PRODUCTIVITY IN BULGARIA

Trends and Options

May 2015

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ACRONYMS AND ABBREVIATIONS

BGN	Bulgarian Lev
CVM	Cooperation and Verification Mechanism
DVAX	Domestic Value Added of Exports
EBRD	European Bank for Reconstruction and Development
ECA	Europe and Central Asia
EU	European Union
EU15	EU of 15 member states: EU-12 plus Austria, Finland, and Sweden
EU28	All EU Member States
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GTAP	Global Trade Analysis Project
GVA	Gross Value Added
GVCs	Global Value Chains
ICT	Information and Communications Technology (ICT)
ILO	International Labor Organization
LFP	Labor Force Participation
LPI	logistics Performance Index
MAMs	Maquette for MDG Simulations
MoF	Ministry of Finance
NED	Non-financial Enterprise Data
NEK	National Electricity Company
NSI	National Statistical Institute
OCS	Other Commercial Services
OECD	Organization of Economic Cooperation and Development
PIRLS	Progress in International Literacy Study
PISA	Programme for International Student Assessment
PMR	Product Market Regulation
PPP	Purchasing Power Parity
RCA	Revealed Comparative Advantage
SMEs	Small and Medium Enterprises
SOEs	State Owned Enterprise
STRI	Services Trade Restriction Index
TC	Trade Complementarity
TFP	Total Factor Productivity
UNCTAD	United Nations Conference on Trade and Development
USPTO	United States Patents and Trademarks Office
WTO	World Trade Organization

CURRENCY AND EQUIVALENT UNITS

Exchange Rate as of June 5, 2015

Currency Unit	**Bulgarian Lev**
US$ 1.00	BGN 1.76

Government Fiscal Year
January 1–December 31

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PREFACE BY H.E. VLADISLAV GORANOV MINISTER OF FINANCE OF THE REPUBLIC OF BULGARIA

The new millennium brought significant progress to Bulgaria. Ground-breaking macro-economic and decisive structural reforms at the turn of the century paved the way to EU accession and unleashed Bulgaria's considerable economic potential. During that period the economy grew remarkably at rates unprecedented in our history, numerous new jobs were created and Bulgarian incomes started to move towards the EU average. The growth of real GDP since the year 2000 is among the strongest in the EU.

Unfortunately the 2008 global financial crisis and the ensuing recession in Europe put the brakes on Bulgaria's successful economic advance. Economic growth slowed down, unemployment rates increased and gains and improvements in living standards of many Bulgarians stagnated. Many of our young compatriots left the country in search of better opportunities elsewhere. Accelerating growth became more and more difficult over time and now it requires intensified and consistent efforts across many government institutions.

The Bulgarian Ministry of Finance asked the World Bank to look closely into the question of how Bulgaria can build on past successes to accelerate growth and improve the lives of the Bulgarian people. The World Bank replied with *the Productivity in Bulgaria* report. The key to putting Bulgaria's economy into gear and onto a higher growth path that will generate the better incomes and additional jobs that we so badly need, as the report explains, is higher productivity. Increases in productivity are of key significance for our country's long-term growth and for the accelerated EU cohesion process. Higher productivity could also help Bulgaria overcome the economic consequences of current demographic changes; and could lead to employment opportunities as well as better competitive power.

The report points to a number of policy areas where efforts need to be directed if constraints to productivity growth are to be overcome. These areas include: educating and improving the skills of all Bulgarians; unleashing the potential of Bulgarian entrepreneurs to innovate; reducing regulatory uncertainty and burden; generating a level playing field for all firms and market participants; and reforming the judicial system to

be an effective force for the integrity of property rights and contract enforcement.

The report also highlights several Bulgarian success stories, the message clearly being - if we can nurture an environment for faster, smarter growth, and thereby enable the emergence of more successful firms, the opportunity to achieve EU living standards within the life-span of this generation is in our own hands.

ACKNOWLEDGEMENTS

This report responds to a request from the Bulgarian Minister of Finance. It was prepared under the overall leadership and guidance of Satu Kahkonen (Director, GMFDR), Miria Pigato (Practice Manager, GMFDR) and Ivailo Izvorski (Practice Manager, GMFDR). The team benefited greatly from the support and guidance of Mamta Murthi (Country Director, ECCU5), Markus Repnik (Former Country Manager, ECCBG) and Antony Thompson (Country Manager, ECCBG). The team would like to thank staffs from the Ministry of Finance (MoF), in particular Marinela Petrova (Director of Economic and Financial Policies Directorate), as well as from the Ministry of Economy, and the National Statistical Institute for their excellent collaboration and invaluable feedback throughout the preparation of this report.

The task team was led by Doerte Doemeland (Lead Economist, GMFDR) and Stella Ilieva (Senior Economist, GMFDR). The report draws on several background papers that have been prepared for the purposes of this report. Chapter 1 refers to a paper by Aristomene Varoudakis and Jose Louis Dias Sanchez on employment and productivity growth in the European Union. Chapter 2 draws on a paper on Bulgaria's structural transformation by Nikola Kojucharov, a note on structural transformation in the EU by Marc Teignier (University Autonoma of Barcelona) and Gallina Vincelette and a note on the marginal productivity of labor in selected European countries prepared by Moritz Meyer. Chapter 3 summarizes a paper on Bulgaria's product space from Israel Osorio-Rodarte and a study on Bulgaria's integration in global value chains by Daria Taglioni and Deborah Winkler. Chapter 4 on Bulgaria's services sector has been prepared by Sebastian Saez and Erik van der Marel (European Center for International Economy) with inputs from Peter Walkenhorst (American University of Paris). Chapter 5 draws on background notes from Roberto Fattal Jaef and Kosuke Kanematsu on Bulgaria's firm-level dynamics with inputs from Mariana Iootty de Pavia Diaz and Donato de Rosa and an analysis of the economic impact of Product Market Regulation on firm-level productivity growth by Erik van der Marel. Chapter 6 on judiciary reform was prepared by Klaus Decker. Chapter 7 on productivity growth and shared prosperity draws on a background paper by Jouko Kinnunen (Statistics and Research Aland) and Hans Lofgren.

The team benefited from helpful comments from the peer reviewers Elena Ianchovichina, Marc Tobias Schiffbauer and Mariana Iootty de Pavia Diaz and from Christian Bodewig, David Gould, Ulrich Hoerning, Hans Kordik, Hannah Nielsen, Irina Ramniceanu and Pedro Rodriguez.

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EXECUTIVE SUMMARY

The 21st century has seen a strong expansion in Bulgaria's real GDP growth, supported by robust macroeconomic and structural reforms and anchored in the process of EU integration and convergence. As growth has slowed since the global economic crisis, so too has the pace of structural reforms and thus productivity growth, the ultimate driver of prosperity. A return to stronger and sustained productivity growth will require renewed progress in revising the role and footprint of the government—notably in such areas as education, innovation, regulatory certainty, competition and the judiciary.

Patterns of Productivity Growth

Bulgaria's real GDP growth since 2000 has been among the strongest in the European Union. Between 2000 and 2013, Bulgaria grew on average by 6.1 percent a year in real per capita PPP terms, a rate only exceeded by the Baltic countries and Romania, and significantly above the EU average of 2.4 percent and the average of regional benchmark countries of 5.3 percent.[1] As in most other countries in the EU, two periods are notable: before and after the global economic and financial crisis. From 2000 to 2008, growth averaged 9.1 percent a year in PPP terms, thanks to a surge in foreign capital of up to 43 percent of GDP a year and the corresponding increase in fixed investment. Progress in Bulgaria was mainly a result of: decisive macroeconomic reforms; the opening of EU accession negotiations in 2000 that provided an anchor for macro stability; low tax rates; and a relatively high-skilled work force. It was also helped by the supportive global environment of abundant capital. A significant share of inflows was channeled into labor intensive sectors, such as construction, textiles, trade, transport and tourism, fueling employment growth. According to national accounts data around 566,000 additional jobs were created between 2000 and 2008, which is remarkable given that Bulgaria's population was 7.6 million in 2008. Employment growth surged to 17.8 percent—twice the average of other regional comparator countries, reducing poverty by more than half.[2]

Productivity growth fell short of that of other regional comparators and improvements in prosperity achieved before 2008 were not sustainable. Productivity

[1] Regional comparators include Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia and Romania.

[2] Poverty measured as the proportion of the population living on less than US$5 a day (PPP) fell from 37 percent in 2001 to 13 percent in 2008.

growth tends to be the most important driver of long-term growth. While temporary gaps between productivity growth and welfare improvements are possible, ultimately productivity dominates. Productivity may not be so significant in the short term, but it is significant in the long term. Widely used measures of productivity include labor productivity which is value of output per worker or hours worked, and Total Factor Productivity (TFP). Labor productivity can increase as workers become better educated or gain access to better machinery, and TFP measures productivity gains independent of changes in production inputs. Between 2000 and 2008, growth in Bulgaria's labor productivity and TFP remained significantly below the regional average. Labor productivity growth was largely driven by capital deepening, i.e. the increase in capital per unit of labor, driven by the investment boom. Nonetheless, its contribution to productivity growth was lower than in other EU countries, as a significant share of capital went into labor-intensive sectors, such as textiles or construction. Sectors with skilled workers, such as finance and ITC, experienced rapid productivity growth, but remained insignificant in terms of overall GDP and employed only a small share of the work force. At the same time, large external capital inflows led to a rapid build-up of external debt which reached 112 percent of GDP in 2009. Growth fueled by external capital inflows started to reach its limits by 2007–08.

Since 2009, productivity growth has become increasingly important for growth, but remains suppressed. The global financial crisis of 2009 and the ensuing Eurozone crisis put the brakes on Bulgaria's investment boom, which had been fueled by capital inflows and bank lending. According to Eurostat data, real GDP growth in PPP per capita terms slowed to an average of 1.2 percent between 2008 and 2013, below the regional comparator average of 1.6 percent. Pre-crisis employment gains were partially undone as around 400,000 jobs were lost between 2008 and 2013. The labor shedding boosted labor productivity growth to 3.3 percent a year on average between 2009 and 2013, above the regional average of 2.6 percent. Most productivity growth continues to be driven by capital deepening. While Bulgaria's investment needs are likely to remain high after decades of underinvestment. Labor could become even more productive if constraints to TFP growth and employment growth were to be addressed.

Bulgaria's TFP growth has been low, particularly in manufacturing. Bulgaria's TFP growth averaged 1 percent between 2009 and 2013 which is significantly lower than the regional average of 1.3 percent. Firm-level data suggest that TFP growth increased in services and construction since 2009 as new, more productive firms entered these sectors and firms with less than average productivity exited. These dynamics were largely absent in Bulgaria's manufacturing sector where TFP growth has stagnated, indeed entry rates in Bulgaria's manufacturing sector are quite low by regional standards. Labor productivity growth in Bulgaria's medium-high-technology sector, including machinery and equipment and chemical products, has stagnated since 2009 even though Bulgaria's peers experienced significant productivity gains.

Bulgaria is suffering from a significant and increasing degree of misallocation of resources at the firm and sector level. A misallocation of resources occurs if—within a given sector—highly productive firms remain small while relatively unproductive firms employ a large share of the workforce. If Bulgaria's allocation of workers across firms within a given sector were similar to that of Germany, TFP would rise significantly: in 2012, TFP was only about 55 percent of the efficient level of manufacturing firms and only 30 percent for services companies. This degree of misallo-

cation is unusually large, indicating that Bulgaria's manufacturing and service sectors are operating significantly below their potential. Economy-wide labor productivity increases if more high-productivity sectors employ a higher share of the workforce. The shift towards more productive sectors has been weak in Bulgaria, as most of the employment gains since 2000 occurred in the relatively low-productivity sectors of industry and services.

In many countries, the export sector serves as an engine of technological change, yet the sophistication of Bulgaria's export basket has stagnated since the mid-1990s. Though Bulgaria has been exporting medium-to-high technology manufacturing products for decades, its companies have not been able to expand on these exports and the productivity growth of exporters has been limited. Bulgaria has also been less successful than other benchmark countries in entering Global Value Chains. With the exception of ICT services, Bulgaria has made little progress in boosting exports of modern services. Its services sector has expanded significantly since 2000 in terms of value added and employment, but remains relatively small by European standards and is dominated by traditional services, such as tourism and transport.

The Rationale for Higher Productivity Growth

Boosting productivity growth is essential for accelerating long-term output growth and converging to the EU income level. Macro-economic stability is necessary but not sufficient for long-term growth: in fact, lack of long-term growth will ultimately challenge macroeconomic stability. The sizable capital inflows of the past are unlikely to return without new reforms that rapidly expand the productive capacity of the economy. Boosting productivity will, therefore, be key for long-term growth and for accelerating EU convergence. Under baseline demographic projections and employment trends, Bulgaria's annual labor productivity growth would need to increase to around 4 percent for the country to reach the EU average income per capita by 2040. An annual productivity growth of 5 percent, a rate attained by Romania and Lithuania between 2000 and 2013, would enable Bulgaria to converge to the average EU income level almost a decade earlier.

Higher productivity growth can help Bulgaria mitigate the economic impact of demographic change. Bulgaria is heading for the steepest decline in the working-aging population of any country. This means that fewer working Bulgarians will need to support more children and people in retirement. One in three Bulgarians is projected to be older than 65 years of age by 2050, according to UN population projections, and only one in two Bulgarians will be of working age. In the absence of timely, significant and sustained reforms, the steep drop in the labor supply is likely to impose a heavy burden on the economy. Even under the most optimistic scenarios that assume a large increase in labor force participation among Bulgaria's elderly, this decline cannot be stemmed. A shrinking labor force means that Bulgaria will have to rely on productivity to sustain aggregate output growth.

Higher productivity growth is likely to generate better employment opportunities and improve Bulgaria's competitiveness. As productivity increases, wages are like to rise. As long as productivity growth exceeds wage growth, employment is likely to increase. In previous years, productivity growth and employment gains in Bulgaria have moved largely in the same direction for the economy as a whole and within firm groups. Only incumbent firms that were in operation prior to 1989, showed a decline in employment and above average TFP growth in the pre-crisis period, suggesting that they underwent significant restructuring to adapt

to the new economic environment. Boosting productivity growth will also be important for Bulgaria to remain competitive. Bulgaria is now one of the most open economies in Europe with an export to GDP ratio of 68 percent in 2014. Unless Bulgaria continues to improve its competitiveness, further jobs could be lost.

Productivity growth is likely to reduce net migration. The decision to emigrate or to return to the country of origin is determined by many factors, including wage differentials among countries and job prospects. If the wage differential between Bulgaria and the countries receiving Bulgarian migrants narrows, fewer Bulgarians will leave the country. Policies that boost productivity, expand opportunities, and therefore result in higher wages could even encourage Bulgarian migrants to return home, moderating the negative consequences of a declining and ageing population. Return migrants could also raise the skill level of the Bulgarian labor force as migrants have often accumulated productivity-enhancing skills during their time abroad.

Productivity growth will be key for improving welfare. A combination of productivity-enhancing reforms and improvements in the skills of secondary education graduates are likely to yield the highest gains in shared prosperity. So far, Bulgaria's progress in shared prosperity has been limited. According to EU-SILC data, the income of the bottom 40 percent of the Bulgarian population increased by 1.4 percent per year between 2007 and 2011, significantly below the regional average. Reforms in support of higher TFP and larger inflows of FDI could have a significant impact on reducing poverty and improving the welfare of the bottom 40 percent. In the long run, improvements in skills will be key for boosting shared prosperity, since it would enable more Bulgarians to benefit from growth. Under most reform scenarios, households with secondary-level education have the largest gains in earnings.

Options for Boosting Productivity Growth

Improving Bulgaria's education system could help boost innovation, increase inflows of FDI and help companies shift into higher value-added sectors. According to PISA data, a large share of young Bulgarians leaves the education system with insufficient reading and mathematics skills essential for productive employment. Educational gaps between the ethnic Bulgarian population and minorities is large. This is especially true for the Roma, who are projected to form an increasing share of labor market entrants. Bulgaria needs fundamental reforms of pre-university education, including of the curriculum and teacher policy, to ensure that students can acquire the skills that employers need. Improvements in tertiary education will be important for Bulgaria to remain an attractive location for foreign investors and to increase innovation. Tertiary attainment rates across the population have increased; financial and social returns to tertiary education attainment remain high and unemployment among students with tertiary education is low. Yet, higher education in Bulgaria continues to face challenges with regard to quality, efficiency and accountability. While education reforms are necessary for boosting productivity growth, they are unlikely to be sufficient. Unless the Bulgarian economy is able to offer attractive jobs, many skilled Bulgarians are likely to emigrate.

Boosting innovation will be important since Bulgaria lags significantly behind other EU countries in terms of innovation. Bulgaria's number of patents is low by EU standards. According to Eurostat data, its share of innovating firms was the lowest in the EU in 2010, ranking low for both product and process innovation. Business R&D spending in 2011 was 0.3 percent in Bulgaria, compared to 1.23 percent in the EU. Public R&D spending was 0.29 percent in 2013, compared to an EU average of 0.76

percent. The low level of R&D spending, in particular by firms, along with limited linkages between research and companies, constitute a challenge for the government's efforts to improve innovation. In this context, it is important to establish incentives for local universities and research institutes to work together with domestic and foreign owned companies, through internships, outplacements, joint training and curriculum development.

Regulatory certainty and a strong rule of law are key for promoting innovation and supporting productivity growth. Innovation tends to be costly. Profit seeking firms will only invest in innovation if the returns are high enough and if they can reap the returns of these investments. Government can play an important role in creating an environment that is conducive to innovation. A country's institutional, legal and economic environment is key for determining the profitability of technological change. Bulgaria scores low on most governance indicators and progress in the past 15 years has been limited, it ranks particularly low on the dimensions of government accountability, corruption and regulatory enforcement. The report shows that governance issues seem to be at the core for preventing faster productivity growth. Services that require complex contractual obligations, such as financial services and accounting, are smaller than in other EU countries and in countries with a similar level of rule of law.

