carried out. The approach combines population projections from Eurostat and the United Nations with data from the ILO on current and future LFP rates by gender and five-year age groups to gauge the impact of the demographic transition on the size and structure of the labor force.³

Labor force participation decisions are influenced by many factors. Declining fertility rates, for example, are associated with increase in female labor supply (Bloom et al. 2010.) Public policies, such as pension reforms, tax treatment of second wage earners or child care subsidies, can stimulate labor force participation, in particular for women. Education policy also affects labor force participation rates by age groups, gender and education level. Moreover, health-sector reform can help increase participation

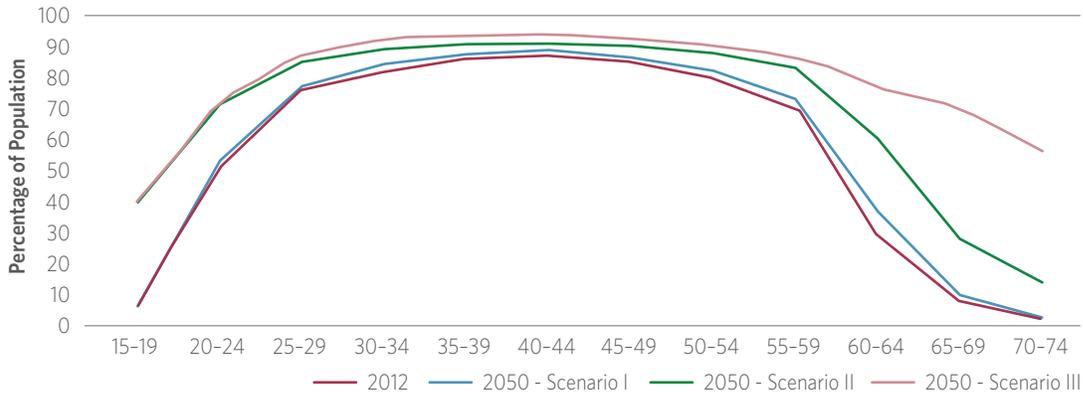
of older workers and support extension of working lives. These policies will be discussed in detail in other chapters of this report.

The scenarios presented here do not focus on one particular policy measure, but rather on a combination: increases in LFP of women, youth and, most importantly, older workers are part of each scenario, but the emphasis is different in each:

- The **baseline scenario** (Scenario I) assumes an increase in participation rates until 2020 in line with the ILO projections. The ILO projects LFP rates men (and women) aged 60–64 to climb steeply from 41.5 percent (18.4 for women) to 51.2 (23.3) percent, while LFP rates of young workers aged 25 and 54 change only minimally by about 5 percentage points between 2010 and 2020. As a result of these assumptions, the ILO's LFP profile in 2020 mimics very closely a profile that would be projected if LFP profiles were to be simulated on the basis of current legislated reform to in-

³ For a discussion of differences in population projections for EU and United Nations, see Annex 1. ILO's labor force participations rates are available at <http://www.ilo.org/global/statistics-and-databases/lang-en/index.htm>. Population projections by education level are discussed in Chapter VII.

FIGURE I-4: LABOR FORCE PARTICIPATION RATES UNDER DIFFERENT SCENARIOS



Source: Authors' calculations based on United Nations Population Division (2011).

crease retirement ages of men and women (Figure I-4).⁴ After 2020, LFP rates by gender and five-year age groups are assumed to remain constant under this scenario (Figure I-4).

- The **LFP convergence scenario** (Scenario II) assumes that participation rates by age and gender converge by 2050 to levels that are currently observed in countries with the highest participation rates among the 50+ population (Iceland, Norway, Sweden, and Switzerland). This scenario implies increases in LFP across the board, but especially for women and older workers. For example, LFP rates of all (female) 60 to 64 year old are assumed to be 77.8 (74.4) percent in 2050 under this scenario instead of 37.9 (23.3) percent under the baseline.
- The **maximum scenario** (Scenario III) assumes a convergence in labor force participation rates with high LFP countries, a convergence of female-to-male LFP profiles and an increase in the average length of work life by 10 years by gender. The scenario implies LFP beyond 80 percent even among those aged 70 and 74 and can be interpreted as an upper bound.

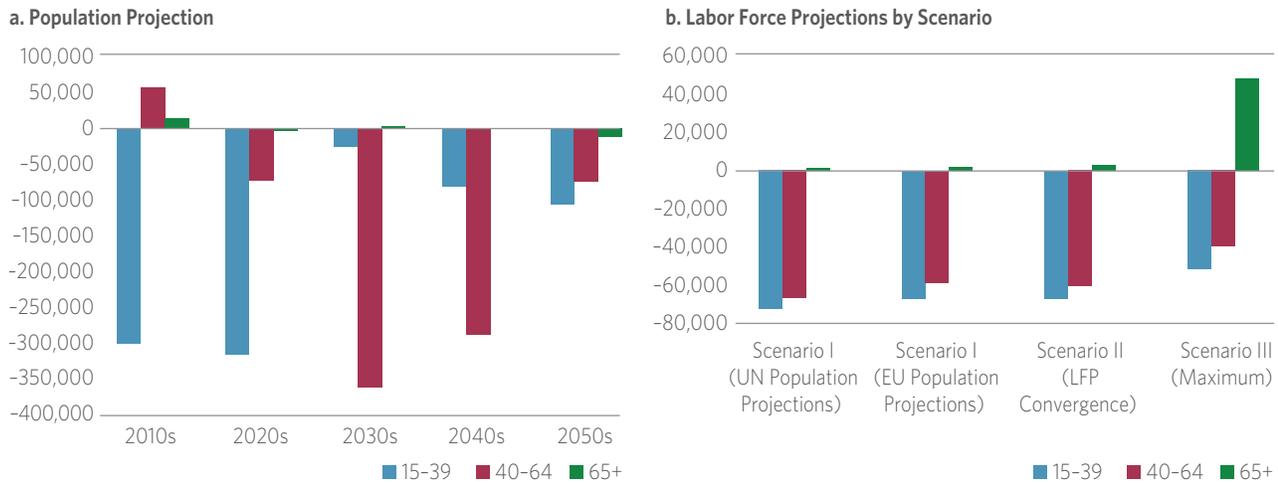
Under the baseline scenario, the work force is projected to fall steeply. According to UN projections, labor supply

will drop by 39.6 percent between 2010 and 2050, based on UN projections, and by 35.3 percent based on EU projections (Figure I-5). The steepest decline is observed among young workers during the 2010s and 2020s and among workers aged 40–64 between during the 2030s and 2040s.

The steep decline of the labor force could be mitigated if labor force participation rates in Bulgaria increased over time. Bulgaria's labor force is projected to decline under all scenarios. Even under the high LFP scenario (Scenario II in chapter I), which assumes convergence of LFP rates of younger workers to levels seen in Nordic countries and a significant increase in LFP of older workers far beyond Bulgaria's current retirement age, the labor force would still decrease by 12.4 percent according to the UN projections and 6.9 percent according to Eurostat projections. The number of younger workers would be increased by a little more than 200,000 workers compared to the baseline scenario if Bulgaria were to reach participation levels as seen in the Nordic countries. The biggest gain

⁴Bulgaria passed a law in January 2012, increasing the retirement age for men and women by 4 months to age 63 and 4 months for men and to age 60 and 4 months for women. From 2013, retirement ages will continue to increase by 4 months each year, until reaching age 65 for men in 2017 and age 63 for women in 2020.

FIGURE I-5: POPULATION AND LABOR FORCE PROJECTIONS UNDER DIFFERENT SCENARIOS



Source: Authors' calculations based on United Nations Population Division (2011), Eurostat (2012) and ILO (2012).

though, would come from an increase of workers beyond the age of 65: convincing these older workers to stay in the labor force could potentially mobilize many hundreds of thousands of them. Of course, this would result in a radically different labor force, with a much higher share of older workers. It would also require improvements in the public provision of education and health care (as discussed in Chapters III and IV, respectively). Reducing net migration by an average 60 percent a year, which is the average difference between EU and UN population projections over a forty-year horizon, would increase the labor force by about 8.1 percent, more than under any of the LFP scenarios except the combined maximum scenario.

The Economic Life-Cycle

Population aging matters because individual economic behavior changes with age. The decision to participate in the labor force is only one of them. In the course of their life people also change their demand for specific public services, their savings behavior and skill acquisition. The expected increase in the share of older people in Bulgaria

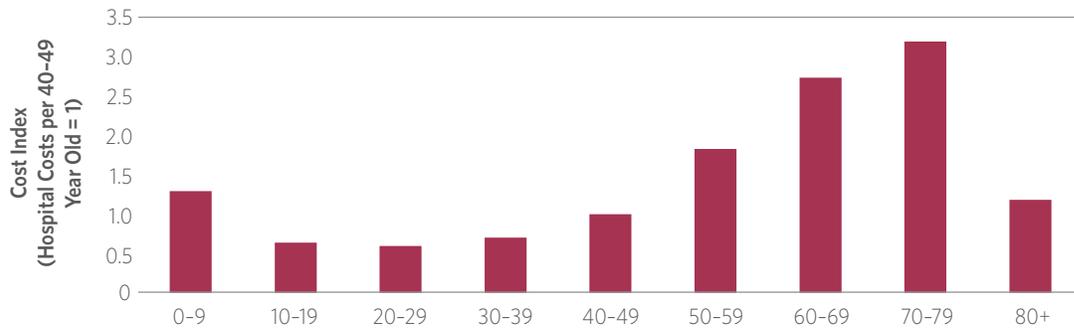
can translate these life-cycle changes into macroeconomic outcomes.

Demand for Public Services

Demand for key public services changes over a person's lifetime. Demand for health services and long-term care tend to increase with age. Older people tend to consume more health care as illnesses, chronic diseases and hospital visits become more frequent. Only at very old age does health care demand tend to decline. In Bulgaria, people in their seventies have the largest public health care costs per person (see Figure I-3). Similarly, demand for long-term care tends to increase steeply after people turn 65 years of age (European Commission 2012a). Only the old tend to retire. As the population ages, public expenditures on health, long-term care and pensions can, thus, be expected to increase. On the other hand, demand for education tends to be concentrated at younger ages. Younger people are also more likely to commit crimes. Population aging is therefore expected to reduce public expenditures for education as well as public order and safety.

Bulgaria's current expenditure composition does not reflect the fact that it

FIGURE I-6: BULGARIA'S HOSPITAL EXPENDITURE-AGE PROFILE



Source: Hospital Data from MoH.

has the EU's third-highest median age. Its public expenditures on health and long-term care are among the lowest in the EU. In 2011, Bulgaria's public health spending in terms of GDP was significantly lower than in other EU countries, amounting to 4.6 percent of GDP compared to 5.4 percent among the EU10⁵ and 7.4 percent among the EU15 countries (Figure I-7).^{6,7} Available data suggests that Bulgaria is among the European countries that spend least on long-term care.⁸ At the same time, Bulgaria's spending on defense, public order and safety significantly exceeds the

spending of other EU countries—both in terms of GDP and of public expenditures.

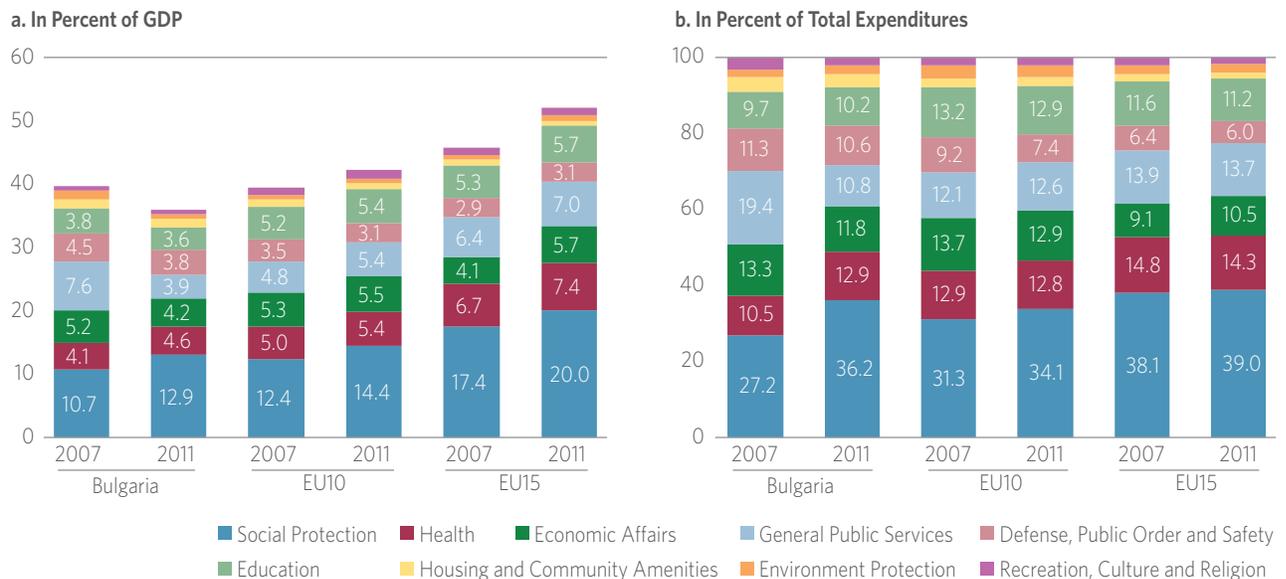
⁵ EU10 refers to Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and Slovenia.

⁶ EU15 refers to Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Sweden, Spain, and United Kingdom.

⁷ Public expenditures for health and long-term care as a share of GDP are even low when taking into account that Bulgaria has the lowest income level of the EU.

⁸ See, Chapter V, for a discussion.

FIGURE I-7: BULGARIA'S EXPENDITURE COMPOSITION IN COMPARISON



Source: Eurostat.

TABLE I-1: DECOMPOSITION OF PUBLIC SPENDING ON SECONDARY EDUCATION

	Bulgaria						EU27
	2005	2006	2007	2008	2009	2010	2009
Secondary education spending (in percent of GDP)	2.0	1.8	1.7	1.9	1.9	1.8	2.4
Spending per secondary student (in percent of GDP per WA adult)	12.5	11.7	11.5	13.2	13.6	13.4	16.4
Gross enrollment rate	0.81	0.83	0.85	0.85	0.86	0.86	0.8
Dependency ratio (School-age pop in percent of WA pop)	0.19	0.19	0.18	0.17	0.16	0.15	0.18

Source: Authors' calculations based on Eurostat (2012).

Education spending has adjusted to Bulgaria's demographic change in recent years. Bulgaria's student-age population has declined steeply over the last decade. In 2012, this population was only about 65 percent of its 1995 level—the steepest fall in the EU. The government responded by implementing a per-capita school-funding model in 2007 and closing over 500 schools in 2007 and 2008. Public education spending per student relative to GDP per capita increased from 15.2 percent in 2001 to 20.5 percent in 2009 for primary education and from 16.2 percent to 21.8 percent for secondary education. Though secondary education spending, for example, declined in terms of GDP between 2005 and 2010, spending per secondary student in terms of GDP per working age adult and gross enrollment rates increased during this period (Table I-1).

Savings

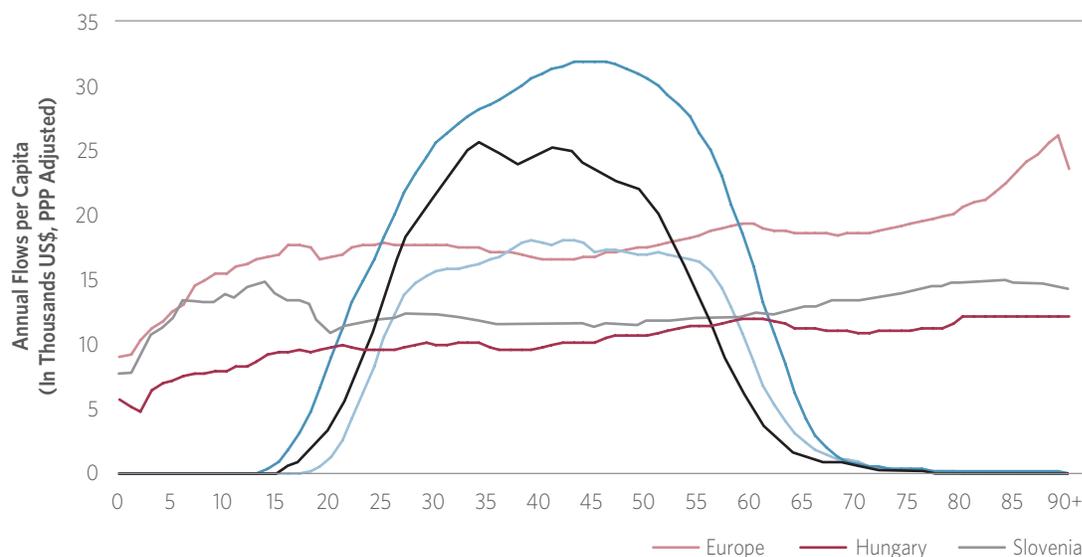
People also change their savings behavior with age. They tend to be net borrowers when young and old and save during their working years. How long people will save in the course of their life is influenced by many factors, including education systems, health, life-expectancy, employment opportunities, family values, public programs and individual wealth. The number of years during which people save tends

to be short in Eastern European countries. The National Transfers Account (NTA)⁹ shows that Hungarians and Slovenians start saving on average at the age of 27 and become net borrowers at 55. In Austria, Finland, Germany, Spain and Sweden, people start saving on average at 25 and stop saving around age 60. Hungarians and Slovenians have therefore seven years less to save for retirement than people who live in wealthier European countries (Figure I-8). It is thus not surprising that consumption at older ages is significantly lower in Hungary and Slovenia. A short savings period followed by low consumption at old age is also likely to apply to Bulgaria, given its relatively low effective retirement age of 63 for men and 60 for women, low replacement rate of 49.8 percent¹⁰ and the high incidence of old-age poverty. More than 60 percent of Bulgaria's population aged 65 or older is at risk of poverty or social exclusion.

⁹The National Transfers Account (NTA) measures all reallocations of income across age at the aggregate level for many countries, but not Bulgaria (Mason and Lee 2010). The only EU10 countries included in the data base are Hungary and Slovenia. For more information, see www.ntaccounts.org.

¹⁰Gross income replacement rates show the level of pension income the first year after retirement as a percentage of individual pre-taxed income (after employer contributions, but including employee contributions) at the moment of take-up of pensions.

FIGURE I-8: INCOME AND PRIVATE CONSUMPTION FOR SELECTED COUNTRIES



Source: www.ntaccounts.org.

Note: Data for Europe is the un-weighted average for Austria, Finland, Germany, Spain and Sweden.

Blue lines refer to income, red lines to consumption.

The high incidence of old-age poverty in Bulgaria and the currently rapid aging of its population raise the question how an acceptable standard of living for Bulgaria's elderly can be funded. Options include delaying retirement; relying on family or the community; increasing public transfers to the old or encouraging savings. There seems to be scope to increase the legal retirement age beyond the recent legislated increases in retirement age (see Chapter VI) and to provide better employment opportunities for older workers (see Chapter II). Relying on family is likely to become increasingly costly for Bulgaria's economy as the working-age population shrinks. Any increase in public transfers would need to be assessed very carefully in the context of a long-term fiscal framework since it could generate significant fiscal costs as the population ages.

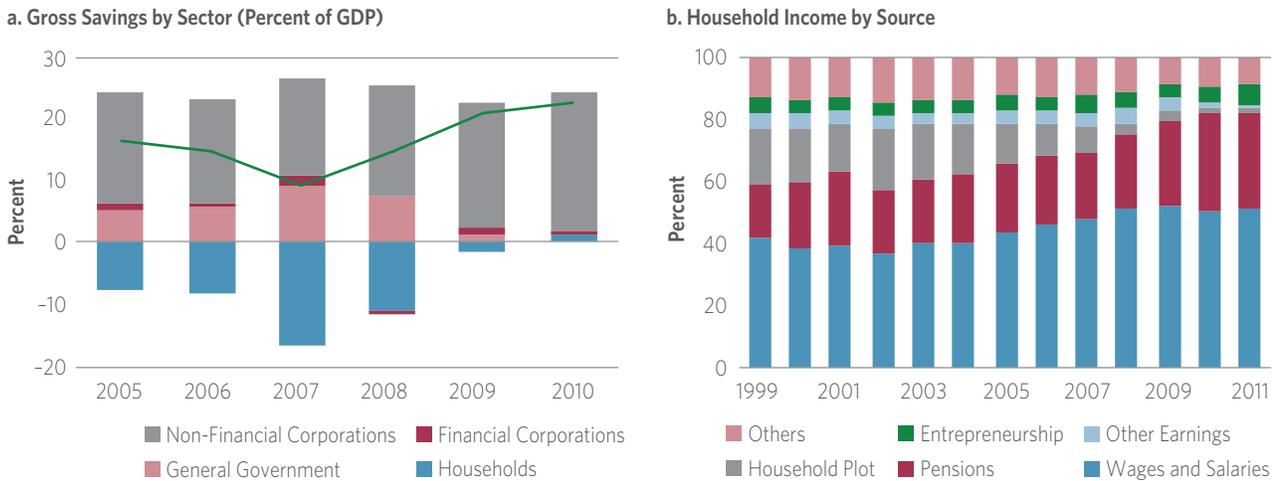
As Bulgarians are expected to live longer and the proportion of older people increases, it will become imperative to encourage savings. In Bulgaria, household savings have been negative since

2005 (Figure I-9). Other European countries, including countries in Eastern Europe, have achieved positive household savings rates; for example, Hungary and Poland have maintained average rates of 10.6 and 7.3 percent, respectively, for the period 2005–10. Still, since the crisis Bulgaria's household savings have been steadily increasing and the government has been implementing some measures to encourage household savings. For example, gradual increases to the retirement age have been introduced to reach 65 for men and 63 for women by 2017 and 2020, respectively. The government has also put in place measures to increase the employment rate. Despite these actions, household savings are unlikely to increase significantly as long as unemployment remains high, growth weak and poverty wide-spread.

Productivity Growth

As individuals age, they tend to be less able to perform certain tasks. There is

FIGURE I-9: GROSS SAVINGS AND SOURCES OF HOUSEHOLD INCOME



Source: Authors' calculations based on National Statistical Institute.

clear evidence that physical productivity declines somewhat as people gets older. That mental productivity declines with age is however less clear cut. In fact, older workers tend to outperform younger workers in positions involving management, communications and conflict resolution skills. They fare worse in jobs requiring strong cognitive abilities. Older workers may also be at a disadvantage in more innovative sectors, since they tend to have more difficulty adjusting to a rapidly changing environment, though this could be due to the fact that older workers tend to have stayed in the same workplace for a longer time rather than age (Daveri and Maliranti 2007).

Several factors suggest that productivity growth is likely to decline in the context of Bulgaria's demographic change. First, there exists a strong link between economies of scale, population density and technical progress. As Bulgaria's population shrinks, population density will decline and human capital externalities may weaken. Second, the decline and aging of the population may depress entrepreneurial activity and innovation. Third, there is a danger that aging reduces public savings as age-sensitive public expenditures increase and revenues decline, potentially crowding out public investment.

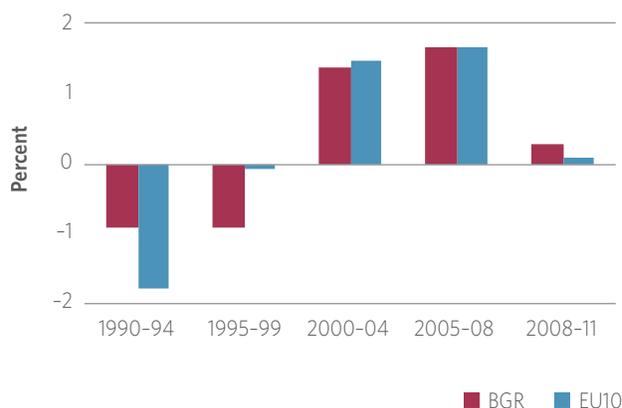
As Bulgaria's working-age population declines, income convergence will require strong productivity growth.

Bulgaria's high real annual real GDP per capita of 5.8 percent between 2000 and 2008 growth was sustained by impressive gains in labor productivity. Labor productivity levels rose by 40 percent between 2000 and 2006 alone and its growth of 3.5 percent over the last decade significantly exceeded that of the EU. As a result, Bulgaria's income relative to the EU countries (EU27) increased from around 28 percent in 2000 to 46 percent in 2011. However, despite the gains in income convergence with the EU, Bulgaria's GDP per capita (PPS adjusted) of Euro 11,600 in 2011 remains the lowest in the EU (Figure I-10). In the future, there will be fewer workers available to generate the required output to sustain per capita income. As a result, it has been estimated that productivity growth rates of more than 4 percent per year—0.75 percentage points more than in the past decade—will be required over the next 30 years in order for Bulgaria to converge to the income level of Portugal—currently the poorest of the original EU member states (Mitra and Pouvelle 2012).

Improving Bulgaria's business climate will be important for increasing

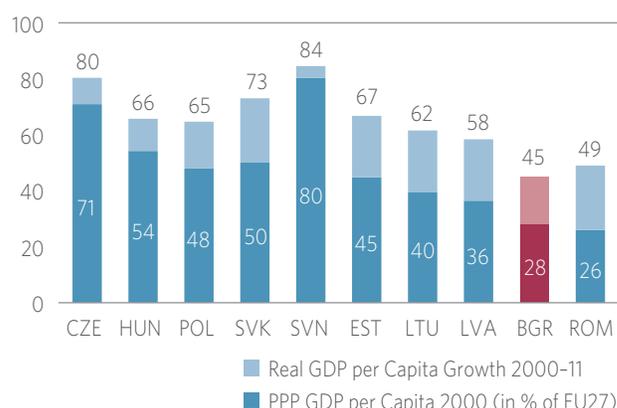
FIGURE I-10: GROWTH AND CONVERGENCE

a. Average Annual Change in Income Gap 1990–2011



Source: Author's calculations based on WDI.
 Note: Positive values indicate a decline in the income gap.

b. GDP per Capita, Percent of EU Average (EU27=100, in PPS)



Source: Eurostat.
 Note: Date for Romania refer to 2000 and 2010.

productivity growth.¹¹ Improving labor market regulations, education, and health services, which are discussed in detail in the next chapters, can all contribute to productivity growth.¹² But reforms in other areas are also likely to be very important. Bulgaria's business environment, as measured by the World Bank's Doing Business index, was the second lowest among the EU10 countries in 2012. The World Bank's Doing Business suggests that Bulgaria has much to gain from making the business environment more predictable, for example, by streamlining the issuance of construction permits, providing faster access to electricity, improving bankruptcy laws and enforcing contracts (World Bank 2012a).

More and more effective innovation is needed for Bulgaria's firms to climb up the value chain and stimulate the exports of higher-technology goods. Bulgaria's exports are still dominated by natural resource-based and unskilled, labor-intensive commodities. Its share of high-tech exports reached at 3.8 percent in 2012, slightly lower than the EU10 average and substantially below the EU27 average of 15.6 percent.¹³ But innovation in Bulgaria has steeply declined in many areas as a large number of scientist and skilled workers emigrated, though

the IT sector has seen a rebound. Data from recent enterprise surveys indicates that Bulgarian firms that innovate tend to grow one-and-a-half times faster than non-innovative firms. The latter also tend to create more jobs: in recent years, they enjoyed an 8 percent annual increase in employment, whereas job growth in non-innovative companies was stagnant. Improving R&D policies in support of innovation will thus be important (World Bank 2012b) and are core contributors to Bulgaria's global competitiveness in the Government's National Reform Program 2011–2015. To meet the national target of 1.5 percent R&D/GPD by 2020, Bulgaria would need to greatly increase its ability to absorb EU funds and boost public R&D spending.

Moreover, improvements in infrastructure and energy policies are likely to significantly improve the performance of Bulgaria's firms. Contrary to

¹¹ As mentioned in the introduction the discussion of productivity-enhancing reforms through channels other than improving education and health will be relegated to a second study.

¹² Also measures that reduce the size of the informal economy could contribute to productivity growth.

¹³ Data from Eurostat (2013).

other EU10 countries, Bulgaria has been slow to build highways and existing roads and the railways sector have suffered from years of neglect (World Bank 2012c). Bulgaria's economy also remains high energy intensive despite the closure of the most inefficient industrial plants early during transition (its use of energy per € of GDP stands at four times the EU average). High energy dependency makes Bulgarian firms less competitive than others in Europe because they cannot adjust to energy related shocks. Recent empirical evidence suggests that improving infrastructure and related policies, innovation and education could raise Bulgaria's labor productivity growth by one percentage point a year (Mitra and Pouvelle 2012).

The next chapters will analyze in more detail the impact of Bulgaria's demographic change on the different sectors of the economy. Bulgaria's labor-market challenges and opportunities for reform are discussed in Chapter II. Since education policies are important to stem the decline in the labor force and increase productivity, Chapter III provides an in-depth analysis of Bulgaria's education sector. How to address the health care demands of an aging population in a sustainable and equitable manner is the focus of Chapter IV. Options for scaling up Bulgaria's long-term care are discussed in Chapter V. Bulgaria's pension system and options for reform are lined out in Chapter VI. These sector analyses feed into in a coherent macro-model that quantifies the impact of demographic changes on growth and fiscal variables under different policy scenarios outlined in Chapter VII.

Policy Options

Since Bulgaria's LFP rates are currently low for some age-groups, there is some potential to moderate the decline of the labor force over the next 40 years by implementing reforms that increase participation rates, in particular among

young women and the elderly. The largest gains will stem from increasing labor force participation rates among the elderly. This will require considerable reforms to incentivize older workers to stay longer in the work-force and to retain marketable skills during their lengthened work life. Such reforms and incentives could include: further increases in the retirement age¹⁴; investment in life-long learning; and improvements in the health care system.¹⁵ Investing in human capital can be a powerful tool for increasing the labor force and productivity. This is similar to the OECD (2012b) finding which emphasized the importance of education and labor productivity growth in compensating for the negative effects of aging on economic development.

Stemming the current trend of emigration and attracting returning nationals as well as new migrants will be important to slow down the work-force decline. Policies that expand the labor force would also be likely to stem the exodus of Bulgarian workers. Poorly functioning labor markets, weak public-service delivery, and an uncertain business environment have all been found to be significant determinants of emigration in Eastern European countries (World Bank 2007). Thus, policies in support of higher labor force participation rates, such as labor market policies, education policies and health sector reforms, which are discussed in detail in the next chapters, if combined with policies in favor of improving the business climate, could help increase Bulgaria's labor supply by increasing labor force participation rates at the same time as reducing emigration.

¹⁴In January 2012, Bulgaria passed a law that increased the retirement age for men and women by four months from age 63 for men and age 60 for women. The law stipulates that from 2013 onwards the retirement age of men and women will increase by 4 months each year until reaching age 65 in 2017 for men and age 63 for women in 2020.

¹⁵An extension of work-lives and increases in labor productivity could also boost savings.

As Bulgaria's population ages, its public institutions and policies will need to adjust. Bulgaria's population is aging very rapidly. To address the expected increase in age-related public spending, the government has several options: (i) prudently reduce public services as they become obsolete: the introduction of per capita spending in education in 2007 combined with the policy of protected schools is a good example;¹⁶ (ii) explore possible reductions in security-related public expenditures; (iii) enhance productivity growth by investing in human capital or innovation and by improving the business climate.¹⁷

The government could also consider further steps to promote savings over the medium term by: i) increasing the retirement age to reduce the length of the life-cycle deficit and reduce the pension-fund deficit;¹⁸ ii) slightly increasing contribution rates (see Chapter VI); iii) encouraging supplementary voluntary pension insurance (Pillar II) by increasing the existing tax relief of up to 10 percent of pensionable income from personal income taxes; and iii) encourage financial education to help people make better financial choices.

Aware of the economic and social challenges of demographic change, the

Bulgarian government has developed several strategy documents that discuss these topics. In 2012, the Council of Ministers adopted, for example, the "Updated National Strategy for Demographic Development in the Republic of Bulgaria 2012–2030" which recognizes that the current demographic transition will pose serious challenges for public services and finances. It emphasizes the need to promote active and productive aging. This aspect is further developed in the "National Concept Paper for the Encouragement of Active Life for the Elderly" and the "National Program for Active Life for the Elderly People" which aim at promoting the participation of elderly people in the labor market, improving conditions for life-long learning and supporting healthy aging. These challenges will be discussed in detail in the next chapters.

¹⁶ See Chapter III for a detailed discussion.