Lack of competition in some sectors has been a strong impediment to Bulgarian productivity growth. According to the OECD's Product Market Regulation data, Bulgarian firms are more exposed to policies that inhibit competition than firms in other regional comparator countries. The analysis presented in this report shows that misallocation of resources across firms tends to be higher in sectors with a high share of incumbent firms and lower competition. It also provides empirical evidence to show that increases in competition in a given services subsector significantly improves TFP growth among firms that use this service as an input. Indeed, competition appears to be the most robust factor affecting TFP growth.

Reforming Bulgaria's judiciary is *a sine qua non* for boosting private-sector performance and establishing an effective, fair, and transparent government. A well-functioning judicial system is an essential element of a healthy, supportive and competitive business climate. Bulgaria scores low on key indicators of judicial performance and Bulgarian firms have little trust in the efficiency or integrity of the country's courts. An important first step for improving judiciary performance and changing perception is to establish a system to accurately measure and manage the performance of judicial institutions, including user surveys. A better distribution of caseloads across judges and a system of fair evaluation of their performance could help ease the burden on some courts. Ensuring that cases are really assigned randomly could build confidence in the system, and targeted training could strengthen judiciary performance. The Bulgarian Parliament adopted an updated justice sector strategy in January 2015, which is an important step in the right direction. A strong and sustained political commitment to fight internal corruption will be key to restoring the confidence of the business community and assuring the general population of the judiciary's integrity and impartiality.

POLICY OPTIONS

	Challenges	Policy Options
Macro-economy	Improve educational outcomes of labor market entrants	Provide better access to early childhood development and education programs, especially for children from disadvantaged groups, including Roma; Reduce early dropout; Direct teacher policy to improving teaching quality and effectiveness, including promoting hiring of highly qualified teachers in disadvantage areas; Postpone selection into vocational, profiled and non-profiled general education tracks until compulsory schooling ends to achieve more equitable and higher-quality basic education.
	Facilitate structural transformation	Boost agricultural productivity; Promote life-long learning; Improve rule of law; Support innovation (see below).
	Mitigate economic impact of declining working-age population	Promote flexible work arrangements; Promote life-long learnings; Promote savings through pension reform and improvements in financial literacy; Strengthen health sector; Promote within sector productivity growth.
Exports	Lack of innovation	Increase public R&D spending; Increase absorption of EU R&D funds; Improve links between businesses, academia and public research, including through mobility of researchers; Strengthen links with foreign research centers; Make science, technology and innovation more business-oriented and receptive to the needs of the whole spectrum of firms; Improve quality of tertiary education.
	Limited GVC integration	Improve infrastructure; Establish a tripartite partnership between graduates, career centers and employers to develop effective education programs; Reduce regulatory uncertainty; Improve quality of tertiary education; Improve rule of law.
Services	Lack of competition	Implement EU Services Directive and associated specific EU directives of financial services, compute and ICT services, transportation, professional services, health care and temporary cross-border services.
	Weak enabling factors	Strengthen judiciary (see below); Remove regulatory uncertainty; Improve tertiary education; Strengthen ICT infrastructure.
Firms	High degree of misallocation	Improve access to finance for SMEs; Improve insolvency regime; Revise regulation to enable competition.
	Weak TFP growth	Improve competition; Improve services.

(*continued on next page*)

POLICY OPTIONS (*continued*)

	Challenges	Policy Options
Judiciary	Protracted resolution of insolvency cases	Improve distribution of caseloads; Revise judicial map.
	Inconsistent application of the law	Issue interpretative, guidance-oriented decisions in key areas; Improve access to online judicial reporting; Improve training for court experts, lawyers and judges.
	Perception of corruption	Establish simple mechanisms to solicit and address corruption complaints; Implement disciplinary system for breaches of conduct; Improve random case assignment system.
	Lack of performance monitoring	Develop tools for routine data collection and key performance indicators; Introduce unified court information system; Introduce standard reporting on judiciary performance.
Shared prosperity	Lack of improvements in shared prosperity	Reduce early drop-out; Postpone selection into vocational, profiled and non-profiled general education tracks until compulsory schooling ends; Attract FDI; Reduce corruption; Facilitate immigration.

CHAPTER 1

INTRODUCTION

This report aims to identify key constraints to productivity growth at the macro-economic and firm-level. It responds to a request from the Bulgarian Ministry of Finance and is the second part of a two-pronged study. The first report on "Mitigating the Economic Impact of Aging: Options for Bulgaria", focused on identifying policy options for mitigating the macro-fiscal impact of Bulgaria's demographic change. Chapter 2 provides a detailed assessment of the link between productivity and demographic change. Since the first report included assessments of Bulgaria's options for further strengthening labor market, education, health sector, and pension policies, this study will not discuss productivity-enhancing reforms in these areas in any detail. Many policy options discussed in this first report remain, thus, not only valid in the context of demographic change but are equally important for boosting productivity growth.

The report assesses constraints to productivity growth at the aggregate, industry and firm-level. Traditionally, most international comparisons of economic productivity use either aggregate calculations of labor productivity or total factor productivity, and sometime they use measures at the broad sector or industry level. In recent years, aggregate calculations have been increasingly supplemented with micro-level assessment of productivity growth at the firm-level or narrowly defined industries. This report follows the same approach. It starts by analyzing productivity growth at the macro-level, comparing Bulgaria's performance over time with other EU member states (Chapter 3). It then assesses the performance of narrowly defined industries through the lens of exporters as exports are often an important driver of productivity growth (Chapter 4). Chapter 5 looks at productivity growth through the lens of the service sector. In Chapters 4 and 5, we track the flow of intermediate inputs at the industry level and the link between output industries and the rest of the economy using input-output tables. Finally, we analyze firm-level productivity growth in Bulgaria (Chapter 6).

As a country's institutional environment affects all economic actors, this report treats institutional constraints as a cross-cutting theme, trying to identify those institutional constraints that are particularly relevant in specific areas. The only exception is the judiciary. Given the judiciary's fundamental importance in protecting the rights of economic agents and the apparent shortcomings of Bulgaria's judiciary, the report dedicates one chapter (Chapter 7) to an assessment of judiciary performance in Bulgaria and possible reform options.

Significant empirical evidence shows that productivity growth is an important determinant of long-term growth, but less is known about the link between productivity growth and shared prosperity. The World Bank's operational goals are to reduce poverty and improve shared prosperity, measured as the income growth of the bottom 40 percent of the population, are the World Bank's operational goals. Poverty, measured as those members of the population. living on less than USD5 per day (in PPP terms) declined significantly in Bulgaria from 37 percent in 2001 to 13 percent in 2008. It increased again and reached 17 percent by 2011. The income of the bottom 40 percent of Bulgaria's population increased by 1.4 percent per year between 2007 and 2011. Productivity growth is likely to boost overall growth. Overall economic growth is an important determinant of income growth of the bottom 40 percent (Dollar, Kleineberg and Kraay 2013). Yet different patterns of growth are likely to have a different impact on poverty and the bottom 40. The last chapter (Chapter 8) explores this question.

CHAPTER 2

CONTEXT

Productivity growth is a key determinant of a country's long-term income growth. Per capita income can be increased by getting a higher proportion of a country's population into the workforce or by raising labor productivity. The latter can be achieved either by investing more (as a share of national income) or by finding new ways to produce more with the same number of workers. Boosting the labor force share has limits while labor productivity can in theory grow forever. As a result, "a country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker" (Krugman 1994). Not only is productivity growth the best guarantor for long-term growth, it is also likely to improve demographic dynamics in a country like Bulgaria. Boosting Bulgaria's productivity growth is therefore key for accelerating income convergence and improving standard of living of Bulgarians.

Compared to regional comparators, Bulgaria's growth performance has been modest.[3] Bulgaria struggled through a tumultuous transition from socialism, which culminated in a severe economic crisis in 1996–97. Ailing from hyperinflation and a banking crisis, the government established a Currency Board Arrangement, pursued fiscal consolidation and implemented key structural reforms (see Chapter 3). Reform momentum was maintained in the run-up to the EU accession with Bulgaria joining the EU in 2007. The reforms seem to have paid off. Between 2000 and 2013, Bulgaria's real GDP per capita growth in PPP terms averaged 6.1 percent and its share of the EU28 average increased from 29 percent to 45 percent in PPP terms. Despite this, growth was less than what would have been expected given its low level of GDP per capita in 2000 (Figure 2.1a).[4] Labor productivity growth averaged 3.0 percent between 2000 and 2013, fueled to a significant extent by exceptionally high FDI inflows. It fell somewhat short of the average among regional comparators, but remained above of that of other dynamic middle-income countries, such as Malaysia or Turkey (Figure 2.1b).

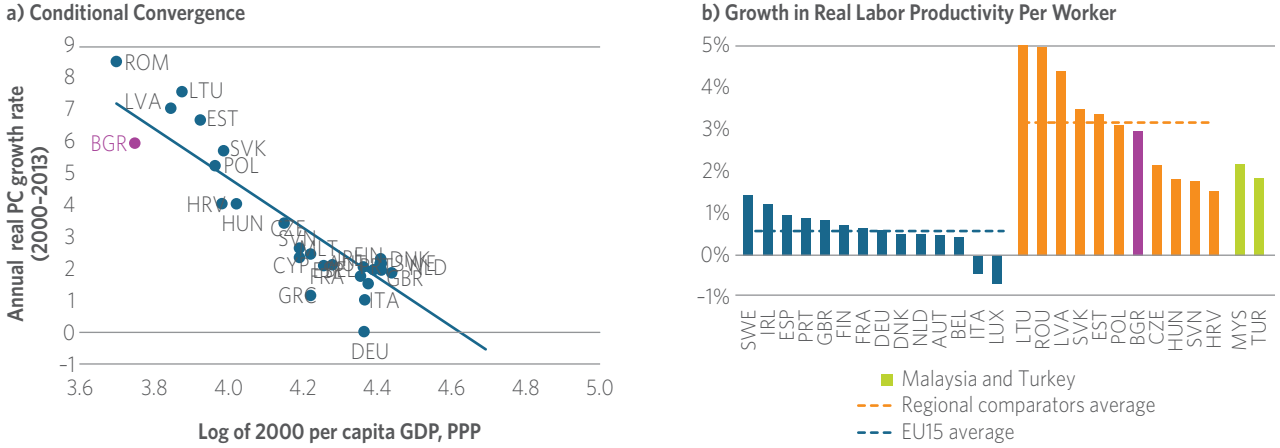
Bulgaria's labor productivity growth would need to accelerate for it to converge with the rest of the EU. Under baseline projections of future demographic and employment trends,[5] even

[3] For the purpose of this report, regional comparators include Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia and Romania, unless stated otherwise.

[4] The line indicates what would have been the estimated real GDP per capita growth rate given Bulgaria's GDP per capita in 2000.

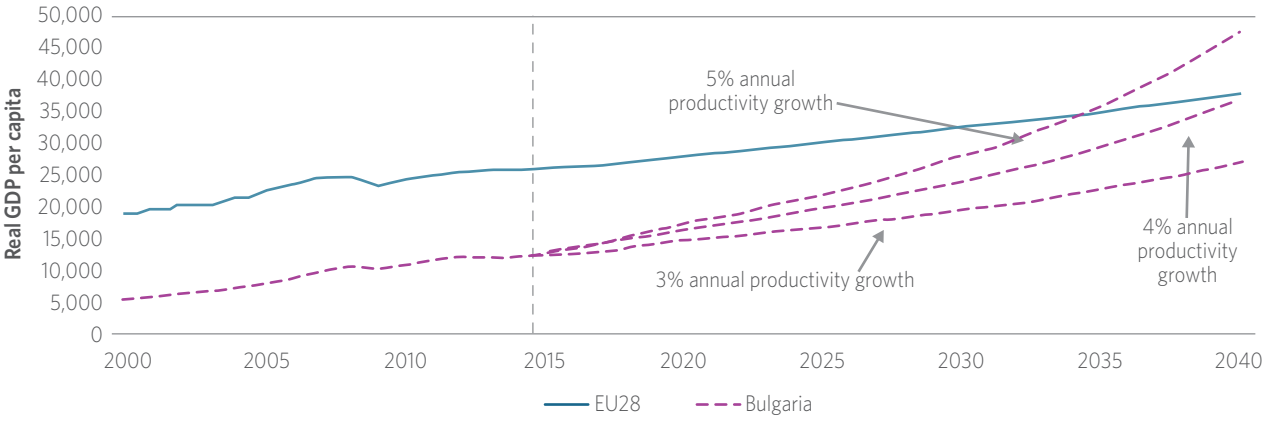
[5] The population growth projections are taken from Eurostat. Labor force projections combine projections of ILO labor force participation rates by age and gender with Eurostat population data. The simulations also assume a long-term GDP per capita growth of 1.5 percent for the EU.

FIGURE 2.1: GROWTH IN LABOR PRODUCTIVITY AND CONVERGENCE 2000–2013



Source: Eurostat; WB staff calculations. Labor productivity is calculated using GVA per worker. Data for Turkey and Malaysia are sourced from the Conference Board's table, "Labor productivity per person employed in 1990 US$ (converted at Geary Khamis PPPs)." This is comparable to Eurostat. For example, Bulgaria's growth in real labor productivity between 2000 and 2013 averaged 3 percent in both EURO and Conference Board data.

FIGURE 2.2: LABOR PRODUCTIVITY AND CONVERGENCE



Source: World Bank staff projections based on WDI data.
Note: Assumes 1.5% per capita GDP growth for EU-15 and 1% for Portugal.

a productivity growth of 3 percent would not be sufficient to deliver GDP per capita convergence with the EU28 anytime over the next two decades (Figure 2.2). It would not even allow Bulgaria to close its income gap with Portugal—the poorest member of the EU15.[6] Annual productivity growth of 5 percent, a rate attained by Romania and Lithuania between 2000 and 2013, would be required for Bulgaria to converge to the EU15 income level almost a decade earlier.

There are three ways to raise labor productivity. One is by investing in physical or human capital, empowering a given number of people to produce more (capital deepening); ii) by innovating so that people can produce more or higher value goods (technological catch-up); and iii) by facilitating a reallocation of workers so more people produce goods with a higher value

[6] EU15 refers to "old" EU Member States before the 2004 wave of accession.

(structural transformation). In Bulgaria, most productivity growth was driven by capital deepening. Going forward, accelerating technological catchup and structural transformation could become important drivers of convergence.

This chapter is structured as follows. Section 2.1 summarizes the relation between productivity growth and demographic change. Section 2.2 reviews the link between productivity growth, employment and migration. Section 2.3 discusses the role of institutions.

2.1 Productivity Growth and Demographic Change

How Bulgaria's demographic change will affect productivity growth will largely depend on how Bulgaria's government decides to respond to the challenge. Bulgaria's decline in the working-age population goes hand in hand with population ageing. In recent years, Bulgaria's age structure has changed radically. Its median age increased from 30.3 years in 1960 to 42.7 years in 2012, the third-highest median age in the EU and the fourth highest median age world-wide. Between 1960 and 2011, the share of the working-age population rose despite the continuous rise in the median age. Now, Bulgaria's working-age population as a share of total population has started to decline. The decline in the working-age population and the ageing of the population will affect productivity growth through a variety of channels as are discussed below. Contrary to many economic shocks, demographic change is rather predictable. People are therefore likely to adjust their behavior to the new reality of a declining and ageing labor force. Governments can put policies in place that facilitate these behavioral adjustments (see, World Bank 2013a, for a discussion of policy options for Bulgaria to mitigate the economic impact of its demographic change). The mix of demographic change, government policies and behavioral responses is what will ultimately determine the demographic impact on productivity and long term growth.

Capital Deepening

The decline in Bulgaria's working-age population is likely to depress economic growth but it may actually boost productivity growth—at least in the short-term. Since the relative size of the labor force is a key determinant of a country's income level, its decline is likely to depress growth (assuming no other changes). As the labor force declines, labor productivity, however, is likely to increase—at least in the short-term—as fewer workers will now work with the same level of capital as before. This increase in productivity growth due to capital deepening is, however, under standard assumptions unlikely to compensate for the decline in growth in the short-term. In the longer term, demographic change may affect the decision to invest. As the capital-labor ratio increases, the marginal product of capital will decline (under standard economic assumptions), inducing people to invest less. At the same time, people may save more as they live longer. Empirical evidence whether aging increases or decreases savings and ultimately investment is mixed (World Bank 2013a).

As life expectancy increases, people have more incentives to invest in education thereby boosting productivity growth. Human capital theory suggests 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). As Bulgaria's population is projected to enjoy an increasingly longer life expectancy at birth, investment in human capital is likely to increase. Education policies can play an important role in

supporting the development of the right cognitive, socio-emotional and technical skills for productive employment. At present, Bulgaria's education system performs poorly in equipping students with the cognitive foundation skills necessary for productive employment and acquisition of technical skills in higher education, lifelong learning and on-the-job (World Bank 2014c). Promising reform opportunities in Bulgaria include enhancing the quality of education, including by developing a curriculum that fosters cognitive and socio-emotional skills and improving teaching quality, and developing a more connected system of life-long learning and skill-building at all age groups, while strengthening the interaction between education and training institutions and firms (for a detailed discussion, see World Bank 2013b).

Whether the ageing of the workforce will reduce the productivity of workers depends ultimately on the government's response. Beyond a certain point, aging adversely affects physical and cognitive functions, which reduces productivity in jobs that rely on these abilities. The decline in productivity, however, hinges on job characteristics and varies by profession (Skirbekk 2008) and heterogeneity of the workforce. In fact, some studies find no negative relationship between aging and productivity (Börsch-Supan and Weiss 2008).[7] The optimal mix of employees, older and younger, who are learning by interacting and can, thus, be more productive than a more homogeneous workforce may ultimately be more important than the average age of the workforce (Malmberg, Lindh, and Halvarsson 2008). In many countries, firms have come up with innovative ways to adapt to an ageing labor force, suggesting that there is significant scope for increasing the productivity of elderly workers. However, process innovation in Bulgaria is very low by EU standards and there is a perception of discrimination against elderly workers (World Bank 2013a).[8] Policies that foster flexible work arrangements and the integration of elderly workers into the workforces combined with improvements in the health system to ensure that people enjoy not only longer, but also healthy lives (World Bank 2013b) and appropriate education polices could significantly reduce the likelihood that Bulgaria's population ageing may lead to a decline in the productivity of the workforce.

Technological Catch-Up

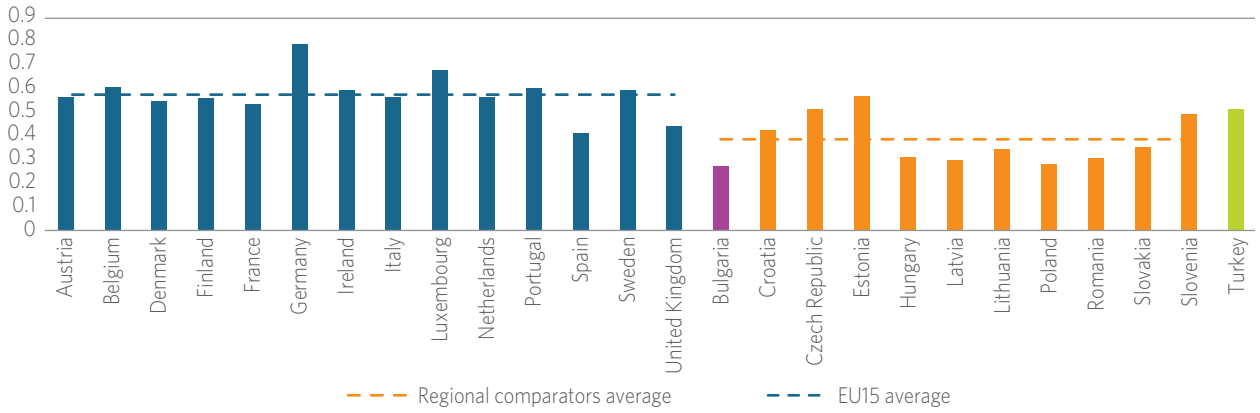
Bulgaria lags significantly behind other EU countries in terms of innovation. The number of patents has dropped significantly since the 1980s, in particular in Bulgaria's traditional industries, such as engineering and pharmaceuticals, and is low by EU standards. Business R&D spending was 0.4 percent of GDP in 2013 in Bulgaria compared to 1.29 percent in the EU. Its share of innovating firms was the lowest in the EU in 2010 (Figure 2.3), ranking low for both product and process innovation (see also chapter 4).

Demographic change may depress innovation and dissemination of new technologies. First, population decline reduces the size of the domestic market. If the latter is an important determinant of the return to innovation, innovation may decline. Acemoglu and Linn (2004), for example, show that in the US an exogenous, demographically-driven increase in

[7] It appears from many empirical microeconomic studies that the relationship between aging and productivity follows an inverted-U pattern, with productivity peaking between ages 30 and 50, although some studies show consistent productivity after the age of 40 (Pekkarinen and Uusitalo 2012).

[8] Opinion surveys show discrimination against workers older than 55 is perceived to be widespread in Bulgaria (Figure 2–4). 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.

FIGURE 2.3: SHARE OF INNOVATING FIRMS IN 2010



Source: Eurostat. Latest available data.

the potential market size for a drug category lead to a 4 to 6 percent increase in the number of new drugs in this category.[9] Second, there exists some evidence that inventions may decline with age. Einstein was 37 years old when he published his general theory of relativity and Newton 43 when he presented his "Mathematical Principles of Natural Philosophy", the foundation of classical mechanics, to the Royal Society. Data from German patents shows that the median age of German inventors is around 44, but that there are significant variances across sectors. The average age of inventors in the areas of agriculture and metallurgy tend to be 10 years older than, for example, in biotechnology and ICT (Henseke and Tivig 2007). Third, adapting to new technologies may be more difficult for elderly workers. Some studies show that workers who have been longer on the job have more difficulties in adapting to new technologies (Daveri and Maliranta 2006). Elderly workers are more likely to have been on the same job for longer. While there is no evidence that aging per se reduces the capacity to adapt to new technology, elderly workers may still have more difficulties to adapting to new technologies simply because they are more likely to have worked on the same job for a longer period of time (World Bank 2013a).

Structural Transformation

Economy-wide labor productivity does not only increase if workers in specific sectors become more efficient but also if higher productivity sectors absorb an increasingly large share of the workforce. This structural transformation can be an important driver of productivity growth. During the past decade, its contribution to Bulgaria's labor productivity growth has been weak at the aggregate level (see chapter 3) and at the firm level (see chapter 6). How demographic change may affect structural change is far from obvious, but—in the absence of policy and behavorial changes—the effect is most likely negative.

Bulgaria's demographic change could slow down structural change for the following reasons: First, labor market entrants tend to play an important role for accelerating structural change (if they find employment in sectors with a relatively high level of productivity) since changing jobs across sectors tends to be costly for workers who are already in the labor force. In the

[9] One may argue that this channel is, however, less likely to be that important for a small, open economy for Bulgaria, where a significant share of innovation is likely to benefit exports.

case of Bulgaria, the share of labor market entrants is expected to decline. Moreover, the skill composition of labor market entrants is likely to deteriorate (in the absence of targeted educational policies). Second, elderly workers are less likely to change jobs, potentially slowing down a re-allocation to new sectors. In fact, in several comparator countries net change in employment levels between 1998 and 2009 was, on average, much lower for workers above 50 years of age[10] (World Bank, forthcoming). Third, age-productivity profile may vary across sectors, making it less likely for elderly workers to move to high-productivity sectors. A recent World Bank study found that the employment share of those below 50 years of age increased more in high productivity sectors, while the share of workers above 50 remained constant (World Bank, forthcoming). Crespo Cuaresmo et al. (2014) find a clear positive association between productivity and the share of younger workers across sectors in Europe. They conclude that assuming no changes in labor force participation and/or productivity, aging of the work force may become an important obstacle for expanding highly productive sectors. Similarly, some studies find that a higher share of young workers is important for productivity growth in ICT firms (see, for example, Lallemand and Rycx 2009). Finally, elderly people are less likely to start new firms. A recent World Bank report (forthcoming) shows that the share of owner managers of a new businesses (up to 42 months old) is lower among those who are 55 years or older. In the US, EU15 and ECA region, less than 1 percent of persons aged 65 years and older report running a young business (World Bank 2014). If the number of start-ups decline with ageing, structural change could slow down.

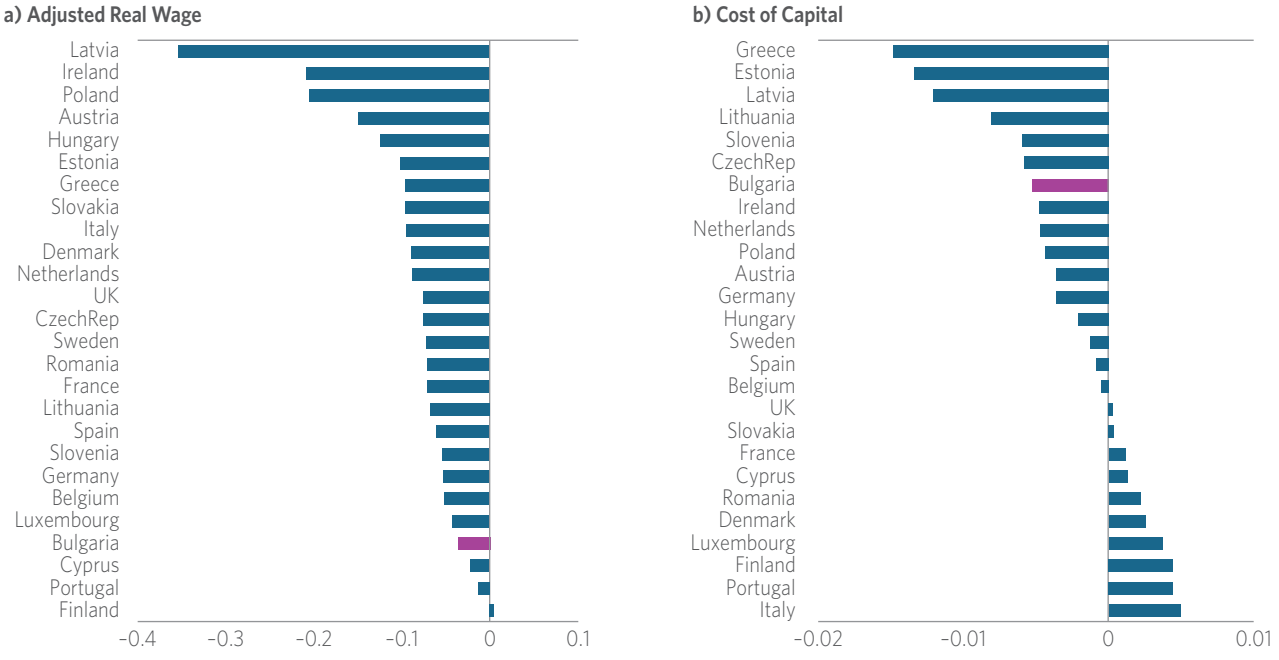
Aging may also affect labor demand and through this channel the sectoral composition of the economy—though there is little empirical evidence whether this would increase or decrease structural change. Demographic change is likely to affect the demand for certain goods, such as toys, bicycles, life insurance, pharmaceuticals and nursing homes and therefore the distribution of profits across industries. If aging implies that the demand for high-value goods increases (and that these goods are produced within the country), structural change may accelerate. Moreover, as demand for young workers in fast-changing sectors may increase, the share of young workers employed in agriculture may continue to decline, a trend already observed across Europe (European Commission 2012). Since agriculture tends to be a sector with the lowest productivity, a decline in agricultural employment accompanied by an increase in farm size and farm-technology could significantly boost structural change and economy-wide productivity.

2.2 Productivity Growth, Employment and Migration

Productivity and employment are generally reflected upon with deep ambivalence. Concerns that increases in productivity led to labor shedding reach as far back as the beginning of the 19th century when Luddites protested against spinning frames and power looms, fearing that they may leave textile artisans without work. In fact, periods of spikes in unemployment often go hand in hand with an increase in labor productivity. The increase in unemployment after the 2008 global financial crisis painfully illustrates this. But while an increase in productivity growth may go hand in hand with a decline in employment in the short-term, this is unlikely to be the case in the longer term for large sectors of the economy. In fact, during the last three decades productivity growth in the US has led to higher

[10] The countries in the sample include Bulgaria, Czech Republic, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

FIGURE 2.4: REAL WAGE-PRODUCTIVITY GAP, COST OF CAPITAL AND EMPLOYMENT GROWTH



Source: WB staff regression.

employment growth in manufacturing (Nordhaus 2005).[11]

How productivity growth affects employment will ultimately depend how final output and wages respond. Since labor productivity equals output/employment, employment equals output/labor productivity. If labor productivity increases, while output remains unchanged, employment is likely to go down. If firms can take advantage of lower labor costs that come with productivity growth, reduce prices and sell more, than employment is likely to increase. Hence, a key question is what happens with labor costs, i.e. wages. If productivity growth outgrows average wage growth so that the wage gap, i.e. the share of average wages in terms of productivity declines, employment is likely to increase (holding everything else constant). However, an increase in the real wage that surpasses productivity growth reduces firms' profitability, increase prices, reduces the demand for output and, ultimately, employment (see for instance Blanchard and Katz, 1999, Blanchard and Summers 1986).[12] In fact, a large empirical literature confirms a negative relationship between the wage-productivity gap and employment in Western European Countries (see, for example, Karanassou and Sala 2014; Hatton 2007; and Meager and Speckesser 2011).

Using Eurostat data, we find that a decline in the wage-productivity gap significantly raises employment in the EU but to a lesser extent in Bulgaria. The positive employment impact of higher productivity partly reflects lower real wage costs adjusted for productivity and partly better competitiveness among domestic industries and/or a higher level of firm

[11] That does not mean that productivity growth implies employment gains for all manufacturing sectors. While the surge of personal computers, for example, has created a large range of new employment opportunities, it has beyond doubt triggered a steep decline in employment in the typewriter manufacturing industry.

[12] The negative effect of the wage-productivity gap is not supposed to affect the equilibrium unemployment (e.g. NAIRU) since in the long-run, the wage level is expected to catch up with productivity.

profitability that boosts output and investment. In Bulgaria, a 1 percent increase in the wage-productivity gap[13] leads to an increase in employment of 0.036 percent. This is relatively low compared to other countries in the sample (see Figure 2.4). High GDP growth and lower costs of capital are also positively associated with employment growth. In particular, lowering the costs of capital has a large and significant effect on employment growth in Bulgaria, which will be discussed in more detail in chapter 6.[14]

A permanent increase in employment and real wages, combined with appropriate policy response, can help mitigate the negative effect on the decline in Bulgaria's working-age population on the labor force by raising Labor Force Participation (LFP) rates. In particular, women, elderly people, young people and minorities have very low LFP rates by European standards. As the population ages, LFP participation rates of these groups could increase if, for example, wages increase.[15] Public policies, such as pension reforms, tax treatment of secondary wage earners, child care subsidies, education policies and health sector reforms can all affect the decision of people to enter the labor force. This effect could be even more significant if in future work becomes less physically demanding. Still, even under the most optimistic scenario that assumes an increase in LFP rate of women, elderly and young workers beyond the highest LFP rates observed in Europe today, the decline in Bulgaria's labor force cannot fully stemmed. The most effective way to stop the labor force from shrinking further is to stanch emigration (World Bank 2013a).

Productivity growth is likely to reduce net migration. The decision to emigrate or to return to the country of origin is determined by many factors, including wage differentials among countries and job prospects. If the wage differential between Bulgaria and the countries receiving Bulgarian migrants declines, net emigrations rates are likely to decline and may eventually turn negative. A recent study on Romania migrants finds that higher expected earnings in Romania and investment in Romanian firms are positively correlated with plans to return (Hinks and Davies 2014). This suggests that policies that boost productivity and therefore wages could encourage Bulgarian migrants to return, moderating the negative consequences of a declining and ageing population. Return migrants could also raise the skills of the Bulgarian labor force as migrants often have accumulated productivity-enhancing skills during their time abroad. Return migration is also likely to increase business entries.[16] But as we show in chapter 8, return migration alone is unlikely to have a significant macro-economic impact. Efforts to improve net migration would need to be supported by migration policies in support of non-Bulgarian migrants.

2.3 The Role of Institutions

Sustained long-term growth requires improvements in technology.[17] Most technological progress requires some type of

[13] The wage-productivity gap has been lagged by one year.

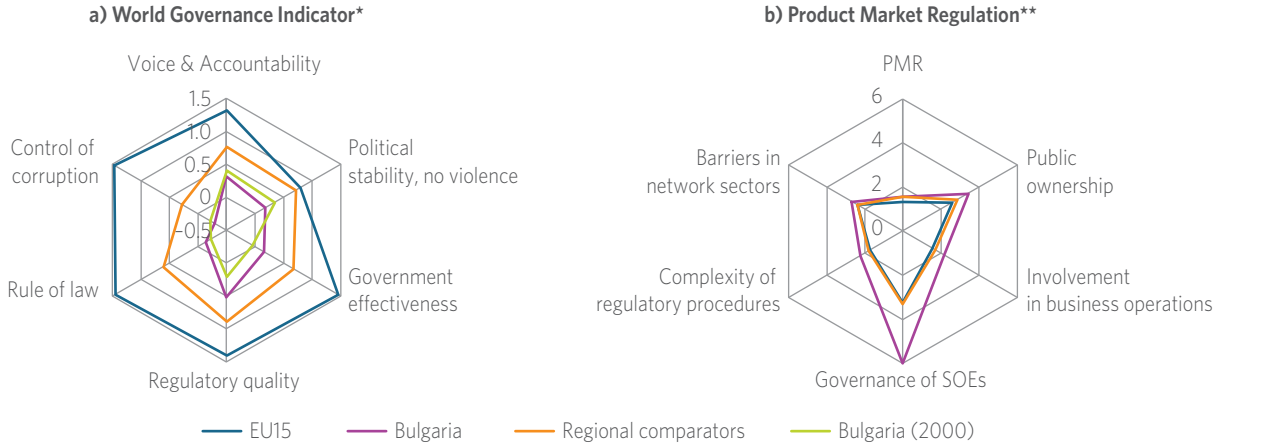
[14] The final impact on employment will depend on the pace of the real wage catch up. In a competitive market, it is expected that over time the wage-productivity gap will close. At this point, employment growth will stop, though the level of employment will remain permanently higher. The longer it will take for the real wage to catch, the bigger the impact on the final employment level (holding everything else constant). The pace of the real wage catch up will depend on the institutional characteristics of the labor market, including the wage bargaining system, wage rigidities and the tightness of the labor market. If unemployment is high, for example, the real wage is likely to be less responsive to changes in productivity growth.

[15] Even in the absence of productivity growth, wages are likely to increase as labor becomes relatively scarce.

[16] Mintchev and Boshnakov (2006) find that Bulgarian return migrants earn more than non-migrants and are more likely to start their own business.