¹⁷ The World Bank's Doing Business ranked Bulgaria 66 in 2013 (World Bank 2012a) with respect to its business climate, suggesting significant scope for improvements, particularly, in areas such as dealing with construction permits, getting electricity and trading across borders.

¹⁸ See Chapter VI for a detailed discussion.

LABOR MARKET POLICIES TO MITIGATE THE IMPACT OF POPULATION AGING

The sharp decline in Bulgaria's labor supply, as a result of projected population trends, could be mitigated if labor force participation (LFP) were to increase. In Bulgaria, the LFP rate, which is the sum of the employment and unemployment rate, is low for specific population groups, such as the youth and older people (young and elderly women, in particular) as well as the Roma. As mentioned in the previous chapter, increasing labor force participation rates in Bulgaria could reduce the projected decline significantly.

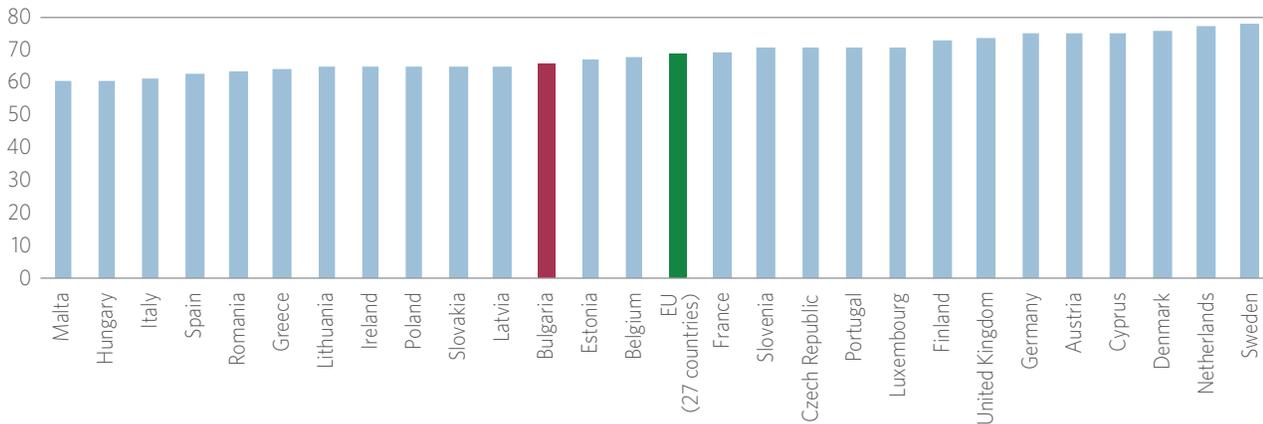
The current labor market situation is challenging, with relatively low employment rates and stubbornly high unemployment rates. In 2010, Bulgaria's employment rate was lower than the EU average. The employment rate among 20–64 year-olds was 65.4 percent, compared to 68.5 percent for the EU-27 (Figure II-1). Unemployment rates, which are generally more volatile than employment rates, were 10.3 percent in 2010, up from a low of 5.6 percent in 2008, prior to the onset of the Great Recession in 2009 (World Bank 2011a). They have risen to 12.3 percent in 2012. Youth unemployment in Bulgaria was 28.1 percent in 2012, above the European average of 22.8 percent. Long-term unemployment was 6.8 percent in terms of active

population, one of the highest rates in the EU.

The Government of Bulgaria has put forward an ambitious reform agenda to improve labor market outcomes. It has set clear development targets to be achieved by 2020 in the areas of labor market, education and poverty reduction, aligning its National Reform Programme (2011–2015) with the Europe 2020 Strategy. By 2020, Bulgaria aims to achieve an ambitious employment rate of 76 percent, up from the 65 percent rate in 2010, which was below the EU average. Within the EU, only two the Netherlands and Sweden had a higher employment rate than 76 percent in 2010. Since employment rates among middle-aged men are already high in Bulgaria, any strategy to achieve this objective would need to focus on youth, women, older people and the Roma population.

This chapter explores labor market reforms that could help boost employment. Job creation requires a combination of demand side and supply side measures to work in tandem. Policy areas for job creation include: (i) promoting macroeconomic stability; (ii) improving the investment climate; (iii) refining labor market regulations; (iv) designing an employment-friendly tax system and (v) developing an adaptable workforce through the education system.

FIGURE II-1: EMPLOYMENT RATES FOR 20–64 YEAR-OLDS IN 2010



Source: Eurostat.

Note: Employment rates are for 20–64 year-olds.

Given the challenges Bulgaria is facing, all five policy areas are important. However, given the scope of this report, this chapter focuses on (iii) and (iv) and Chapter III on (v) and does not aim to assess how labor demand in general could be strengthened in Bulgaria. This analysis is based on the premise that job growth in Bulgaria can be fostered by general improvements to work incentives and by removing barriers to employment faced by groups identified as having low labor force participation rates: the youth, older people, women, and the Roma.

Labor Force Participation by Population Groups

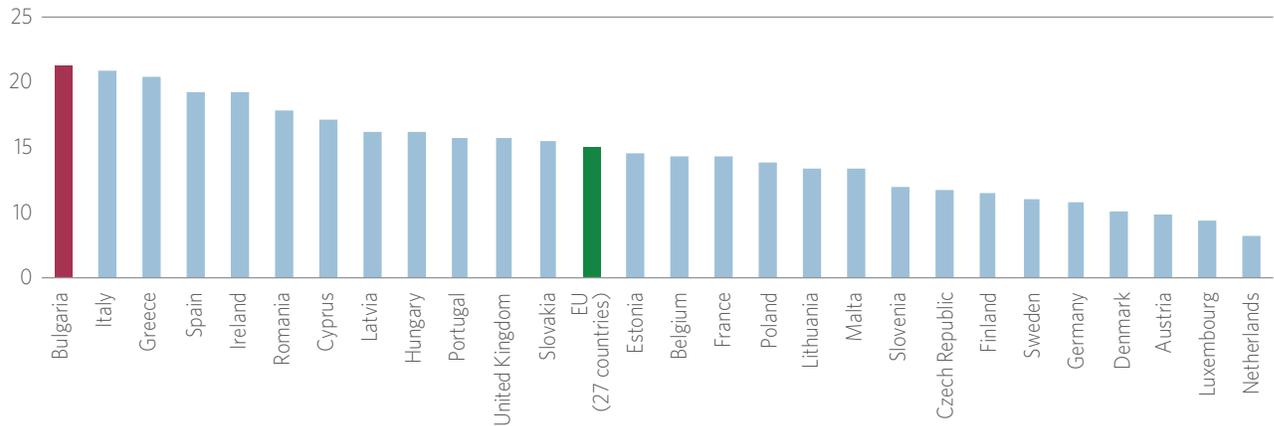
The youth in Bulgaria are more disengaged from employment and education than in any other EU-27 country. Bulgaria has the highest rate of young people who are counted as not being in employment, education, or training (NEET) in the EU. In fact, more than one out of every five young Bulgarians is classified as NEET (Figure II-2). Eurofound (2012) estimates that the lack of labor market participation by NEETs costs Bulgaria about 2.3 percent of GDP, nearly double the 1.2 percent

of GDP for the EU area. NEETs have usually dropped out of school without qualifications and are likely to be dependent on welfare programs. Although NEETs are heterogeneous, Eurofound (2012) finds that the largest group of NEETs tends to be the unemployed. But NEETs also include other vulnerable subgroups such as the sick and disabled; and young care-givers. NEETs impose a significant cost on the economy and even on society. For instance, NEET youth are less likely to trust other members of society and to participate in civic and political activities (World Bank 2012e).

Employment rates among older Bulgarians are relatively low. The employment rate for 50–64 year-olds is 54.5 percent in Bulgaria, more than 10 percentage points lower than the EU average and significantly lower than that of top performers (Figure II-3). A number of factors explain this, including a lack of gradual retirement options; lack of training opportunities for elderly workers; and negative perceptions held by employers of older workers and their health problems (World Bank 2013).¹⁹ In addition, it is believed that

¹⁹ Similar patterns can be observed in other transition countries.

FIGURE II-2: NEET RATE AMONG 15-24 YEAR-OLDS IN 2009



Source: World Bank staff calculations using Eurostat data.

factors such as ill-adapted workplaces, negative stereotypes of older workers and social norms about work at older ages also deter older workers from participating in the labor market.

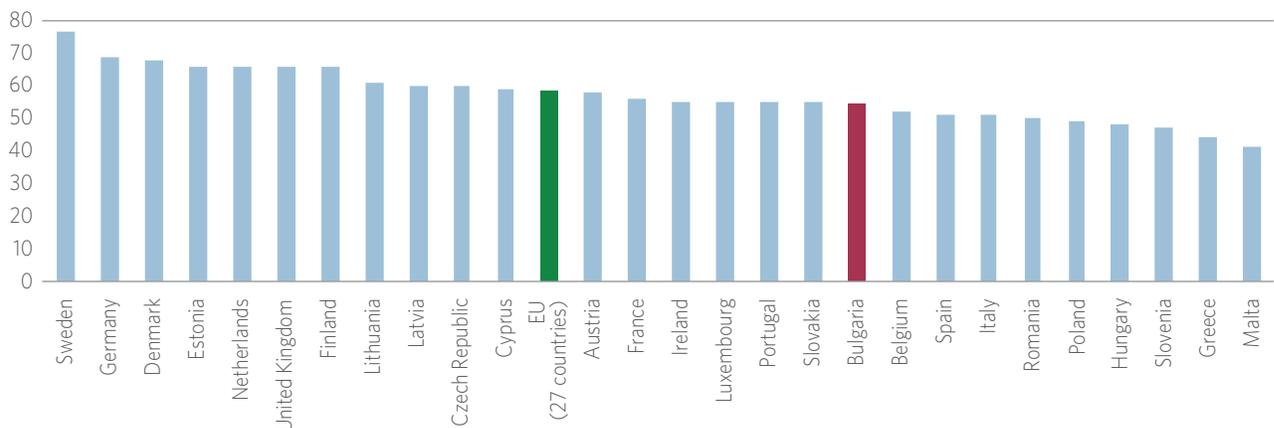
Opinion surveys show discrimination against workers older than 55 is perceived to be widespread in Bulgaria (Figure II-4). More than two-thirds of Bulgarians believe that people over 55 face discrimination in the labor market (European Commission 2012c). The perception of age discrimination can erode older workers' commitment to their employer, which in turn hurts productivity and the incentive

structure meant to induce it. Workers who experienced age discrimination on the job are generally more likely to separate from their employers than workers who did not (Johnson and Neumark 1997).²⁰

Employment rates are lower for women relative to men. This gap is particularly pronounced for young and elderly women. While employment rates for women

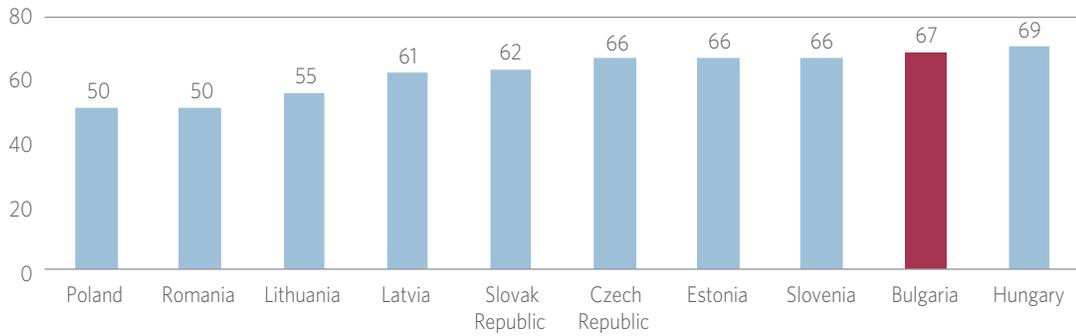
²⁰ The EU enacted specific legislation requiring Member States to prohibit age discrimination in employment. All member countries have now legislated to make it unlawful to discriminate in the labor market on grounds of age (or other factors).

FIGURE II-3: EMPLOYMENT RATES AMONG 50-64 YEAR-OLDS



Source: World Bank staff calculations using Eurostat data.

FIGURE II-4: DISCRIMINATION PERCEPTIONS^a



Source: World Bank staff calculations using European Commission (2012b).

^a Y-axis shows percentage of respondents who believe that age above 55 places the worker at a disadvantage for accessing a job

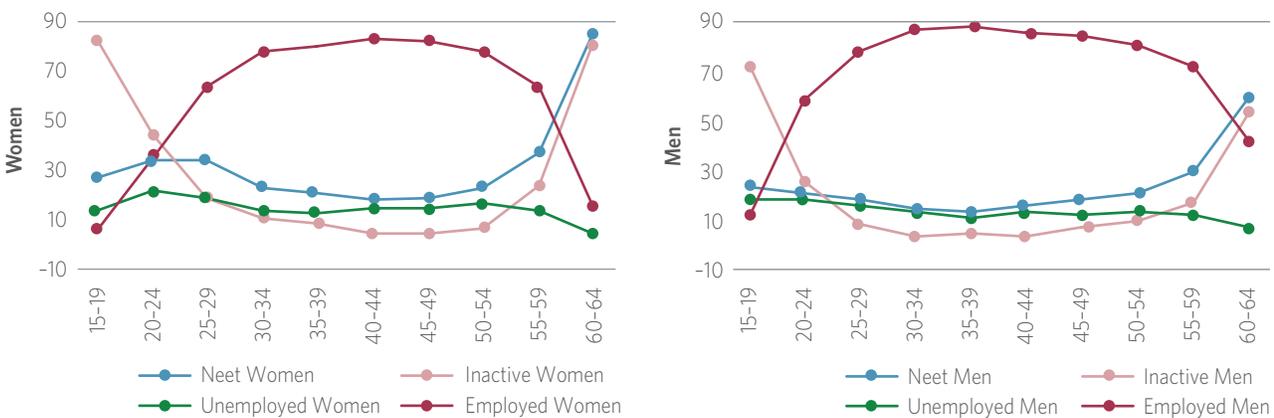
between the ages of 30 and 54 are above 76 percent, which is relatively high, they are below 22 percent among young women, aged 15 to 24 in 2009 (Figure II-5). Employment rates among young women are also significantly below the European average of 32.7 percent. The likely cause of the delayed entry by women into employment is marriage and child care.²¹ In addition, only 63 percent of 55–59 year-old women is employed compared to 72 percent for men. The ratio drops sharply to 16 percent for 60–64 year-old women while 42 percent of men in that age bracket are still employed. One reason for the low employment rates among older

women may be childcare provided by grandmothers. Increasing women’s access to economic opportunities can have positive impacts on children’s health, education and nutrition, thereby affecting not only current but also future economic growth (World Bank 2011b).

Bulgaria is among the countries in the world with the longest mandatory paid maternity leave. Mandatory maternity leave is 410 calendar days, the longest

²¹ An additional factor is that enrollment rates of women in tertiary education are also significantly higher than enrollment rates of men.

FIGURE II-5: LABOR MARKET RATES FOR BULGARIAN WOMEN AND MEN IN 2009 (IN PERCENT)



Source: World Bank staff calculations using EU-SILC data.

Note: Y-axis is in percent and x-axis represents age groupings.

among 141 countries (World Bank 2012f).²² The average paid maternity leave period for Eastern Europe and Central Asia is 185 days and for OECD countries 109 days. During maternity leave, women in Bulgaria receive 90 percent of their current wage.²³ In addition to the paid maternity leave, Bulgaria grants 320 days of mandatory paid parental leave which can be taken by either the father or the mother.²⁴ This can prolong the effective maternity leave to a total of 730 days if the woman chooses to take the parental leave as well.²⁵

While providing maternity leave is important, long maternity leave periods can have unintended adverse consequences for women. For example, maternity, paternity, and parental leave arrangements affect the choices that women make and the opportunities available to them in the working world. Introduced to protect women, such laws ultimately limit their choices and can adversely affect their ability to find employment. A good mix of maternity, paternity, and parental leave is needed so that employers do not have incentives to avoid hiring women. There appears to be no ideal mix of leave. Different governments favor different options to suit their particular social and economic requirements, and the benefits thus vary widely by region. One policy to consider would be to shorten the mandatory maternity leave and increase child-care options instead.

Another example of well-intended gender policies with potentially adverse effects on women are differential retirement ages. In Bulgaria the retirement age for women is currently 60, 3 years below that of men. Difference in retirement age can create disparities in lifetime earnings, pension benefits and retirement savings (Levine, Mitchell and Phillips 1999). In addition, early retirement may result in women not being promoted to senior management positions, thus providing men with better career promotion opportunities (Adams 2002). Life-time earning differences are

aggravated where wage gaps between men and women are significant to begin with, as is the case in Bulgaria. Women in Bulgaria earn on average only 59 percent of what men earn, putting the country in 98th place in the ranking on Wage Equality (World Economic Forum 2012).²⁶

Roma already constitute between 9 and 19 percent of new labor market entrants in Bulgaria,²⁷ yet employment rates among Roma are very low. In 2011, only 42 percent of Roma men reported working (any kind of employment for pay, including informal employment), while only 26 percent of Roma women report the same employment status (UNDP/WB/EC 2011). This is significantly less than the 63 percent and 56 percent, respectively, of men and women in the general population (Figure II-6). It is also interesting to note that employment rates among non-Roma neighbors, while lower than that of the general population, are still considerably higher than the Roma employment rates. These low employment rates tend to be determined by factors that are well defined by the time an adult worker starts seeking employment, such as the education level. For example, when education is constant, the Roma

²² 45 days of the maternity leave must be taken before the child's expected birth date.

²³ Provided that that the woman has worked for 12 months prior to taking maternity leave and has insurance.

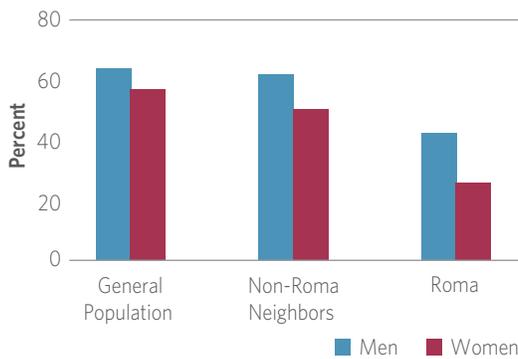
²⁴ Parental leave payments are equal to the minimum salary.

²⁵ Just 48 out of 141 economies offer parental leave, and in only 34 is any benefit paid. Parental leave is more common in middle and high-income economies. Since 2009, fathers in Bulgaria are entitled to a 15 day period of leave on the birth of a child. They are also permitted to use the remaining portion of the 410-day maternity leave when the child is between six and twelve months old. Bulgaria has also a special scheme entitling grandparents to take parental leave.

²⁶ Other countries in Eastern Europe and Central Asia fare significantly better. For example, in Macedonia, Georgia, the Kyrgyz Republic, Tajikistan and Kazakhstan the female to male wage ratio stands at 77 percent.

²⁷ The difference is explained by the methodology used to count the number of Roma.

FIGURE II-6: EMPLOYMENT RATES FOR ROMA AND NON-ROMA NEIGHBORS



Source: General Population: Eurostat 2011 Q2; Non-Roma neighbors and Roma: UNDP/WB/EC regional Roma survey (2011). The latter survey is based on a random sample of primary sampling units with proportion Roma. Employment rates are for 15–64 year old.

and non-Roma neighbor drops from 21 to 8.2 percent for men. Similarly, for women, the Roma and non-Roma neighbor drops from 20 to 11.4 percent.²⁸ Still, some labor market constraints have been identified by researchers, including a high tax burden on labor and a weak job-search system (Bogdanov and Angelov 2006).

Labor taxes are less progressive in Bulgaria than in any other European or OECD country. Bulgaria implements a flat tax that is unrelated to the earning level of the individual. However, unlike in many countries that also implement flat taxes, income tax credits and other means of increasing progressivity are absent in Bulgaria. As Figure III-7 shows, the gap in the tax wedge between higher wage and lower wage earners is negligible in Bulgaria, while in all other European or OECD countries there is some measure of progressivity embedded into the system and hence the gap in the tax wedges is positive for other countries. Lack of progressivity in labor taxation can be particularly harmful to low-wage workers, who in turn tend to be the younger and older workers, as well as women and ethnic minorities or part-time workers.²⁹ While lack of progressivity is likely

reduce underreporting, it bears the danger of pricing out low-wage earners from the formal labor market. Since a priori it is not clear whether the costs of introducing a progressivity element in labour taxation in terms of underreporting outweighs potential benefits of increasing labor force participation of low-wage earners in the formal sector, any change to the tax system would require detailed and comprehensive analysis.

The government has implemented a number of policy reforms in recent years to address these labor-market challenges. These include, but are not limited to: improving the quality of employment services provided by the Labor Offices Directorate (LOD); improving the effectiveness of measures and programs undertaken by the Employment Agency (EA); easing school-to-work transitions with the “New Start” program; launching an integrated system for labor market demand and supply and developing a unified national vacancy portal; reducing the share of undeclared work through increased inspections; and improving labor market flexibility and job security (Republic of Bulgaria 2011).

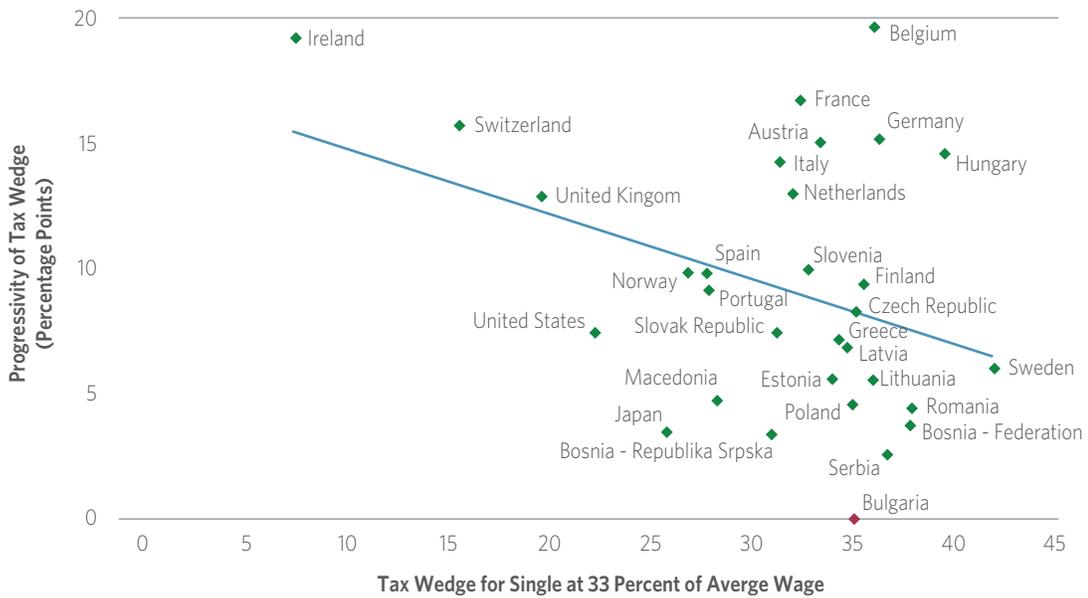
Policy Options

Providing affordable alternatives for the care of children and the elderly could boost female employment by reducing the opportunity cost of working outside the home. In 2011, the Slovak Republic experimented with changes to maternity benefits, allowing benefits to be combined with work and offering slightly higher pay to partly off-

²⁸ To investigate whether employment rates are low when education is held constant, we run separate regressions for men and women with data for all working age people and control for age, age square, education levels, and community fixed effects (thus effectively comparing Roma and non-Roma neighbors in the same community).

²⁹ See Betchermand, Daysal and Pages (2008) and Koettl and Weber (2012).

FIGURE II-7: GAP IN TAX WEDGE BETWEEN HIGH AND LOW WAGE EARNERS IN 2008



Source: Koettl and Weber (2012), based on OECD Tax and Benefit Models.

Note: The tax wedge measures personal income tax and social security contributions paid by workers and employers as a share of total labor costs. Tax wedge for a single person with no children at 33 percent of average wage versus progressivity of tax wedge. Progressivity refers to the increase of the tax wedge between 33 and 100 percent of average wage, in percentage points.

set child-care costs.³⁰ With sufficient child-care supply, the reform is expected to increase women’s labor force participation (World Bank forthcoming). Bulgaria could also consider reducing its very generous maternity leave provision and use the savings to subsidize child-care options.

Promoting flexible work arrangements may draw more youth, older workers and women into employment. For youth, it may be crucial to be able to combine work with studies. For others, it may be important to work part-time or at home to facilitate child-care duties. For older workers, expanding part-time and home-based work may encourage individuals to remain in the labor market until the stipulated retirement age.³¹

New apprenticeship, internship and wage-subsidy programs for young workers could be piloted and evaluated. Given the particularly acute problem of youth NEETs in Bulgaria, the school-to-work transition might be improved by designing pilot

programs involving apprenticeships, internships, and job subsidy programs for young people to encourage them to take and keep jobs. The success of these measures would require contributions and partnerships between the Government, employers and trade unions. In addition to piloting these initiatives, it would be important to undertake rigorous impact evaluations before any scale-up is considered. Similar programs have been implemented in countries around the world and some of them, especially in Latin America where youth unemployment tends to be exceptionally high, have passed rigorous evaluations. Chile, Peru, Colombia and other countries can offer design options to Bulgaria.

³⁰ Although the reform has not been evaluated yet, it is expected that the reform is expected to increase women’s labor force participation, as opposed to subsidizing women to stay at home.

³¹ Qualitative work in Croatia and Poland found that half of those aged between 55 and 70 would have liked to delay retirement, but that appropriate arrangements, such as part-time contracts, were not always available.

An effective youth NEET strategy needs to retaining young people in formal education and training and be well-targeted. Bulgaria could scale up such measures as job placement services, training and remedial education for older youth and back-to-school programs, enabling young people to acquire skills that are valued by employers. It could also entail outsourcing the full range of activation services to qualified agencies, for example to agencies with experience in working with disadvantaged youth, such as the socially excluded Roma. The experience from other countries suggests that the impact of activation measures

is mixed, so the measures need to be carefully evaluated and, if brought to scale, monitored.

Targeted, early childhood programs may be an effective way of improving employment among the Roma over time. Pre-schooling has been proven to improve the later scholastic performance of linguistic minorities, including the Roma. While the general Bulgarian population is declining rapidly, the Roma population is increasing and it is important that they find employment, especially among young Roma. This will be discussed in more detail in the next chapter.

THE ROLE OF EDUCATION POLICIES

As discussed in the previous chapter, groups with low LFP rates is only one of many reasons why investing in education will be essential to sustain Bulgaria's long-term growth. As mentioned in Chapter I, reducing the convergence gap between Bulgaria and the rest of the EU will require sustained improvements in productivity and a shift to better-paid economic activities generated by employees with higher and better skills. Education increases productivity, notably by fostering innovation. The urgency of focusing more on education has been heightened by the emigration of 50,000 scientists and skilled workers since the 1990s (Mansoor and Quillin, 2007). Moreover, technology changes dictate that far-sighted companies need to invest in the continuing education of their employees or fall behind—and better-educated employees are easier to retrain. Finally, there is strong empirical evidence that the better educated are healthier and live longer (Cutler and Lleras-Muney 2006; OECD 2006). All of these advantages of education are only realized, however, when the education is of good quality.³²

Bulgaria's demographic change is likely to increase investment in education. Human capital theory predicts that in societies with higher life expectancy at birth, all other things being equal, families have incentives to invest more in education as

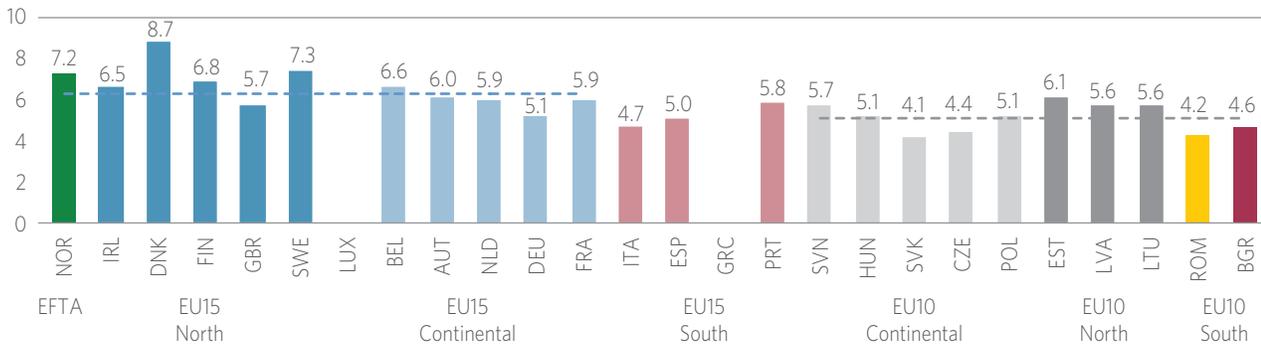
they are able to reap the returns to education over a longer period of time (Becker, Murphy, Tamura 1990).³³ As Bulgaria's population is projected to enjoy an increasingly longer life expectancy at birth (see Chapter I), investment in human capital is likely to increase. Bulgaria's future generations should thus be more educated than today's.

There is significant scope for harnessing education to mitigate the impact of demographic change. Bulgaria's student population has declined steeply in recent years. The government has responded by moving to a per-capita funding model and consolidating schools. It has also implemented programs to help young people get jobs, reduce the number of drop-outs and improve teacher training. Still, many more reform opportunities exist. Promising ones include enhancing the quality of education across all sectors, promoting lifelong learning and skill-building at all age levels, focusing on under-enrolled sectors, expanding overall monitoring and evaluation, promoting evidence-based policymaking, and examining efficiencies at all levels of education, to ensure the best use of available funds.

³² Education may also affect demographic change by reducing fertility (Basu 2002).

³³ Education in turn is likely to affect all three fundamental demographic components, fertility, mortality and migration.

FIGURE III-1: PUBLIC EDUCATION EXPENDITURES IN PERCENT OF GDP



Source: Authors' calculations based on Eurostat.

Bulgaria's Basic Education in the Context of Demographic Change

Bulgaria's public education spending in terms of GDP is low, but it has been catching up with the EU average. Bulgaria's education spending has increased over the last decade from 3.88 percent in 2000 to 4.6 percent in 2009 (Figure III-1). At the same, the student population declined three times faster than it did in the EU. The decline started in the mid-1990s and accelerated in the new millennium. Between 2000 and 2010, the primary and secondary student population plummeted by 40 percent (Figure III-2a). As a result, public education spending per student relative to GDP per capita has increased steeply from 15.2 percent in 2001 to 20.5 percent in 2009 for primary education and from 16.2 percent to 21.8 percent for secondary education. Bulgaria's overall public education spending per student relative to GDP of 27.1 percent slightly exceeded the EU average of 27 percent in 2009. Still, primary and secondary public education spending per student relative to GDP per capita were still below the EU average in 2009.³⁴

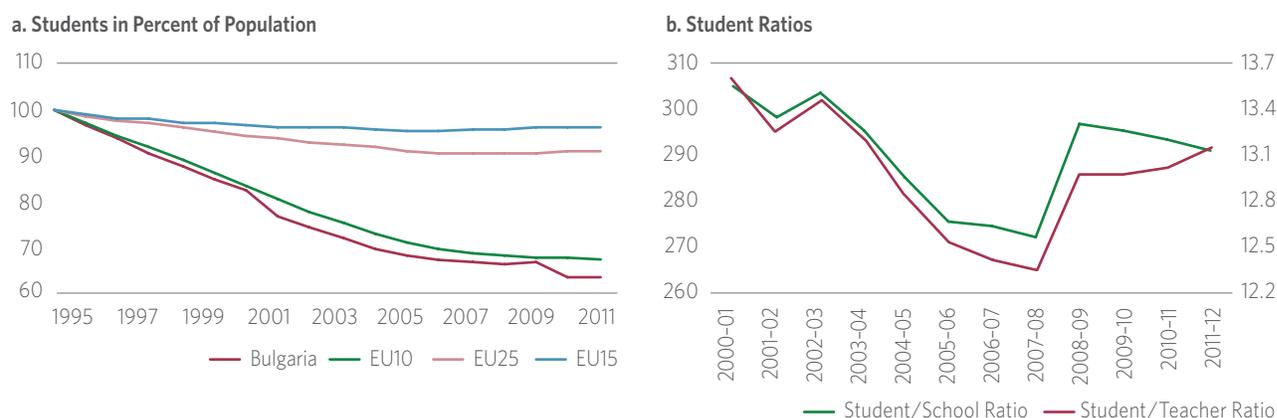
The Bulgarian government has responded judiciously to the steep decline in its school-age population. The resulting diminished enrolments and overcapacity of schools and staffing raised concerns not

only about inefficiency of public spending, but also about deteriorating service quality as resources were spread too thinly across a large number of small schools. The government responded by implementing a per-capita school funding model in 2007 and closed over 500 schools in 2007 and 2008 alone and 119 schools between 2009 and 2012 (Figure III-2b).

To ensure that access to education in remote villages was not reduced by consolidating schools, the Government introduced the notion of "protected schools," which were kept open so that children need not travel excessive distances (generally over 30 km). Such distances were found to contribute to high drop-out rates (World Bank, 2010). Currently, 127 schools around the country have been formally recognized as protected. Meanwhile, better-attended and/or newly built schools became hubs and were designated "focal schools." They attracted some of the savings of the consolidation process and their standards were raised. As noted in the Strategy for Prevention of Early School

³⁴ In 2009, primary, secondary and tertiary public education spending per student relative to GDP per capita in Bulgaria amounted to 20.5 percent, 21.8 percent and 48.3 percent, respectively. The EU average in 2009 was 22.6 percent for primary, 26.6 percent for secondary and 40.8 percent for tertiary education spending.

FIGURE III-2: EVOLUTION OF STUDENT NUMBERS AND RATIOS



Source: Authors' calculations; Eurostat.
Note: Index (1995=100).

Source: Authors' calculations based on data from Bulgarian NSI.

Leavers (2013), drop-out rates improved dramatically at protected schools since they were first introduced in 2007/8.

In cities, however, student populations are increasing and struggling to receive basic education. Migration flows from small towns and villages to the large cities have strained their infrastructure. Several cities, including Sofia, have been forced to develop two-shift school days. Such schedules are known to lower education quality, since full-time schooling with after-school tutoring and classes are among the most effective mechanisms to reduce early school-leaving. To return to full-day education for all grades (from 1 to 7) in all schools in Bulgaria in the coming years would require that the double shifts be

discontinued in many schools, to free up the required physical infrastructure (classrooms for the afternoon part of the full day schooling). This requires expenditures to build or renovate schools and to hire more and better-qualified teachers. In these cases, expenditures across the education sector will need to increase to promote optimal student outcomes. Indeed, significant resources (over €70 million) from EU structural funds have been allocated for teacher qualification and training, in addition to the funds provided by the state budget, to meet the expanding needs of the education sector.

Quality of Bulgaria's basic education has been declining in recent years. Bulgaria's score on the 2011 Progress in

TABLE III-1: IMPLICATIONS OF DEMOGRAPHIC CHALLENGES FOR BULGARIA'S EDUCATION SYSTEM

Response	Data/Activities
Primary/Secondary School Closures	Total number of closures: 682 <ul style="list-style-type: none"> • 2005-2009: 563 • 2009-2012: 119
Access/quality concerns	Protected Schools Identified: <ul style="list-style-type: none"> • 2011/2012-119 • 2012/2013-127 Bulgarian University Ranking System (BURS) developed to provide access to data on programmatic quality across the tertiary higher education sector
Teacher training/recruitment shifts	Improved teacher training for student retention, particularly of Roma students

Source: MEYS.

International Literacy Study (PIRLS)³⁵, released in 2012, showed a decline compared to the country’s own results in previous PIRLS rounds. A mirror finding of this outcome in the 2011 PIRLS is that around 40 percent of the Program for International Students Assessments (PISA)³⁶ 2009 student cohort was classified as “functionally illiterate,” unable to read well enough to extract and summarize relevant information from text documents (World Bank 2013). Improving quality of education in Bulgaria is also hampered by the fact that the variance of scores on PISA is exceptionally large between schools. This inequality between schools seems to be driven, at least in part, by the early selection of students into general and vocational tracks and into ‘elite’ and ‘ordinary’ school. Addressing these inequalities will be critical to improving the economic chances of disadvantaged groups and the overall quality of education in Bulgaria.

Even with this diminished quality, however, Bulgaria still ranked comparatively high in PIRLS 2011 (22nd out of 45 participating countries) in terms of average performance of primary education outperforming France, Poland, Spain, Slovenia and Romania. Bulgaria featured also among the 10 countries with highest share of students reaching the highest PIRLS benchmarks, outperforming most OECD countries. Moreover, in terms of performance gains in PISA scores in 2009 over 2006, Bulgaria ranks 7th, i.e. among the top improvers worldwide, with only two regional peers—Serbia and Romania—showing higher gains (41 and 28 points). Though there is no clear evidence these rising test scores were directly related to the

school reforms, the results corroborate that Bulgaria’s education reform has been on the right track (World Bank 2010b).

Tertiary Education and Demographic Change

At the university level, the number of institutions as well as their enrollment expanded (Table III-2) over the last decade. As the number of secondary students dropped, the number of tertiary education students increased by 16 percent. The net enrollment rate for tertiary education grew from 26 to 42 percent of the population aged 19–23 between 2000 and 2012. This increase was driven by the emergence of new private universities as the public ones expanded. Today, Bulgaria has 51 Higher Education Institutions (HEIs), of which 18 are private and 33 are public. Though tertiary attainment rates across the population have increased, financial and social returns to tertiary education attainment remain high in Bulgaria and unemployment among students with tertiary education low.

Despite quantitative and structural achievements during the past two decades, higher education in Bulgaria continues to face challenges with regard

³⁵ The PIRLS is an international comparative study of the reading literacy of young students (4th-grade students in the United States and students in the equivalent of 4th grade in other participating countries).

³⁶ PISA is a global assessment tool administered by the OECD that aims to evaluate education systems worldwide every three years by assessing 15-year-olds’ competencies in the key subjects: reading, mathematics and science.

TABLE III-2: GROWTH OF ENROLLMENTS IN TERTIARY EDUCATION IN BULGARIA

Academic year	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Growth in total enrollments	4 percent	2 percent	7 percent	2 percent	4 percent	5 percent	-1 percent

Source: National Statistics Institute.

to quality, efficiency and accountability.

The Ministry of Education, Youth and Social Sciences (MEYS) is committed to comprehensive reforms across the sector, continued innovations and improvements could further improve it. The current funding model is based on a per-capita formula that takes into account enrollments, performance and competitive research funding needs. The Ministry is continuing to seek new mechanisms for improving the quality of education, including greater use of performance-based contracts. A new strategic report (World Bank 2012g) for comprehensive reforms of the tertiary system proposes various mechanisms—including financing formula recalibrations, quality assurance system improvements, and governance changes—to improve the outcomes of higher education investments so that quality and efficiency become even stronger drivers in an autonomous yet accountable higher education sector.

Responding to these challenges, the government implemented the Bulgarian Universities Ranking System (BURS) in 2010. In use since 2010, the BURS provides users with a tool to compare study programs offered by Bulgarian tertiary education institutions against a set of 51 indicators. It provides readily available, hard and objective data that complement the institutional and program evaluation criteria used by National Evaluation and Accreditation Agency (NEAA). By giving students and other stakeholders the tools to assess the outcomes from institutions and programs, the BURS brings quality issues to the fore of informed decision-making for both students and policy-makers. This is a powerful and impressive innovation in the higher education sector for the entire CEE region.

The tertiary sector will need to adapt to an impending decline in enrollment. As the primary and secondary pipeline of students shrinks, so, too, will the traditional pool of tertiary students. So far, though the numbers of secondary school students has decreased, the proportion that goes to university has grown. With enrollment

rates of close to 50 percent, however, the tertiary system can no longer rely on growth from traditional student populations. Reforms to the sector, including potential closures, mergers and the redeployment of institutions to serve changed academic goals must be considered to stabilize the sector in the face of diminished enrollments.

The focus of learning must become more adaptive. The growing demand for generic cognitive/non-cognitive skills requires sufficient and targeted responses from education and training systems, particularly in the training of teachers and the development of adaptive curricula. It is not enough to provide students with learning modules geared towards memorizing facts. Employers across the world cite the need for workers who can learn quickly and work well in adaptive team environments. Youth do better in acquiring skills, but many often acquire the wrong set (both generic/transversal and technical). Bulgaria has the tool in place (the BURS) to access powerful data on what is and is not working in tertiary education programs as it relates to outcomes. In addition, and with World Bank support, further information about this balance of cognitive and non-cognitive skills in the workforce is being gathered through the Bulgarian Longitudinal Inclusive Society Survey (BLISS)³⁷, which is utilizing household surveys to assess a broad array of motivation, skills and activation issues across the Bulgarian population. This information could potentially be used as inputs to funding schemes or in the development of other incentive programs.

³⁷ BLISS is a nationally-representative multi-topic survey of Bulgarian households, with a booster sample of Roma settlements. It is implemented jointly by the World Bank and the Open Society Institute-Sofia and uses the same sample (and includes many of the same modules) as the Crisis Monitoring Survey, which had three waves (February 2010, September 2010, February 2011). BLISS has the sample of 2,400 households, plus 300 households in the Roma booster.

With increased enrollment of foreign students, classrooms become globalized, bringing in skills and norms from other academic cultures and providing access to a broader array of modes of teaching and learning. The fees foreign students pay could help the financially challenged system. The students themselves expose Bulgarian students to cultures and ways of thinking that are different from their home communities. This exposure to foreigners can only help its university graduates to better integrate Bulgaria into a global economy.

Though Bulgaria has the third-highest median age in the EU, it has the lowest rate of participation in lifelong learning: 1.2 percent. The Bulgarian government recently completed an evaluation of the implementation of the National Strategy for Lifelong Learning for the years 2008 to 2013. It provides useful insights on what has worked and what must be improved for the next programming period, 2014–2020. The three leading indicators included in the original LLL strategy were: increase participation in lifelong learning to 5 percent of population aged 25–64 years; reduce the share of

early school leavers to 11 percent; and boost the share of persons aged 20–24 years with a completed secondary education to 85 percent. The first target (5 percent participation in LLL) was missed quite dramatically, as enrollments in LLL was only 1.2 percent in 2012. A very successful life-long learning strategy has been implemented in Denmark. Key features of this strategy are outlined in Box III-1.

A Labor Force Survey performed by the National Statistical Institute in 2011 found that 12.8 percent of young adults aged 18 to 24 has left school early, close to the goal of reducing the rate to 12 percent, but there are notable differences across groups. The study found that women left school 1.7 percent earlier than men. The worst-performing regions are those in the north and south, in which 19.4 percent of adults are without secondary education and 16.8 percent do not participate in any form of education or training. The Western region, in contrast, maintains school-leaver rates between 2 and 3.5 times lower than the national 12.8 percent ESL rate, with indicators for the period

BOX III-1: DENMARK'S STRATEGY FOR LIFELONG LEARNING: A ROLE MODEL FOR INCLUSIVE SKILL DEVELOPMENT

Denmark has one of the highest levels of participation and completion of lifelong learning endeavors in the EU with 32.3 percent of the population aged 25 to 64 participating in training or education program. The reasons for the success of the program lie in:

- A well-developed and properly funded early child education: High-quality basic education has been found to be an important requirement for successful adult education and training programs through to retirement;
- Publicly funded adult education and continuing training that is inclusive, encompassing general adult education, vocational adult education and continuing training (up to and including vocational education and training level--labor market training, basic adult education etc.) as well as a further education system for adults at three tertiary levels. In addition, a number of educational programs are provided for marginalized target groups;
- Public funds provide to all stakeholders - institutions, students, and employers--to support their participation and promote relevant interventions;
- Focused on groups with greatest needs--the low-skilled, marginalized groups, and those with the lowest levels of formal education and/or literacy and numeracy problems. The aim is that more people with the lowest level of formal education shall participate in vocational adult education and continuing training.

Danish Ministry of Education (2007).

2008–2011 that are comparable with the best values in the EU.³⁸ More challenging, however, are recent government objectives to further reduce the share of early school leavers by 2020 to 11 percent. This has been established in several subsequent national and European documents including: National Reform Program (2011–2015), NPD BG2020, National Strategy for Children 2008–2018, National Program for Development of School and Pre-school Education and Training (2006–2015), Program for Development of Education, Science and Youth Policies in the Republic of Bulgaria (2009–2013), Strategy for Educational Integration of Children and Pupils from Ethnic Minorities of the Ministry of Education, Youth and Science, National Strategy for Roma Integration in Bulgaria (2012–2020), Law on Youth, as well as within the 28 regional strategies for development of social services (2011–2015).

Finally, the National Strategy for Life-Long Learning target of increasing the share of persons aged 20–24 with completed secondary education of 85 percent was achieved two years before the final 2013 evaluation date, when it scored 85.5 percent in 2011. Overall, for the period 2007–2011, Bulgaria experienced four years of improvement and one flat year followed several years of improvement averaging 1 percent per year (Eurostat 2012).

The combination of poor learning outcomes among Bulgarian youth and limited participation in lifelong learning among adults is a cause for concern, as noted in the forthcoming World Bank report of workforce development³⁹. These combined deficiencies compromise the quality of the future workforce and the country’s ability to move into more lucrative areas of economic activity. At the same time, they diminish the capacity of the current workforce to adapt to economic restructuring and to take advantage of new job opportunities. Reforms targeting both improved youth education outcomes and lifelong

learning address the full spectrum of opportunities for human capital formation, providing the comprehensive interventions needed to drive forward effective change the skills make-up of the Bulgarian labor market.

Recent Reforms in the Education Sector

In many countries, populations have become older and governments have implemented effective policies for addressing this change. Many have found education and training to be powerful tools to narrow the social, employment and general-capacity gaps that emerge from demographic shocks such as those being experienced in Bulgaria. Different countries have pursued an array of policies to raise the skills of their future work force. Table III-3 compares them with what Bulgaria has done so far.

The government has taken steps to help young workers get jobs and to reduce the number of drop-outs. The 2010–2020 National Youth Strategy (NYS) is oriented toward young people aged 15 to 29 years and is targeted at “building and implementing a unified, consistent and sustainable youth policy in Bulgaria, based on a multi-sectoral approach, inter-sectoral collaboration and joint management with young people at the national, regional, provincial and municipal level” (NYS, 2010). The measurable goals related to youth and education within the NYS—of reducing the proportion of early school leavers to 11 percent and raising the one of university graduates to 36 percent of working age people are comparable with the EU 2020 and NDP BG2020 targets. Such policy complementarity illustrates the thoughtful

³⁸ The analysis is based on NUTS3 territorial classification.

³⁹ The World Bank. (forthcoming 2013). Workforce Development in Bulgaria: Systems Approach for Better Education Results – Workforce Development (SABER-WfD) Country Report.

TABLE III-3: GLOBAL EDUCATION RESPONSES TO DEMOGRAPHIC SHIFTS

Education Intervention	Country	Bulgaria's Policy Response
Merging/Repurposing of Institutions	Japan, Romania, UK, USA,	<ul style="list-style-type: none"> • Focal and protected schools identified in primary and secondary school systems • To be determined at tertiary level
Increase Foreign Students and Staff; create incentives for study abroad and repatriation of skills	Netherlands, Australia, Chile, UK, USA	<ul style="list-style-type: none"> • Increase the number of programs offered in English • Increase foreign study options, promote participation in ERASMUS and other EU education programs
Lifelong/Life-wide Learning	Austria, Germany, Hong Kong SAR, China, Ireland, Japan, Sweden, UK, USA	<ul style="list-style-type: none"> • The National Concept for Promotion of Active Aging 2012–2030: • Operational Objective #4: Ensuring access to education, promoting lifelong learning, further trainings and requalification of older people for the purpose of enhancing labor market mobility • Law on Encouragement of Employment—to promote both recognition of life experience in credentialing; promote apprenticeships and skill building in conjunction with employers.

Source: Authors' notes.

and collaborative nature of the Bulgarian policy environment. Likewise, the New Chance for Success project (March 2011) is another program that could bring about important innovations in lifelong educational opportunity. It offers literacy training to early school leavers aged 16 and up and to 10,500 working-age adults, with the goal of increasing social mobility. As acknowledged by the Ministry of Education, Youth and Social Sciences (MEYS), “(a)cquiring modern key competencies provides a chance for low-literate persons to go out from the risk group on the labor market. The activities (of the New Chance for Success project) create conditions for inclusion in training of persons in disadvantaged socio-economic status and widen the possibilities for more successful social inclusion” (MEYS 2013). Finally, the government has introduced a Strategy for Prevention and Reduction of the Share of Drop-Outs and Early Leavers from the Educational System (2013–20) which will monitor drop-outs and early school-leavers. It includes plans to develop a detailed analysis of gathered data aimed at elaborating long-term policies for the prevention, intervention, and compensation (remediation of lost educational opportunities) of early school-leaving.

Extending compulsory and free pre-school education by one year to include

five-year olds would provide additional opportunities for children of disadvantaged background to be better prepared for schools and eliminate differences in outcome among children based on income. It would also reduce some of the known drivers of early school-leaving, such as the inability to cope with the language or the curriculum. Pending legislation envisions even broader exposure to pre-school education by making it compulsory from age 4. Enrollments in pre-schools have already increased and will continue to do so if Bulgaria adopts and implements the proposed legislation and reaches for the EU goal of 95 percent enrollment into pre-schools of 4-year-olds. Pre-schooling has been proven to improve the later scholastic performance of linguistic minorities, including the Roma.

To promote lifelong learning, the government developed a LLL program in 2008⁴⁰. The National Concept for Promotion of Active Aging 2012–2030 highlights as Operational Objective #4: Ensuring access to education, promoting lifelong learning, further trainings and requalification of older people for the purpose of enhancing labor

⁴⁰ National Strategy for Lifelong Learning for the Period 2008–2013.

TABLE III-4: EUROPE 2020 EDUCATION GOALS

Goal	Examples of BG responses
Increase the number of higher education graduates to 40 percent for 30–34 years old	The enrollment rate of 30–34-year-olds was 27.3 percent in 2011 and 26.9 in 2012 according to preliminary data. Net enrollments for 19–24-year-olds increased from 26 percent to 42 percent between 2007 and 2011. The net enrollments (bachelor, master and professional bachelor levels) for 20–24 years old increased from 29.5% in 2007 to 35.4% in 2011.
Improve the quality and relevance of teacher and researcher training	Development of the Bulgaria University Ranking System, providing data on quality and relevance of degree programs and institutions.
Provide more opportunities for international engagement of students and staff—in Bulgaria and abroad	Foreign student enrollments up 8.1 percent since 2007 (According to NSI data, foreign student enrollments increased by 21.6% from 2007 to 2011 – incl. all levels of higher education except for the PhD programs. Foreign student enrollments in PhD programs declined by 12.6% over the same period.) 22 percent increase in Bulgarian student mobility, 2007–2011*
Strengthen the knowledge triangle: teaching, research, business	Bulgaria Smart Specialization Strategy Initiative (ongoing)
Create effective governance and funding models in support of excellence	Strengthening Higher Education in Bulgaria: Options for improving the models of governance, quality assurance and financing of higher education (2012 report) developed to provide strategic roadmaps to achieving effective governance and funding models
Reduce early school-leavers to 10 percent	<ul style="list-style-type: none"> • National Reform Program (2011–2015); National Program for the development of Bulgaria: Bulgaria 2020; • National Strategy for Children 2008–2018; • National Youth Strategy (2010–2020) • 28 Regional strategies for development of social services (2011–2015)

Source: Authors' notes based on information from MEYS.

market mobility. Beginning in 2014, the next phase in the lifelong learning agenda⁴¹ will call for the Bulgarian National Assembly to conduct targeted information campaigns to encourage participation by both institutions and individuals in lifelong learning. In particular, educational institutions are receiving support to form consortia to apply for EU-funded “Leonardo daVinci” mobility program funds. The Bulgarian National Assembly has set a National Priority for 2013 to ensure that a larger number of technical and vocational education and training (TVET) organizations participate in the program, so that mobility is promoted at all post-secondary institutions, not just at elite tertiary institutions. Even if they lack the experience and the resources to manage a project at the institutional level, participating in a broad, well-supported initiative such as this would encourage institutions to start building lifelong-learning norms, to offer new curricula and to allow individuals to access the new opportunities.

A thorough revision of Bulgaria’s teacher policies should lead to policies that will improve teaching and learning in the classroom. Currently, 50 percent of teachers in Bulgaria are over 50 years of age, the profession is unattractive, and it fails to attract the young and the talented. Pre-service preparation of teachers needs to be improved. Higher education institutes offering degrees in pedagogy need to revisit their curriculum and, with Government support, transform their programs into highly attractive academic majors. Finally, policies ensuring that small schools are attractive to good teachers and ensuring that the best teachers are retained in the system and drawn to schools with supply shortages must also be adopted and implemented as soon as possible.

Curricular reforms to promote high-educational standards and matching

⁴¹Being proposed follow-up Strategy for Lifelong Learning 2014–2020.

textbooks are necessary to ensure that students can improve the cognitive and non-cognitive skills that employers want.

These include critical reasoning, adaptive learning, and the ability to work effectively in a team. Employers identify them as missing from the current graduates and vital to the success of their businesses. Collaboration with employers in reforming the curriculum should be encouraged, particularly in TVET, and in secondary and tertiary education.

In the context of education and skills and in light of Bulgaria’s ageing population, the challenges for workforce development require efforts on four fronts: providing better access to education for all ethnic groups; ensuring education of high quality and relevance; boosting worker productivity through continuing education and training; and facilitating entry of the inactive population into the labor force through second chance education and training-related programs.⁴² **Finally, perhaps in a model like the BURS, pre-primary through secondary and TVET education could benefit from a comprehensive student, teacher and school evaluation system.** Integrating national assessments, classroom observations, evaluations, inspections and other sources, it would provide a powerful source of useful information and help guide the design and implementation of new policies. Such evidence-based policy-making can promote sustainable progress and help evolving systems—such as Bulgaria’s is today—avoid the pitfalls and wrong turns made in other systems in the past.

Improving Educational Outcomes among the Roma

The Bulgarian government has developed key education strategies that, if implemented, will prepare its Bulgarian-speaking workforce better for the future and mitigate the impact of an aging population. But the expected change in the country’s ethnic composition also requires a different kind of reform. As mentioned in the previous chapter, between 9 to 19 percent of labor force entrants are projected to be from the Roma population. As a result, one of the key priorities is to improve the educational outcomes among Bulgaria’s ethnic minorities. There are very large gaps in educational attainment between the Bulgarian-speaking population in Bulgaria and the minorities, especially the Roma. Among the ethnic Bulgarian population aged 25 to 64, 59 percent had completed their secondary education, and 33 percent had post-secondary education (Table III-5). But the figures are 45 percent and 6 percent, respectively, among ethnic Turks (which may also include Roma who self-identify first as ethnic Turks), and even lower, 21 percent and 0 percent, respectively, among those who identify themselves as Roma.

The Roma’s low educational attainment is driven by high drop-out

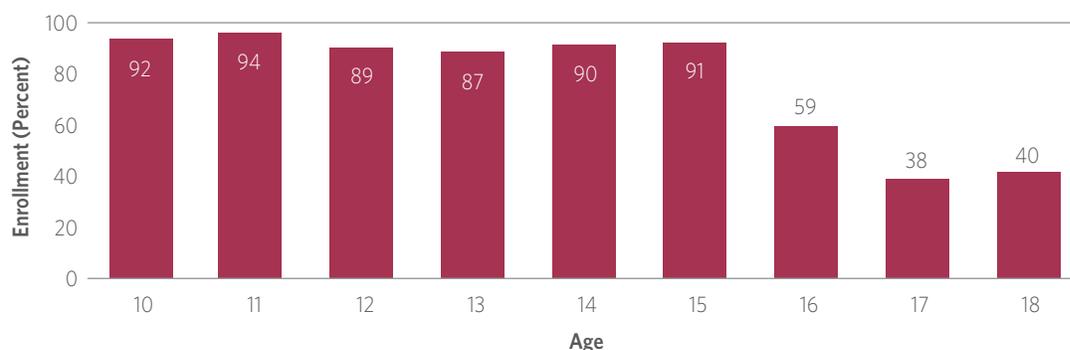
⁴²The World Bank. (forthcoming 2013). Workforce Development in Bulgaria: Systems Approach for Better Education Results – Workforce Development (SABER-WfD) Country Report.

TABLE III-5: HIGHEST LEVEL OF EDUCATION ATTAINED, BY ETHNIC GROUP IN PERCENT

	Bulgarian	Turkish	Roma	Other
Up to basic education - ISCED 1	1	9	34	2
Lower secondary education - ISCED 2	7	40	45	38
Upper secondary education - ISCED 3	59	45	21	42
Post-secondary education - ISCED 4+	33	6	0	19

Source: 2010 Crisis Monitoring Survey (WB and OSI, 2010); WB calculations.
Note: Sample limited to those aged 25-64 years old.

FIGURE III-3: ENROLMENT RATES OF ROMA IN BULGARIA BY AGE IN 2011



Source: UNDP/WB/EC regional Roma survey (2011). WB calculations. Bulgaria sample.

rates and low pre-school enrollment.

Current enrolment data show that around 90 percent of Roma in Bulgaria—and in neighboring countries, with the exception of Romania—remain enrolled as long as education is compulsory, but drop out when it ceases to be at age 16; at age 15, 91 percent are still enrolled, but only 59 percent at 16 (Figure IV-3). Moreover, pre-school enrollment among Roma children is much lower than the overall population. Among Roma children aged 3–6, 38 percent of girls and 42 percent of boys are reported to be enrolled in pre-school, compared with 75 percent for the general population. These enrolment rates compare favorably with Roma in the Czech Republic (21.8 percent), Slovakia (17.8 percent), and Romania (32.2 percent). Only Hungary is a notable exception, with 66 percent of Roma in this age group enrolled in pre-school.

Early childhood development should be expanded to improve outcomes for all ethnic minorities and Roma students in particular. The World Bank (2012d) regional study on “Closing the Early-Learning Gap” found that Bulgarian Roma children enrolled in pre-school were much more likely to know the Cyrillic Bulgarian alphabet and say simple sentences in the national language than Roma children in the same neighborhood and with similar backgrounds not enrolled in pre-school.

Consistent with international evidence, the World Bank (2012d) report also finds a strong correlation between Roma pre-school attendance, graduation from secondary schools and attendant reduction in drop-out rates.

Similarly, a representative quantitative study of the Bulgarian International Center for Minority Studies and Intercultural Relations (2003a) demonstrated that Roma school children who attended kindergarten had significantly higher grades than those who did not. They also were more likely to have friends of Bulgarian ethnic origin and were twice as likely to be able to use a computer.

Finally, the National Strategy for the Integration of Roma (2012–2020) aims to increase Roma enrollment, prevent Roma students from dropping out and provide quality education in a multicultural environment. The Strategy also identifies ten specific goals to promote quality and relevance to the Roma community. The Strategy aims to integrate Roma students more effectively through more classroom diversity and the teaching of the Roma culture.⁴³

⁴³ Well-qualified Roma teachers could also serve as role model for their students.

Policy Options

Bulgaria’s education policies will have to be tailored for today’s and tomorrow’s labor force by expanding LLL opportunities and improving basic and tertiary education systems. To enhance the productivity of the existing workers, Bulgaria will need to invest in LLL programs. Identifying barriers for achieving increased participation in LLL programs is likely to be an important first step. A strong collaboration among university graduates, training centers and employers would be helpful for developing strong LLL programs. To boost the productivity of future generations, Bulgaria would also need to improve basic and tertiary education. In particular, Bulgaria’s education system should ensure that students at all levels learn generic skills that can be used in different work settings—the so-called transversal skills. In this context, improving basic and tertiary education through improved teaching and better curricula will be important.

Education policies need to include interventions designed for the Roma minority. Expanding early childhood programs, which have been found to be effective, will be of particular importance. An active implementation of the Strategy for Prevention and Reduction in the Share of Drop-outs and Early Leavers will be key for reducing high drop-out rates, particularly among the Roma and other disadvantaged groups.

Effective education reforms require a strong interaction between education and labor markets including all relevant stakeholders by i) identifying the requirements of the business community; ii) establishing a tripartite partnership of university graduates, career centers and employers; iii) strengthening the links between higher education and business; iv) selecting the most suitable methods and techniques for recruiting new skilled staff; v) strengthening the coordination between universities, the non-government sector, and business. Table VI-6 provides an overview

TABLE III-6: RECOMMENDATIONS FOR AREAS OF STRATEGIC FOCUS AND COLLABORATION

Recommendation	Responsible agency	In cooperation/consultation with	Timeframe
• Increase emphasis on generic/transversal skills at all education levels	MEYS	Association of Rectors, HEIs, Employer organizations, Business associations, Trade Unions, National Vocational Education and Training Agency	Medium-term
• Enhance quality of basic and tertiary education by improving teaching and learning and through curricular reforms	MEYS	National Vocational Education and Training Agency, Center for assessment of quality, (to be established) National Education Inspectorate, Association of Rectors, HEIs, Employer organizations, Business associations, Trade Unions	Short/Medium/Long-term
• Increase foreign students and staff in tertiary education	MEYS	Association of Rectors, HEIs, Employer organizations, Business associations	Medium-term
• Expand lifelong learning opportunities by identifying current constraints and fostering coordination among all stakeholders	MEYS	MLSP, Employer organizations, business associations trade unions	Short/Medium-term
• Utilize more fully the available data to promote extensive evidence-based policy making in education	MEYS	Statistical agency, Social Security Agency, MLSP	Short/Medium/Long-term

Source: Authors’ notes.

of the different stakeholders involved in the implementation of the different reform options.

Bulgarian education is already well-supported by an extensive network of legal and strategic frameworks helping it deal with demographic decline. With continued attention to developing the legal and strategic frameworks and roadmaps to implementation, monitoring, evaluation, and recalibration (where necessary), there is no reason Bulgaria cannot build upon its founda-

tions and harness education to face the challenges of its aging population. Indeed, the creativity and purposeful engagement already exhibited by the MEYS and the Ministry of Labor and Social Policy (MLSP) have set the stage for an impressive and rapid adaptation. If the implementation phases of these policy directives can focus on ensuring good access to education for all and on improving the quality of existing institutions, then the education sector is well-poised to serve the entire population of Bulgaria well in the decades to come.

HEALTH SECTOR REFORM IN THE CONTEXT OF AN AGING POPULATION

Health systems and policies play an important role in shaping demographic transformation. Both can help prevent unnecessary deaths and ensure that aging populations enjoy long, productive, and healthy lives. While adults have been living longer and increasingly healthier lives in the EU15 countries, excess mortality, particularly in middle age, continues to plague the EU10. Men from the EU10 countries who are currently 50 years of age can expect to live to age 73–75, compared with age 78–81 in richer EU countries. Roughly speaking, a citizen of Bulgaria is twice as likely as a citizen of Spain to die in any given year⁴⁴. The health sector not only plays a key role in extending lives, it also improves the quality of life by ensuring that people stay healthy and can work. It thus has an important role to play in stemming Bulgaria's labor force decline.

Preparing a health system for an aging population requires concerted efforts at all levels of the system (Doyle, Rachel, et al. 2009). The complexity of health problems tends to increase as populations age, with more people suffering from co-morbidities⁴⁵ and chronic diseases and thus receiving a wide range of treatments that could potentially interact with each other. Adapting to this requires: i) emphasis

on health, wellness and disease prevention programs that target the main causes of morbidity and premature mortality, in particular obesity and hypertension; ii) coordination of care across health and social services, as well as across different levels of the health care system; and iii) recognition of the important role played by primary care providers in helping patients optimize their medical care. Many older people are hospitalized for treatments that could be provided more cost-effectively as out-patient care.

Bulgaria's rapidly aging population is expected to put pressure on public health expenditures. The widespread expectation is that rapidly aging populations throughout Europe will lead to increases in health expenditures, simply because the elderly have a higher demand for ambulatory, inpatient, and chronic care than younger members of the population. In reality, the size and age structure of populations typically only explain a small share of increases

⁴⁴The age-standardized death rate in Spain in 2010 was 488, and in Bulgaria, 970 per 100,000 (1.99 times higher). The age-standardized death rate due to cardiovascular disease in Spain was 138 (28 percent of the total), compared to 622 per 100,000 in Bulgaria (64 percent of the total). The data are from Eurostat.

⁴⁵Comorbidities refers to two or more diseases existing at the same time in the body.