[17] See, for example, Grossman and Helpman (1993).

FIGURE 2.5: BULGARIA'S INSTITUTIONS IN 2013



Sources: Rule of Law Political Risk Services International Country Risk Guide (PRS), World Governance Indicators (2014). *Lower values indicate weak governance. ** Larger values indicate a higher regulator burden.

investment. Profit seeking firms will only invest in innovation if the returns are high enough and if they can reap the returns of these investments.[18] Government can, thus, play an important role in creating an environment that supports innovation. A country's institutional, legal and economic environment is key for determining the profitability of technological changes. In fact, there exists significant empirical evidence that a country's ability to protect productive activities from diversion can explain to a large extent differences in output per worker across countries. Countries with strong institutions that protect productivity economic agents from diversion, such as thievery, squatting, Mafia protection, expropriation, rent seeking and corruption tend to create an economic environment that supports productive activities and encourages capital accumulation, skill acquisition, invention and technology transfer. In fact, these types of institutions are a key factor in explaining differences in labor productivity across countries (Hall and Jones 2000).

Bulgaria scores low on most of the governance indicators and progress in the past 15 years has been limited. Bulgaria is consistently performing worse than the regional comparators and EU15 on all six Worldwide Governance Indicators: voice and accountability, political stability and violence, government effectiveness, regulatory quality, rule of law and control of corruption (Figure 2.5). Since 2000, only the indicators of government effectiveness and regulatory quality have improved. Bulgaria is also the weakest performer in the European Union of the 2014 Rule of Law index of the World Justice Project, ranking 44th among 99 countries in the world. It ranks particularly low in the dimensions of government accountability, corruption and regulatory enforcement. A weaker governance environment also tends to expose firms to uncompetitive behavior. According to the OECD's Product Market Regulation (PMR) data, Bulgarian firms are more exposed to policies that inhibit competition than firms in other regional comparator countries. The data indicates that Bulgaria scores particularly low on governance of SOEs, where it performed worse than regional comparators, including Turkey.

Bulgaria's performance of the judiciary is particularly weak. A well-

[18] Innovation is not only confined to the private sector. The public sector can boost productivity, for example, by reforming health care, education or public investment.

functioning judicial system is essential for long-term growth since it plays a critical role in protecting property rights, enforcing contractual rules, ensuring an effective and consistent application of the legal and regulatory framework, reducing and resolving conflicts and fighting corruption and informal practices. Shortcomings in judicial reforms, the fight against corruption and tackling organized crime resulted in Bulgaria being placed under the Cooperation and Verification Mechanism (CVM) in 2007. Though Bulgaria has made some progress with respect to judicairy reform,[19] it is still being monitored under the CVM and the 2014 CVM report[20] is critical about intransparency around senior appointments, political influence in the judiciary and the ability of a few high-profile organized crime figures to escape justice on the eve of their verdict. In only a very few cases were crimes of corruption or organized crime brought to court. While the number of cases initiated by prosecution seems to have increased signifincatly in 2014, the number of cases reaching final conclusion remain low (2015 CVM report). The autumn 2014 Eurobaromters showed that many Bulgarians consider judicial reform, the fight against corruption and trackling organize crime important problems for Bulgaria. The policy statement of the 2014 elected government considers judiciary reform a priority. A detailed analysis of Bulgaria's judiciary system is present in chapter 6.

Weak governance of SOEs could also constrain Bulgaria's productivity growth. Market failures can result in suboptimal provision of associated infrastructure services, motivating the government to intervene through regulations, subsidies, or SOEs. However, if SOEs suffer from poor corporate governance because of political interference, limited accountability, and protection from takeover or bankruptcy, economy-wide productivity growth may suffer. Poorly performing SOEs are particularly damaging in network sectors, such as energy and transport.

Public ownership in Bulgaria was significantly reduced at the beginning of 2000 but remains significant. A recent comprehensive assessment of SOEs in Bulgaria is not available but in 2008, the sector subsumed approximately 115 state-owned enterprises.[21] Sectors with an important public sector presence are the mining sector, the pharmaceutical sector the energy sector and the transport sector, in particular, railways. There is some evidence the corporate governance of Bulgaria's SOEs could be improved (World Bank 2008a). For example, the liabilities of the National Electricity Company (NEK) reaching EUR1,040 million by December 2013, though the company's generation capacity comfortably exceeds demand even during peak times. NEK suffers, however, from a series of governance, policy and regulatory issues. There is also some evidence that private ownership in Bulgaria is highly concentrated in the hands of few (130–150) domestic investors (World Bank ROSC 2008). In 2008, the average size of the largest equity stake was found to be equal to 60 percent of outstanding shares, with the second and third biggest shareholders averaging 12.7 and 5.5 percent.

[19] Since July 2012, Bulgaria has made some progress in making the procedures for nominating senior magistrates or public and in tackling some management issues, such as workload imbalance across courts (see Chapter 6).

[20] Report from the Commission to the European Parliament and the Council (2014) on Progress in Bulgaria under the Co-operation and Verification Mechanism. SWD (2014) 36 final.

[21] Information of the current number of SOEs or the share of SOEs in value added, sales or employment is not available for Bulgaria.

CHAPTER 3

PRODUCTIVITY GROWTH AND STRUCTURAL CHANGE

Bulgaria's productivity growth has been slightly below the average for the regional comparators since 2000, hampering improvements in living standards and limiting convergence gains. Its labor productivity has grown on average at 3.0 percent, compared to 3.3 percent for the regional comparators. One of the reasons for Bulgaria's relatively low labor productivity growth is that its shift out of low productivity sectors has been sluggish during the boom years. Total factor productivity growth, which may be a better measure of "true" efficiency gains, has been around 1 percent, compared to 1.3 percent in the regional comparators.[22] Since 2008, Bulgaria's productivity growth under the various measures assessed in this chapter has begun to outpace the average for the regional comparators.

This chapter examines Bulgaria's productivity growth since the early 2000s. It reviews the key features of Bulgaria's growth, delving into the key determinants of Bulgaria's productivity. In this context, the chapter presents new TFP estimates for Bulgaria. The chapter also analyses how the transformation of Bulgaria's post-transition economy contributed to productivity growth and identifies possible constraints.

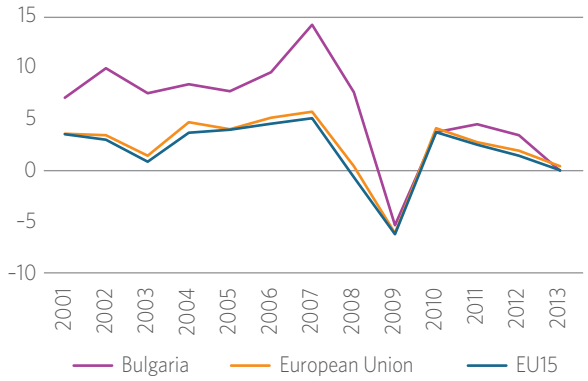
3.1 Boom, Bust, and Some Productivity Gains

After a protracted and tumultuous transition, Bulgaria's output growth recovered towards the end of the 1990s on the back of macro-economic and structural reforms. Delays in structural reforms at the beginning of the 1990s led to sharply declining output and then weak growth, and culminated in a severe economic crisis in 1996–97. Buffeted by hyperinflation, the government established a Currency Board Arrangement in 1997 and embarked on a path to fiscal consolidation, reducing the overall fiscal deficit from 16.9 percent in 1996 to below 1 percent in 5 years. General government debt—which amounted to close to 100 percent of GDP in 1997—was cut in half by 2002 and inflation reached single digit levels. Between 1998 and 2002, most of the non-infrastructure enterprises and banks were privatized or liquidated, banking supervision was strengthened, trade and prices were liberalized, important energy reforms were implemented, and first steps were taken to improve the investment climate.

[22] TFP estimates for the EU countries other than Bulgaria are drawn from the European Commission's AMECO database.

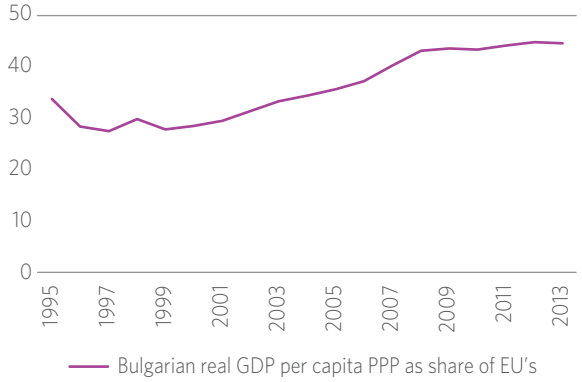
FIGURE 3.1: GROWTH AND CONVERGENCE

a) Real PPP GDP Per Capita Growth



Source: WB staff calculation based on WDI data.

b) Bulgaria's PPP GDP PC Relative to the EU



Source: Eurostat.

These reforms paid off in terms of economic growth. After declining on average by 1.2 percent per year during the 1990s, real GDP growth surged to an annual average of 5.7 percent between 2000 and 2008 in PPP terms (Figure 3.1a). As outmigration continued through the new millennium,[23] growth rose even faster on a per-capita basis, averaging 9.1 percent in real PPP terms during this period.[24] As a result, Bulgaria's PPS income per capita as a share of the EU-wide income level increased to 43 percent by 2008 after declining from 34 percent in 1995 to 29 percent in 2000. Since 2011, it has remained at close to 45 percent (Figure 3.1b). Meanwhile, Bulgaria's income relative to the regional comparators decreased from 70 percent in 1995 to 59 percent in 2000 but increased again to 70 percent by 2008, where it has broadly remained since then.

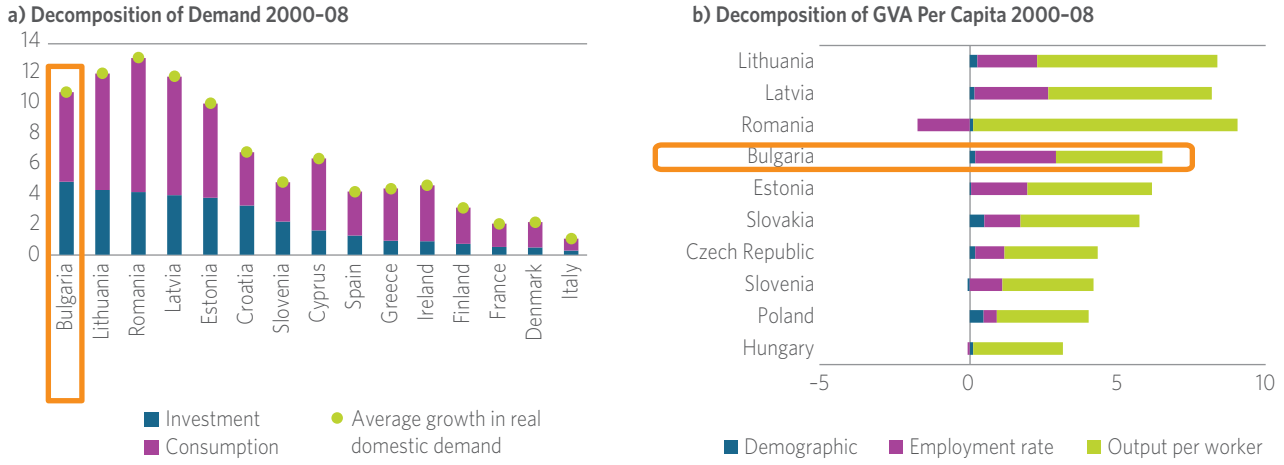
Growth in the 2000s before the global crisis was driven by a massive investment boom. Surging domestic demand was a common feature of many fast-growing countries in the EU during this period, but Bulgaria's boom was among the largest and most investment-driven (Figure 3.2a). Between 2000 and 2008, Bulgaria's domestic demand increased by nearly 15 percentage points of GDP. In most sectors of the economy and particularly in mining, energy and real estate, this rapid rate of investment far exceeded the pace of job creation, leading to a sharp rise in the economy-wide capital-labor ratio. While a large share of FDI went into the financial sector, a significant share of FDI went to relatively labor-intensive sectors such as construction and textiles, boosting employment. Bulgaria's unemployment rate fell from 19.5 percent in 2001 to 5.6 percent by 2008. GVA per capita growth in 2000-2008 was strongly associated with higher employment growth, a record unmatched by any other benchmark country. Indeed, in no other benchmark country was GDP per capita growth in 2000–2008 associated with higher employment growth (Figure 3.2b).

The 2008–2009 financial crisis brought these "boom" dynamics to an end. By 2007, this credit-driven growth model had created large internal and external imbalances and began to look increasingly unsustainable as the current account deficit reached 24.3 percent of GDP by 2007. In 2009, real per-capita GDP plunged by 5.0 percent and capital inflows dropped to less than 10 percent of GDP in the wake of

[23] Bulgaria's population declined from 8.8 million in 1990 to 7.5 million in 2010.

[24] This rate was surpassed in the EU by Estonia, Latvia, Lithuania and Romania.

FIGURE 3.2: FEATURES OF BULGARIA'S BOOM



Source: WB staff calculations based on Eurostat data. Demographic change is the change of working-age population to population. GVA is chain-linked in 2005 exchange rate.

the 2008 global financial crisis. Imports collapsed and combined with an acceleration of export growth shifted the current account into a small surplus by 2011. Capital flows plummeted: by 2013 FDI had retrenched to less than 20 percent of its pre-crisis level, falling from 17 percent in terms of GDP in 2008 to 2.7 percent in 2013. The unemployment rate doubled between 2008 and 2011, reaching 13 percent by 2013.

Although the economy has since made a modest recovery, the pre-crisis drivers of growth are unlikely to return. GDP growth rebounded to 0.7 percent in 2010 and accelerated to 2.0 percent in 2011, but began to slow again in 2012 in the face of weakening demand from Bulgaria's key EU trading partners. It remained anemic at 1.1 percent in 2013. Pre-crisis growth drivers such as a strong EU demand for Bulgarian exports, growing private consumption and large FDI inflows are unlikely to return over the medium term. The growth recovery of the EU is projected to remain anemic, domestic demand is constrained by high unemployment and rapid private sector deleveraging as households and firms strive to repair their balance sheets in the aftermath of the crisis. A significant resurgence in external capital inflows also seems unlikely as net FDI flows have reverted to a more "normal" average of around 3 percent of GDP over the past few years.

3.2 Bulgaria's Productivity Growth

Bulgaria's labor productivity growth was slightly below the average for regional comparators prior to 2008. Bulgaria's labor productivity growth, according to the GDP-per-worker measure, increased considerably between 2000 and 2008, averaging 3.5 percent per annum compared to 1 percent between 1995 and 1999. It accounted for around half of the real GDP per capita growth during this period (Figure 3.2).[25] This was considerably faster than GDP-per-worker growth in the EU15 over the same period (0.8 percent), helping advance income convergence, but it was lower than the 4.2 percent gain in the average rate of GDP-per-worker among regional comparator countries. Controlling for hours worked

[25] Alternative labor productivity computations on an output *per hour* basis yield similar results, with the main divergence coming in 2008–09, when output-per-worker productivity outpaced output-per-hour productivity due to labor hoarding during this recessionary period.

TABLE 3.1: COMPARATIVE ESTIMATES OF BULGARIA'S ANNUAL PRODUCTIVITY GROWTH

	Labor productivity			Total factor productivity (TFP)	
	GDP per worker	Gross value added (GVA*) per worker	GVA* per hour	No capital utilization adjustment	With capital utilization adjustment
2000–08	3.7%	4.2%	3.8%	2.9%	1.9%
2008–12	1.9%	2.6%	3.4%	-0.9%	-0.7%
Memo items:					
EU15					
2000–08	0.8%	0.8%	1.2%	0.5%	—
2008–12	0.1%	0.1%	0.4%	-0.5%	—
Regional comparators					
2000–08	4.2%	4.5%	4.7%	2.3%	—
2008–12	1.4%	1.2%	1.6%	-1.0%	—

Source: NSI, Eurostat, European Commission, World Bank Staff estimates.
Notes: *Excludes imputed rents of owner-occupied dwellings.

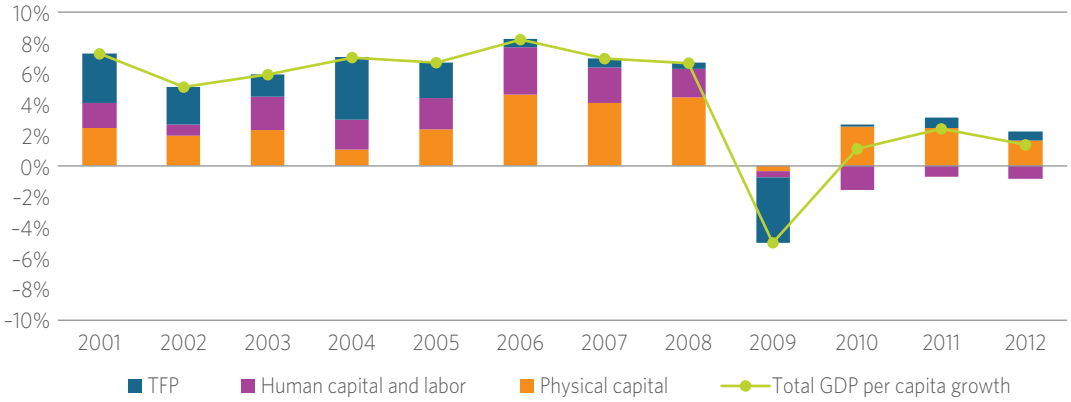
yields similar results (Table 3.1). Bulgaria's labor productivity growth was subdued as factors of production shifted relatively sluggishly into sectors with higher productivity and weak TFP growth (see also section 3.3).

Since 2008, labor productivity has been the key driver of GDP growth in Bulgaria. Though Bulgaria's labor productivity growth has slowed to 2.6 percent on average between 2008–12, it has outpaced that of regional comparators and the EU15. Labor productivity has become the key driver of Bulgaria's growth as its employment rate declined and demographic change (i.e. the change in the working-age population in total population) turned negative. Higher productivity growth will be critical to accelerate Bulgaria's income convergence with the rest of the EU. As mentioned in the previous chapter, Bulgaria is expected to face a rapidly declining working-age population. The large decline in labor supply is likely to depress growth. Productivity growth would, thus, need to accelerate significantly for Bulgaria to converge to the EU.

Efficiency gains seem to have played an important role for pre-crisis growth. While labor productivity growth is affected by changes in inputs, such as capital and education, TFP growth captures changes in output that are unrelated to changes in inputs and may, thus, better capture "true" efficiency gains. In any former transition economy, it is inherently difficult to pinpoint the part of the capital stock that is truly "productive" and thus the appropriate input into an economy's production function, since the transition from socialism to capitalism rendered a significant part of the existing capital stock unproductive. How much of the original capital stock was destroyed is difficult to assess, but the numbers are likely to be quite significant. Deliktas and Balcilar (2005), for example, estimate that up to 50 percent of the socialism-era capital stock was destroyed in the early transition. We therefore do not rely on historical investment data to estimate the capital stock. Instead, we use a mix of census, national accounts and corporate balance sheet data to estimate Bulgaria's capital

[26] The calculations suggest that the net business capital stock that is most relevant for economic output has increased as a share of the total net capital stock between 2000 and 2012. Net business capital stock as a share of annual economic output has remained broadly stable at around 3, slightly higher than average capital-output ratio of 2.3 for the other EU transition economies. For a detailed description of the methodology see ANNEX 2.1.

FIGURE 3.3: GROWTH ACCOUNTING WITH CAPITAL UTILIZATION ADJUSTMENT



Source: World Bank staff estimates.

stock between 2000 and 2012.[26] Our estimates[27] suggest that between 2000 and 2005, TFP growth (adjusted for capital utilization) contributed about 50 percent to GDP growth.[28] This contribution fell steeply during the capital-fueled pre-crisis period. Since 2010, TFP growth has again contributed over 50 percent to GDP growth (Figure 3.3). Unlike in the output-per-worker estimates, TFP growth dropped considerably between 2006 and 2008 as the investment boom reached its zenith and an increasing share of GDP became attributable to rising physical capital per capita.

3.3 Sector Productivity, Employment and Structural Change

Labor productivity increases when workers become more efficient, but it also rises when more workers move into high-productivity sectors. As countries develop, increases in income per capita tend to be associated with a gradual shift of labor and capital from the agricultural sector to industry and services. Since non-agricultural sectors tend to have higher value added, the reallocation of workers to these sectors generally raises economy-wide labor productivity and boosts per-capita GDP growth.[29] In fact, some authors (Caselli 2005; Restucci et al. 2006) argue that the difference in living standards across countries can be attributed to two simple facts: (1) all countries are relatively less productive in agriculture; and (2) countries with higher productivity attribute relatively less labor to agriculture than other countries.

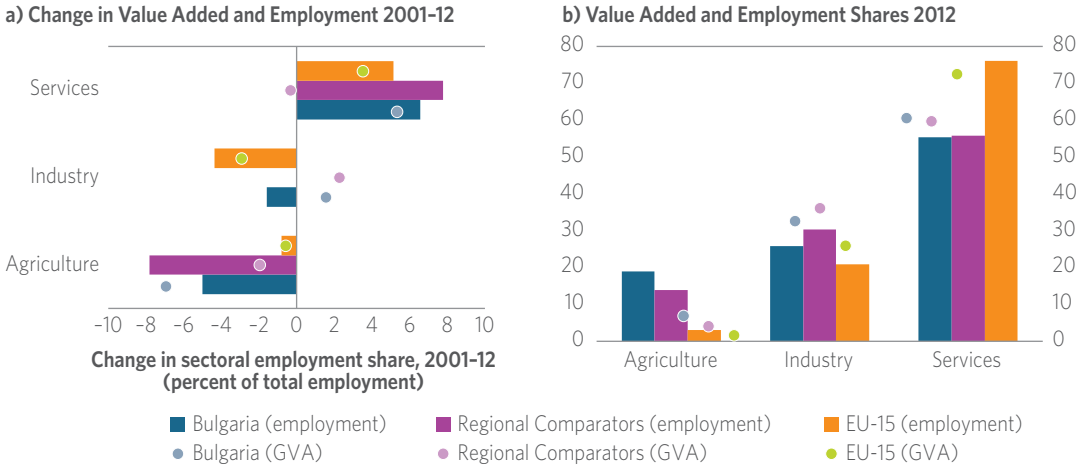
In fact, the productivity of Bulgaria's agriculture sector is among the lowest of the EU countries and it has the highest share of agricultural employment. In 2001, Bulgaria's agricultural sector employed 23.9 percent of the workforce according to national accounts data. This was the second-highest share among regional comparator countries, only trailing Romania's. By 2012, this share had declined to 19.2 percent. At the same time, the productivity of

[27] We use a constant returns-to-scale Cobb-Douglas production function, in which the capital share is estimated from the national accounts data to be around 0.45. We use employment data to better reflect fluctuations in the labor supply due to unemployment. This employment variable is augmented with changes in the human capital stock, measured as average years of education of the working-age population.

[28] These estimates control for capital utilization rates in the non-financial corporate sector. Neglecting to account for changes in capital utilization biases the portion of growth attributed to TFP. It overestimated the TFP contribution in periods of low physical capital utilization and it understates it in periods of high utilization.

[29] Recent research suggests that as much as 85 percent of cross-country variation in TFP can be attributed to differences in relative efficiency across sectors (Chandra and Dalgaard 2008).

FIGURE 3.4: EVOLUTION OF BULGARIA'S EMPLOYMENT AND VALUE ADDED STRUCTURE



Source: Eurostat.
Note: industry includes construction; EU-10 excludes Croatia due to lack of data.

Bulgaria agricultural sector was among the lowest in the EU and has been trending downwards since 2001.[30] For example, the yield of tomatoes in Bulgaria in 2012 was 28 tons per hectare, compared to 60 tons per hectare in Turkey. The yield of sunflowers was 1.7 tons per hectare compared to 2 tons in Hungary and 4.3 tons in Greece. Inefficient usage of inputs, worse production management, less productivity of seedlings and plants, and worse natural conditions explain the lower productivity in crop production (Republic of Bulgaria 2014). Overall, investment in the agriculture sector has been flailing.

Bulgaria's reallocation of workers into services has been similar to that of other regional comparators. Between 2001 and 2012, shrank by a combined 6.6 percentage points, and shifted into services sectors. This is slightly less than the reallocation that occurred in the regional comparators, and not significantly more than in the richer EU15 countries, which were already further along in the structural transformation process (Figure 3.4a). In 2013, Bulgaria's employment and value-added share of services was similar that of to the regional comparators, but significantly below the EU15. Bulgaria's industry in terms of employment and valued added is significantly below the regional comparators' average (Figure 3.4b).

Yet, the contribution of structural change to Bulgaria's GDP growth has been weak prior to 2008.[31] Of the 6.6 percent per annum average growth in GVA per capita during 2001–08, an estimated

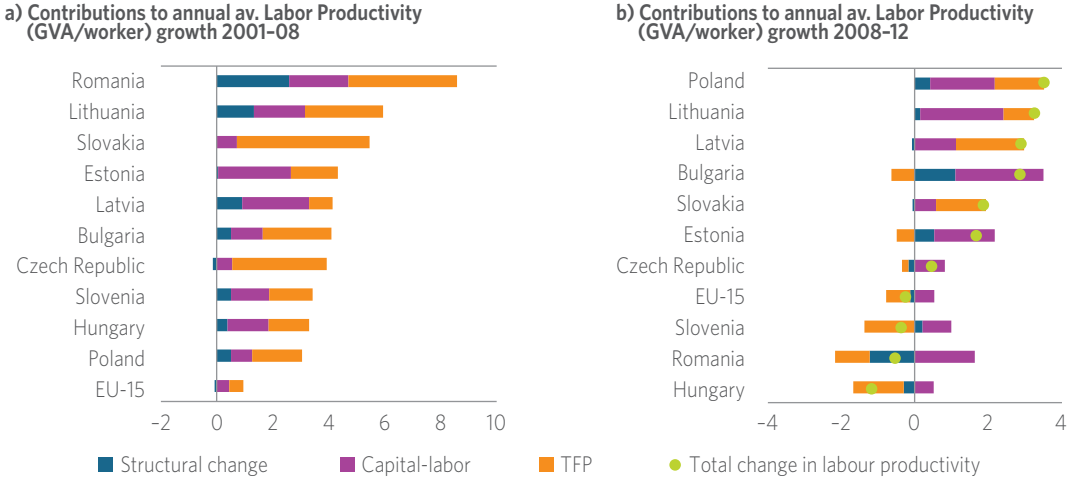
[30] Also agriculture TFP in Bulgaria relative to other EU countries has declined continuously between 1995 and 2005 (Bah and Brada 2009).

[31] Labor productivity can be decomposed into "within" sector change and changes "across" sectors or structural change. Structural change captures the contribution of reallocation of labor (or change in sector weights) to growth. This can be written as

$$\Delta y_t = \Sigma_N s_{i,t-k} \Delta y_{it} + \Sigma_N y_{i,t} \Delta s_{it}$$

where ΔY_t is the change in aggregate labor productivity between t and t-k, θ_{it} is the employment in sector i at time t and y_{it} is the productivity level in sector i at time t. The first term is the "within" component and the second term the "across" component. Economy-wide labor productivity is thus decomposed into two parts. The first component measures the change in labor productivity that is due to changes in sectoral labor productivity due to changes in capital per workers and TFP growth. It captures how labor productivity evolved under constant employment shares across sectors. The second component captures the impact of structural change on labor productivity development. It measures the counter-factual productivity level that was reached if sectoral productivity levels remained unchanged and only shifts in labor across sectors change productivity.

FIGURE 3.5: BULGARIA'S STRUCTURAL CHANGE



Source: WB staff calculations based on Eurostat data.

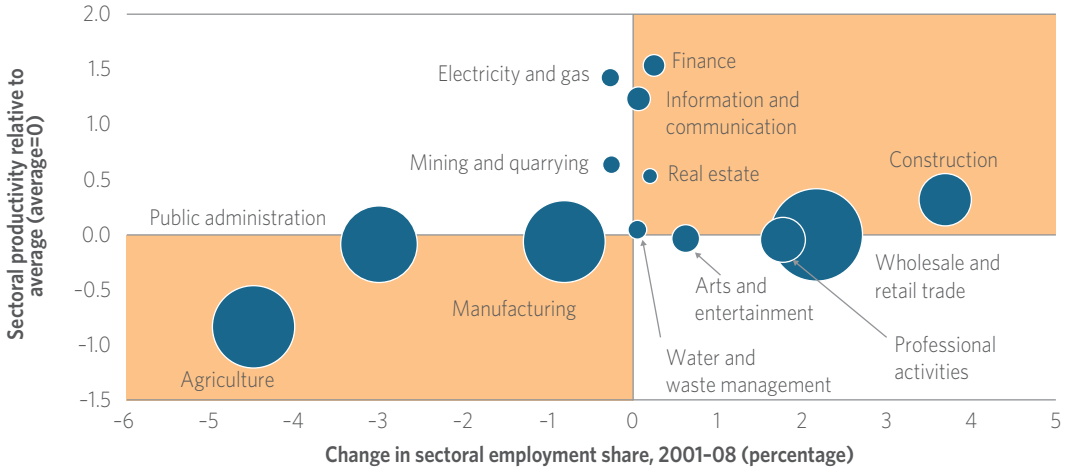
4.1 percentage points was attributable to increases in output per worker, of which 3.6 percentage points (over 85 percent) arose from "within-sector" productivity improvements and only 0.5 percentage points from structural change. This means that structural change contributed only 6.9 percent to real GDP growth, which is far below regional comparator average of 19.4 percent. The contribution of structural change to growth in output per worker (which was lower in Bulgaria compared to the EU average) was 12.7 percent compared to the average of 21.9 percent among regional comparator countries (Figure 3.5a). Had Bulgaria's structural change remained at the level of regional compators, its per-capita GDP growth would have been 0.5 percentage points higher per annum during this period, helping to narrow the income gap with the EU15 by 1.5 percent and keep the gap with the comparator countries broadly stable (instead of the increase actually observed). In the best case, structural change at Romania's level (the largest among the regional comparator countries) would have boosted Bulgaria's annual GDP per capita growth by a full 2 percentage points and narrowed its income gap with the EU15 and and the group of regional comparator countries by 6 percent and 11 percent, respectively.[32]

The weak growth contribution from structural change reflected a concentration of employment gains in relatively low-productivity industrial and services sectors. Although GDP growth benefitted from a decline in the share of workers in agriculture—the sector with the lowest productivity—the corresponding increase in employment shares occurred in sectors with productivity levels either slightly below the economy-wide average (wholesale and retail trade, professional activities, arts and entertainment) or only slightly above (construction). Meanwhile, the highest-productivity services sectors such as finance and ITC barely saw any increase in their share of total employment (Figure 3.6). As a result, the net gains in productivity (and therefore GDP growth) from structural change were rather limited.[33] Still, contrary to other

[32] These are both significant amounts considering that Bulgaria's income gap with the EU-15 declined by a total of only 12 percent between 2001 and 2008 while its income gap with regional benchmark countries continued to increase.

[33] In addition, though employment in Bulgaria shifted into sectors that were more productive in 2011, these sectors were not necessarily more productive in 2008. As a result, structural change between 2001 and 2011 was positive if we use initial productivity, but turns insignificant if we use final productivity during the 2001–08 period.

FIGURE 3.6: SECTORAL DRIVERS OF PRODUCTIVITY GROWTH (2001–08)



Source: World Bank staff calculations.
Note: Shading denotes region of positive contributions to structural change.

benchmark countries, structural change in Bulgaria has remained positive since 2008.

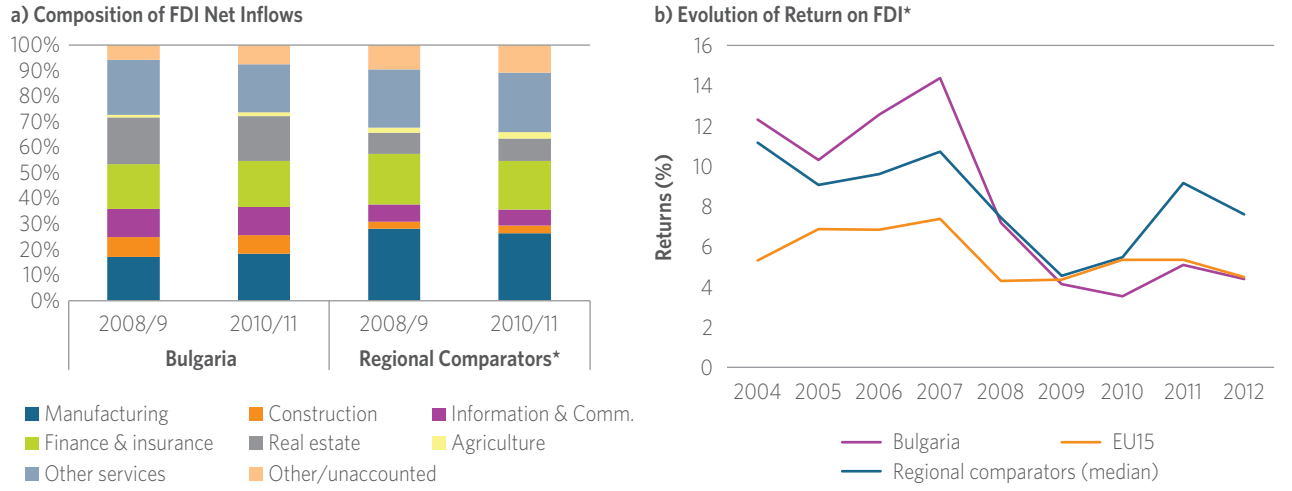
All sectors with positive within-sector productivity growth saw a considerable increase in FDI inflows between 2001 and 2008.[34] Manufacturing, finance, ITC and trade had the highest "within-sector" productivity growth in Bulgaria. Within-sector productivity growth in Bulgaria has been close to the average of benchmark countries prior to the 2008 crisis and has exceeded it since then. Productivity gains within the manufacturing sector accounted for nearly a third of total within-sector productivity growth between 2001 and 2008. The remaining gains were concentrated in finance, information and communication and wholesale and retail trade. The lion's share of Bulgaria's FDI net inflows went to manufacturing, financial services, real estate and other services (Figure3.7a). On balance, these sectors also had the highest rates of gross fixed investment, consistent with the earlier finding that the majority of measured within-productivity gains during the latter half of this period were attributable to a rising amounts of physical capital per worker.

Compared to the average of benchmark countries, the share of net FDI flows to agriculture and manufacturing was significantly lower in Bulgaria. In Bulgaria, a relatively high share of FDI went into real estate, construction, information and communication. The share of FDI destined to manufacturing, agriculture and other services was below the benchmark country average. Net FDI flows to Bulgaria have remained at about 3 percent GDP since 2010, but returns to FDI have declined steeply since 2007 and have remained below the benchmark country average and median (Figure 3.7b).