TABLE IV-1: HEALTH EXPENDITURE - BULGARIA AND COMPARATOR COUNTRIES (2010)

	Health Expenditure (per capita \$)	Total health expenditure (percent of GDP)	Public Health expenditure (percent of GDP)	PHE (percent of gov. expenditure)
Bulgaria	434.9	6.9	3.7	9.8
Romania	428.0	5.6	4.4	10.8
Lithuania	781.4	7.0	5.2	12.6
Latvia	717.6	6.7	4.1	9.2
Poland	917.1	7.5	5.4	11.9
Croatia	1066.7	7.8	6.6	17.7
Estonia	853.3	6.0	4.7	11.7

Source: WHO, Global Health Expenditure Database. Countries in the table are ranked by income per capita.

in health expenditure. Whether population aging leads to overall higher health care costs will depend to a large extent on whether longer life spans mean more years of healthy living or more years of illness. Future health care costs are also determined by income-driven changes in demand and technological changes in the medical sector. Bulgaria's health system is not performing as well as it could in many areas and Bulgarians are increasingly dissatisfied with it. This alone is likely to increase pressure to invest more in it. It is therefore critical to address some of the system's structural problems to ensure that any further investments will bring about effective results.

The rapidly aging population adds a sense of urgency to an already large need for health service delivery reforms. Modern health-service delivery systems are under tremendous pressure to adapt due to the need to rein in spending, the increasing cost of medical technologies, the evolving expectations of patients, and the imbalances in the workforce. To meet this challenge, systems must be increasingly organized to ensure that patients are treated at the right level of care; there is also a need to concentrate specialized services to provide access to the best quality of care and more up-to-date complex treatment. This chapter shows that the service delivery system in Bulgaria shows few signs of following these

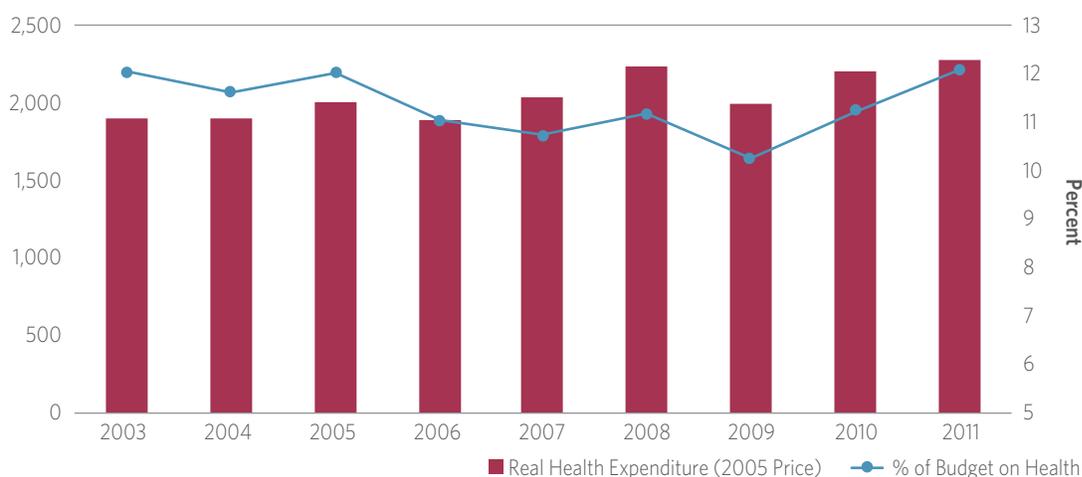
trends and suggests priorities for the Government's consideration to prepare the health system to meet these challenges.

Current Public Health Expenditure

Bulgaria's total expenditure on health, although low by EU standards, appears to be broadly in line with its income level, but public health expenditures are low. Total health expenditure in Bulgaria represents around 7 percent of GDP, a level which is comparable to many EU10 countries. But Bulgaria dedicates a smaller proportion of its public resources to health than does the average EU country. In 2010, Bulgaria's public health expenditure represented 3.7 percent of GDP and less than 10 percent of total public expenditure (Table IV-1): both figures are rather low by European standards. Conversely, out-of-pocket payments (OOP) incurred by households when they need care represents 44 percent of total expenditures⁴⁶. In fact, Bulgaria is an outlier among EU countries: its share of OOP is currently among the highest in the region and has

⁴⁶ Out of pocket expenditure is derived from various sources and pertains to goods and services purchased privately: formal public sector copayments and informal payments, although the latter tend to be under reported.

FIGURE IV-1: PUBLIC HEALTH EXPENDITURE GROWTH AND SHARE IN PUBLIC EXPENDITURE



Source: Ministry of Finance, IMF.

increased substantially over time from around 25 percent in 1997.

Following years of decline, public health expenditure growth has accelerated in the past few years. Between 2003 and 2009, the share of health in total public expenditures eroded steadily (Figure IV-1), although it has since increased to its 2003 level as public health spending increased 14 percent in real terms between 2009 and 2011.

Current Health-Sector Performance in the Context of Aging

Compared to other EU10 countries, the Bulgarian health system's performance is lagging. A health system's performance is measured against 3 goals: i) producing health; ii) providing financial protection⁴⁷ and iii) responding to citizens' expectations. Recent performance reviews of health-care systems suggest that many countries perform better than Bulgaria without spending much more.

i. Producing Health

Although health outcomes have been improving, Bulgaria has been falling

behind most EU countries. Average life expectancy at birth for a Bulgarian is 73 years compared to 80 years in the EU27 and 75 years among the EU10 (Table IV-2). In fact, Bulgaria now lags behind most of its neighboring countries, despite performing relatively better twenty years before. The burden of non-communicable diseases (NCDs) is high, in particular circulatory-system diseases, which tend to mainly affect older adults. In fact, heart attacks, heart failure, and strokes jointly comprise more than 65 percent of all reported causes of death in Bulgaria in 2011. Cancer is the next major cause of death (16 percent), with death rates of 172 per 100,000 similar to the EU-27's 173 per 100,000 and better than the EU10's average 199.

ii. Providing Financial Protection

The financial protection provided by the health care system is limited by high out-of-pocket payments. Financial protection provided by the National Health

⁴⁷ Providing financial protection refers here to protecting individuals from the financial consequences of illness and medical care.

TABLE IV-2: HEALTH STATUS INDICATORS OF BULGARIA AND COMPARABLE COUNTRIES^a

Countries	Life expectancy (LE) at birth, in years	Reduction of LE through death before 65 ^b	Infant deaths per 1000 live births	Standard Death Rate (SDR) all causes, per 100000	SDR, diseases of the circulatory system, per 100000	SDR, malignant neoplasms, per 100000	SDR, chronic liver disease/cirrhosis, per 100000	Tuberculosis incidence per 100000
Austria	80.6	4.1	3.8	563	213	158	15	5.3
Bulgaria	73.4	6.9	8.6	995	611	172	18	35.4
Czech Republic	77.5	4.8	2.9	744	357	197	16	6.0
Greece	80.3	4.0	3.2	577	245	154	5	4.1
Romania	73.6	7.2	10.1	959	549	181	47	97.2
Slovakia	74.3	6.3	7.2	945	509	208	25	8.1
Slovenia	79.3	4.6	2.6	632	235	202	25	9.1
EU	79.6	4.6	4.3	622	234	173	14	13.5
EU10	75.1	6.6	6	873	436	199	27	35.9

Source: HFA database (accessed Aug 2012).

^a Hypothetical increase in life expectancy if no one died before 65.

^b Data is for 2009 or latest available year.

Insurance Fund has significant gaps and between 10 and 20 percent of the population are not covered.⁴⁸ As a result, out-of-pocket payments (OOPs) in Bulgaria are large. In 2007⁴⁹, they represented nearly 6 percent of average household spending. Two thirds were spent on medicines, which are not well covered by the public health insurance system. In the health economics literature, OOPs in excess of 10 percent of household spending are deemed catastrophic. In Bulgaria, 20 percent of households faced OOPs above this threshold compared to only 7 percent of households in EU15 countries. The same survey showed that OOPs have had a significant impact on poverty in Bulgaria: using a poverty line of \$5 per day, OOPs on health were responsible for increasing poverty from 12 to 15.7 percent⁵⁰. A three-wave household survey conducted in 2010 and 2011 showed that many households reduced their spending on health in response to the economic crisis (World Bank 2012a). In fact, 40 percent of those households in the lowest-income quintile declared having suspended the purchase of regular

medicines as a crisis-coping mechanism; the average for all households was 19 percent. Overall, this shows that out of pocket payments, which are predominantly incurred on pharmaceuticals, are more detrimental to the poor.

The elderly are thus particularly vulnerable. The elderly are currently at the highest risk of poverty and social exclusion in Bulgaria⁵¹. They are also more likely to develop chronic diseases than younger age groups. Controlling for risk factors associated with chronic diseases or managing these diseases typically requires taking medicines on a long-term basis. For these two reasons, the burden of out-of-pocket payments probably falls disproportionately on the elderly. As their number increases, the need for improved financial protection can be expected to rise.

⁴⁸ No official data available.

⁴⁹ Last Living Standards Measurement Study available.

⁵⁰ World Bank computations.

⁵¹ 2011 SILC data http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/3-26022013-AP/EN/3-26022013-AP-EN.PDF.

iii. Responding to Citizens Needs

A significant majority of Bulgarians has expressed dissatisfaction with the health care system. In 2009, only 28 percent rated the system as “good” or higher: the second-lowest rating in the EU (European Commission 2010). One possible reason for dissatisfaction is unmet needs: In the 2008 Statistics of Income and Living conditions survey, almost a quarter of Bulgarian respondents reported an unmet need for medical consultation, with the most commonly cited reason being cost. By 2010, the rate had dropped to around 15 percent for an EU average of around 7 percent⁵². Perceived corruption within the health care system could be another reason for such low levels of satisfaction: a 2009 survey found that 65 percent of Bulgarians believed corruption was widespread in the public health care sector—slightly higher than the EU12 average of 54 percent, but virtually the same as the corruption perceived in other public sector domains: building inspections, public contract tenders, licensing inspections and business permits, all at 60–65 percent, (European Commission

2009). The Euro Health Consumer Index⁵³ (Health Consumer Powerhouse 2012) appears to confirm Bulgaria’s poor user-focus: it scored 33rd out of 34 countries in Europe, a virtual tie for worst with Serbia.

A Service-Delivery Agenda with a Focus on the Hospital Sector

i. Improving Coverage of Preventive Services, Use of Primary Care and Hospitalization Rates

Poor health does not have to be an inevitable consequence of aging: healthy behavior and preventive health care can help people live long, healthy lives. In Bulgaria, the use of most preventive services is much lower than in other EU countries, with the exception of Romania (Table IV-3).

⁵² Hungary 7.9 percent, Slovakia 5.5 percent, Romania 13.6 percent (Statistics of Income and Living Conditions survey, via EUROstat).

⁵³ A compound measure of nearly 40 indicators which assesses patient rights, health services and pharmaceutical accessibility, as well as health outcomes.

TABLE IV-3: USE OF PREVENTIVE SERVICES IN BULGARIA AND SELECTED EU COUNTRIES^a

	Breast exam (women 50–69) (percent)	Colorectal cancer screening age 50–74 (percent)	Cervical smear test (women 20–69) (percent)	Cervical Cancer death rate ^b (per 100,000)	Influenza immunization (percent)
Bulgaria	10.3	8.5	18	7.9	4.8
Czech Republic	39.8	14.1	46.3	4.9	19.4
Germany	44.7	36.6	58.3	2.5	56.2
France	50.3	13.6	48.7	1.9	66.7
Latvia	23.1	8.5	41.7	5.9	2.9
Hungary	37.4	2.9	35.4	5.7	30.3
Poland	29.4	1.7	35.8	7.1	12.9
Romania	3.5	0.7	4.4	13.4	18.1
Slovenia	25.6	3.3	38.5	3.7	22.3
Slovakia	31.9	9.6	33.1	6.3	24.4

Source: European health interview survey, most recent year available (circa 2008).

^a Percentage reporting use of preventive services within the past 12 months in Bulgaria and selected EU countries.

^b Eurostat 2009 or 2010.

One example is women’s health: only 10 percent of women aged 50–69 received mammography screenings in Bulgaria compared to 23 percent in Latvia and 37 percent in Hungary. Only 18 percent of women aged 20–69 had a cervical smear test in Bulgaria, compared to about 35 percent in Eastern Europe and about 50 percent in Western Europe. Death rates from cervical cancer remain high in Bulgaria but could be practically eliminated by early detection and treatment. Influenza vaccine coverage in Bulgaria is another illustration of the limited focus on prevention care. The World Health Organization recommends immunization for some categories of the population, including the elderly. In Bulgaria, coverage is less than 5 percent, compared to about 20 percent in Eastern Europe and more than 50 percent in Western Europe.

The Ministry of Health has stepped up efforts to improve prevention care in recent years. Most notably, in 2010, the Hib (Haemophilus influenzae type B) and the PcV (Pneumococcal conjugate) vaccines were introduced in line with recommendations from the Centers for Disease Control and Prevention and other international agencies. In 2010, tobacco tax rates were increased sharply, and bans on public smoking were instituted in 2012. These are two commendable policy actions that have had positive proven public health impacts in other countries. The Ministry will launch a National Program for Cancer Screening in 2013 and it is finalizing

a plan to reinforce the prevention of non-communicable diseases.

But the system is not addressing the burden of disease in an efficient way. Though Bulgaria has a high number of physicians per capita compared with other countries, Bulgarians have fewer contacts with primary care and specialist physicians than citizens in other EU countries with the exception of Romania. The number of nurses per capita is by far the lowest in the region. There are 4 nurses per thousand inhabitants in Bulgaria, 6 on average in EU10 countries and 9 on average in EU15 countries. Many nurses have emigrated and in 2011, more physicians than nurses completed their studies. Further, the number of hospital episodes per capita jumped sharply, by 68 percent between 2000 and 2010, as other countries decreased hospitalizations (Table IV-4). As mentioned in the introduction, for reasons of efficiency and quality, most countries aspire to reducing hospitalizations by relying on a combination of prevention and outpatient treatment, particularly for chronic disease management. Bulgaria appears to be moving in the opposite direction. Bulgaria’s hospitals are primarily funded on a case-basis (meaning they receive a payment for each stay), which provides strong incentives to multiply hospitalizations. Expenditure caps have been put in place to counter-balance this but strong incentives remain for hospitals to encourage hospitalizations.

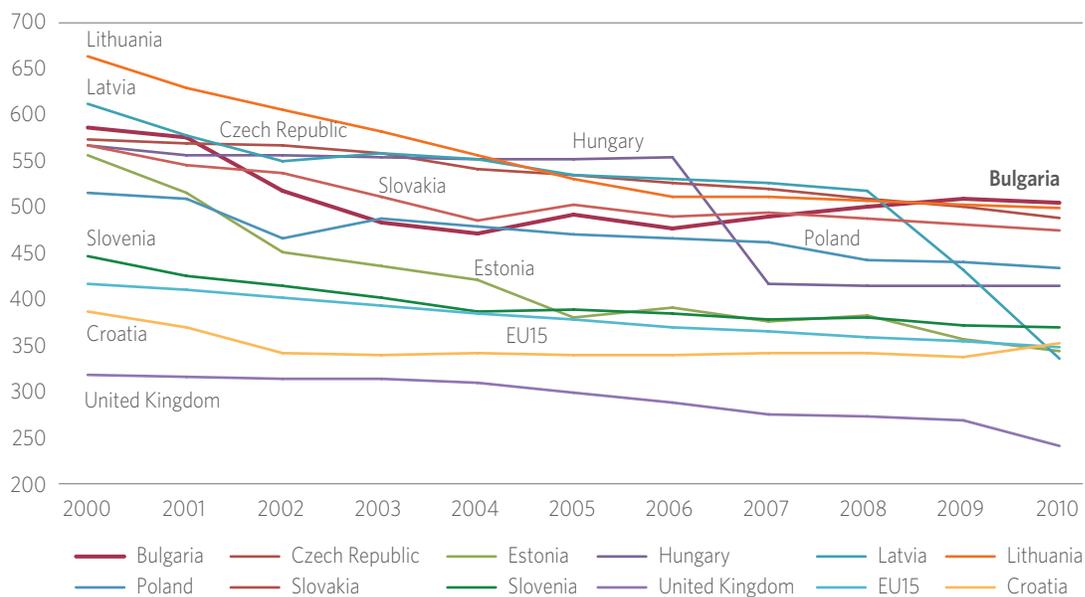
TABLE IV-4: INPATIENT HOSPITAL DISCHARGES BULGARIA AND SELECT EU COUNTRIES^a

Countries	1990	2000	2005	2010
Bulgaria	19.0	15.4	21.0	25.9
Croatia	15.4	15.7	16.6	16.8
Hungary	21.8	23.6	25.0	20.8
Romania	20.1	22.4	24.6	24.9
EU 15	16.9	17.7	16.9	16.9
EU10	16.8	19.0	20.8	21.0

Source: HFA database.

^a Per 100 persons.

FIGURE IV-2: ACUTE CARE HOSPITAL BEDS PER 100THDS



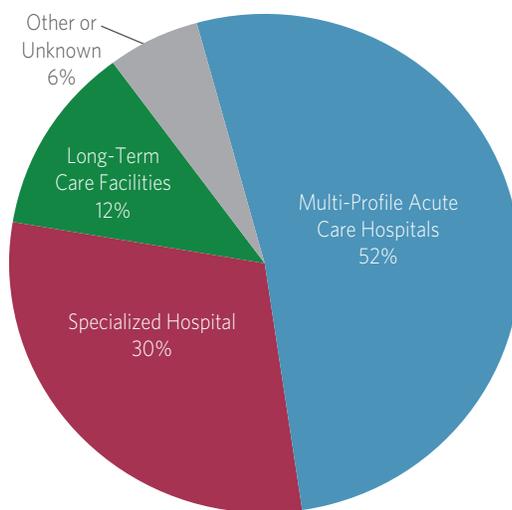
Source: Health for All Database 2011.

ii) Reducing Size and Fragmentation of the Hospital System

Among EU10 countries, Bulgaria has the highest number of beds per capita and, opposite to the trend in most other countries, the number continues to grow. Despite large cuts in hospital infrastructure in the 1990s, EU10 countries and Bulgaria in particular, still have a relatively high stock of hospitals and beds. Figure IV-2 shows the trend in the number of beds per 100,000 since 2000, with the United Kingdom at the bottom for reference. The EU10 and the EU15 are all positioned above the UK.

A significant share of Bulgaria’s hospitals is too specialized to provide the multi-disciplinary quality required for an aging population. The large share of specialized hospitals is a legacy of the Soviet system on the one hand, which relied heavily on the delivery of services through single-specialty hospitals. On the other hand, many new hospital entrants are specialized institutions opting to focus on delivering the most lucrative services. Currently nearly one third

FIGURE IV-3: TYPOLOGY OF HOSPITALS IN BULGARIA

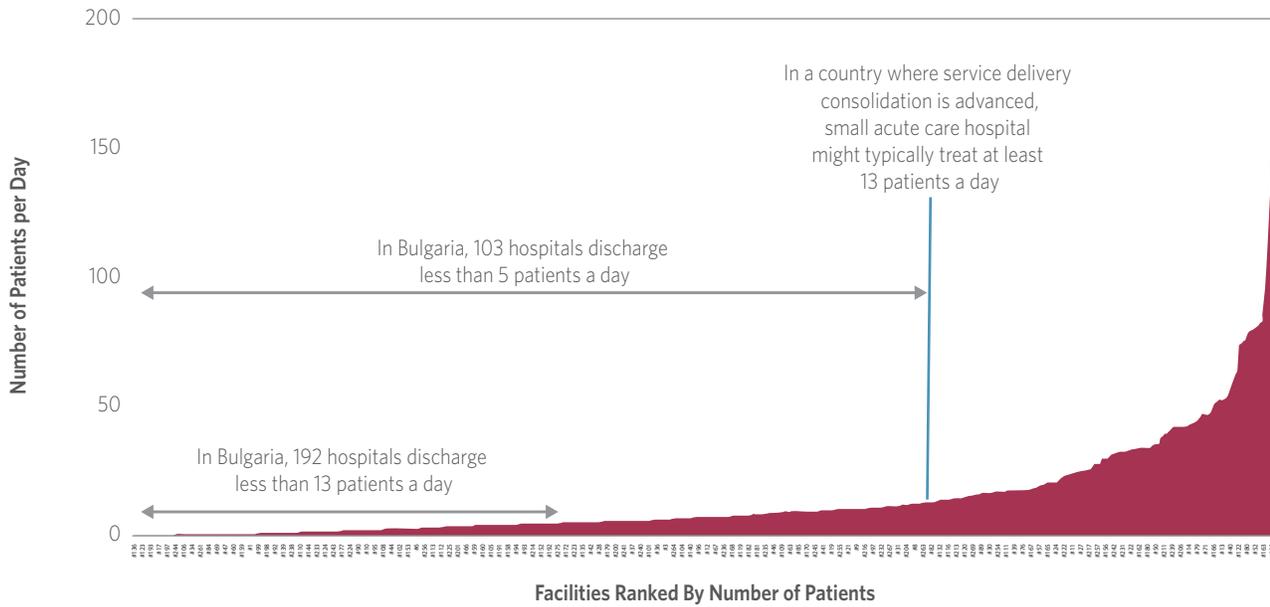


Source: Author’s calculations based on National Center of Health Informatics Data.

of the 275 hospitals contracted by the NHIF are specialized.

Many Bulgarian hospitals have a very low throughput, which is highly

FIGURE IV-4: MONTHLY DISTRIBUTION OF NUMBER OF BULGARIAN HOSPITAL PATIENTS



Source: Author's Calculation based on National Center of Health Informatics Data.

inefficient. Figure IV-4 shows the 275 facilities ranked by number of patients discharged per month. The three busiest hospitals discharge more than 95 patients a day. At the other end of the spectrum, the first 103 facilities account for 5 percent of hospital stays in Bulgaria, which means that approximately one in three hospitals in Bulgaria discharges 5 patients a day at most. Further, if the smallest acute-care hospital in Bulgaria had 130 beds⁵⁴, it could be expected to discharge around 13 patients a day. In Bulgaria, 192 (out of a total of 275) discharge fewer patients than that⁵⁵. The hospital system is therefore fragmented, in other words, composed of an exceedingly large number of facilities that produce very little (and are probably small). There is considerable room for consolidation in the sector.

The fragmentation of hospitals tends to lead to the duplication of resources across facilities, impeding the exploitation of economies of scope and scale that modern health care requires. Competition between facilities hinders the coordination of care; it also hinders the

coordination of investment and thus the capacity to finance and concentrate investment in technology-intensive medical equipment. Technology is one of the keys to improving the performance of the health-care system (Smith, Mossialos, Leatherman and Papanicolaos 2008). In one study, information was collected about medical equipment available in a sample of 10 hospitals. It revealed that that a supposedly sophisticated multi-profile hospital had less equipment than a lower-level facility and a so-called “Comprehensive Oncological Center” appeared to lack the

⁵⁴The assumptions underlying this simulation are plausible. For instance, in the Netherlands, in 2011, the smallest hospital has 138 beds (the threshold used here is 130). Historically, this was not the case: In the 50s, more than half of Dutch hospitals had less than 130 beds, but the system has since been profoundly remodeled. Other assumptions are as follows: the occupancy rate of beds is 70 percent (which is rather low – in 2008 in Bulgaria it was close to 76 percent) and each patient stays 7 days in the hospital (the average length of stay in Bulgaria in 2011 was 5.8 days).

⁵⁵Even accounting for long term care hospitals (less than 35 out of 275) where stays would be longer than in acute care hospitals.

technology required for this type of facility⁵⁶. The 2012 Health Systems in Transition review (Dimova et al. 2012) reports that the material and technical infrastructure of state and municipal health establishments in Bulgaria is obsolete and that substantial funding will be required to modernize buildings and medical equipment.⁵⁷ The consolidation of facilities and investments in medical equipment will need to be strongly coordinated.

iii) *Improving the Allocation of Patients to the Right Setting*

Around 20 percent of hospital stays in Bulgaria are for conditions which, international standards suggest, could be routinely treated on an outpatient basis.⁵⁸ The list of 308 Bulgarian Clinical Care Pathways (CCPs—see footnote 13) was reviewed by an international team of hospital physicians who estimated that 49 CCPs correspond to cases usually amenable to outpatient care, according to international good practices⁵⁹. Between 60 and 100 percent of these episodes could be dealt with without an overnight stay in a well-functioning health care system with properly-staffed primary health care facilities, effective emergency care and a substantial network of “community care” providers, as well as a balanced payment system which provides incentives to treat patients at the right level. Given these conditions, the data suggests that that one in five hospital stays could be avoided in Bulgaria. This proportion of cases corresponding to CCPs amenable to outpatient care varies significantly across hospitals. Approximately 40 percent of hospitals do not appear to provide these CCPs. At the other end of the spectrum, in 20 percent of hospitals, more than a third (and up to 100 percent) of the activity could be amenable to outpatient care. Interestingly, there is no correlation between a hospital’s size and the proportion of activities that could be carried out on an outpatient basis.

Referral patterns highlight some dysfunctions and suggest that the quality and effectiveness of care might be sub-optimal. In theory, an efficient health system should be organized as a pyramid through which patients travel and are elevated when the complexity of their problem requires more specialized resources. On paper, this is the case in Bulgaria but in reality, there are clear signs that it is not happening. For instance, nearly a third of cases are directly referred from general practitioners, which is much higher than one would expect. Another study (Sanigest Europe 2008) found that only about half of the total admissions were planned and the other half (49.3 percent) were urgent (whereas in the UK, for example, about 80 percent of admissions are planned). A number of observations also suggest that the hospital system may not be treating patients effectively. First, at least a quarter of patients are “referred from other hospitals”. If this is genuinely the

⁵⁶ A physical assessment of the state of medical equipment and an audit of their actual use would be required for a complete picture of the state of technology in these hospitals.

⁵⁷ Another important drawback of specialized hospitals is that they are often not financially sustainable and, at the level of individual public facilities, the accumulation of arrears and debts has become a recurring issue. Data on hospital debts and arrears are not readily available.

⁵⁸ Data analyzed here are from the records of each hospital stay reported by hospitals to the National Health Insurance Fund (NHIF) and collected by the National Centre for Public Health & Analysis between July 2011 and June 2012, a total of 1,558,339 anonymous records. These records come from 275 acute and long term care hospitals. Virtually all hospitals with a contract with the NHIF are included with the exception of the military hospitals and mental health facilities. Each record includes information about the patient’s demographic characteristics; diagnoses; medical procedures performed; length of stay. It also includes the Clinical Care Pathway (CCP) selected for the stay. The CCP is the flat-rate payment which is paid to the hospital for a complete stay, there are 308 different CCPs.

⁵⁹ These correspond to chronic conditions which could be treated on an outpatient basis, conditions for which outpatient surgery is a reasonable option and conditions related to rehabilitation or palliative care.

case (and if the treatment indeed required a hospital stay in the first place), it means that the first facility failed to resolve the problem, which should have been the case in the vast majority of cases. The data base also suggests that around 13 percent of the population had at least one hospital stay in the year. For these patients, the average number of hospital stays is 1.6, and around 30 percent of patients were hospitalized more than once in a given year⁶⁰. In the end, the fact that many patients are hospitalized more than once in a year is probably a sign that (i) some of the treatment did not warrant a hospital stay; and (ii) the treatment provided may not be adequately effective.

The continued inefficient allocation of patients is likely to lead to a significant waste of resources. Table IV-5 attempts to quantify the impact of the stays amenable to outpatient care (as defined above) in 5 representative multi-profile acute hospitals. The fact that the average length of stay for these cases is always well above 4 days illustrates the extent to which the system is biased toward in-patient care. In these five hospitals alone, a significant proportion of around 200,000 bed/days could be avoided.

Together, these findings highlight the many ways in which health-service delivery needs to change. First, a significant number of patients are being admitted for problems which could be taken care of on an outpatient basis. The root causes are likely to include the limited availability of outpatient alternatives; payment systems and

regulations which may not encourage or even allow outpatient alternatives; and the lack of incentives to change what has become normal practice. Second, the proportion of cases amenable to ambulatory care does not appear to be correlated with hospital stated complexity or size (measured by activity) which suggests that hospitals are not organized in networks and thus all compete with each other to provide all services rather than try to complement one another.

Policy Options

The introduction of the health insurance fund in 2000 in Bulgaria was seen as a decisive move away from the legacy of the communist regime and towards a West European system (Atanasova et al. 2011). Expectations have not been met and Bulgarians are increasingly dissatisfied with their health care. Resource constraints could possibly explain the lack of improvement, but countries with comparable economic circumstances appear to have achieved better results. The imbalance and ineffective organization of the Bulgarian service-delivery sector is at the

⁶⁰Data on the number of times given individuals are hospitalized in a year is not readily available in most countries. In France in 2008 around 13 percent of the residents were hospitalized once or more (a rate comparable to that of that Bulgaria). Yet, total number of hospitalizations per capita was 40 percent lower in France, meaning that the number of patients with multiple hospital stays is unusually high in Bulgaria.

TABLE IV-5: ACTIVITY AMENABLE TO OUTPATIENT CARE IN 5 MULTI-PROFILE HOSPITALS

Hospital	Level	Average LOS	Min LOS	Max LOS	Number of days	Percent of activity for the concerned hospital
A	2 nd	4.0	1	14	10,091	36.9 percent
B	3 rd	4.8	1	106	60,749	24.4 percent
C	1 st	5.2	3	16	2,076	16.9 percent
D	3 rd	4.8	1	81	68,114	17.9 percent
E	3rd	5.1	1	89	50,895	30.1 percent

LOS: length of stay.

core of the issue, and as illustrated earlier, in the absence of reform, the problems will only get worse as the population ages. **There are no easy or quick solutions. Transforming the health sector will require decisive action on several fronts:**

A key action would be the implementation of a technically-driven hospital rationalization plan to support the reorganization of the hospital sector while maintaining physical access to care. In this context, the National Health Insurance Fund needs to be able to purchase services selectively, i.e., it should be allowed to decide which entities it can contract. To support this process, information on the quality of care needs to be generated, collected and publicized. As shown above, the CCPs generate a host of poor incentives. The implementation of a modern Diagnostic-Related Group (DRG) payment system has been under consideration for many years, but efforts to implement this have not prevailed. Accompanying the introduction of DRGs with expenditure caps and the development of outpatient alternatives through concerted efforts (regulatory and in terms of payment systems) would avoid further escalation of costs.

Strengthening alternatives to hospital-based care would require improving the capacity of primary care health professionals to manage the prevailing burden of disease and to play an active role in the coordination of their patients' care needs. This would require developing an effective and attractive continuous medical education curriculum in light of the current burden of disease and adjusting regulatory standards to expand the list of conditions that can be managed fully in primary care. Stronger incentives and accountability mechanisms would also need to be put in place to increase the management of chronic diseases at the primary care level (pay for performance). Emergency care reforms could help improve the continuity of and access to care.

Providing financial protection to all—so that no one falls into poverty

due to health care costs—is a core objective of the health system. As mentioned above, financial protection provided by the National Health Insurance Fund has significant gaps and OOP expenditures are large in Bulgaria. It is important to note that both large OOP expenditures on drugs, which are more problematic for the poor and the elderly, and exclusions from the regular insurance system are sources of inefficiency in the system. Indeed, patients who forego care or do not manage their existing conditions are at higher risk of complication and ultimately end up costing the public system more. In addition to being equitable, improving financial protection is efficient.

Although the number of physicians per capita is high, the profession's specialty mix is not adapted to the population's needs. The number of nurses per capita is by far the lowest in the region. Solutions could include interventions on various fronts, including planning for human resources, adapting training, and addressing financial and other constraints in order to retain qualified staff in Bulgaria.

Addressing the various issues highlighted in this chapter will require strong and consistent strategic leadership. Transparent debates that articulate clear priorities are likely to improve trust in the health system over time. A forthcoming report on Health Systems in ECA highlights that while there are no specific recipes to building better health systems, the use of information for decision making and strong leadership are crucial. As the report puts it: "Successful reform requires vision and leadership. It means taking on vested interests, whether in the medical establishment, political actors, or elsewhere in society, to usher in new reforms that will help achieve sector objectives." Many experts within the health sector in Bulgaria agree that the system is in need of reforms and support the recommendations presented here, but attempts at reform have so far not been brought to completion.