Productivity gains have been concentrated in a few regions, increasing regional income gaps. During the 2000–08 growth boom period and the years since the recession, productivity gains in the southwest region (containing the capital city of Sofia) significantly outpaced those

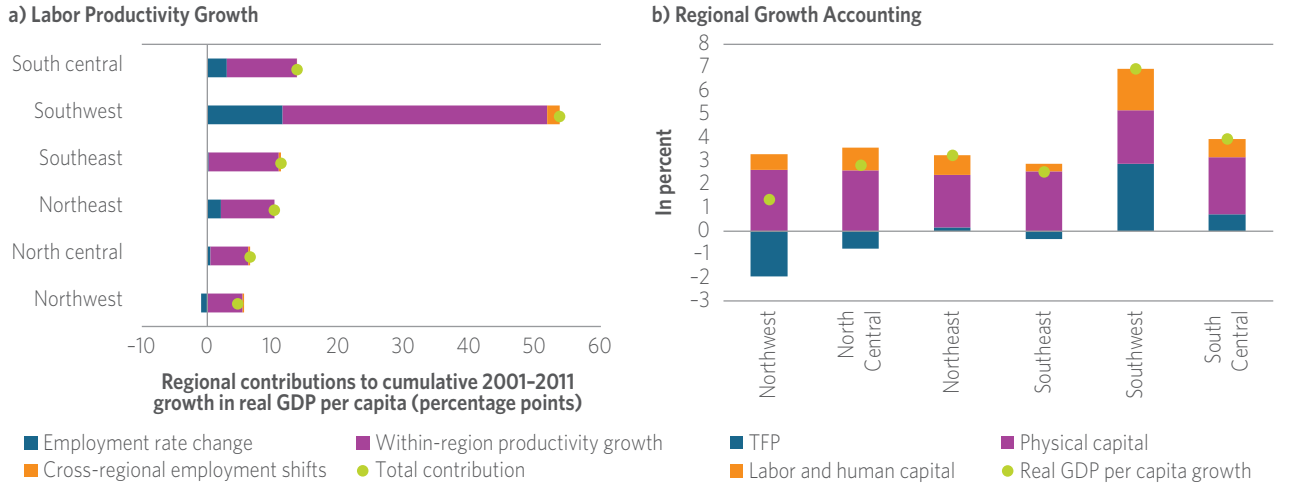
[34] Measuring productivity of the public sector is notoriously difficult since it produces non-market outputs whose value cannot be directly observed. As a result, public sector output is generally calculated by equating it to its inputs, i.e. the amount spent on producing this output, which to large extent consist of wages. This implies that increases in public spending translate automatically into one-to-one increases in output, rendering an analysis of public sector productivity based on national accounts data meaningless.

FIGURE 3.7: NET INFLOWS OF FDI AND RETURNS ON FDI



Source: WB staff calculations based on Eurostat. *Data for Croatia is not available. Return on investment is calculated as direct investment income divided by the direct investment stock in a given year.

FIGURE 3.8: REGIONAL DISPARITIES IN PRODUCTIVITY GROWTH 2001–2011



Source: World Bank staff estimates.

elsewhere in the country—in terms of labor productivity growth and TFP growth (Figure 3.8a and b). However, mobility across regions has been very limited, constraining structural change. Little national-level improvement in output per worker came from workers shifting from the lower-productivity regions to the southwest, suggesting either poor mobility incentives or structural mismatches between the higher-productivity jobs of the southwest and the skills or education of workers in the rest of the country. TFP gains were concentrated in only a few areas of the country, contributing to the increase in regional income disparities.[35] Similarly, gains in TFP between

[35] This exercise uses utilization-adjusted capital stocks, although the assumed utilization rate is uniform across the regions due to lack of available regional data. Human capital stocks are also assumed to be distributed evenly across the regions. The national capital share of 0.45 is used for all the regions.

2000 and 2011 occurred almost exclusively in the southwest region, where TFP growth averaged around 3 percent during this period. The northeast and south-central regions averaged the second-highest TFP growth of around 0.5 percent, while elsewhere, TFP fell slightly. In fact, the gap between Bulgaria's richest and poorest regions increased from 1.4 in 1995 to 2.7 in 2011.

3.4 Constraints to Structural Change

Large productivity gaps across sectors suggest that a reallocation of workers from low-productivity to high-productivity sectors can be an important driver of economy-wide labor productivity and income growth. In fact, in many high-growth countries, in particular in Asia, re-allocation of workers from low-productivity to high-productivity sectors has contributed positively to growth during the last twenty years (Rodrik and McMillan, 2012). Compared to regional comparators, Bulgaria sectoral productivity gaps are still quite significant, suggesting prima facie that there is significant scope for productivity-enhancing structural change. In fact, in 2012, about 70 percent of Bulgaria's workers were employed in sectors with labor productivity that is below the economy-wide labor productivity. If the share of workers in sectors with above economy-wide labor productivity were to increase—or the productivity of poorly performing sectors were to catch up—growth would rise.

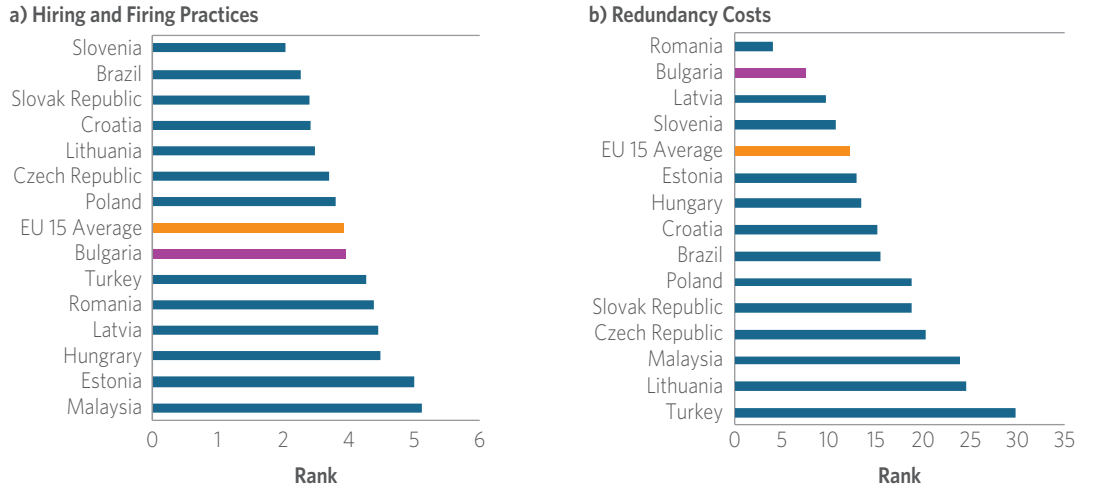
To pass judgment whether a re-allocation of workers truly improves welfare and promotes growth requires a more in-depth analysis.[36] One important step in this direction is to look at marginal productivity across sectors. The key intuition behind this analysis is to assess whether a worker with the same skills would earn a different wage in different sectors and then to ask why the worker would not move to the sector with the higher wage. Under perfect competition, marginal labor productivity—not average productivity—should be equalized across sectors. Under certain assumptions, large gaps in average productivity may reflect large gaps in marginal labor productivity. There are some caveats, though. For example, high average labor productivity in capital-intensive sectors like mining may simply reflect a low labor share.

The marginal productivity of labor varies significantly across sectors, suggesting some inefficiencies in the allocation of labor. In 2008, the dispersion of the average product of labor value in Bulgaria was the third-largest among the EU member states after Slovenia and Romania, suggesting some inefficiencies in labor markets.[37] The problem with an analysis based on the average product of labor is that it rests on the assumptions that workers have the same skills. The skill composition of workers is, however, likely to vary significantly across sectors. We therefore estimate the marginal productivity of labor using wage data for 35-year-old Bulgarians with the same level of education and occupation working in different sectors. This data suggests that a middle-aged Bulgarian man with secondary education working in construction earns 13 percent more in mining and manufacturing and 17 more than a construction worker with the same characteristics. These differences across sector could be interpreted as evidence that there is a misallocation of workers across sectors and that some rigidities prevent the reallocation of workers to higher-productivity sectors. In fact, there exists empirical evidence that changing occupations within sec-

[36] Not every structural change is good. For example, productivity may be higher in sectors with monopoly power. A reallocation to these sectors would contribute positively to structural change but would not necessarily promote growth or enhance welfare (for a more detailed discussion, see Maloney 2012).

[37] See Annex II for a description of the methodology and Table 1 of the Annex for the dispersion of the average labor product value across sectors.

FIGURE 3.9: LABOR MARKET REGULATIONS



Source: Global Competitiveness Report 2014–2015. Note: Rank1 = Best.

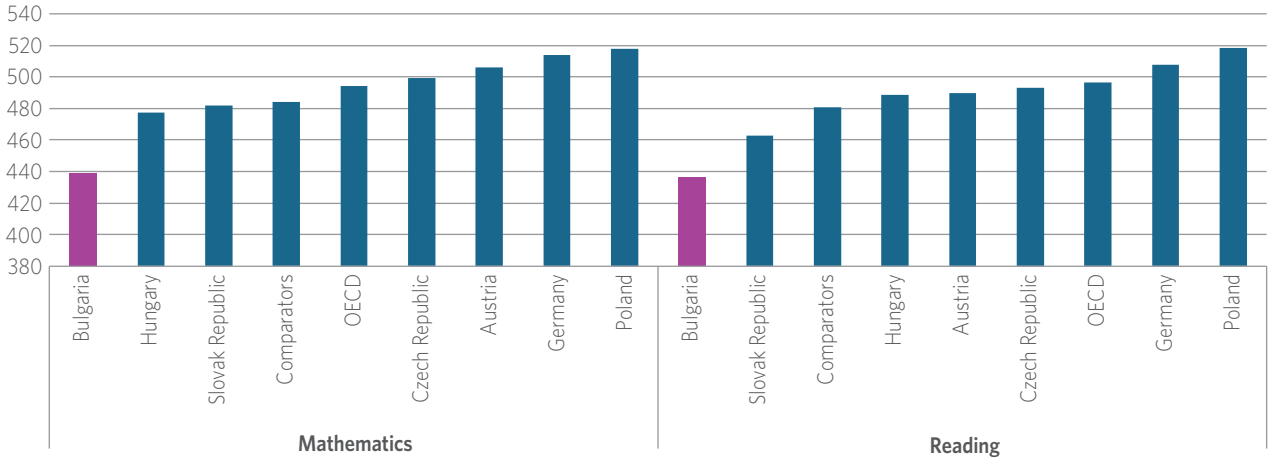
tors tends to be significantly less costly than changing sectors while maintaining the same occupation (Lee and Wolpin 2006).

Regulations and institutions can constrain labor reallocation. Labor-market regulations can make it more costly for workers to change jobs, thereby slowing down structural change. Bulgaria's regulations for hiring and firing are relatively flexible compared to other regional compactor countries and in line with the EU15 average (Figure 3.9a). Redundancy costs are the second-lowest in the EU. Constraints to internal mobility, such as a shallow rental housing market and high home ownership, may reduce mobility. Indeed, internal mobility rates in Bulgaria are among the lowest among regional comparator countries. The share of Bulgarians willing to emigrate, however, is high compared to the benchmark country average and the wage premium required to accept jobs in a different country or region is the lowest in the region (World Bank 2013c). High home ownership and weak labor demand combined with the fact that strong employment growth in the south-west has been limited to only three years (2004–07) may be one explanation for the relatively low internal mobility.[38]

Labor market entrants can play an important role for labor reallocation in the context of structural transformation. Since changing occupation across sectors generally implies a cost, labor market entrants can play an important role in fostering structural change. Kim and Topel (1995), for example, show that the large decrease in agricultural employment share and the large increase in manufacturing employment during South Korea's industrialization period could largely be attributed to changes in the behavior of new entrants. As a result of Bulgaria's demographic change, the share of labor market entrants is projected to decline. In order to stem the reduction of these labor market entrants, Bulgaria would need to implement measures to stem migration outflow. Improving labor demand, public-services delivery and the business environment have all been found to reduce emigration in Eastern European countries (World Bank 2007).

[38] In fact, using micro data for the US from 1986 and 2000, Lee and Wolpin (2006) conclude that labor demand factors, such as changes in relative prices and sectoral productivities, are likely to have been the key driving forces behind reallocation of labor.

FIGURE 3.10: PISA SCORES 2012



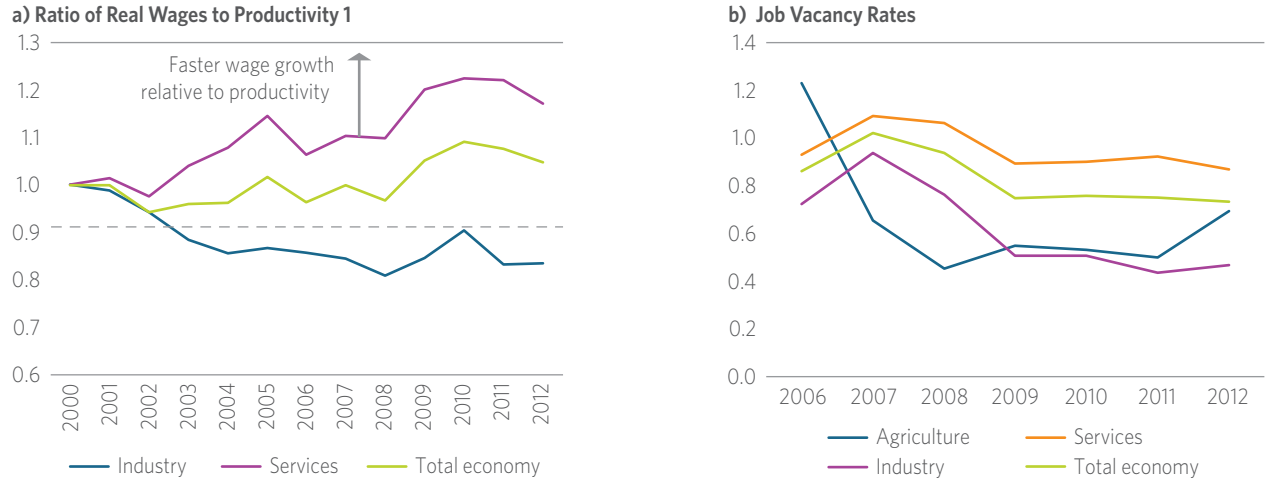
Source: Program for International Student Assessment 2013.

Inadequate education among labor market entrants could slow down structural change. Employment success depends on good cognitive, socio-emotional and job-relevant technical skills (World Bank, 2014b). Evidence from the Program for International Student Assessment (PISA) which measures cognitive skills—mathematics, reading and science competencies—of 15 year-olds, shows that Bulgaria significantly trails other EU Member States (Figure 3.10). More alarmingly, a large share of young Bulgarians leaves the education system with insufficient reading and mathematics skills (performing below level 2, the functional literacy and numeracy level in PISA) which are essential for continued learning and productive employment. Moreover, Bulgaria's education system is also highly inequitable, with significant variation in performance between students from the top and bottom socio-economic quintile. In addition, educational gaps between the ethnic Bulgarian population and minorities, especially the Roma, is large. Among the ethnic Bulgarian population aged 25 to 64 percent, 50 percent completed their secondary education and 33 percent had post-secondary education, which compares to 45 percent and 6 percent, respectively, among ethnic Turks,[39] and even lower, 21 percent and 0 percent respectively among those who identify themselves as Roma. Bulgaria needs fundamental reform of pre-university education, including on curriculum and teacher policy—to ensure that students can acquire the cognitive and non-cognitive skills employers need. Expanding early childhood development programs and extending compulsory and free pre-school education would provide additional opportunities for children of disadvantaged backgrounds to be better prepared for school, reduce drop-out rates and eliminate differences among children based on income (World Bank 2014c).

Agriculture can play an important role in accelerating structural change. Since agriculture tends to be among the lowest-productivity sectors in an economy, policies that facilitate reduction in agricultural employment while boosting agricultural productivity growth can play an important role for accelerating structural change. Bulgaria's land productivity has improved significantly for several crops since

[39] This may also include Roma who self-identify as Turks.

FIGURE 3.11: PRODUCTIVITY GROWTH, WAGES AND JOB VACANCY IN SERVICES



Source: National Statistical Institute, World Bank staff calculations.

Source: National Statistical Institute.

the EU accession, though a major drought in 2012 constituted a major setback. In particular, wheat, corn and oilseeds registered an increase in productivity, while productivity of vegetables, fruit and livestock has remained stagnant since 2008. Agricultural productivity growth was supported by policy reforms. Between 2005 and 2010, Bulgaria's average farm size doubled from 6 ha to 12 ha, in particular, due to a decline in the number of small farms, which contributed to a significant decline in agricultural full-time employment. Policies that boost labor demand outside of agriculture combined with continued investments in farm modernization and improvements of agricultural products, for example, by developing strategies for voluntary land consolidation and investments in hydro-amelioration, could help accelerate Bulgaria's structural change.

Constraints to services may slow down structural transformation. As countries become richer services tend to become an important driver of structural change. In particular, the rise of modern services, such as business services, telecommunication and finance,[40] lead to an acceleration of structural change. These services play an important role for boosting economy-wide productivity growth since they are used for production in other sectors, including manufacturing (see Chapter 6). Messina (2006) argues that Europe's lower employment share in services is due to higher entry barriers, such as licensing requirements, zoning restrictions or regulations that restrict shopping hours. In Bulgaria, service sectors with rapid productivity growth such as finance and ICT absorbed very few workers. While economy-wide real wages grew broadly in line with productivity between 2000 and 2008, wages in services consistently outpaced productivity during this period. Persistent skills shortages in services can potentially explain this continued bidding-up of wages in excess of productivity, especially since the profit share in services sectors (measured by gross operating surplus as a percent of total income) declined at the same time (Figure 3.11), indicating that firms in these sectors allowed workers to capture an increasing share of productivity gains so as to attract and retain skilled talent.

[40] This pattern may however not be replicated in today's middle countries as technology transfers will make it easier for these countries to adopt new technology in the services sector.

Annex 3.1: Bulgaria's Net Capital Stock and TFP Growth

Total factor productivity is difficult to estimate in transition countries like Bulgaria. In an economy such as Bulgaria's where the composition, ownership, and utilization of the capital stock has been changing rapidly changing over the past two decades amidst structural transformation and wide scale privatization. It is inherently difficult to pinpoint that part of capital stock that is truly productive and therefore a relevant into the economy's production function. Using accounts, and corporate balance sheet date, we have estimated Bulgarian capital stock for the period 2000 to 2012. Calculation suggest that the net business capital stock (excluding private and public residential dwellings) most relevant for economic output has actually increased as a share of the total capital stock between 2000 and 2012 (Table 1). This is suggestive of a reallocation of investment to more productive activities throughout the decade, thus helping to support the high GDP growth during the period. Over this same period, the ratio of the business capital stock to annual economic output has remained broadly stable at around 3, slightly higher than average capital-output ratio of 2.3 for the other EU transition economies.

For the TFP calculations, we use a Cobb-Douglas production function and human capital augmented labor force data. The capital share is estimated from the national accounts data to be around 0.45. In contrast to most standard specification which use labor force data as the labor supply input variable, we use employment data to better reflect fluctuations in the labor supply due to unemployment. This employment variable is augmented with changes in the human capital stock, measured as average years of education of the working age population.

ANNEX TABLE 3.1: ESTIMATED COMPOSITION OF NET CAPITAL STOCK

	2000		2012	
Constant 2005 prices	million levs	% of total	million levs	% of total
TOTAL NET CAPITAL STOCK	**256,944**	**100**	**318,507**	**100**
Household dwellings	150,298	58	161,163	51
Privately-owned	143,768	56	156,626	49
Publicly-owned	6,530	3	4,537	1
Business capital stock	106,646	42	157,344	49
Households (office space in dwellings)	21,726	8	23,310	7
Public nonresidential	11,278	4	22,767	7
Nonfinancial corpororations	72,883	28	107,569	34
Financial corporations	759	0	3,698	1
Memo items:				
Real GDP (constant 2005 prices)	34,837	—	53,333	—
Total capital-output ratio	7.4	—	6.0	—
Business capital-output ratio	3.1	—	3.0	—

Source: World Bank staff estimates using NSI and Eurostat data.

EXPORTS

Exports can boost growth in output, productivity and employment through three key channels. First, competition in international markets pressures domestic firms to achieve greater efficiency of production (Bhagwati and Srinivasan 1979; Feder, 1983 Kohli and Singh 1989; Krueger 1980). Second, exports allow for exploitations of economies of scale (Helpman and Krugman 1985). Third, firms that export tend to introduce technical progress, which can have positive spillover effects on the rest of the economy (Grossman and Helpman 1991).[41]

Exports have expanded progressively in Bulgaria. Since 2009, exports of goods and services grew at an annual rate of 9.5 percent, driven by merchandise exports whose share in total exports surged from 66 percent to 76 percent. By 2013, total exports reached 68 percent of GDP (approximately EUR28 billion), far above the EU average of 44 percent. Exports plus imports added up to 140 percent of GDP in 2013, compared with 77 percent in 2000. Since the global financial crisis, trade has recovered and even persistent trade deficits typical of the boom period declined to less than 3 percent of GDP by 2013.

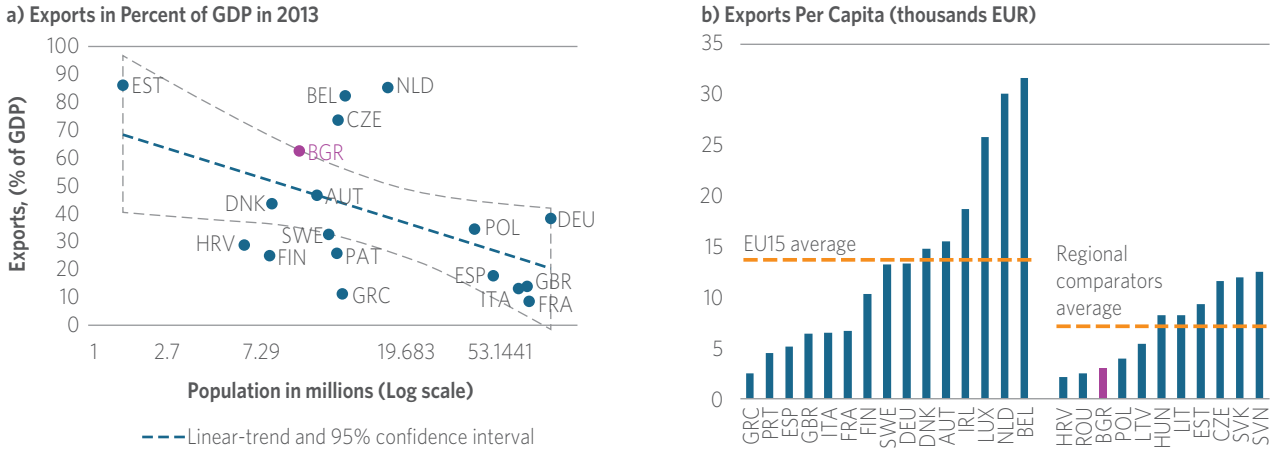
Bulgaria's share of exports-to-GDP is in line with its population and per-capita income but exports per capita remain low, reflecting the low value added of its exports and its output. Across countries, it is often the case that the smaller the domestic market (typically measured by the size of the population), the larger the shares of exports and trade in total output. Bulgaria lies just above the trend-line and within the 95 percent confidence interval drawn of exports plotted against population in Europe (Figure 4.1a). Countries with a similar population, like Belgium, Ireland, the Czech Republic, Hungary, and Slovakia, have much higher export and trade shares. The share of Bulgaria's trade in GDP—exports plus imports—in GDP is also in line with Bulgaria's income level. Yet, Bulgaria's exports per capita (EUR 3,051) are less than a third of the EU's average level Figure 4.1b).

Bulgaria's export basket is well-diversified. Bulgaria's diversification of exports as measured by the Herfindahl index[42] is similar to that of some other benchmark countries but less than that of Croatia, the Czech Republic, Slovenia, Poland, or Hungary. Bulgaria's export diversification has somewhat declined in recent years as the share of its top three exports increased from 13.8 percent before 2000 to 25.5 percent by

[41] Exports also bring in foreign currency, helping to overcome external constraints on growth (Thirlwall, 1979).

[42] A small Herfindahl index indicates a higher level of diversification. The index has been calculated using the Harmonized System (HS) trade commodity classification system of the World Customs Organization.

FIGURE 4.1: EXPORTS IN 2013



Source: World Development Indicators.

2013, driven by an increase of international prices of raw materials[43] and of special economic transactions.[44] Given the low level of value added and the high diversification of exports, the value of export diversification should be questioned—as it is neither a policy lever nor an important determinant of economic development.

The rest of this chapter is structured as follows. Section 4.1 summarizes the key exports trends in Bulgaria. Section 4.2 presents Bulgaria's product space. Section 4.3 presents the value added of Bulgaria's exports, followed by an analysis of Bulgaria's integration into global value chains. The chapter concludes by summarizing the key constraints to Bulgaria's export performance.

4.1 Export Trends

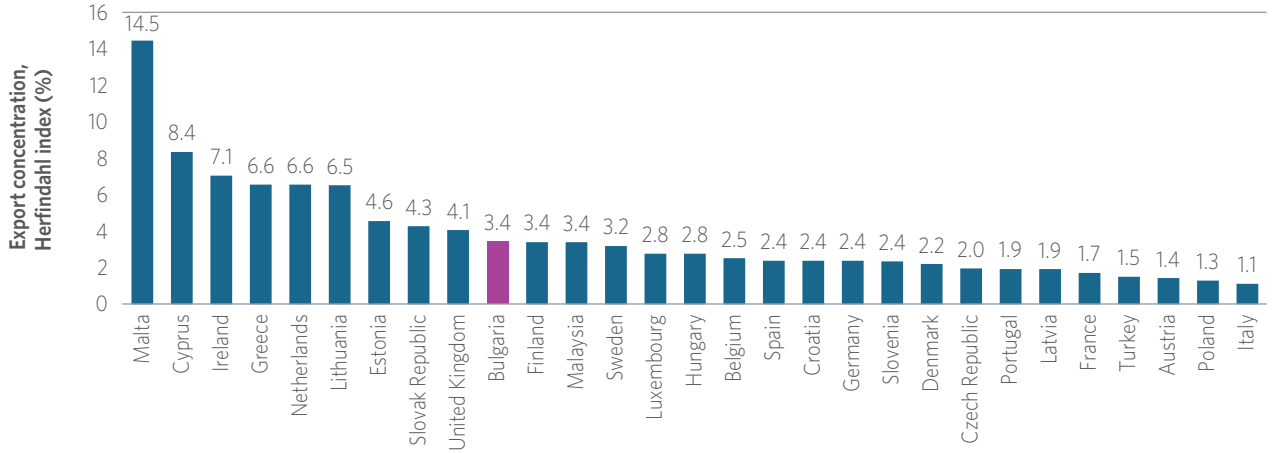
Bulgaria's exports have been growing rapidly since the beginning of the 1990s and the country has one of the most open economies in Europe. Openness, defined here as exports and imports as a share of GDP, has increased from 83 percent in 1991 percent to 115 percent in 2004, reaching 141 percent by 2013. Export and import volumes are 2.4 times higher than in 2000.[45] In 2013, exports were equivalent to 70 percent of GDP and more than one out of five jobs was related to exports. Similarly to other countries in the region, Bulgaria faced the double challenge of reorienting its

[43] For example, copper international prices averaged US$7,073 /mt (real 2010 US$) from 2007 to 2013 which more than doubles in prices from a decade earlier. Source: World Bank Historical Commodity Prices, *The Pink Sheet*, http://go.worldbank.org/4ROCCIEQ50

[44] There is scarce evidence on the nature of Bulgaria's US$3 billion worth of special transactions (SITC code 9310) that started in 2007 and no more than a quarter can be attributed to gold and military exports, which often fall into this category. For instance, the Center for the Study and Democracy and Safeworld (2014) estimates Bulgaria's arms exports to be about 1.6 percent of total exports or USD91 million in 2002 and Bulgaria's annual defense sales abroad in the range of 0.9 percent to 1.75 percent of total exports or USD 185 million to USD350 million in 2010. Annual gold exports have been estimated to range between USD 150 million to USD250 million considering an annual gold production of 5,200 kilograms and recent international prices (Soto-Viruet 2014).

[45] Export and Import volume indexes are derived from UNCTAD's volume index series and are the ratio of the import value indexes to the corresponding unit value indexes. Unit value indexes are based on data reported by countries that demonstrate consistency under UNCTAD quality controls, supplemented by UNCTAD's estimates using the previous year's trade values at the SITC 3-digit level as weights.

FIGURE 4.2: CONCENTRATION OF MERCHANDISE EXPORTS



Source: World Bank staff estimates based on UN-Comtrade Data.

exports from the ex-socialist states to other, mainly Western European markets, and of delivering goods competitively to these new markets. Initially, like its regional peers, Bulgaria's competitive advantage was clearly in labor-intensive sectors such as textiles, but many countries in the region also upgraded their production over time, taking advantage of the relatively low wages of their higher skilled work forces, and expanding exports in machinery and manufacturing.

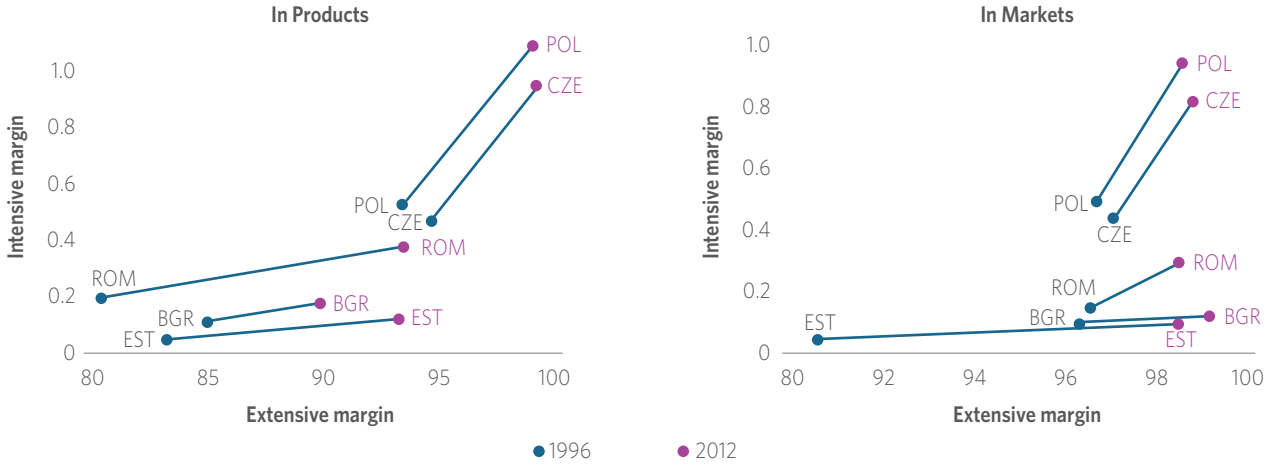
Though exports of machinery and equipment has increased over time, Bulgaria still exports a relatively high share of primary exports and relatively few medium-high tech goods. Mining products, construction materials and equipment, machinery, garments as well as cereals and vegetables oils accounted for nearly 50 percent of Bulgaria's exports on average between 2008 and 2012 (see Table Annex 4.1). Copper and unwrought copper alloys are Bulgaria's most important exports, accounting for 11.4 percent of total merchandise exports. In 2012, Bulgaria was the sixth-largest exporter of copper in the world, accounting for 3.5 percent of the US$137 billion global market. Agriculture and food exports are composed of a diverse set of products, ranging from the capital intensive production of cereals to the more skilled-labor intensive production of vegetables or premium cheeses and meats.[46] Garments and textiles constitute about 10 percent of Bulgaria's total exports. Bulgaria, traditionally known for skilled tailors, exports garments for some of the leading designer brands; nevertheless the country faces extremely tough competition not only from countries with lower wages in Asia and the Middle East (Pakistan, Turkey, India, China, Vietnam, Indonesia and Egypt), but also from countries within Europe whose comparative advantage lies in design, marketing, and logistics, such as Italy, Portugal, Greece, Slovenia, Lithuania and Romania.

Global demand for Bulgarian exports is relatively weak. Growth of exports of existing products was slower than in other EU countries (Figure 4.3),[47] world demand

[46] The GoB has set the agricultural sector as priority and is looking for the "development of the agricultural sector to ensure food security and production of products with high value added through sustainable management of natural resources".

[47] Export growth can take place at the intensive or at the extensive margin (Hummels and Klenow, 2005). These margins in terms of products assess export growth of existing products (intensive) versus how important are these products in world trade (extensive). In

FIGURE 4.3: INTENSIVE AND EXTENSIVE MARGINS IN PRODUCTS AND MARKETS



Source: Authors' calculations based on UN-COMTRADE data.

for Bulgaria's exports has grown less than for the exports of neighboring countries. Bulgaria has made similar progress as other benchmark countries in expanding its exports to new markets (extensive margin). But Bulgaria has been less successful than Romania, the Czech Republic and Poland in increasing its share of exports to existing markets. These EU countries now export goods that are in much-higher demand than Bulgaria's.

The sophistication of Bulgaria's export basket has stagnated since the mid-1990s. One way to measure the sophistication of exports is by calculating the share of exports that is produced predominantly by higher-income countries, and hence more likely to be associated with higher productivity levels as measured by the EXPY (Hausmann, Hwang, Rodrik 2006).[48] The EXPY value of Bulgaria's export basket was US$19,371 in 2012, a level below the value of other EU member states but in line with its income level. In contrast to all other comparator countries, Bulgaria's EXPY has not improved since 1996, narrowing the gap between the observed and the expected EXPY value (Figure 4.4).