LONG-TERM CARE EXPENDITURES AND POLICY OPTIONS

One of the most important alternatives to hospital-based care in the context of population aging is the development of the long-term care (LTC) sector. The relatively high average length of hospital stays, discussed in the previous chapter, suggests that improved patient discharge management could cut hospital costs. The aim of patient discharge management is to reduce the length of stay in hospital by referring patients to more cost-efficient LTC services, either within the health system (outpatient services like post-surgical treatments and rehabilitation) or in the social system. The fact that Bulgaria currently spends only 1.2 percent of total health expenditures on rehabilitation suggests a lack of rehabilitative services. In contrast, in other EU10 countries, where such data are available, expenditures on rehabilitative services as a share of total health expenditures is around 2.9 percent. Hospital discharge management of older patients could also involve social workers who can help organize assistance with ADLs after discharge. For older patients who live on their own and lack family support, even a minor injury like a broken leg can leave them temporarily dependent on outside help. Given the overcapacities in hospital beds, hospital management may choose to keep such patients hospitalized until they are fully recovered. This is expensive and also

detrimental to the well-being of older people, because they are exposed to infections in hospitals. A better solution would be to discharge the patient when no more medical treatment is needed and to provide the social support through community-based LTC services.

There is a strong consensus in the literature that population aging significantly increases the demand for long-term care (LTC). The steep decline of the working-age population in Bulgaria raises the question: who will care of the elderly and who will pay for future LTC needs? The urgency of policy action stems from the need to plan future financing needs for LTC services now. While today's workers may be able to finance LTC needs for their parents' generation through a pay-as-you-go system, this is unlikely to be sustainable for future generations. Given current demographic trends, today's workers will not be able to rely on their children to finance their LTC needs. Bulgaria, therefore, needs to find ways to increase earmarked savings for the future LTC needs of today's workers. Financial LTC insurance, like that implemented in France, is one option that could be explored to achieve this.

People in need of LTC services are not only elderly patients but anyone with restrictions in performing activities

of daily living (ADLs). They are hampered in their mobility and in performing such activities as cooking, cleaning, washing, shopping and eating. They are therefore dependent on others to support them in these activities. Their dependency could be the result of a mental or physical disability, but in the case of the elderly it is not necessarily disability, but frailty in general that places them in a position of dependency. In Bulgaria, only 0.7 percent of the population aged 16 to 24 is considered highly dependent, while the same share is 14.5 percent for the population aged 75 to 84, and 23.9 percent for the population aged 85 and older (Table V-1). These shares are somewhat lower than in other EU countries. Still, it is important to constantly assess population growth rates among the old and very old, with an aim to ensuring continued quality of care, since they place most demand on LTC services.

Current Public Expenditures on Long-Term Care

In general, there are few data available on current public expenditures on long-term care. This makes it particularly difficult to compare expenditures across countries. The undefined position of LTC between the health and the social sectors also makes it difficult to accurately collect data. The OECD (2008) developed a System of Health Accounts (SHA) where LTC comprises the following categories of services: (i) in the health sector: palliative care; long-term nursing care (including accommoda-

tion in nursing homes); personal care services to assist with ADLs; and services and financing in support of informal (family) care; and (ii) in the social sector: home help and care assistance; residential care services other than nursing homes; and other services like daycare and transportation.

Available data suggests that Bulgaria and other EU10 countries spend relatively little on LTC. Total public and private expenditure on LTC in Bulgaria is shown as ranging between nil and 0.2 percent of GDP,⁶¹ placing it among the European countries that spend least on LTC. The data on LTC available in the OECD SHA database shows considerable variation across countries and time. High-income countries like Sweden currently spend as much as 3.7 percent of GDP on LTC. In contrast, the EU10 countries report spending less than 1 percent of GDP on long-term care. The data also shows strong variations over time for some countries. To illustrate, Latvia recorded expenditures on LTC of LAT111.04 million in the social sector in 2005, while in 2006 this expenditure category is missing.

Countries probably spend more on LTC than the SHA data suggests. The SHA data on LTC has a strong bias towards health sector data, with data on expenditures in the social sector largely absent, especially for EU10 countries. Focusing on public LTC expenditure can help overcome this bias though at the expense of narrowing the scope of the analysis. In most countries, the largest

⁶¹ Excluding the outlier in 2005.

TABLE V-1: SHARE OF HIGHLY DEPENDENT PEOPLE BY AGE GROUP IN 2008

	16-24	25-34	35-44	45-54	55-64	65-74	75-84	85+
Bulgaria (2011)	0.7	1.3	1.3	1.6	5.1	7.3	14.5	23.9
Bulgaria (2008)	1.0	0.9	1.6	3.1	5.9	10.1	14.9	30.1
EU-average (2008)	1.5	2.3	3.8	6.9	10.9	14.6	25.0	39.5

Source: Eurostat (2013).

Note: Based on self-reporting.

share of public expenditures for LTC in the social sector, in particular for the elderly, occurs at the level of local government. This decentralized financing of LTC services makes it difficult to obtain consolidated national expenditure data. A recent initiative by the World Bank focuses on developing databases for consolidated government expenditures to include expenditures at all government levels. This will enable the collection of detailed public expenditure data on LTC at the local level as well as consolidated administrative data from the Ministry of Social Policy. A first detailed analysis of such data was recently conducted in Poland. It showed that estimated public expenditures on LTC in the health and social sector were at 1.0 percent of GDP in 2007, in contrast with estimated *total* expenditures, including private expenditures, of

0.4 percent estimated by the SHA. Table V-2 lists total expenditures on LTC (as a percentage of GDP) only for countries where expenditures are relatively constant over time, which suggests at least consistency of data collection within countries.

Bulgaria's public expenditure on LTC in social sectors is estimated to amount to 0.22 percent of GDP in 2012.

Total public expenditures on LTC increased somewhat from BGN 154 million in 2010 to BGN 168 million in 2012 (Table V-3). Total public LTC expenditures include expenditures for incapacity, temporary incapacity, disability, and support for the elderly in the social sector, but exclude any spending on LTC in the health sector or any private spending on LTC. Cash benefits or social security benefits, unless specifically assigned

TABLE V-2: TOTAL LTC EXPENDITURES AS A SHARE OF GDP IN SELECTED COUNTRIES

	2003	2004	2005	2006	2007	Average
						2003-2007
Sweden	3.8	3.8	3.7	3.7	3.6	3.7
Germany	2	2	2	1.9	1.9	1.9
Japan	1.6	1.7	1.7			1.7
France	1.4	1.5	1.5	1.6	1.6	1.5
Austria		1.3	1.3	1.3		1.3
Slovenia	1.1	1.1	1.2	1.2	1.1	1.1
United States	1	1	1	1		1
Latvia			1.4	0.2		0.8
Spain	0.7	0.7	0.7	0.7	0.8	0.7
Lithuania		0.4	0.4	0.4	0.5	0.4
Poland		0.4	0.4	0.4	0.4	0.4
Hungary	0.3	0.3		0.2	0.2	0.3
Czech Republic	0.3	0.2	0.2	0.3	0.3	0.3
Estonia	0.1	0.1	0.2	0.2	0.2	0.2
Portugal	0.1	0.1	0.1	0.1		0.1
Bulgaria	0	0.1	0.2	0	0	0.1
Romania	0	0	0	0	0	0
Average	1.2	1.2	1.2	1.1	1.1	1.2

Source: Eurostat.

Note: The 2005 value for Hungary (8.23 percent of GDP) was dismissed as an outlier.

TABLE V-3: GOVERNMENT EXPENDITURE ON LTC ACCORDING TO GOVERNMENT EXPENDITURE DATA (BGN)

	Capacity			Expenditures			Expenditures per capacity		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
LTC institutional									
Homes for elderly	5,318	5,427	5,462	30,014,946	31,621,851	31,036,724	5,644	5,827	5,682
Homes for adults with disabilities	4,159	3,734	5,317	40,346,110	39,072,828	37,765,306	9,701	10,464	7,103
Centers for social rehabilitation and integration	1,958	2,547	3,139	4,754,425	5,833,034	6,687,367	2,428	2,290	2,130
LTC community-based									
Domestic social patronage, public canteens	38,030	38,390	38,554	43,228,311	45,540,252	46,569,962	1,137	1,186	1,208
Clubs for pensioners, disabled people	n.a.	n.a.	n.a.	6,283,563	7,476,566	6,584,993	n.a.	n.a.	n.a.
Daycare for elderly	1,388	1,413	1,423	2,493,591	2,760,346	3,030,603	1,797	1,954	2,130
Daycare for adults and children	2,376	1,913	3,388	15,877,149	17,799,745	18,706,607	6,682	9,305	5,521
LTC home-based									
Foster care for children and adults	627	993	1,286	5,897,778	8,889,981	11,377,950	9,406	8,953	8,848
Shelters	875	959	941	5,415,328	5,975,322	6,488,754	6,189	6,231	6,896
Total	54,731	55,376	59,510	154,311,201	164,969,925	168,248,266	2,819	2,979	2,827

Source: Administrative data.

to support care or care givers, and most importantly old-age or disability pensions, are also excluded.

Providing Long-Term Care Services

Reforms that focus on community-based services like home care and day care for the elderly are likely to lead to more efficient and produce better outcomes. Institutional care is an important component of any LTC system, but it results in higher-intensity care and is more expensive; it is also often not the preferred form of care by patients. The conversion of small municipal hospitals into institutional LTC facilities is a good example of how well-intentioned LTC reform can lead to inefficient outcomes.

International experience shows that many countries at some point in their history have converted redundant municipal hospitals into LTC institutions. These reforms however bear that risk of introducing a bias towards expensive institutional care into a country's LTC system. Poland is a good recent example. Some years ago, Poland started to convert small hospitals into medical nursing homes, run and financed by the health sector, that were intended to provide post-surgical treatment at lower costs than in regular hospitals. The unintended consequences were that, given the general shortage of LTC services in Poland, patients and their families continued to use the medical sector as a substitute for social LTC services, at a much higher price than this could be done in the social sector. This came about because medical nursing

homes were largely financed by the health insurance fund and came at a much lower price for patients than private or social sector LTC services. Private sector response was dampened because for-profit and even non-profit organizations could not compete with the lower user fees in medical nursing homes. Municipalities, who finance most of the social LTC services, also found it cheaper to shift patients to the health sector than to provide their own social services.

A better approach would be to convert redundant municipal hospitals into privately or publicly owned community centers that provide a whole range of LTC and rehabilitative services. Such community centers would be at the center of care coordination for patients. They could house day-care centers for elderly and disabled people (or even childcare), but also offer outpatient services like physical therapy. They could host home-based services like care assistants or community nurses who support dependent people in their homes. To the extent necessary, they could of course also provide limited facilities for residential care, in particular respite care and temporary care. The exact setup of such community centers would depend on local needs and circumstances and also have to be balanced against transportation costs in sparsely populated areas. High transportation costs could in fact justify more residential care facilities with low levels of care intensity.

Finally, provider payment mechanisms should ensure a level playing field for competing public and private providers. If public providers are subsidized, either directly from the municipal budget through staff salaries or through capital investment subsidies, then private sector providers will be unfairly disadvantaged and private sector provisioning of LTC services might be dampened if these subsidies are not passed on to private providers as well. Often, this is not the case, and services procured from private providers are reimbursed at substantially lower rates.

Financing of LTC Services

Some form of pooling of LTC risks is desirable from an economic perspective.

As demand for LTC services is expected to increase dramatically, so are its costs. Individuals who lose their ability to live independently are therefore at risk of becoming impoverished. Evidence from Austria suggests that the estimated income and assets of an average Austrian pensioner would finance only about four months of institutional LTC. This compares to an average length of stay of 35 months. As the need for LTC is a low-probability, high-cost event, economic efficiency requires some form of risk-pooling to allow people to protect themselves against the adverse financial impact of LTC needs. Hence, not only for reasons of equity, but also for reasons of economic efficiency, individuals should pool their resources to protect themselves against the risk of becoming dependent, just as they should protect themselves against the risks of sickness.⁶² For various reasons related to asymmetric information, risk selection, adverse selection, and cost uncertainty, the potential for private LTC insurance to provide *in-kind services* is limited and in practice, it has not been very successful.⁶³ This suggests that there is a need for the public sector to play a role in providing adequate instruments for pooling old-age dependency risks.

The most common forms of publicly provided risk-pooling are financed by contributions to social security and health benefits, and tax-financed benefits like social safety nets. For LTC, most countries use both mechanisms to finance expenditures. For example, in the United States, the contribution-financed, universal Medicare program provides limited LTC

⁶² See Baeza and Packard (2006) for a discussion on risk-pooling in general, and Chakraborty, Hofmarcher, and Koettl (2010) on risk-pooling for LTC specifically.

⁶³ See Chakraborty, Hofmarcher, and Koettl (2010) for a more detailed discussion.

benefits for the elderly. Any LTC needs exceeding these limited benefits have to be paid by beneficiaries. If beneficiaries cannot afford these services, the tax-financed Medicaid program, a social safety net, provides at least a minimum level of LTC services. Austria has a tax-financed universal cash benefit that pays benefits based on dependency levels. Yet, these cash benefits are not sufficient to cover all formal LTC costs, in particular institutional care, and so the tax-financed social assistance program pays all costs for institutional care that cannot be covered by beneficiaries. Germany has a universal, contribution-based social LTC insurance, but also uses its social assistance program to pay for LTC costs that cannot be covered from the by beneficiaries.⁶⁴ There is evidence that tax-financing, in particular via social safety nets and infrastructure investments, is being increasingly used to finance LTC services. Even in Germany, 20 percent of total expenditures on LTC have been financed via general taxation between 2004 and 2007.

Based on successful policies from its European counterparts, Bulgaria could apply a mixture of instruments to finance LTC services. It seems that applying a mixture of instruments would give the government additional flexibility to adjust to changing conditions. They range from means-tested to universal entitlements; from privately paid or insured to tax and contribution-financed benefits and from defined contribution-type to non-defined contribution-type benefits. Contribution-based benefits have the advantage of earmarked spending while tax-financed benefits put less of a burden on labor income. Universal entitlements might have the benefit of broad political support and may foster social cohesion while social safety nets act as benefits of last resort and as an important means of avoiding old-age poverty. Supplemental and complementary private LTC financing instruments, in particular LTC insurance could serve those who are willing and able to pay more for enhanced LTC services, and for better accommodation and

services which are excluded from standard coverage.⁶⁵

Still, nearly all of these instruments rely on pay-as-you-go financing mechanisms, which are highly unsustainable in a rapidly aging society. The urgency of LTC reform comes from a need to convince current workers aged 15 to 45 to start saving for their own future LTC needs now, in addition to having to pay for the LTC needs of their parents' generation. Ever-smaller cohorts of younger people will follow these workers. Once today's young workers begin to retire, any system relying on inter-generational solidarity will become increasingly unsustainable and will require large amounts of debt to be paid off by future generations.

If, on the other hand, private savings earmarked for the LTC of today's young workers were increased, these savings could be used to support increased spending on LTC as this large group of cohorts grows older. This implies a buildup of reserves, perhaps through a fully funded component, and could exist either within social insurance or tax-financed funding systems. If this does not happen, future generations will either face much higher contributions and tax rates, or LTC benefits will have to be significantly decreased to ensure sustainability.

Yet, given the political and practical challenges of building up financial reserves within a public system, Bulgaria should also consider the experience of France. In France, unlike in most other European countries, a small private insurance market for LTC provides supplementary LTC benefits. The market for private supplemental LTC insurance increased by 15 percent a year between 2000 and 2007

⁶⁴It should be stressed, though, that safety nets that support those in need of LTC usually have poverty reduction as their primary objective, and not providing LTC *per se*.

⁶⁵For private insurance classification, see Mossialos (2002).

and now covers 4 million people.⁶⁶ The key to the program's success appears to be its relatively simple design. Benefits are clearly defined in cash terms and based on disability levels. This makes the handling of claims much easier than insurance products, which are based on reimbursements of services (as in the United Kingdom or the United States). In fact, the French model is based more on financial products, like life insurance, than on health insurance products.⁶⁷ Monthly premiums are leveled, but not guaranteed, and are offered either at an individual or group rate. Eligibility for the benefit is based on total or partial irreversible loss of autonomy, upon which the insurance pays a lifetime annuity of €300 to €2,500 per month (€600 on average). The uncertainty about future LTC costs is thus eliminated, and other features that cripple private LTC insurance in many countries are also reduced. In the future, though, as the market for these products matures in France, additional benefits, including in-kind benefits, could be added.

Policy Options

As demand for LTC services is bound to increase strongly with population aging, Bulgaria would need to consider options of scaling up LTC services in a financially sustainable way. Providing better LTC services would not only protect older people who become dependent from falling into poverty, it could also improve the efficiency of Bulgaria's health sector and reduce the need for informal care-givers, who are likely to become less available as labor becomes scarce. Going forward, Bulgaria could thus consider the following policy options:

Future investments in LTC and rehabilitative service facilities could convert municipal hospitals into community cen-

ters. These centers could be privately or publicly owned⁶⁸ and provide a range of LTC and rehabilitative services, including home-based and daycare services.

Existing community-based LTC will need to be carefully evaluated before a country-wide rollout. Some municipalities, with the support of NGOs like the Red Cross, already seem to have successfully implemented temporary home-based services or even residential LTC services that take care of elderly patients who do not require hospitalization.

With regards to linkages to the health sector, it is important that the coordination of care services between health and the LTC sector focuses on patient needs and efficiency gains rather than cost implications for either the health or the social sector. Cost shifting between the sectors should be avoided as much as possible.

Because costs for LTC can become catastrophically high, some form of risk-pooling is desirable. As pay-as-you-go financing mechanisms are unsustainable in an aging society, earmarking private savings of young workers for LTC through, for example, financial LTC insurance could be an option worth exploring.

It is essential that Bulgaria improve its data collection and recording practices on LTC services to develop effective and fiscally responsible policies in this area. The OECD SHA methodology gives good guidance on how to record public (and private) expenditures, and it is important that Bulgaria strengthen its efforts along these lines, also at the local government level.

⁶⁶ See Le Corre (2008).

⁶⁷ This product is a typical LTC annuity. For other insurance products covering LTC risk, see Więckowska (2006).

⁶⁸ Centers could also be run by NGOs.

THE EFFECT OF DEMOGRAPHIC CHANGE ON THE PENSION SYSTEM

The future of the Bulgarian pension system largely depends on demographic developments that have already taken place. As Bulgaria's baby boomers, now aged 55–65, start to retire in large numbers, pension fund revenues will fall while pension expenditures rise. At the same time, Bulgaria's pension system will experience the effects of the post-transition demographic shock that came about as a result of the economic turmoil of the early 1990s. In the post-transition years, fertility rates in Bulgaria were among the lowest in Europe. Although they have since increased and are currently in line with regional averages, the drop led to fewer women of reproductive age today. As a result, even if fertility rates were to increase to replacement levels today, the impact would only be felt after the worst of the demographic crisis around 2050 occurs. In addition, between 1990 and 2010 Bulgaria also saw its working-age population contract by about 12 percent. Low births in the past and high emigration have led to very few cohorts of 0–20 year olds joining the pension system today.⁶⁹ This development imposes significant challenges to restoring fiscal sustainability.

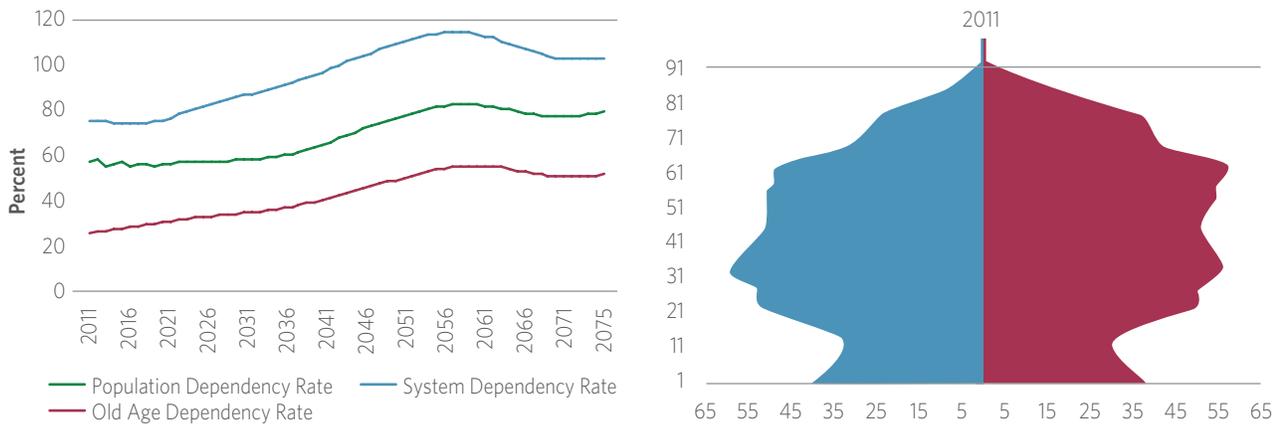
Dependency rates are expected to increase markedly over the coming decades. Rapid aging of Bulgarian society

will impose severe challenges to the pension system. The population over the age of 65 is projected to increase by about 60 percent as a share of the total population between 2011 and 2075.⁷⁰ On top of that, the working-age population between the ages of 15 and 64 is projected to decline by more than 50 percent by 2075. The relative size of the elderly population is also projected to grow faster than the working age population due to low fertility rates in the past as well as gains in life expectancy at older ages. Consequently, the old-age population dependency rate, defined as the number of elderly per 100 working-age persons, is estimated to double from 25 percent in 2011 to 51 percent in 2075. Adding children under the age of 14 would mean that 100 working-age persons supported 77 dependents in 2011. The definition of working-age population in fact understates the severity of the situation as most people begin employment much later than age 15. The dependency rate that best captures reality is expressed through the system dependency rate, defined as the number

⁶⁹ This is also illustrated by the changing shape of the population pyramid for 2011 in Figure VI-1.

⁷⁰ The projection period in this chapter is extended to 2075 as pension system analysis requires long term projections spanning a lifetime of a generation.

FIGURE VI-1: DEPENDENCY RATES AND POPULATION PYRAMID



Source: United Nations Population projections, NSSI Bulgaria administrative data.

Source: PROST projections based on data from the United Nations Population Division (2011).

of beneficiaries relative to the number of contributors. This statistic stood at 75 elderly or disabled persons per 100 contributors. It is projected to reach 109 such beneficiaries per 100 contributors by 2050. The situation is expected to improve after 2050 as the inflow of new retirees decelerates, reflecting the smaller number of post-transition cohorts retiring (see Figure VI-1). However, at that point, 25 percent of the elderly will not be eligible for a pension because they will not have contributed long enough.⁷¹

The Bulgarian pension system, like many in Europe, will have to adjust to these adverse demographic developments. Spending cuts can be achieved either by reducing the number of beneficiaries through tighter eligibility criteria, decreasing the generosity of benefits, or shortening the length of time benefits are given. The menu of reform options to increase revenue includes increased coverage of the working-age population or higher contribution rates. Bulgaria has implemented a mix of these reforms through modest increases to the retirement age, essentially reducing the time spent in retirement, and through changes to the benefit formula and indexation mechanisms to control pension levels. Despite these reforms, the Bulgarian pension system will likely continue to run deficits in view of the projected

shrinking of the labor force and the established difficulty of increasing coverage among the working-age population. Experience shows that over the last decade, the government has on occasion overridden reforms prescribed by law through the implementation of various discretionary adjustments, including ad-hoc pension increases and Christmas bonuses. For example, despite only partial pension indexation to wage growth, pension benefits have grown in line with wages between 2000 and 2011 and the ratio of the average old-age pension to the average economy wage has remained relatively constant.

Key Features of Bulgaria's Pension System

Bulgaria's pension system follows a multi-pillar design. Table VI-1 captures the organization of the Bulgarian pension system. It incorporates a mandatory, defined-benefit first pillar that's financed on a pay-as-you-go basis; a mandatory, fully funded second pillar as well as voluntary fully funded third pillar. The third pillar has low accumulated assets and is therefore of

⁷¹ They could become eligible for a social pension at age 70 if they satisfy a means test.

TABLE VI-1: STRUCTURE OF THE BULGARIAN PENSION SYSTEM

Zero Pillar	Pillar I	Pillar II	Pillar III
Non-contributory	Contributory Earnings-related (ER)	Contributory Earnings-related (ER)	Contributory Earnings-related (ER)
Universal social pension	Defined Benefit (DB)	Defined Contribution (DC)	Defined Contribution (DC)
State Budget Financed	Pay-as-you-go (PAYG)	Fully Funded	Fully Funded
Means tested social pension	Mandated (employed, self-employed, farmers)	Mandated for individuals born after 1959	Voluntary
Reformed in 2000–2003	Reformed in 2000–2003	Introduced in 2002	Introduced in 1999

Source: Authors' notes.

little consequence for the discussion of average-benefit adequacy. The main objective of the second pillar is to enhance benefit adequacy and, with the exception of the transition costs involved, does not affect public finances. The first pillar matters both in terms of adequacy and public finances and is therefore the focus of this chapter. The system also includes a non-contributory zero pillar providing a means-tested social pension to individuals above age 70. The structural reforms that shaped the existing pension system took place between 2000 and 2003. Table VI-2 outlines the respective

pension amounts provided from Pillars Zero and I based on years of contributions and income. In 2011 the average old-age pension for an individual with a full career, increasing to 37 years for women and 40 years for men, amounted to 279 leva or 47 percent of the average insured wage. Pillar I includes a minimum pension guarantee that amounted to roughly 23 percent of the average insured wage in 2011. The objective of the minimum guarantee is to ensure a pension floor for lower-income earners.

Coverage of the working-age population is relatively low; currently the

TABLE VI-2: PENSION BENEFIT TYPES PROVIDED BY PILLAR 0 AND I IN 2011

	Pillar I	Pillar I Minimum Pension Guarantee	Pillar I Minimum Pension Guarantee with partial career	Zero Pillar Social Pension
Age	Age: 63m/60f	Age: 63m/60f	Age: 65	Age: 70
Years of Service	37m/34f	37m/34f	Minimum of 15	—
Benefit Formula	AR*IP*IC*AMII	Flat Amount	AR*IP*IC*AMII	Flat Amount
Financing Mechanism	Contributory	Contributory	Contributory	Non-Contributory, Means-Tested
Pension Amount in 2011	Average: 279 leva	Minimum: 136.06 leva	85 percent of Min. Pension Guarantee, 115.67 leva	100.86 leva
Percent of average insured wage	47 percent	23 percent	20 percent	17 percent

Note: Old age pension benefit formula: Old Age Pension = Accrual Rate * Insurance Period * Individual Coefficient * AMII^a.

^a Accrual Rate is currently 1.1 percent per insurance year. The Insurance Period consists of contributory and non-contributory periods for which contributions have been paid by the State; the Individual Coefficient is the ratio of an individual's average insurable income and the national average insurable income, the average is calculated from (i) the best three consecutive years out of the last 15 years of service before 1 January 1997 and (ii) the whole period after 31 December 1996. Currently, the reference period for calculating average insurable income is 18 years, this is gradually extended to the total length of service for persons entering the labor market after 1993. Lastly, the average national monthly insurable income is the income for the previous 12 months before retirement.

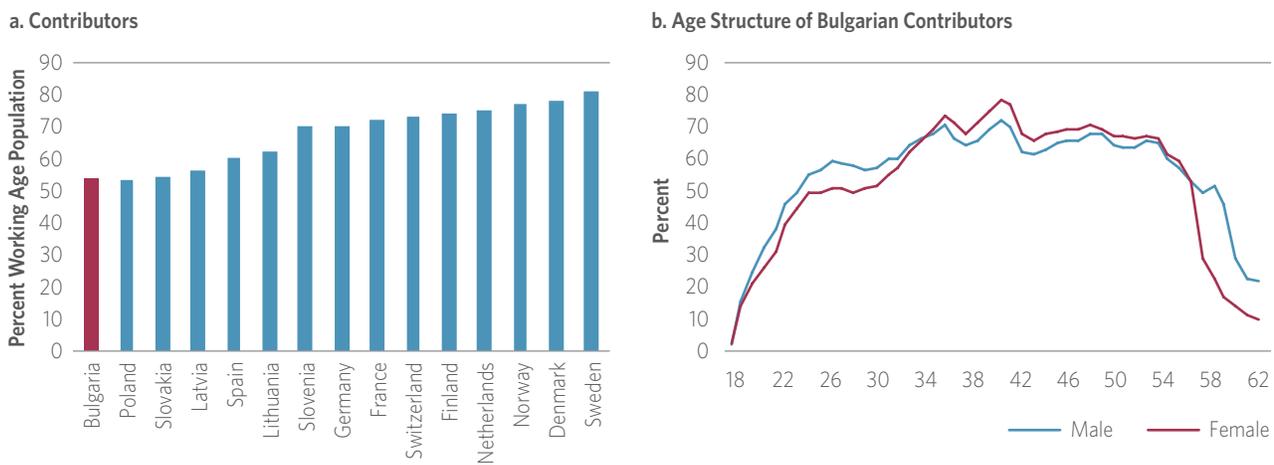
highest potential for expansion is among the youth and persons over the age of 55. Although coverage rates stood at just above 50 percent in 2011, they are not strikingly different from other EU10 countries (Figure VI-2a). Coverage rates are indeed higher among West European countries, mostly because of higher statutory retirement ages; however none exceeds 80 percent coverage. Coverage is particularly low among the youth, reflecting high youth unemployment rates (Figure VI-2b). Youth aged of 25–34, which are most likely to have already completed their education, present the largest opportunity for contributor expansion. At the other end of the age spectrum, there is evidence that a large number of people still leave the labor force before reaching age 65. Postponing retirement would increase coverage among older workers. This is especially true for women whose official retirement age is lower than that of men.

The primary objective of pension systems is to protect individuals from social risks like old age, disability and the loss of a breadwinning partner. Therefore expanding coverage to include as many people as possible should be among policymakers’ top priorities. However, policy makers first need to evaluate the potential negative impact on long-term fiscal sustainability, given the cur-

rent financing gap. The PAYG pension system promises to support replacement levels that cannot be adequately financed by the current low contribution rate. Attracting more contributors today would certainly result in higher revenues; however in the absence of reform, it would also lead to more pension liabilities when those contributors reach pension age. The menu of solutions to this problem entails raising contribution rates, raising retirement ages or reducing the level of the pension benefit.

In an effort to draw in more workers, the government in 2006 reduced contribution rates. The net effect was a sharp decline in revenue. While the number of contributors did increase during that time, this cannot be solely attributed to the lower contribution rates, and the higher numbers of contributors did not compensate for the lower contribution rates. Other important factors included high GDP growth, the echo-boomer generation (the children of the baby-boomers) joining the labor market and improved enforcement efforts. Figure VI-3a compares contribution rates across 28 European countries highlighting the particularly low rate in Bulgaria. This is noteworthy because pension spending levels and replacement rates are comparable across these countries and Bulgaria has significantly less favorable demographics. The

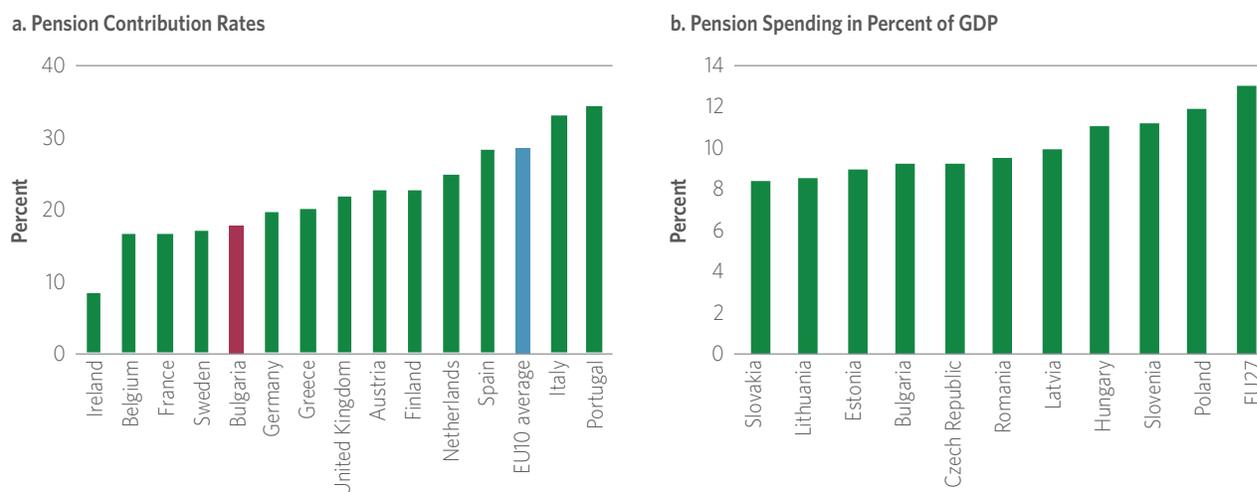
FIGURE VI-2: CONTRIBUTORS AND THEIR AGE STRUCTURE IN 2011



Source: Administrative data and Staff notes.

Source: NSSI Bulgaria administrative data.

FIGURE VI-3: PENSION CONTRIBUTION RATES AND SPENDING IN PERCENT OF GDP IN 2010



Source: United States Social Security Programs throughout the World, Europe 2012

Source: ESSPROS.

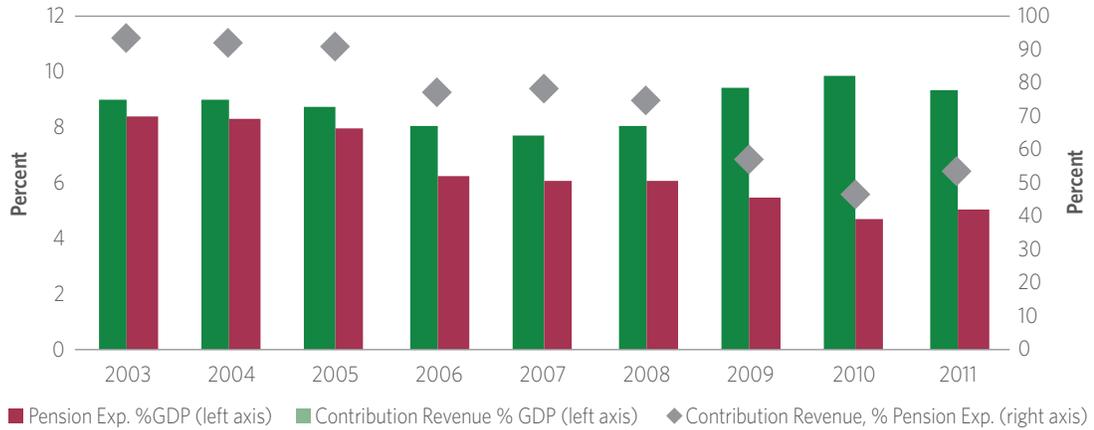
total contribution rate, financing both Pillar I and Pillar II, stood at 17.8 percent in 2011. Individuals born after 12.31.1959 participate in both pillars and contribute 12.8 percent to Pillar I and 5 percent to Pillar II. Since participation in the second pillar is only possible for individuals born after 12.31.1959, those born prior to 1960 contribute the entire 17.8 percent to the state pension system. This low pension contribution rate means that the role of the government in financing social insurance has grown to account for almost half of all pension spending. Therefore, any further cuts in pension contribution rates should be assessed very carefully in light of this recent experience and the projected fiscal needs of the pension system.

The Bulgarian pension system is currently not self-sustaining, relying significantly on state subsidies. Employee and employer contributions financed only 53 percent of pension expenditures in 2011 (Figure VI-4). The increasing role of the government in financing social insurance through tax revenues raises serious concerns about its financial stability today and in the future, as our projections confirm. Consistent with European Commission findings in the 2012 EU Ageing Report (European

Commission 2012a), the PAYG scheme, although not fiscally self-sustaining, could continue to function as is if the role of the government in financing pension expenditures, which corresponds to about 6 percent of GDP, remains as significant as it is today.

The fact that the system is not self-sustaining does not only raise concerns about fiscal sustainability, but also equity. The equity of the system of income provision for the elderly will be increasingly questioned as today's near-universal coverage of the elderly will be replaced by a sharply lower coverage rate of the elderly in the future. Sizable government subsidies may not be of particular concern today, when almost everyone above the age of 65 gets a pension. However, the number of people who have a right to a pension is projected to decline significantly. This will only become apparent as the first generation of people who started working in the 2000s begins to retire. The projected decline in elderly coverage is the result of high unemployment and sporadic contribution patterns attributed to movement between formal and informal labor. These circumstances create a significant barrier for individuals to meet old age pension eligibility conditions. Currently, in a given month, the

FIGURE VI-4: FINANCIAL PERFORMANCE OF SOCIAL INSURANCE



Source: NSSI.

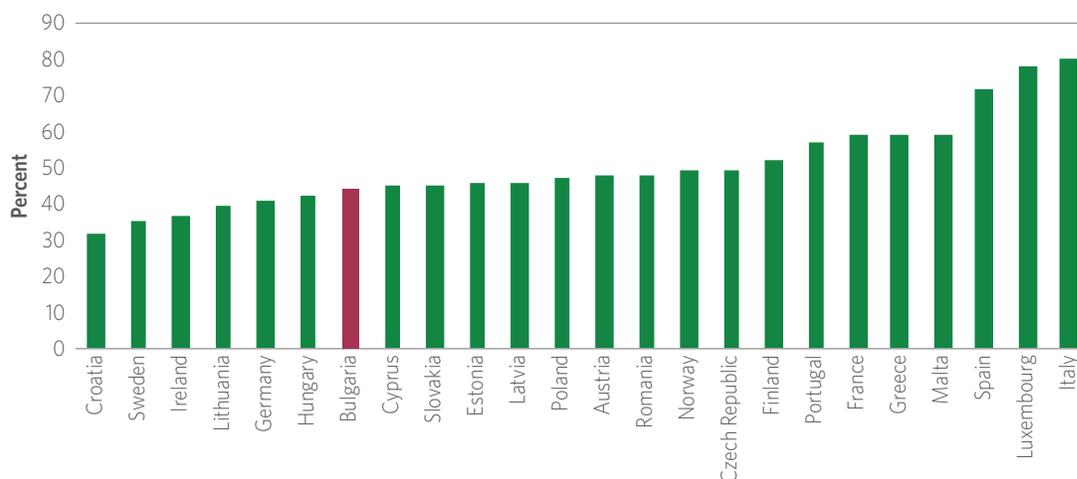
Bulgarian pension system covers only about 55 percent of the working-age population. Continuing to subsidize an increasingly smaller group of elderly people with state revenue finances and excluding a large proportion of the life-long poor raises serious concerns about the fairness of the system of income provision to the elderly as well as its social sustainability. In addition, people with pension rights are likely to be wealthier than those without, as generally people who have worked in the formal sector and have accumulated pension rights tend to have had higher earnings in their lifetime.

Despite a markedly lower pension contribution rate and worse demographics, Bulgaria’s pension system promises replacement rates of roughly 47 percent of average wage, in line with regional averages. Gross replacement rates in Bulgaria are similar to those provided by countries experiencing more favorable demographics and with significantly higher pension contribution rates (Figure VI-5). Recent reforms to the benefit formula are expected to control the level of generosity through a closer link between contributions paid and benefits received. Previously, an individual’s pension was based on earnings averaged over the best three years during the last fifteen prior to retirement, while the reformed benefit formula

takes into account average career earnings. However, the benefit formula also applies an accrual rate of 1.1 percent per year, scheduled to increase to 1.2 percent in 2017. This accrual rate translates into replacement rates of 41 percent for women and 44 percent for men. With a replacement rate of 44 percent and a system-dependency rate⁷² of 75 percent, the PAYG pension system would require a pension contribution rate of 33 percent in order to be fiscally self-sustainable. Even accounting for the formalized government contribution of 12 percent of covered wage bill, the combined contribution rate still falls short of closing the financing gap. The percentage of pension expenditures financed by the state budget grew from about 16 percent in the early 2000s to over 50 percent in 2011. As a result of the mounting financing gap, the Bulgarian government became a “third insurer” in 2009, contributing 12 percent of the covered wage bill. Despite the formal introduction of a third insurer, the combined contribution rate remains insufficient to meet pension liabilities. The projected replacement level would require an even higher contribution rate in order to attain fiscal balance.

⁷² The system dependency rate is defined by the ratio of the number of pensioners to the number of contributors

FIGURE VI-5: GROSS REPLACEMENT RATES



Source: Administrative data and staff notes, latest years.

Impact of Recent Reforms

Bulgaria's pension system has undergone a number of well-designed systemic and parametric reforms over the last two decades. The reforms of 2000–2003 transformed the traditional pay-as-you-go system into a multi-pillar structure, including a fully funded mandatory second pillar as well as a voluntary and fully funded third pillar. The motivation behind the structural reforms included a weak link between contributions and benefits in the public scheme. The system was providing low and nearly flat-rate pensions; the maximum pension benefit amounted to three times the minimum pension. The average pension benefit was less than 30 percent of the average wage. The low benefit levels provided little incentive for individuals to declare their earnings and pay into the system. In addition, the emergence of the informal economy further enabled individuals to evade pension contributions, rendering the public system largely ineffective. The reforms to the public scheme aimed to alleviate these issues through the introduction of a fair and simple benefit formula that provided a strong link between contributions and benefits. Additional reforms to the public

pillar included increased eligibility conditions for an old age pension, a shift towards full-scale inflation indexation of pensions, as well as a comprehensive overhaul of early retirement programs. The second and third pillars were introduced to provide an additional vehicle for savings and risk-diversification. While the reforms to the old age program were both well designed and effectively implemented, some, such as postponing the retirement age, resulted in increased pressure on the disability program. Disability rolls began to swell as people who wanted to retire but were prevented from doing so by the new legislation applied for disability benefits. The flood was stabilized through stricter eligibility criteria and more effective enforcement.

Bulgaria recently accelerated reforms to increase the eligibility conditions for a pension. Nevertheless, there remains a differential between genders in retirement ages as well as in length of service needed to obtain a pension. The parametric change with the strongest impact is the increase in the retirement age. By 2017, it will reach 65 for men, up from age 63.8 today and 63 by the year 2020 for women, a slightly larger jump from 60.8 in 2013. Similarly, the length of service required to obtain

TABLE VI-3: SUMMARY OF MAIN LEGISLATED REFORMS

Parameter	Pre-2010/2012 reforms	Post-2010/2012 reforms ^a
Retirement age	63m/60f	65m/63f
Length of service requirement (LOS)	37m/34f	40m/37f
Indexation of pensions	Swiss Indexation	CPI Indexation
Contribution rate Pillar I (switchers)	12.8 percent	12.8 percent
Contribution rate Pillar II	5 percent	7 percent (as of Jan 2017)
Actuarial increase for deferred retirement	3 percent	4 percent
Individual pension coefficient calculation period	last 16 years	Full career ^b
Accrual rate	1.1 percent	1.2 percent (as of Jan 2017)
LOS for military officials and police	25 years	27 years

^a The December 2010 law would have increased the retirement ages to 65 (men) and 63 (women) by 6 months per year starting in 2021. A new law was passed in January 2012 that accelerates the implementation of the reforms. Under the new law, the retirement age for men and women increased by 4 months - to age 63 and 4 months for men and to age 60 and 4 months for women. From 2013, retirement ages will continue to increase by 4 months each year, until reaching age 65 for men in 2017 and age 63 for women in 2020.

^b Previously, an individual's pension was based on earnings averaged over the best three years during the last fifteen years prior to retirement. The reformed benefit formula takes into account the best three years during the last fifteen years until 1996 and average career earnings after this year.

a pension will increase to 37 years for women and 40 for men by 2020. A certain percentage of the active population will likely fail to accumulate the number of years needed to qualify for a full old-age pension. Those individuals would still be able to claim a partial contributory pension, contingent upon their having contributed to the pension system for a minimum of 15 years. The retirement age for a contributory pension with only 15 years of coverage is also being increased from age 65 to age 67 by the year 2020 for both men and women.

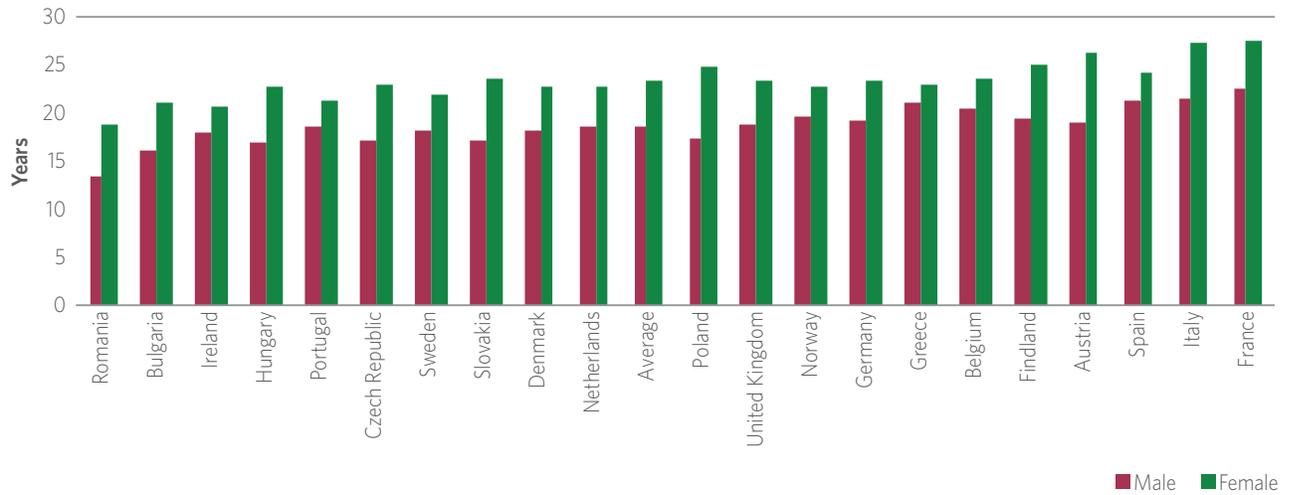
Maintaining a gap between official retirement ages for men and women raises both benefit adequacy and fiscal sustainability concerns.⁷³ Women tend to contribute over a shorter period than men, partially because they stop working to have children. Enabling women to retire earlier than men essentially puts them at a higher risk of poverty in old age as fewer years of contribution translate into lower pension benefits. In addition, women live longer than men. Women spent on average 5 years longer in retirement than men in 2010 (Figure VI-6). From a fiscal sustainability standpoint, given the severe projected demographic contraction in Bulgaria as well as the relatively large

informal sector, it is unlikely that Bulgaria will be able to finance the same number of years in retirement as other wealthier and younger European countries. The vast majority of European countries has already taken steps towards equalizing retirement ages between men and women. According to the EU 2012 Aging Report (European Commission 2012a), 86 percent of EU27 countries will have fully phased in reforms to equalize retirement ages between genders by the year 2060. The benefits of longer working lives for women are considerable. Aside from increasing benefit adequacy, more women spending more years in the workforce will lead to more revenue through an expansion of the contributory base as well as lower pension expenditures as a result of fewer beneficiaries.

Tighter eligibility conditions for old-age pensions contributed to an increase in the disability program. Increases to the retirement age and length-of-service requirements coincided with increased pressure on the disability program. Although it is reasonable to observe higher rates of disability

⁷³ See Chapter II for a discussion of the labor market implications of a gender-differential in retirement age.

FIGURE VI-6: RETIREMENT DURATION IN 2010



Source: European Commission (2012a).

among older people, the rapid growth in new pensioners reporting disabilities and claiming benefits in the form of disability pensions is likely the effect of individuals seeking alternative paths to retirement in view of stricter eligibility conditions in the old age program. Disability spending as a percentage of GDP more than doubled between 2001 and 2010 (Figure VI-7) and while disability inflow rates have stabilized since 2006, it is likely that pressure on the disability program will intensify, given further increases to the retirement age

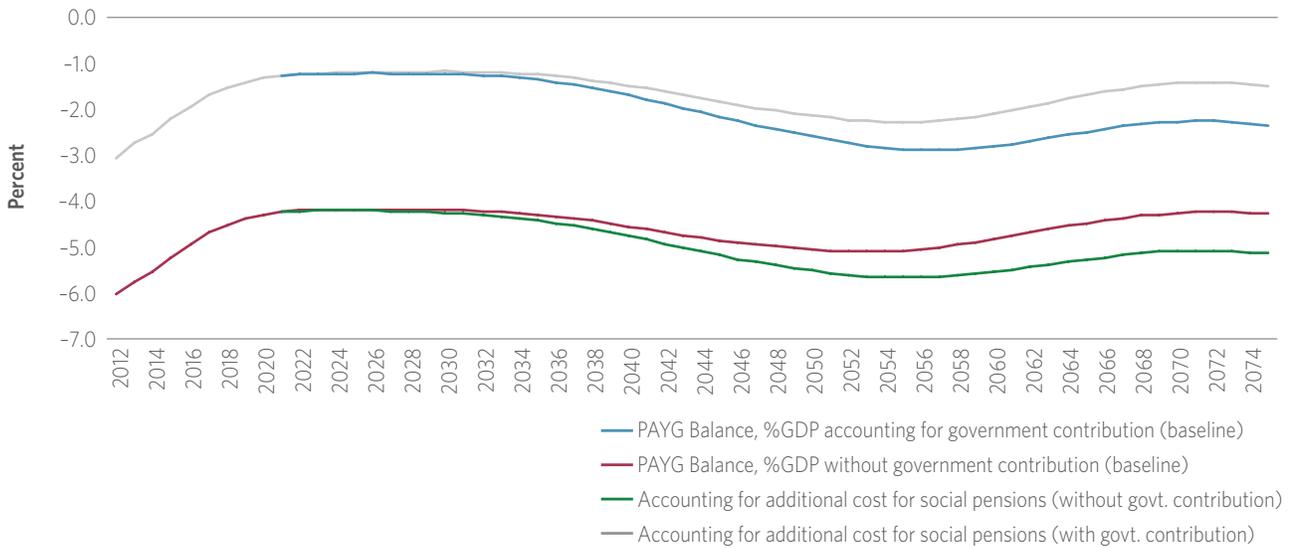
and the current difficult labor market conditions. International experience shows that during periods of high unemployment, the disability program is used as a last-resort safety net. When left with no other income prospects, many individuals who may have previously chosen to work despite a medical issue would now opt for disability benefits. Figure VI-8 illustrates the trend in disability inflow rates and the growth in disability pension spending as percentage of GDP over the last decade.

FIGURE VI-7: DISABILITY AND OLD AGE PENSIONERS



Source: Eurostat.

FIGURE VI-8: PROJECTED BASELINE FISCAL PAYG BALANCE (IN PERCENT OF GDP)



Source: Author's calculations using PROST.

Projections of Fiscal Balance under the Baseline

Based on PROST projections, Bulgaria's pension system is projected to remain in deficit throughout the projection horizon. Though current pension spending in terms of GDP, retirement ages as well as benefit generosity are similar to other EU countries, low contribution rates have led to declining revenues and increasing subsidies from the state budget. In 2011, employee and employer contribution financed only 53 percent of pension expenditures in 2011. The remaining liabilities were financed from general revenue. Since 2009, the Government has become a third insurer paying contribution equal to 12 percent of the total contributory base. The Government also covers the additional remaining deficit beyond the 12 percent contribution. Going forward, the transfers from the general government budget to the pension fund is projected to decrease from about 6.1 percent of GDP in 2012 to about 4.9 percent of GDP in the medium term before climbing to about 5.6 percent by 2050. (Figure VI-8).

Social pension costs are also projected to grow. Figure VI-8 also includes the

projected pension system deficit if a social pension is provided to individuals who fail to accumulate even the minimum 15 years of contributions needed for a partial contributory pension from Pillar I. As explained above, coverage of the elderly is projected to decline in the future. The estimated future coverage of the newly retiring elderly will be about 70 percent, of which an estimated 20 percent will be drawing a partial contributory pension. The remaining 30 percent will have no right to a contributory pension (Table VI-4). Bulgaria also currently has a Zero Pillar that provides a non-contributory, means-tested social pension at age 70. The level of the benefit was set at 100.86 leva in 2011, representing around 10 percent of GDP per capita (Table VI-4). Assuming that all individuals without rights to a pension at age 70 satisfy the income test and draw the social pension at a rate equal to 13 percent of GDP per capita, the projected cost would gradually begin to grow, reaching 0.5 percent of GDP by 2050 and close to 0.9 percent by the end of the projection horizon. The number of social pension beneficiaries as a percentage of the population over the age of 67 is expected to increase from 0.2 percent to more than 25 percent by 2075.

TABLE VI-4: PROJECTED PENSIONERS AS A PERCENT OF POPULATION ABOVE THE RETIREMENT AGE

Pension type	Age/gender	2013	2020	2030	2040	2050	2075
Full pension from Pillar I	Female (age 63)	73 percent	68 percent	62 percent	58 percent	53 percent	51 percent
Partial pension (15 yrs of service) Pillar I	Female (age 67)	24 percent	27 percent	25 percent	24 percent	22 percent	19 percent
No meaningful pension ^a	Female (age 63)	3 percent	5 percent	13 percent	18 percent	25 percent	30 percent
Full pension from Pillar I	Male (age 65)	87 percent	68 percent	63 percent	58 percent	53 percent	49 percent
Partial pension (15 yrs of service) Pillar I	Male (age 67)	11 percent	25 percent	23 percent	22 percent	20 percent	18 percent
No meaningful pension ^b	Male (age 65)	2 percent	8 percent	14 percent	20 percent	27 percent	33 percent

^a Individuals with less than fourteen years of contributions will receive a negligible pension from Pillar II and no pension from Pillar I.

^b Individuals with less than fourteen years of contributions will receive a negligible pension from Pillar II and no pension from Pillar I.

Pensions benefit levels are projected to decline relative to the average insured wage. A shift towards full-scale inflation indexation will gradually result in the decline of pension levels relative to average insured wages. Previously, pensions in Bulgaria were indexed according to the “Swiss indexation” rule, i.e. based on 50 percent wage growth and 50 percent increase in prices. The projected replacement rate⁷⁴ for an existing old-age pensioner, including both the PAYG and funded components is projected to stabilize at around 40 percent (Figure VI-9). However, the projected benefit from the second pillar assumes a real growth of 3 percent over the projection horizon. Investment risk from the second pillar is fully borne by the individual; therefore it is important to ensure an adequate benefit

level from the PAYG scheme alone. Table VI-5 shows that if an individual was insured at the minimum wage of 250 leva in 2011 and had worked a full length of service, the pension earned would fall below the minimum pension guarantee of 136 leva within the PAYG pillar. The minimum pension guarantee is only slightly greater than the partial pension provided with a minimum of 15 years of contributions. As a result, lower wage earners may find little motivation to contribute past the minimum 15 years. Additionally, the pension for an average wage-earner with a full length of service will not be much higher than the minimum guarantee; this induces incentives

⁷⁴ The percentage of a worker’s pre-retirement earnings that is paid out by a pension system upon retirement.

TABLE VI-5: OLD AGE PENSION LEVELS IN 2011^a

Gender	Career	Accrual rate	Replacement rate	When insured at min. wage ^b	When insured at ½ insured wage ^c	PAYG pension guarantee
Female	34	1.1 percent	44 percent	111	123	136
Male	37	1.1 percent	48 percent	120	152	136
Female	15	Flat	23 percent ^d	N/A	N/A	116
Male	15	Flat	23 percent ^e	N/A	N/A	116

Source: NSSI Bulgaria

^a As of 01.01.2017, the second pillar social insurance contribution is expected to be 7% and the accrual rate should be 1.2%, as of 01.01.2017.

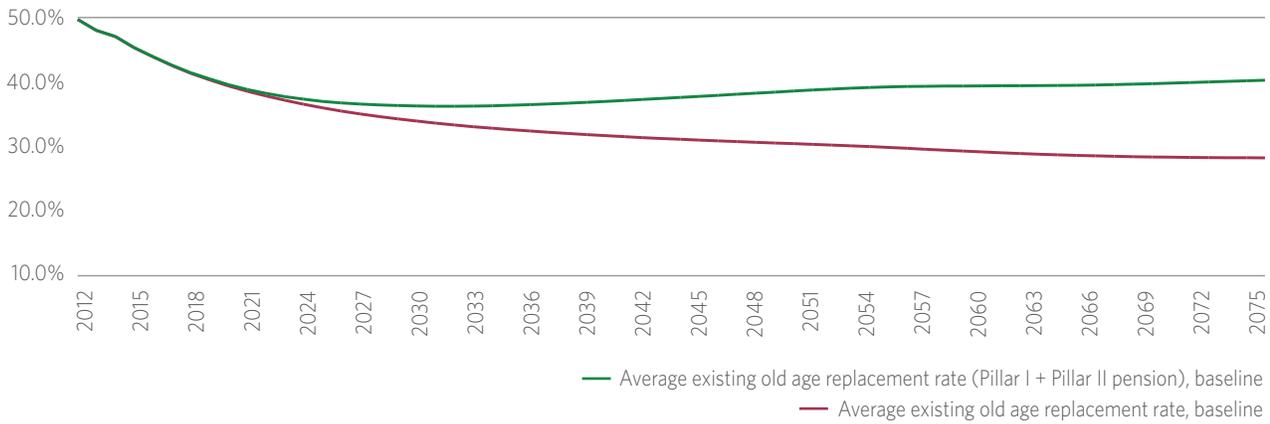
^b Here 250 leva since this was the minimum wage for 2011 the base year for these projections. In 2013, the minimum wage is 310 leva.

^c Based on current wage income distribution, close to 40 percent of people are insured at income below average insured wage. This trend will lead to many people receiving pensions below or close to the level of the minimum pension guarantee.

^d The minimum pension guarantee provided to individuals with full careers amounted to roughly 23 percent of average insurance wage.

^e The minimum pension guarantee provided to individuals with full careers amounted to roughly 23 percent of average insurance wage.

FIGURE VI-9: PROJECTED REPLACEMENT RATE FOR AN AVERAGE OLD AGE PENSIONER



Source: Author's calculations using PROST.

to under-report wages. By 2060, the average replacement rate from the PAYG scheme will be only 10 percent higher than the partial old-age pension provided with 15 years of service.

Alternative Financing Mechanisms for a More Equitable Pension System

The growing role of government in financing social insurance pensions weakens the link between contribution payments and benefits. The state pension system's benefits formula was designed to link contributions and benefits. But the presence of significant state budget subsidies could result in regressive outcomes. One would be the provision of larger benefits to higher-income earners who are, to a large extent, financed by general revenue and not solely through private sector contributions. In addition, such government transfers could introduce uncertainty among contributors regarding the system's capability to continue providing the promised pension benefits. Lack of confidence in the system could result in further damage to contribution compliance.

A universal benefit for all citizens of age 65, or higher, financed by general rev-

enue added to a smaller earnings-related pension financed by private contribution would ensure the equity of the pension system as coverage among the future elderly declines. If those individuals who have worked in the formal sector and have made contributions could continue to earn an earnings-related pension, the consumption-smoothing element of the system could be preserved. This arrangement would better promote poverty alleviation among the vulnerable elderly while still providing a mechanism for wealthier individuals with formal sector employment and contribution history to accumulate larger pensions based on their earnings. Table VI-6 presents some of the European countries that provide a universal or basic pension.

The starting point of the universal benefit would depend on the subsistence income level of the elderly. The process of identifying the level of the benefit would require taking into account all in-kind benefits and services provided to the elderly. Such in-kind transfer and subsidies could include support with heating payments and free or subsidized healthcare. In addition, many elderly tend to own property and therefore live rent free. As a result, careful and detailed assessment of the true needs of the elderly would need to be undertaken in order to arrive at a benefit level

TABLE VI-6: COUNTRIES WITH UNIVERSAL AND BASIC PENSIONS

Universal Pension: all residents or citizens above a certain age	Basic Pension: Individuals who have fulfilled a minimum years of service requirement receive a flat benefit, unrelated earnings or the value of their contributions. Benefit may vary based on years of service.
Czech Republic, Denmark, Georgia, Ireland, Kazakhstan, Kosovo, Netherlands, UK	Armenia, Azerbaijan, Croatia, Czech Republic, Ireland, Kyrgyz Republic, Lithuania, Luxembourg, Netherlands, Russian Federation, UK

high enough to prevent old age poverty but reasonable enough so as not to create an unmanageable fiscal obligation.

The estimated cost of providing a universal pension to all citizens above the age of 67 at a level of 120 leva (equal to 20 percent of average insured wage) would amount to roughly 2.5 percent of GDP.

In 2012, the government contribution of 12 percent of covered wage bill stood at 3 percent of GDP. Re-allocating the government contribution away from social insurance and towards a universal benefit for all elderly would create a much more equitable transfer. Separating out the financing sources would also help create a more transparent system where earnings-related pensions are fully financed by private sector contributions. The introduction of a universal demogrant pension complemented by a smaller earnings-related pension would need to be implemented gradually as it would entail a decrease in the accrual rate from Pillar I.

The number of people with a reduced pension is projected to increase markedly in the future, primarily as a result of the currently low contributor coverage. Challenging labor market conditions present a significant hurdle for youth between the ages of 25 and 30 to secure and maintain formal employment and to contribute to the system on a consistent basis. The presence of a shadow economy also adds to the problem of low contributor coverage. In any given month in 2011, roughly 55 percent of the working age population contributed to the pension system. Sporadic contribution patterns and shorter than required work his-

stories will inevitably result in more individuals claiming the minimum pension with partial career contributions. A projected 30 percent of future elderly could claim the social pension, a non-contributory means tested benefit provided at age 70, given their income falls below the minimum income threshold.

Reform Scenarios

To assess the fiscal impact of different reform scenario, this section discusses three different scenarios that are intended to address the key challenges of Bulgaria's pension systems as in previous sections. The scenarios have been modeled using the World Bank's Pension Reform Options Simulation Toolkit (PROST). They are as follows:

- Scenario I: Equalizing retirement ages for men and women at age 65
- Scenario II: Increasing Pillar I contribution rate by 6 percentage points
- Scenario III: Increasing labor force participation.⁷⁵

Scenario I: Impact of Equalization of Retirement Ages

From 2024 to 2050, the equalization of retirement ages is projected to result in

⁷⁵ These projections are based on scenario IV in chapter I.

fiscal savings of about 0.3 percent of GDP, eliminating roughly 20 percent of the system’s deficit. Increasing female retirement age could mitigate the projected contraction in the labor force. Labor force participation for those over the age of 55 is particularly low. The projected savings appear modest primarily because the difference in effective retirement ages between men and women is smaller than the gap between them in official retirement ages. Women experience more career breaks than men, for example, to raise children. As a result, more women stay longer in the workforce in order to qualify for pensions. An even more effective approach to reduce the deficit would be to delay retirement without a corresponding adjustment in benefits, essentially decreasing the accrual rate. As noted earlier, the effects of an aging population on the pension system can only be addressed through higher contributions, lower benefits or a shorter duration of benefit receipt.

Female replacement rates under the equal retirement age scenario are projected to be slightly higher. The average female replacement rate will gradually begin to increase in line with increases to the retirement age. Two additional years in employ-

ment will result in roughly 1.5 percent higher replacement rate by the end of the projection horizon. This is the result of two extra years of contributions with an annual accrual rate of 1.2 percent of earnings. Figure VI-10 illustrates the difference in replacement rates between the baseline and equal-retirement-age scenario.

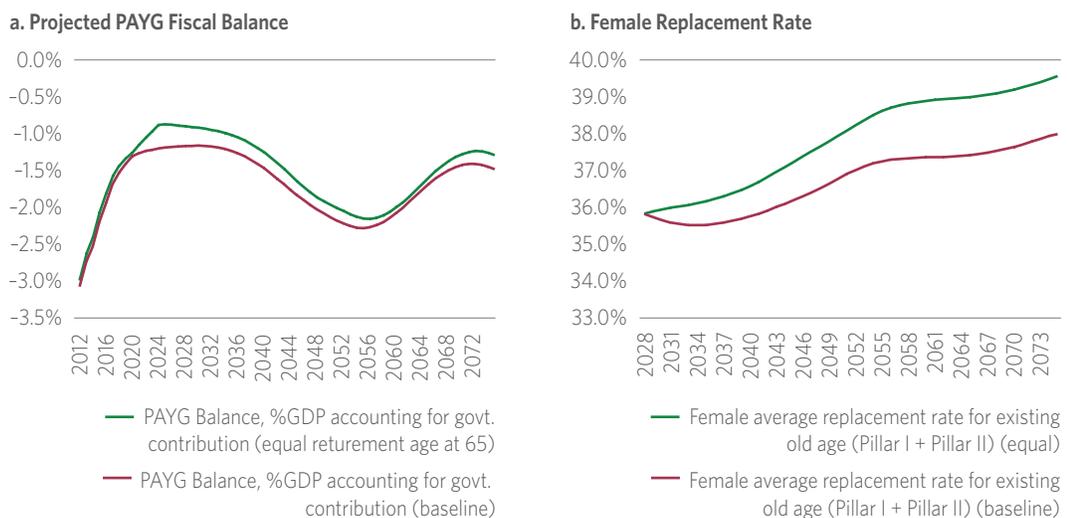
Scenario II: Higher Contribution Rate

A higher contribution rate provides a clear improvement to the fiscal balance of the PAYG pension system. Nevertheless, increasing the contribution rate could potentially increase the labor tax wedge as well as incentives for informal employment. Such a reform should, thus, be considered carefully.

Scenario III: Changes in Labor Force Participation

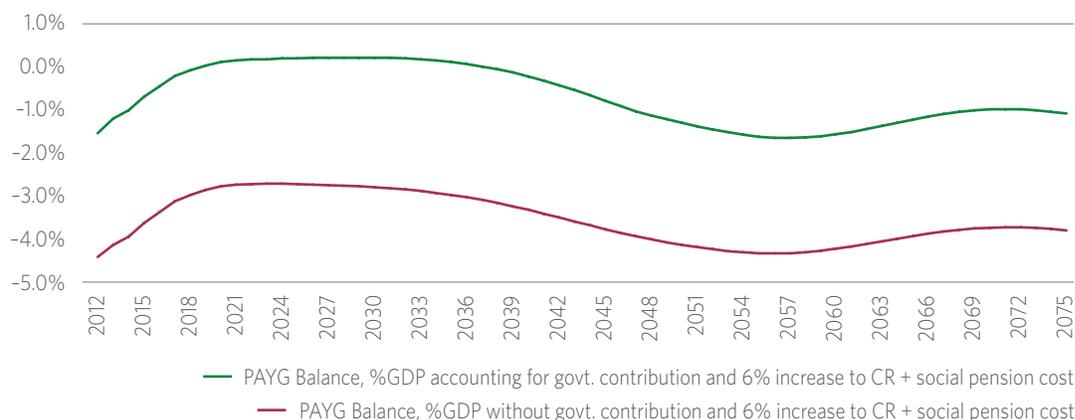
An increase in labor force participation of the overall economy improves the fiscal balance of the PAYG system. Increased labor force participation will result

FIGURE VI-10: SCENARIO I: PAYG FISCAL BALANCE AND FEMALE REPLACEMENT RATE



Source: Author’s calculations using PROST.

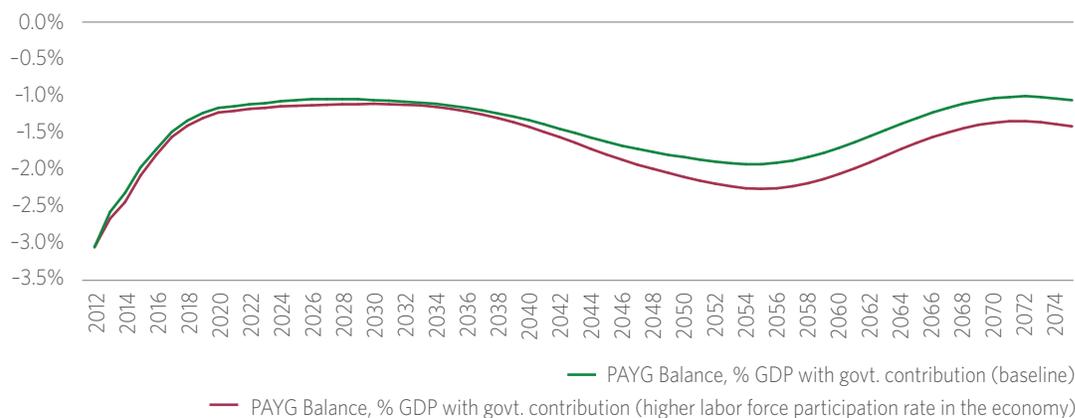
FIGURE VI-11: SCENARIO II: PROJECTED PAYG FISCAL BALANCE



Source: World Bank Projections based on PROST.

Note: Includes the estimated costs associated with the provision of social pensions for individuals without pension rights.

FIGURE VI-12: SCENARIO III: PROJECTED PAYG BALANCE



Source: World Bank Projections based on PROST.

TABLE VI-7: SCENARIO III: MACROECONOMIC ASSUMPTIONS

High LFP, Baseline TFP	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030	2040	2050	2055	2065	2075
Real GDP Growth rate ^a	3.0	3.0	3.5	3.2	2.7	2.8	2.8	3.3	3.2	2.5	1.5	0.9	0.9	0.9	0.9
Real Wage Growth rate ^a	3.2	3.0	2.9	3.2	3.5	3.3	3.3	3.0	2.8	2.2	2.2	1.8	1.8	1.8	1.8

^a In percent.

in slightly higher GDP. This scenario does not assume an increase in the number of people contributing to the pension system, because it is difficult to predict how many

individuals entering the labor force would engage in formal labor and begin to contribute to the pension system. Also as explained earlier, an increase in the number of

contributors would result in fiscal savings at first but would ultimately result in more pension expenditures in the absence of reforms. The PAYG system is projected to remain in deficit; bringing more people into it will likely further exacerbate the fiscal problem. Moreover, the government has officially assumed the role of a third insurer paying at the rate of 12 percent of the covered wage bill. If the latter were to increase the government's liabilities to the pension system would also raise.

Policy Options

In the absence of reform, Bulgaria's pension system is projected to remain in deficit. Low contribution rates have led to declining revenues and increasing subsidies from the state budget in recent year. In 2011, 47 percent of pension expenditure was financed from general revenues, corresponding to about 6 percent of GDP. Going forward the transfers from the general government budget to the pension fund is projected to decline to about 4.9 percent by 2030—due to declining coverage—before reaching 5.6 percent in 2050. Increasing the contribution rate levied on individual wages by 6 percentage points clearly improves the fiscal balance. However, such a decision would require careful consideration for the potential negative effects on the labor market and overall economy. In the context of a rapid demographic contraction pursuing both objective of poverty alleviation and income replacement inevitably leads to the compression of the income distribution of the elderly and reduced incentives to contribute. An increase in the retirement age is the main tool to mitigate this trend. Nevertheless, Bulgaria could consider a smaller increase in the PAYG contribution of around 2 percent that could still strengthen the fiscal state of the first pillar without introducing major labor market distortions.

The prevailing issue with the Bulgarian pension system is its inherent in-

equality. The fact that the system is not self-sustaining does not only put pressure on government debt but raises significant concerns about equity as the government will continue to subsidize an increasingly small group of relatively well-off elderly while excluding a large portion of the life-long poor. In view of changing demographics and difficult labor market conditions, the financing mechanism for Bulgaria's pension system may need to be reviewed so that the contributory system can become self-sustaining, that it is financed solely by private sector contributions.

Equalizing retirement ages for men and women at age 65, while preparing further increases to the retirement age beyond age 65 would be important to consider⁷⁶. Women tend to contribute for a shorter periods than men, which is to some extent the result of career interruptions experienced during childbearing years. Enabling women to retire earlier than men raises concerns about the adequacy of their pension benefits. In addition, an earlier retirement age for women, who have a longer life expectancy than men, further increases the period of benefit receipt for women relative to men.

Strengthening the disability certification processes could help mitigate an increase in disability claims stemming from high unemployment and stricter eligibility rules in the old age program. Disability spending as a percentage of GDP more than doubled between 2001 and 2010. Although the inflow rates were stabilized in 2006, it is likely that the pressure on the

⁷⁶One way to address the risk of longevity is to link the statutory pension age to life expectancy. Fourteen EU Member States have already introduced a variety of sustainability factors and/or other reduction coefficients that ultimately determines the amount of the pension entitlement. For example, Italy and the Czech Republic have linked the retirement age to increases in life expectancy, essentially removing the need for further reforms to the pension age (European Commission, 2012)

disability program will intensify if the retirement age increases amid difficult labor market conditions.

Avoiding further ad-hoc pension increases would facilitate long-term fiscal planning. Evidence shows that indexation reforms did not fully hold and recurrent increases in pensions above those prescribed by the law occurred. Such practices make it difficult to accurately project

financing needs and ultimately jeopardize the long-term fiscal sustainability of pension the system. Pension reform is inherently a difficult undertaking from a political standpoint, especially when pension reforms begin to exhibit an expenditure cutting impact. Nevertheless, policymakers should refrain from resorting to ad-hoc measures in order to ensure the fiscal sustainability of the pension system in the long-term.

MACRO-FISCAL IMPLICATIONS OF BULGARIA'S DEMOGRAPHIC CHANGE

Bringing together the analyses of the previous chapters, this chapter quantifies the macro-fiscal impact of Bulgaria's demographic change over time in a coherent setting. A simple modeling platform brings together independent projections of the population, the labor force by age and education level, government transfers to the pension fund and student numbers as well as estimates of public expenditure-age profiles for health and long-term care.⁷⁷ Since the impact of demographic change on key expenditure items, such as health-care, education and pension can be compounding and offsetting, it is important to evaluate the fiscal impact of demographic change in a coherent framework. This model extends existing analyses of the long-term impact of Bulgaria's demographic change (see, for example, European Commission 2012b) by combining detailed sector analyses in a consistent framework, which feeds into a fiscal sustainability analysis.

The model also assesses the impact of policy changes through alternative scenarios. In particular, it explores how changes in net migration and life expectancy, LFP rates, the retirement age, productivity growth and public investment in education would alter the baseline findings. These alternative scenarios are based on consistent projections of the labor force, government

transfers to the pension fund and student numbers, all reflecting Bulgaria's specific circumstances. The model does not attempt to provide a novel contribution to the generic debate of the impact of demographic change by solving individual optimization problem on the basis of a labor-leisure choice, and abstracts from characterizing the impact of government expenditures on household welfare.

Simulations suggest a significant slowdown in Bulgaria's growth and a steep increase in its debt-to-GDP ratio. Under the baseline projections, GDP growth reaches 2.6 percent in 2016. It then decreases gradually to about 1 percent in the early 2040s, and continues to decline to 0.7 percent by the end of 2050, the projection horizon. Public expenditures for health-care are expected to increase from 4.1 percent of the GDP in 2012 to 5.1 percent by 2050. Long-term care expenditures are expected to rise from 0.45 percent of GDP to 0.76 percent by mid-century. Government transfers to the pension fund decrease from 6.1 percent of GDP to 4.9 percent in the medium term and increase to about 5.6 percent by 2050. Public

⁷⁷ See Chapter I for a discussion of population projections and public expenditure-age profiles, and Chapter VI for projections of government transfers to the pension fund.

TABLE VII-1: BASELINE ASSUMPTIONS

	2012	2015	2020	2025	2030	2035	2040	2045	2050
	(Percent)								
Baseline TFP Growth Rate	0	2	1.3	1.2	1.2	1.2	1.2	1.2	1.2
Global Interest Rate (Before Tax)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Interest Rate Differential	2.5	2.5	2.3	2.2	1.7	1.2	0.6	0.3	0.1
Unemployment Rate	12.3	11.1	9.1	7.1	5.8	5.3	5	5	5
	(Percent of GDP)								
Direct Tax Revenues	5.4	5.5	5.9	6.1	6.3	6.4	6.4	6.5	6.5
Indirect Tax Revenues	17.2	16.4	16.2	16.2	16.2	16.2	16.2	16.2	16.2
Non-Tax Revenues	4.8	3.8	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grants	3.1	3.8	3.4	3.3	3.2	3.1	3.1	3	3
Contribution to EU Budget	1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Other Expenditures	18.6	19.5	19.4	19.2	19.1	19.1	19	19	19

expenditures on education are projected to decline from 4.6 percent of GDP in 2012 to 3.2 percent by 2050 as the number of students is projected to shrink by nearly 50 percent. The assumptions underlying these projections are quite conservative. Still, Bulgaria's ratio of public debt to GDP is expected to increase from about 18 percent to 51 percent by the end of projection period.

Key Baseline Assumptions

The baseline is designed to reflect the macro-fiscal outcomes in the absence of policy adjustments. The demographics under the baseline scenario are based on United Nations population projections. The labor force projections are based on ILO projections till 2020 and assume constant labor force participation rates by gender and five-year age groups thereafter.⁷⁸ Total factor productivity (TFP) is assumed to grow at 1.2 percent in the long term, which is slightly above the average TFP growth projected for the EU (European Commission 2012a), in line with a gradual convergence in the absence of productivity-enhancing policy reforms.

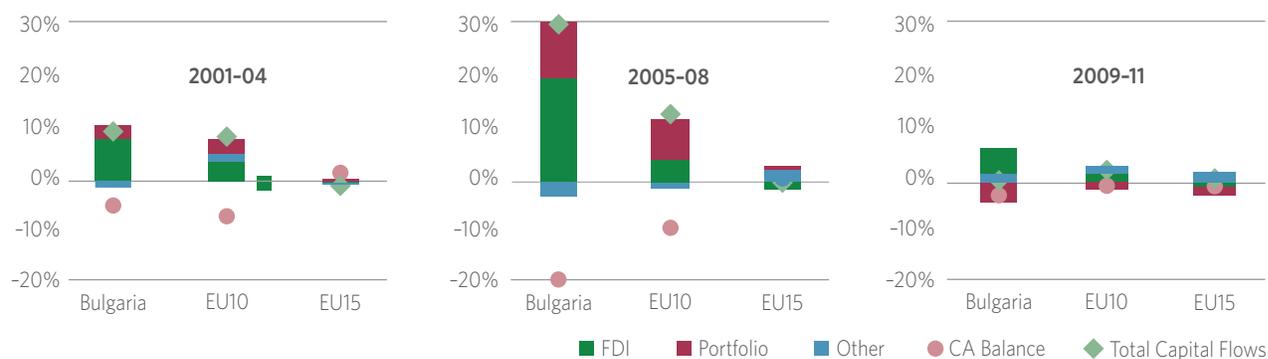
Estimating the capital stock in Bulgaria is a challenge. In many transition economies, a large unknown part of the capital stock has been destroyed as factories were abandoned and equipment was scrapped in the transition period. Moreover, the introduction of new technologies by the developed economies accelerated the depreciation of existing capital (Campos and Coricelli 2002). Estimates suggest that these losses are likely to be large.⁷⁹ Relying on a standard perpetual inventory approach is thus likely to lead to an overestimation of the capital stock in Bulgaria. For example, based on this approach, Ganev (2005) estimates a capital output ratio of 3.18 for Bulgaria in 2007. This model uses a more conservative estimate of 2.55 in the base year, which is in line with the capital-output ratio for 2010 discussed in IMF (2010) and the EU estimate for Slovenia (European Commission 2011).

The model assumes that Bulgaria is a small and open economy. This assump-

⁷⁸ For a detailed discussion of different labor force scenarios, see Chapter I.

⁷⁹ Deliktas and Balcilar (2005), for example, estimate that up to 50 percent of the communist-era capital stock has been destroyed in the early transition period.

FIGURE VII-1: BULGARIA'S CAPITAL FLOWS IN PERCENT OF GDP



Source: Authors' calculations based on Eurostat.

tion is motivated by the fact that Bulgaria has attracted exceptionally large capital flows of up to 30 percent of GDP in net terms prior to the 2008 financial crisis. Even after the crisis, Bulgaria's capital flows remain high compared to other EU countries (Figure VII-1). In an open economy environment, capital flows respond to the differences between the domestic economy and the rest of the world in terms of risk-adjusted returns on investment. Between 2012 and 2050, the interest rate differential between the Bulgarian rate and the rest of the world's is assumed to decline from 2.5 percentage points in 2012 to 0.1 percent in 2050, which encourages further capital inflows. This path is motivated by several factors including a declining risk aversion of global investors as well as economic and institutional convergence of the Bulgarian economy with the rest of the EU.⁸⁰ On the other hand, the decline in Bulgaria's labor force depresses the return on capital, discouraging additional inflows.

The unemployment rate is assumed to reach 5 percent just before 2040. Since the beginning of the new millennium, Bulgaria's unemployment rate has steadily declined from around 20 percent to 5.6 percent by 2008. In the wake of the 2008 financial crisis, unemployment has increased steeply, reaching 12.3 percent in 2012. As the economy converges to its long-term potential, so does the unemployment rate.

Projecting the public health-care expenditures is a daunting task.

Public health-care expenditures are projected on the basis of age-specific health-care expenditures that are indexed to per-capita income through income elasticity.⁸¹ This elasticity is assumed to be slightly larger than one (1.15), reflecting a catch-up effect of public health expenditures given the fact they are currently low compared to the rest of the EU. In order to calculate the total public health-care expenditure share in GDP, these individual expenditures are multiplied by the average per-capita income and the number of individuals in each five-year group for a given year. The projection methodology relies on an implicit assumption: health-care consumption remains proportional across age groups as life expectancy increases. This is a very conservative assumption. In Bulgaria, for example, public health-care expenditures of 70–75-year-olds are about 3 times higher than those of 50–55-year-olds. In many EU15 countries, this ratio tends to be above 5 (European Commission 2009).

⁸⁰ The model does not enable to quantify the impact of aging on domestic savings. However, as discussed in Chapter I, this impact depends on a variety of factors, including the demographic drivers of aging and characteristic of the social security system.

⁸¹ See Chapter I for a discussion of the public expenditure-age profiles for health and long-term care.

Long-term projections of revenues are based on the following assumptions: Non-tax revenues and indirect tax revenues are assumed to have unitary income elasticities; therefore, their share remains constant in GDP in the long term. The only adjustment comes from small reductions, between 2012 and 2015, of indirect revenues from 17.2 percent to 16.4 percent and from non-tax revenues from 4.8 percent to 3.8 percent, which are in line with the Medium Term Fiscal Framework of the Government of Bulgaria (2012). Direct tax revenues are, on the other hand, projected to exhibit modest improvement over time, increasing from 5.4 percent of GDP in 2012 to 6.5 percent in 2050, representing better tax collection. Box VII-1 provides more information about the underlying structure of the model.

Key Findings

Baseline Results

In the long run, GDP growth is projected to decline. Under the baseline projections, annual GDP growth reaches 2.6 percent in 2016. It then decreases gradually to about 1 percent in the early 2040's, and continues to decline to 0.7 percent by the end of the projection horizon. As a result, real GDP is projected to grow from about US\$77 billion in 2012 to US\$126 billion in 2050. Monte Carlo simulations show that, in the long term, the growth rates are expected to remain within a band of 2.2 percent and 0.2 percent with a 90 percent degree of confidence.⁸² The growth rate in terms of GDP per capita, on the other hand, reaches a peak of 3.3 percent in 2016, and then gradually slows down to 1.5 percent by the end of the projection horizon.

This decline is largely driven by the shrinking work force. From 2021 onwards, employment is projected to depress growth as the labor force declines. In the

medium term, employment is projected to contribute positively to growth. This is driven by the fact that the assumed reduction in the unemployment rate in the medium term has a positive effect on employment, which initially outweighs the labor-force decline. Once the unemployment rate reaches its long-term equilibrium of 5 percent, only the negative effect of a decreasing labor force remains (Figure VII.1, Panel (b)). However, TFP growth and increasing capital intensity raise the productivity of labor throughout the projection horizon. On average, the GDP per worker grows by about 2.4 percent per year.

Public health-care expenditures as a share of GDP rise throughout the projection period. They climb from 4.1 percent in 2012 to more than 5.1 percent by 2050 (Figure VII-2, Panel d). This increase arises from a combination of two factors: first, public health-care expenditures per person are higher for the elderly. An increase in the average age of society, thus, increases the share of aggregate income spent on health-care. Second, assuming that Bulgaria's public health-care expenditures as a share of GDP will eventually catch up with other European countries⁸³, health-care consumption is assigned an income elasticity slightly greater than one (1.15). As a result, even after controlling for the change in the age composition, public health-care expenditures still increase as a share of GDP. Long-term care expenditures, which are classified under the other expenditures category, are projected to increase from 0.45 percent in 2012, to 0.76 in 2050. These projections are in line with European Commis-

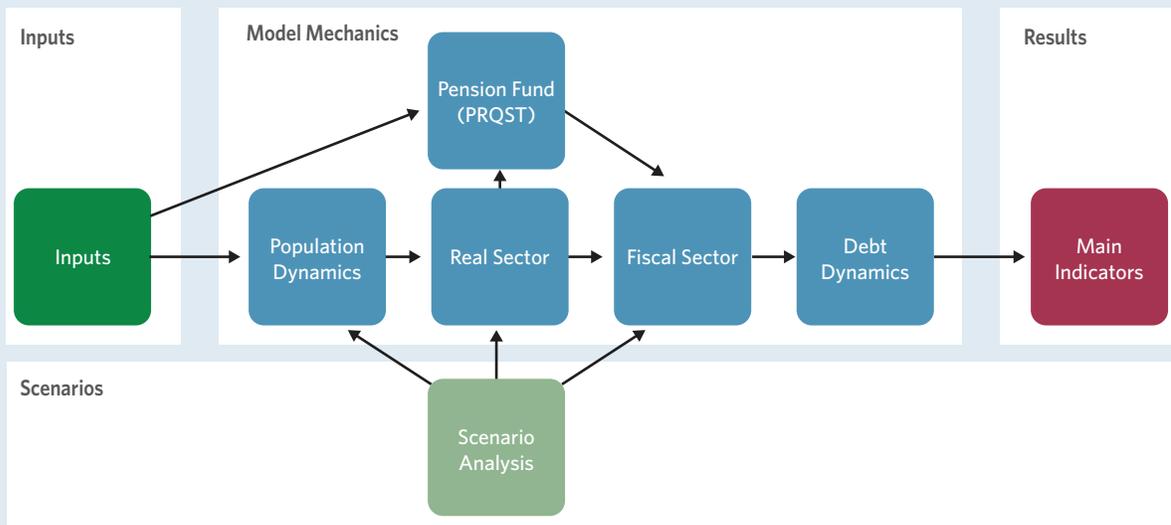
⁸² These simulations characterize shocks to TFP growth that are identically and independently distributed with zero mean and 0.75 percent standard deviations.

⁸³ Bulgaria's public health expenditures as a share of GDP are very low compared to other European countries even when taking into account income levels. As discussed in Chapter IV, it is reasonable to assume the public health expenditure per capita as a share of GDP will rise.

BOX VII-1: UNDERLYING MODELS

The analysis in this chapter draws on simulations from a projection model by Onder, Pestieau, Ley (2013), and analytical findings from an Overlapping Generations (OLG) model developed by Dedry, Ley, Onder, and Pestieau (2013). The first model characterizes Bulgaria as a small and open economy, where capital is the mobile factor. Output is produced by a standard Cobb-Douglas production function with constant returns to scale and two factors of production: capital and efficiency unit of labor. Physical labor is converted to efficiency units by using a Mincerian transformation. Labor supply is exogenous to the model, and the equilibrium level of capital is given by equalization of risk adjusted returns between domestic markets and the rest of the world. In the model, government collects taxes, receives non-tax revenues and grants, and provides public services. Tax revenues comprise indirect taxes, capital income taxes, and labor income taxes, whereas public expenditures include education, health, pension fund transfers, and other expenditures.

The OLG model uses a two period environment with endogenous age of retirement. An interesting finding is that the impact of aging on domestic savings and, hence, on investment and capital accumulation, depends on the drivers of aging and the prevailing social security system. Aging, which is driven by a decline in fertility unambiguously fosters savings, whereas an increase in longevity (or decrease in mortality) in a society with flexible retirement age and pay-as-you go social security has ambiguous effects on savings. Even though an increase in savings would be expected under reasonable assumptions, if the pensions system is rather generous, then a decrease in savings is also possible. Moreover, the precise type of financing also affects the impact of aging on capital accumulation. In the case of a defined contribution system, where the current beneficiaries bear the burden, a reduction in fertility rates increases the savings and the capital accumulation. If the benefits are defined, then the net effect is ambiguous.



sion (2012a) projections, but ignore the fact that public LTC expenditures are likely to be underestimated and that the public provision of LTC services in Bulgaria is currently likely to be sub-optimal (see Chapter V for a detailed discussion).

Fiscal pressures arising from the deficits in the social security system decline in the medium-term before

increasing steeply again in the longer run. The transfers from the general government budget to the pension fund take two forms in Bulgaria. First, an amount that is proportional to the total current pension contributions from employee payrolls is transferred from the general budget to the pension fund, as enacted by law. Second, if the pension fund runs a deficit within a year, the gap is

closed by a second-tier transfer from the general government budget within the same year. As shown in Panel (d) of Figure VII-2, the sum of these two types of transfers exhibits a small decrease from about 6.1 percent of GDP in 2012 to about 4.9 percent in the medium term, before climbing to about 5.6 percent by the end of the projection horizon, mainly driven by the number of contributors and beneficiaries.⁸⁴

A decline in the number of students is expected to drive public education expenditures down. The total number of students was 1.03 million in 2012; this number is projected to decline to 527,000 in 2050. Although education expenditures per student are assumed to grow at the same rate as GDP per capita, the sheer size of the reduction in enrollment reduces public education expenditures. As a result, public education expenditures will decline from 4.6 percent of GDP in 2012 to 3.2 percent by 2050. These projections implicitly assume that there is no need for “protected” education institutions and additional investments in life-long learning. Moreover, increasing the quality of education that is crucial for sustaining productivity growth may require a more-than-proportionate increase in the per-student expenditures, which would tilt up the downturn trajectory of education expenditures (see Chapter IV for a detailed discussion).

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Figure VII-2, the sum of these two types of transfers exhibits a small decrease from about 6.1 percent of GDP in 2012 to about 4.9 percent in the medium term, before climbing to about 5.6 percent by the end of the projection horizon, mainly driven by the number of contributors and beneficiaries.⁸⁵

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Bulgaria’s demographic transition is projected to lead to a steady increase in public debt. The fiscal budget is projected to incur primary deficits throughout the projection horizon, which are expected to be close to 1 percent in the longer term (Panel (e) in Figure VII-2)⁸⁶. As a result, the

⁸⁴ For a detailed discussion of the evolution of Bulgaria’s PAYG balance and assumptions underlying these simulations, see Chapter VI.

⁸⁵ For a detailed discussion of the evolution of Bulgaria’s PAYG balance and assumptions underlying these simulations, see Chapter VI.

⁸⁶ The most recent budget projections from the Ministry of Finance of Bulgaria report a 0.2 percent primary surplus in 2012, 0.3 percent deficit in 2013, 0.2 percent deficit in 2014, and a balanced primary account in 2015.

FIGURE VII-2: FISCAL PROJECTIONS UNDER THE BASELINE ASSUMPTIONS

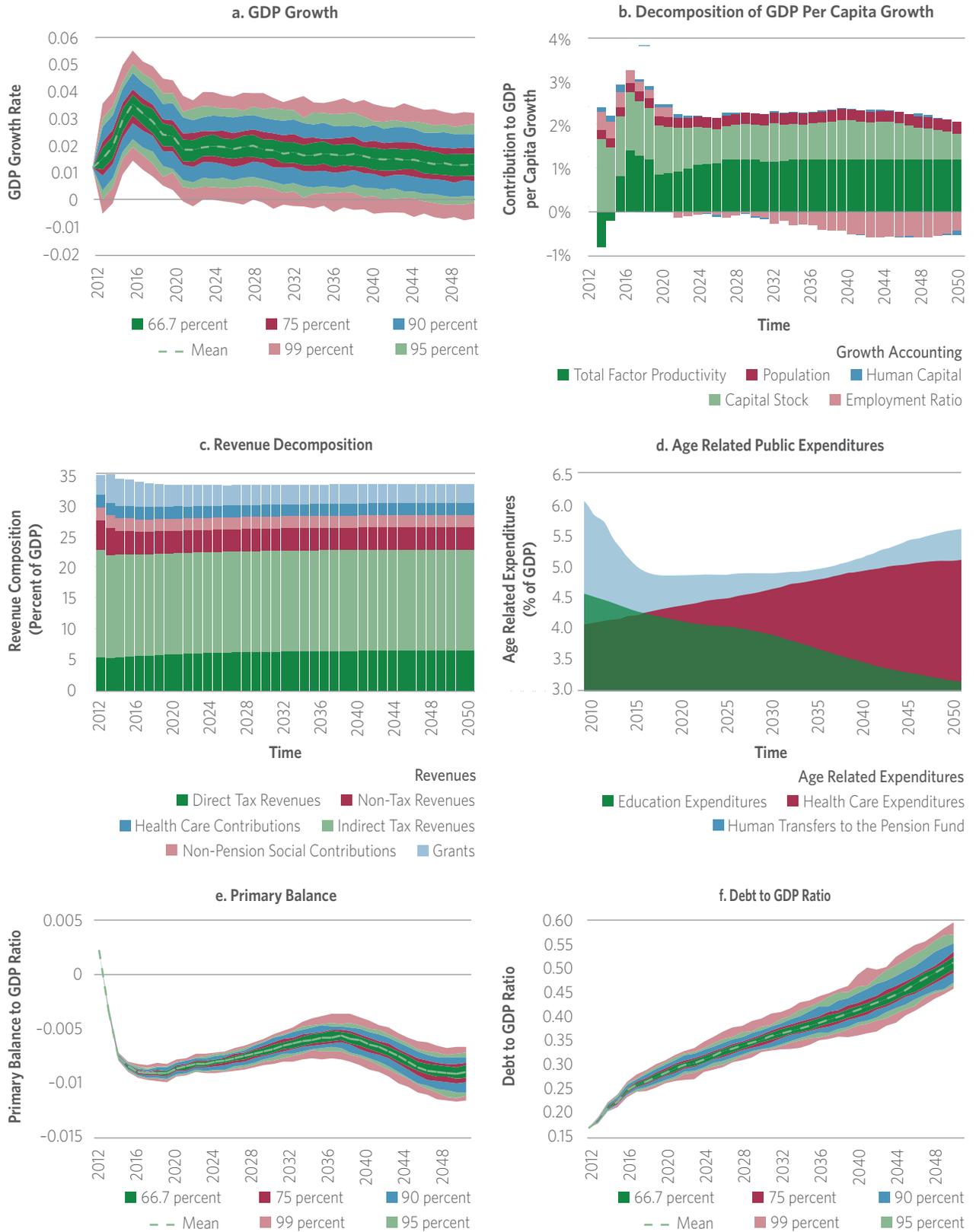


TABLE VII-2: DECOMPOSITION OF DEBT DYNAMICS UNDER THE BASELINE SCENARIO^a

	2015	2020	2025	2030	2035	2040	2045	2050
Change in Debt to GDP Ratio	1.2%	0.8%	0.7%	0.6%	0.6%	0.7%	1.0%	1.1%
Growth Effect	-0.5%	-0.5%	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%	-0.3%
Interest Payments	0.8%	0.4%	0.3%	0.4%	0.4%	0.4%	0.5%	0.5%
Primary Balance	0.8%	0.9%	0.8%	0.7%	0.6%	0.7%	0.9%	0.9%

^a Annual contributions in percentage points, 2012–2050.

debt-to-GDP ratio increases from its current level of about 18 percent to about 51 percent by 2050. Even though this shows a substantial deterioration, this level is still within the limits defined by Maastricht criteria. However, the protracted upward trend is cause for concern.

Protracted primary deficits are the most prominent factor leading to an accumulation of public debt over the projection period (Table VII-2). Primary deficits increase the ratio of debt to GDP by about 0.9 percentage points per year. Interest payments raise the ratio by about 0.4 percentage points per year, roughly offsetting the GDP growth effect.⁸⁷

Alternative Scenarios

In order to explore which policies can mitigate the negative consequences of Bulgaria’s demographic change, three alternative classes of scenarios are presented here affecting: i) total factor productivity, ii) labor force, and iii) education of the population.

Total Factor Productivity Scenarios

The assumption of high productivity growth directly raises GDP growth. But there is also an additional indirect effect. When TFP increases, marginal productivities of production factors increase as well. In response, there will be further capital inflows into an open economy and thus

higher investment.⁸⁸ Two alternative TFP scenarios have been developed to explore the impact of different TFP assumptions on the projection results. The low TFP growth series in Panel (a) in Figure VII-3 is 0.15 percent smaller than in the baseline case in the long term. In the medium term, differences range from 0.8 percent in 2016 to 0.18 percent in 2021. The low TFP growth series approaches the average TFP growth of EU countries projected by the European Commission (2012a).⁸⁹ The high TFP growth series is about 0.3 percentage points higher than the baseline in the long term and is similar to the Bulgaria-specific projections in the European Commission (2012a) report. In this case, GDP per worker grows by an average of 2.9 percent per year.

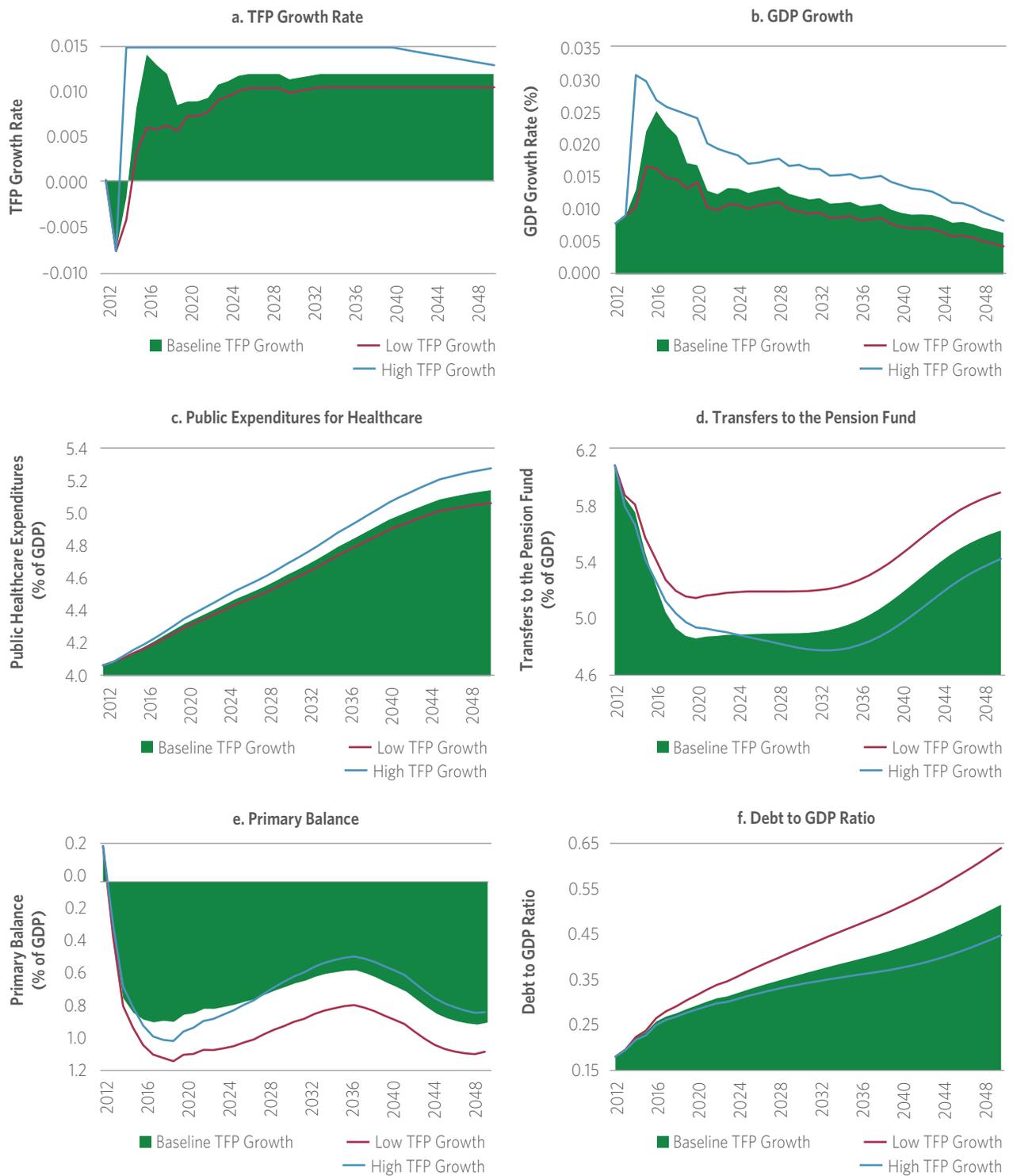
Public health-care expenditures are higher in a richer society. An interesting result of higher productivity is that the share of GDP that is spent on public health-care increases slightly compared to the baseline. Public health-care expenditures were assumed to grow by a rate proportional to GDP per capita. In an economy with a shrinking

⁸⁷ Since the model does not capture inflation or exchange rate movements there are no other valuation effects.

⁸⁸ Labor supply is assumed to be inelastic in the model and thus does not change under the different TFP growth scenarios.

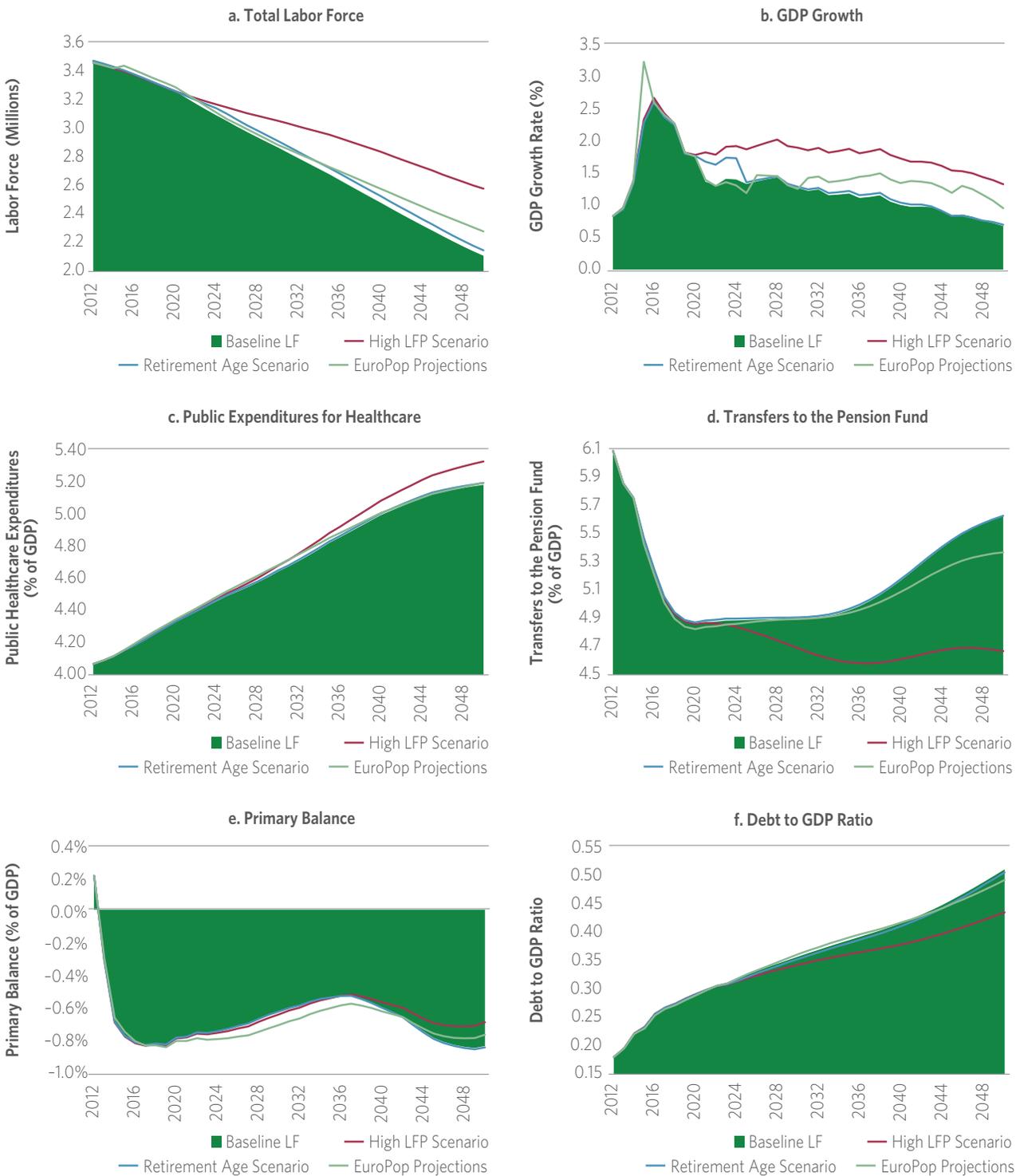
⁸⁹ Differences between the two series mainly lie in medium term dynamics. The EC study employs a relatively stable TFP growth trajectory, whereas this model incorporates the current economic downturn and projects a recovery in the medium term. This leads to first lower and then higher TFP growth rates relative to the EU average in the short and medium term, respectively.

FIGURE VII-3: PROJECTIONS UNDER TFP SCENARIOS



Source: Authors' simulations.

FIGURE VII-4: PROJECTIONS UNDER LFP SCENARIOS



Source: Authors' simulations.

population, GDP per capita grows faster than GDP itself. In addition, when the income elasticity of health expenditures is greater than one, the differential between GDP per capita growth and GDP growth has an even more pronounced impact on public expenditures. Higher TFP growth magnifies this effect, boosting public expenditures even as a share of GDP.

Higher productivity growth helps reduce the deficit of the social security system. As Panel (d) shows, high TFP growth leads to smaller transfers. Higher TFP growth generates a nominally greater pension fund deficit that needs to be financed by transfers from tax revenues. This is because benefits are indexed to wage growth, and higher productivity growth increases real wages faster. However, higher productivity also increases GDP, and in this case its impact on the GDP is comparatively larger than its impact on the pension fund deficit. Therefore, the amount of transfers as a share of GDP is smaller in the case of a high TFP growth scenario, compared to the baseline scenario. A similar reasoning explains why a lower TFP growth implies a greater burden for the fiscal budget levied by the social security system.

In the long run, maintaining a high level of productivity growth is crucial for fiscal sustainability. A high TFP growth reduces the primary deficit as displayed in Panel (e) and thereby the debt-to-GDP ratio from 51 percent under the baseline to 45 percent in 2050. Under the low TFP scenario, the same ratio increases to about 64 percent over the projection horizon. In the absence of a policy change, this result suggests that if the Bulgarian economy does not outperform the EU average in terms of TFP growth, there will be a substantial risk in the long run of breaching the Maastricht criterion, which limits the public debt to 60 percent of GDP. An essential point here is that maintaining high productivity growth is not an automatic process. It entails active policies and planning. In addition to improvements in the function-

ing of the labor market, education and training and the health services which have been discussed in detail in previous chapters, these policies could also take the form of establishing a more predictable business environment, improving innovation and policies and providing better basic road infrastructure and improved performance of the energy sector.⁹⁰

Labor Force Participation and Population Scenarios

Since the evolution of the labor force will have a significant impact on Bulgaria's growth outlook, the model simulates the impact of different labor force and population projections. Alternative labor supply scenarios presented here are the retirement-age scenario, which shows the impact of current legislated reform of an increase in retirement ages of men and women⁹¹ and the high LFP scenario. The latter assumes a convergence in LFP rates to high LFP countries (Scenario II in Chapter I). The scenario implies LFP beyond 80 percent even among those aged 70 to 74. The scenario can be interpreted as an upper bound.⁹²

In order to capture the impact of a reduction in net emigration, this chapter also presents results based on Eurostat population projections EUROPOP2010. While the UN extrapolates current immigra-

⁹⁰ As mentioned in the introduction the discussion of productivity-enhancing reforms through channels other than improving education and health will be relegated to a second study.

⁹¹ A law passed in January 2012 raised the retirement age for men and women by 4 months to age 63 and 4 months for men and to age 60 and 4 months for women. From 2013 retirement ages will continue to increase by 4 months each year, until reaching age 65 for men in 2017 and age 63 for women in 2020.

⁹² As discussed in Chapter I, this scenario is likely to reflect combination of ambitious reforms, including changes in tax treatment of second wage earners, child care subsidies, increases in the statutory retirement age for men and women and health sector reforms which support the extension working lives.

tion trends and projects 10,000 net emigrants per year throughout the projection period, Eurostat assumes an increase in net emigration from 10,000 persons per year to 14,000 in 2020, which then declines steadily at the beginning of the 2030s for the EUROPOP2010 projections. Between 2030 and 2050, EUROPOP2010 assumes a net immigration of around 5,000 persons per year. EUROPOP2010 also differ from the United Population projections with respect to fertility rate and life expectancy.⁹³ As a result of these assumptions, the population in 2050 is somewhat different. According to EUROPOP2010, Bulgaria's population would shrink to 5.899 million by 2050, while the UN projects a lower population of 5.457 million, largely driven by the assumption of higher emigration.

Higher labor-force participation proves to be an effective way to counteract the growth-dampening effects of the demographic transition. The High LFP scenario significantly boosts GDP growth (Figure VII-4, Panel (b)). On average, this effect is about 0.5 percent per year, which increases the GDP per capita from about 22,200 leva under the baseline to about 26,400 leva in 2050. Under the retirement-age scenario, GDP growth increases by about 0.3 percentage points per year between 2020 and 2025. However, once the reform is completed, the growth rate of the labor force is determined solely by the demographic dynamics again. Therefore, GDP growth converges to baseline growth for the remaining projection period. In comparison, the EUROPOP based LFP scenario contributes on average about 0.18 percent to the growth rate per year, slightly increasing towards the end of the projection period.⁹⁴

Higher labor force participation improves fiscal sustainability. With higher LFP comes higher income per capita. This leads to a small increase in public health-care expenditures as a share of GDP for the reasons explained in the previous scenario. However, the budget transfers to the pension fund

as a share of GDP decrease at the same time due to a higher number of contributors; lower growth of real wages in relative terms, which is used as a base for pension benefits; and a higher denominator. The high labor-force scenario leads to a strong improvement in primary balances (Figure VII-4, Panel (e)). The primary deficit in 2050 is projected to be 0.75 percent under this scenario, compared to 0.83 percent under the EUROPOP-based LFP scenario, and about 0.91 percent under the baseline and retirement-age scenarios. This translates into lower ratios of debt to GDP for the high-LFP scenario (43.7 percent), and the EUROPOP-based LFP scenario (49.4 percent) in comparison to the baseline and retirement-age scenarios (51.3 percent and 50.8 percent, respectively).

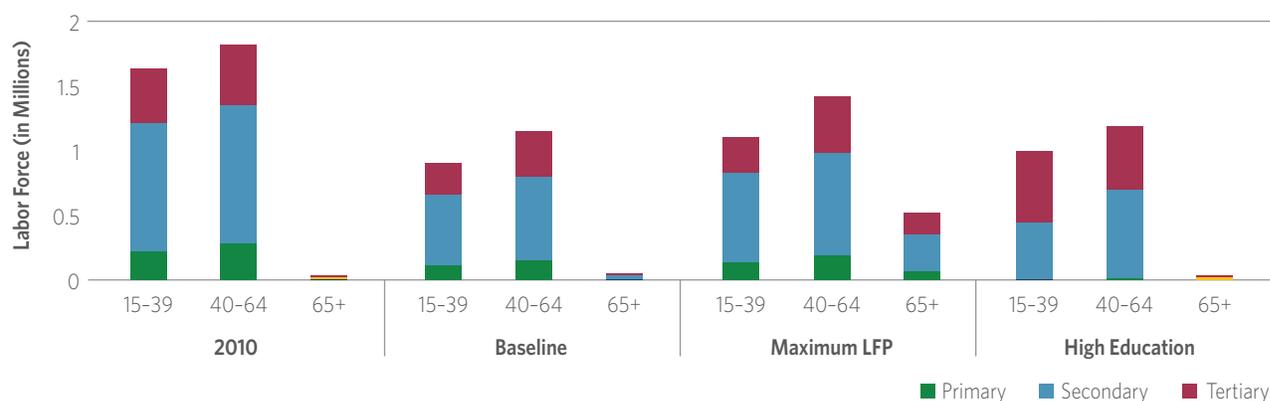
Education Scenarios

Since investment in education is a key channel through which the government could boost the productivity growth, the model presents two different education scenarios. The baseline and High LFP projections presented above assume that student enrollment rates remain constant. The high-education scenario presented here, on the other hand, assumes a steady increase in the share of students that complete secondary or tertiary degrees. As a result, contrary to the standard LFP scenarios, this scenario also assumes an increase in the share of population with tertiary and secondary education. Notwithstanding these differences, the baseline and the high education scenarios are based on the same United Nations population projections. This imposes a rather strong assumption,

⁹³ See Annex I for a detailed description of the difference between Eurostat and United Nations populations projections.

⁹⁴ The EUROPOP based LFP scenario assumes, similar to the baseline scenario LFP rates by gender and five-year age groups in line with ILO projections up to 2020 and constant LFP rate by gender and five-year age groups thereafter.

FIGURE VII-5: LABOR FORCE BY EDUCATION LEVEL UNDER DIFFERENT SCENARIOS



Source: WB Staff simulations based on data from UN population, ILO and the Vienna Institute of Demography. Projections are for 2050. The high education scenario assumes constant LFP rates by age and education.

since education is likely to affect all three fundamental demographic components: fertility, mortality and migration. The number of children, the timing of births and marriage tend to differ among women with different levels of education. Life expectancy tends to be higher among the more educated. Moreover, the highly educated tend to be more likely to migrate and are less likely to return to their country of origin. All these suggest that population projections could vary under different education scenarios, but the direction of the change is ambiguous. Although the total population is assumed to be the same under the baseline and the high education scenario, the labor force is projected to be larger under the high-education scenario since labor force participation rates tend to be higher for the population with higher education within a given age group (Figure VII-5).⁹⁵

Can improving the skills of the labor force compensate for its reduction in size? By 2050, the number of students graduating with a tertiary-school diploma reaches 204,000 under the high education scenario, which compares to 88,000 under the baseline.⁹⁶ This leads to an increase in the average years of schooling from about 11 years in 2012 to 12.2 years by 2050. In addition, as labor force participation is higher among the higher-educated, the labor force

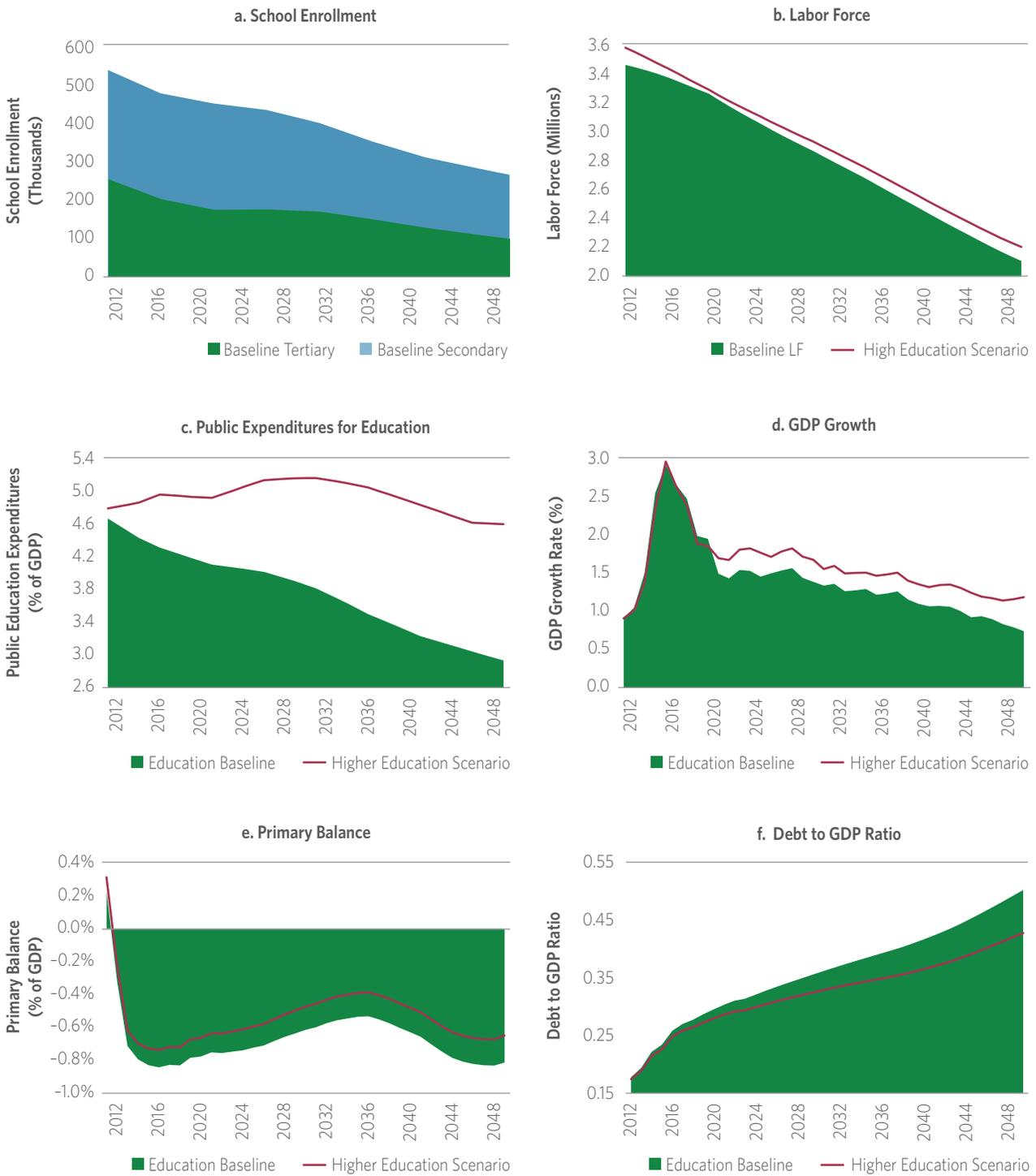
is bigger under the high-education scenario. This provides an additional source of growth to the increase in skills. On average, this scenario generates an additional 0.23 percent growth rate after it becomes effective around 2020. Later, it becomes stronger and reaches almost 0.4 percentage points in 2050 (Figure VII-6, Panel (a))

Higher school enrollment increases public education expenditures compared to the baseline. Instead of decreasing as in the baseline case, public education expenditures increase from a little above 4.6 percent in 2012 to near 5.1 percent in the medium term and fall back to 4.5 percent by 2050 (Figure VII-4 – Panel (c)). The increase in fiscal costs is mitigated by the assumption that investment in education reduces demand for other public services such as police and hospital care. This argument is supported by empirical evidence that higher education tends to be correlated with lower crime rates and more frequent practice of preventive health-care (Lochner and Moretti 2004).

⁹⁵ This observation is almost universal. Even among the richer EU countries with significantly higher average years of education than Bulgaria, labor force participation rates tend to increase with education level.

⁹⁶ Similarly, the number of students graduating with a secondary school diploma will increase from 265 thousand to 440 thousand.

FIGURE VII-6: PROJECTIONS UNDER EDUCATION SCENARIOS



Source: Authors' simulations.

A better-educated workforce helps make public finances more sustainable.

On average, a more educated and productive workforce leads to a reduction in the primary deficit by about 0.15 percentage points per year. As a result, the debt-to-GDP ratio decreases from 51 percent in 2050 under the baseline to near 41 percent under this scenario. This is to some extent driven by the assumption that education investment raises living standards as public services other than education also improve as the skills of the work-force improve.

As discussed in Chapter III, the Bulgaria education system faces several challenges that are not reflected in these simulations:

First, in the future, Bulgaria will need to decrease its high drop-out rates, especially among the Roma and other disadvantaged groups. This is likely to require additional public funding. On the other hand, Bulgaria would need to develop an effective program of life-long learning. Costs of such a program are not reflected in the simulations. They are also based on the assumption that the costs of education per child in terms of GDP per capita do not increase under the high-education scenario. Second, the model assumes that school attainment in itself increases the productivity of the workforce. Again, this assumption may not hold if the education system does not serve the business needs or if the quality of the education decreases as the number of graduates rises.

These simulations suggest that Bulgaria's demographic change poses a serious threat to growth and fiscal sustainability in the absence of reform.

As the high-LFP scenario shows, increasing LFP rates could significantly raise growth and improve the public-debt trajectory (Table VII-3). Public investment in education is also projected to lead under the high education scenario to significant gains in terms of growth and fiscal sustainability if education raises productivity, LFP rates and efficiency of public spending. The low-TFP scenario illustrates that downward risks are significant. Maintaining strong productivity growth, which will entail active policies and planning, is essential to maintain debt at a sustainable level.

The debt-to-GDP ratio increases particularly under the low-productivity growth scenario through its impact on the primary deficit.

Under this scenario, the primary deficit adds 1 percentage point per year on average to the debt-to-GDP ratio whereas it does not exceed 0.8 percentage points under any other scenario (Table VII-4). Under the higher education and higher labor force participation, the dampening-growth effect gains importance. For example, under the higher-education scenario, this effect reaches 0.9 percent per year towards the end of the projections, nearly compensating the pressures created by primary deficits. Overall, the largest average debt-dampening effect of growth comes from higher labor force participation.

TABLE VII-3: GROWTH RATES AND PUBLIC DEBT RATIO UNDER BASELINE AND SCENARIOS

	2012	2015	2020	2025	2030	2035	2040	2045	2050
GDP Growth									
Baseline	0.8%	2.2%	1.7%	1.3%	1.2%	1.1%	1.0%	0.8%	0.7%
Low TFP	0.8%	1.7%	1.5%	1.0%	1.0%	0.9%	0.7%	0.6%	0.4%
High TFP	0.8%	3.0%	2.5%	1.7%	1.7%	1.6%	1.4%	1.1%	0.8%
Retirement Age	0.8%	2.2%	1.7%	1.3%	1.2%	1.2%	1.0%	0.8%	0.7%
High LFP	0.8%	2.2%	1.7%	1.8%	1.8%	1.8%	1.7%	1.5%	1.3%
EUROP based LFP	0.8%	3.1%	1.7%	1.1%	1.2%	1.4%	1.3%	1.1%	0.9%
High Education	0.8%	2.1%	1.6%	1.6%	1.5%	1.3%	1.2%	1.1%	1.0%
GDP per capita Growth									
Baseline	1.5%	2.9%	2.5%	2.1%	2.1%	2.0%	1.8%	1.6%	1.5%
Low TFP	1.5%	2.4%	2.2%	1.8%	1.9%	1.8%	1.6%	1.4%	1.3%
High TFP	1.5%	3.7%	3.2%	2.6%	2.6%	2.4%	2.2%	2.0%	1.7%
Retirement Age	1.5%	2.9%	2.4%	2.1%	2.1%	2.0%	1.8%	1.6%	1.6%
High LFP	1.5%	2.9%	2.5%	2.6%	2.7%	2.7%	2.5%	2.3%	2.2%
EUROPOP based LFP	1.5%	3.3%	2.4%	1.9%	2.0%	2.0%	1.8%	1.7%	1.5%
High Education	1.5%	2.8%	2.4%	2.4%	2.3%	2.2%	2.0%	1.9%	1.9%
Debt to GDP Ratio									
Baseline	18.0%	23.4%	29.3%	32.7%	35.9%	38.9%	41.9%	46.1%	51.4%
Low TFP	18.0%	23.7%	31.5%	36.7%	41.6%	46.2%	50.9%	56.7%	63.8%
High TFP	18.0%	22.7%	28.4%	31.3%	33.8%	35.7%	37.5%	40.4%	44.7%
Retirement Age	18.0%	23.4%	29.2%	32.3%	35.5%	38.4%	41.4%	45.5%	50.9%
High LFP	18.0%	23.4%	29.3%	32.0%	34.5%	36.4%	38.1%	40.5%	43.7%
EUROPOP based LFP	18.0%	23.2%	29.1%	32.6%	35.8%	38.4%	40.8%	44.2%	48.5%
High Education	17.3%	22.2%	27.3%	29.6%	31.7%	33.4%	35.2%	37.8%	41.3%

TABLE VII-4. COMPARISON OF DEBT DYNAMICS ACROSS THE SCENARIOS^a

	Change in Debt to GDP Ratio	Growth Effect	Interest Payments	Primary Balance
Baseline	0.8%	-0.4%	0.5%	0.8%
Low TFP Growth Scenario	1.2%	-0.4%	0.5%	1.0%
High TFP Growth Scenario	0.6%	-0.5%	0.4%	0.7%
High LFP Scenario	0.6%	-0.6%	0.4%	0.7%
EUROPOP based Scenario	0.8%	-0.5%	0.5%	0.8%
High Education Scenario	0.6%	-0.4%	0.4%	0.6%

^a Annual averages in percentage points, 2012-2050.

CONCLUSION

Addressing the economic impact of population aging requires a combination of prudent fiscal policy and provision of high-quality public services with a sustained commitment of implementing broad-based reforms. Providing high-quality public services in areas such as basic education, life-long learning and health will be increasingly important as Bulgaria's population ages. Combined with targeted policies that activate population groups with traditionally low LFP rates and improvements in the business climate, these policies could boost employment rates. They would also most likely reduce emigration and stimulate the economy.

There are no easy or quick solutions. There is an urgency to start the reform process. Institutions and policies take time to evolve, but the elderly of the future are already entering the education system or work-force today. Current institutions influence their choices, and thereby, the country's future growth. The slower the reform process, the heavier the effects of Bulgaria's demographic change are likely to become. Some of the reforms discussed in this report, such as in health-care, are likely to be politically challenging to implement. Moreover, one-off reforms are unlikely to be enough. The report shows that sustained reform commitment in all relevant areas will be required to tackle the economic consequence

of aging. Providing the public with better information about the economic consequences of aging and inviting an open public debate about the cost of inaction, available options, and pros and cons of different reforms might be an important step.

One of the most important choices that the Bulgarian society will have to make is how to fund the needs of the elderly. Possible options, discussed in this report, are to further increase the retirement age, provide public transfers to older people or to foster the accumulation of household assets. Bulgaria is unlikely to be able to avoid additional increases of the legislated retirement age in the future. But for older workers to find productive jobs, it will be essential to implement productivity-enhancing policies, such as improving the business climate, infrastructure and innovation, and provide them with better life-long learning opportunities, improvements in the health-care system and labor-market policies targeted to them. Moreover, strengthening the quality of Bulgaria's basic education system can help ensure that the young people of today have the skills they need to be productive when they become old. Given the unsustainability of public-transfer systems, there is an urgency to convince current workers to save more for their future and to incentivize household savings. But unless economic growth accelerates and unemployment declines, this will

be admittedly a daunting task. There is no doubt that population aging will challenge public and private budgets. By investing in future productivity growth, postponing

retirement and increasing asset-accumulation it should be possible for Bulgaria to meet this challenge.

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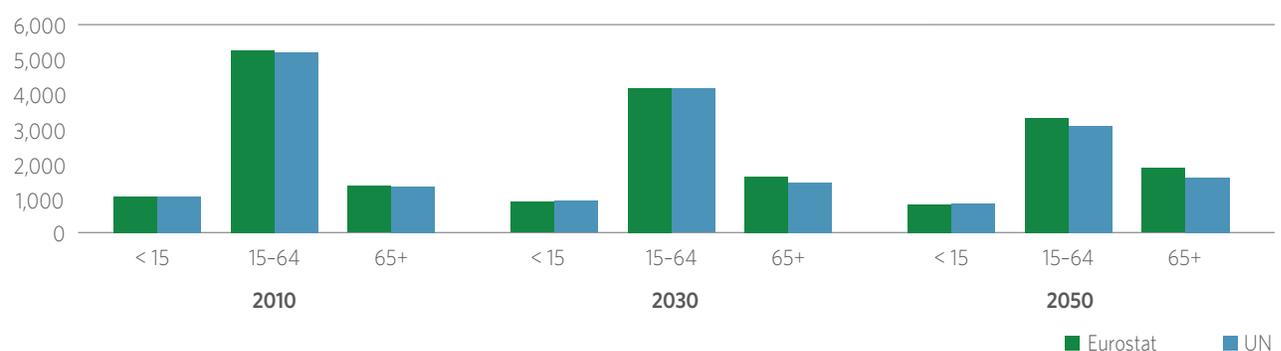
ANNEX I: POPULATION PROJECTIONS FOR BULGARIA

Population projections in this report are taken from either Eurostat (EUROPOP) or the medium variant of the United Nations Population Division. Their projections differ with respect to assumptions regarding fertility rate, life expectancy and migration. Eurostat (UN) projects that Bulgaria TFR increases from 1.56 in 2010 to 1.65 (1.93) by 2050. Note that the TFR in the EU27 is currently at a low 1.7. Eurostat (UN) assumes that male life expectancy in Bulgaria increases from 70.3 in 2010 to 82.3 in 2050 and female life expectancy from 77.5 in 2010 to 85.0 in 2050. By comparison, it took the average European country 45 years to increase male life expectancy from 70 to 80.

With respect to migration Eurostat assumes an increase in net emigration from 10,000 per year to 14,000 in 2020, declining steadily towards the beginning of the 2030s. Between 2030 and 2050, Eurostat assumes net immigration of around 5000 per year, while the UN extrapolates current immigration trends, and assumes 10000 net emigrants per year throughout the projection period.

As a result of these assumptions, population in 2050 is somewhat different. According to Eurostat, Bulgaria's population would shrink to 5.899 million by 2050, while the UN projects a lower population of 5.457 million, largely driven by the assumption of higher emigration. Also the age structure

EUROSTAT VERSUS UN DATA



Source: United Nations Population Division (2011) and Eurostat (2012).

differs slightly: although the working-age population as a share of total population is the same (56 percent in 2050 for both UN

and Eurostat projections), the share of people aged 65 and above is higher for the EU projections.



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