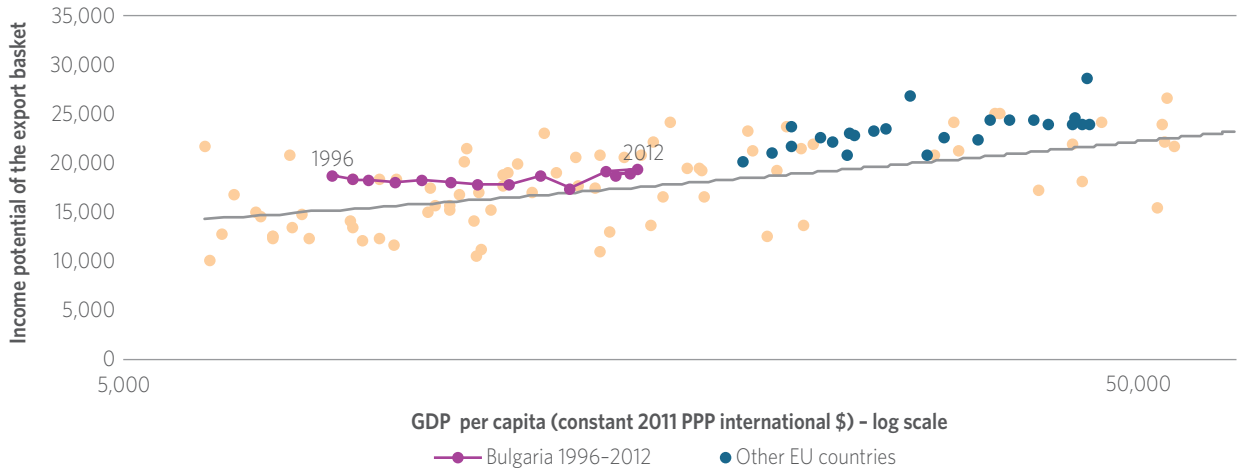
Bulgaria's export basket is formed by products with very different technological intensities, ranging from primary products to sophisticated high-tech goods, proving that some of the capa-

terms of markets, they assess the export growth to existing markets (intensive) versus growth due to being present in more dynamic markets (extensive). Formally, if k^i is the set of products exported by country i, X_k^i the dollar value of i's exports of product k to the world, and X_k^w the dollar value of world exports of product k, the intensive margin below calculates a country's share in its representative products. The extensive margin calculates the importance of one's export portfolio relative to all exports that exist in the world. Similarly, the intensive margin in market measures the importance of Bulgaria's exports in existing markets, while the extensive margin measures how important these markets are for total world trade. The intensive and extensive margin are be defined as follows:

$$IM_t = \frac{\Sigma k^i X_k^i}{\Sigma k^i X_k^w}, EM = \frac{\Sigma k^i X_k^w}{\Sigma k^w X_k^w}$$

[48] More specifically, Hausmann, Hwang, and Rodrik (2007) use Comtrade data to construct a panel of nearly 80 countries that start in 1962. Combining global export data with country data on GDP per capita they calculate PRODY's per product category as a global measure of the income potential of a product. The *EXPY* is then a country-specific measure of income potential based on *PRODY* and country-specific export data. The authors grouped this data into 5- and 10-year intervals and results from four different estimators (OLS, IV, OLS with fixed effects, and GMM) suggest that, on average, a 10 percent increase in EXPY in an earlier five-year period raises per capita growth by 0.14–0.19 percentage points in the subsequent five-year period.

FIGURE 4.4: INCOME POTENTIAL OF THE EXPORT BASKET AND GDP PER CAPITA



Source: Authors' calculations using UN-Comtrade Data. The figure is based on the subset of countries with a GDP per capita in 2011 PPP international US$ above US$7,000.
Note: Luxembourg is not included in the above graph.

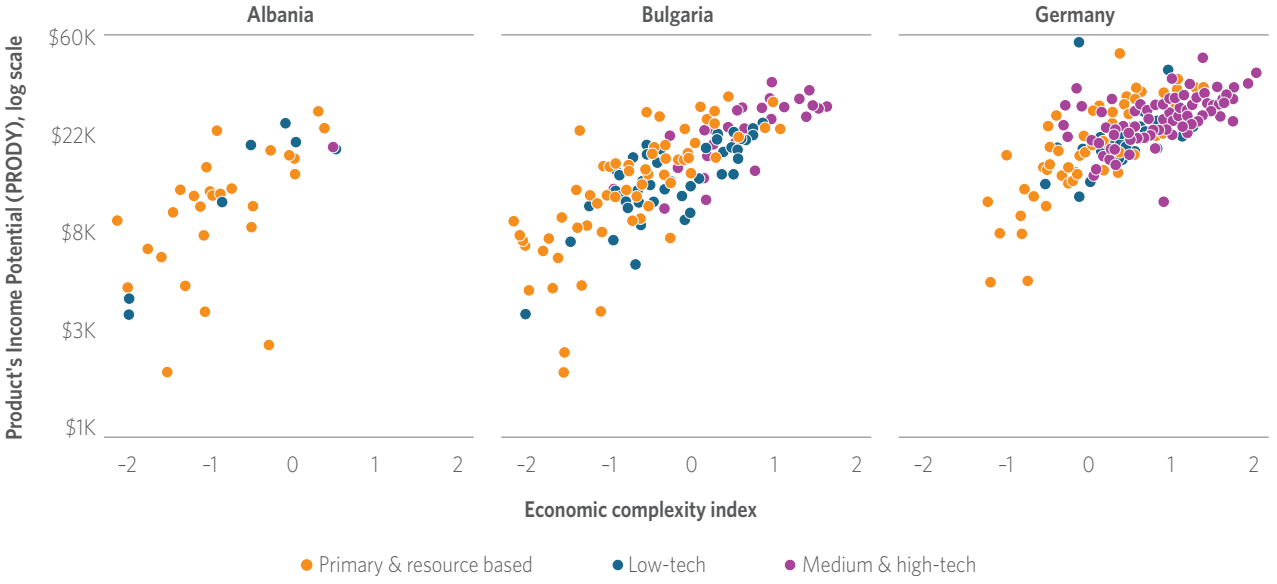
bilities to produce high-tech goods are already available.[49] Bulgaria's comparative advantage lies in a diverse set of products with low and high-income potentials (*PRODY*) that vary greatly in economic complexity (*PCI*). Figure 4.5 uses three dimensions to plot all products on which Bulgaria has a Revealed Comparative Advantage (RCA) index larger than one. For the first dimension, products are categorized according to a broad technology definition (proposed by Lall 2000a) while the second and third dimensions are income potential (*PRODY*) and economic complexity (*PCI*). On average, primary products and resource-based categories are less sophisticated (with lower *PRODY* and *PCI* values) than the low-, medium-, and high-tech manufactures. High-tech manufactures, as expected, are very complex products with large associated-income potential. Nonetheless, there is a sizable overlap between technological categories, particularly on products on which Bulgaria has an RCA larger than 1. In other words, not all products labeled as primary and resource-based are of low value-added. Some of them are indeed very complex products that offer large income gains, and Bulgaria is harnessing its comparative advantage to export them.

4.2 Bulgaria's Product Space

The product space analysis is based on the assumption that production requires not only capital, labor and resources, but also specific knowledge. Some of this knowledge can be readily available from manuals, the Internet or by asking experts, but acquiring broader knowledge like how to run a garment factory, is costly and time-consuming and hard to acquire. Hausmann, Hidalgo, et al. 2011 refer to this knowledge as capabilities. The production of goods tends to require the interaction of individuals with different capabilities. As the complexity of goods increases, so does the amount and diversity of capabilities to produce a given good. Moving into a new product may therefore

[49] The production of goods that are classified as high-tech goods according to the UN Comtrade Database does not necessarily generate a high value added. This discussed in more detail below.

FIGURE 4.5: TECHNOLOGICAL CONTENT, PRODUCT COMPLEXITY AND COMPARATIVE ADVANTAGE



Source: Authors' calculations using UN-Comtrade data.

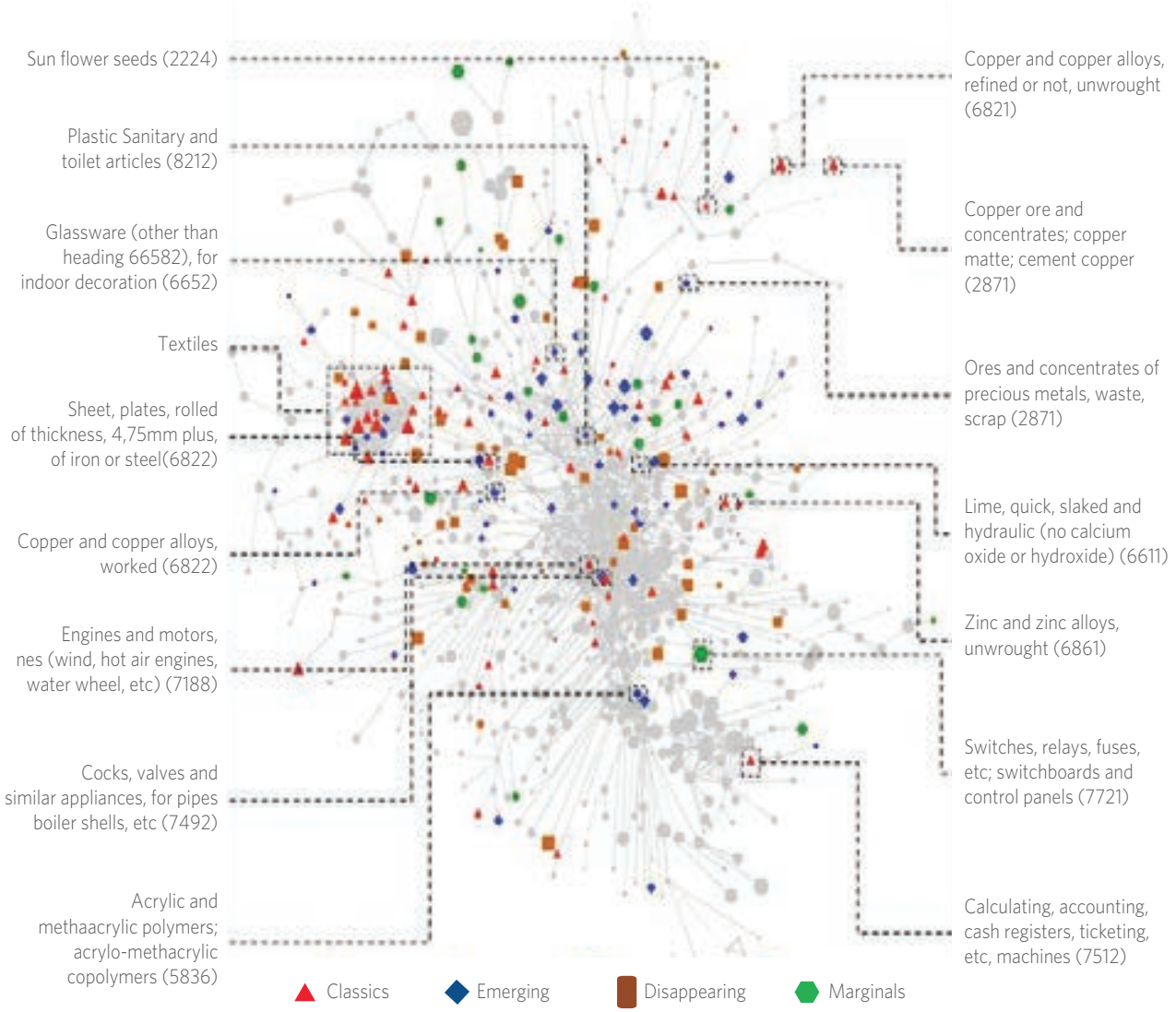
be easier if most of the capabilities required for producing this product are already available in the country.[50]

The product space represents this idea graphically. It measures the distance between two products as the conditional probability that an exporter with a RCA in product *X* also has a RCA in product *Y*. Hausmann and Klinger (2005) show empirically that countries tend to diversify into export products close to those they have already specialized in. It follows that countries specialized in more "connected" goods, whose production requires capabilities that are used for the production of other goods, are able to upgrade their exports basket more quickly. If a country is producing goods in a dense part of the product space, then the process of export diversification is much easier because the set of acquired capabilities can be easily redeployed to other nearby products. This implies that low costs of production may not be the only reason to export a good. Marshallian externalities could potentially offset any losses arising from moving against comparative advantage. These can arise if the concentration of production in a given location generates external benefits to firms through knowledge spillovers, labor pooling or proximity to specialized suppliers (Maloney and Lederman 2012).

Bulgaria's export basket is significantly less developed in the densely connected core of its product space than the baskets in the other EU countries. In particular, Bulgaria has a significantly lower export share in world markets in its "core" industries like electronics, chemicals and industrial machinery. Some products in the industrial core were exported back in 1990s, such as electric motor, generators or electro-mechanical tools, but are not exported anymore (Figure 4.6). Some related capabilities are now employed in the production of emerging industrial products such as switches, relays and other engines and motors.

[50] Whether diversification per se is good for growth is less obvious at best and most likely incorrect, though. Easterly, Reshef, and Schwenkenberg (2009), for example, show that success in manufacturing exports tends to be dominated by a few success stories, accounting for most of the export value.

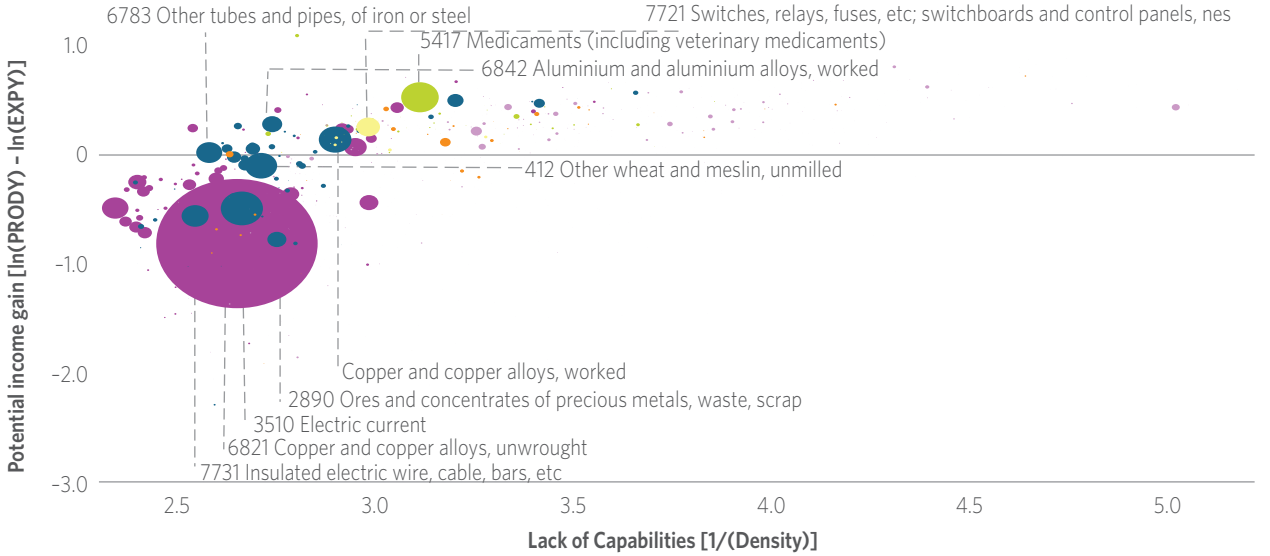
FIGURE 4.6: BULGARIA'S PRODUCT SPACE



Source: Authors' diagrams based on Hidalgo's Map in The Product Space and the Wealth of Nations. http://www.chidalgo.com/productspace.

Most Bulgarian exports are associated with low productivity levels, but some emerging activities offer potentially greater income gains. Figure 4.7 depicts Bulgarian exports in four dimensions. The circle size represents a good's share in total exports. Most of Bulgaria's key exports are located below the zero-line on the vertical axis, which is the threshold indicating whether a product would be income-enhancing or not. Some emerging exports, which are highlighted in blue, are located above the vertical line. They are also placed farther right on the horizontal axis, which measures the required capabilities needed by Bulgarian firms to export these products. Products located to the right are more difficult to export due for example to a lack of qualified engineers, too few agencies to expedite phytosanitary standards, or the limited number of flights between Bulgaria and the rest of Europe. Policy can influence the creation of capabilities and, thus, the positions of the circles.

FIGURE 4.7: PRODY, EXPY, DENSITY, AND EXPORT SHARES IN BULGARIA, 2012



Source: Authors' calculations using UN-Comtrade Data.
Notes: Red circles are classics, blue circles emerging and green circles marginal products.

In recent years, Bulgaria has started to export some more-sophisticated export goods. Bulgaria has started to gain a comparative advantage[51] in the export of copper alloys. In contrast with the global market for raw copper, the market for copper alloys is not dominated by the Chilean industry, which only supplies 1 percent of the global demand, but by Germany (16.7 percent), China (8.7 percent), Japan (5.9 percent), and South Korea (4.8 percent). Copper alloys require a larger set of capabilities than raw copper and tend to have more backward and forward linkages than raw copper exports. In 2012, Bulgaria exported US$801 million in copper alloys, or 0.81 percent of the global market. Exports of some machinery and electronics products have also emerged, contributing nearly 20 percent of the observed export growth in the last 15 years. In fact, Bulgaria has developed a comparative advantage in 10 out of 115 products grouped in the "Machinery" category and in 3 out of 49 in the "Electronics" one.

Exports of machinery are growing strongly and are now an integral part of the Bulgarian export basket. In fact, machinery exports accounted for 12 percent of total Bulgarian exports and contributed 13.7 percent to overall export growth between 1996 and 2012.[52] Though Bulgaria has only 10 products with a revealed comparative advantage in this community, it has good diversification options for the medium and long term in 55 export categories in this community.[53] Bulgaria has a revealed comparative

[51] Traditional trade theory argues that welfare is maximized when countries specialize in goods where they have a comparative advantage. The traditional measure for identifying comparative advantage is the RCA index from Bela Balassa (1965 and 1989). It is calculated as the ratio of product *k*'s share in country *i*'s exports to its share in world trade. A country is considered as having a RCA if this index is greater than 1. It is a useful index to document a country's current trade pattern.

[52] Machinery is the largest community in the Product Space and the one with the largest average product complexity index.

[53] The largest export category in this group is "Switches, relays, fuses, etc., switchboards and control panels" (SITC 7721 with US$1.55 billion in exports from 2008 to 2012); followed by "Cocks, valves and similar appliances, for pipes boiler shells, etc" (SITC 7492 with close to US$872 millions); and "Engines and motors "(SITC 7188 with US$747 million in exports from 2007–2011).

FIGURE 4.8: NETWORK REPRESENTATIONS FOR MISCELLANEOUS ENGIN

Source: Authors' diagrams based on Hidalgo's Map in The Product Space and the Wealth of Nations. http://www.chidalgo.com/productspace.

advantage, for example, in 25 products related to "Engines and motors", which is not too different from Slovenia (with 37 products), but still far away from manufacturing leaders like Germany (Figure 4.8).

4.3 The Value Added of Bulgaria's Exports

What you produce matters, but so does how you produce it. The product space implicitly assumes that producing goods closer to their core origin is advantageous, since their production requires capabilities that can be used in the production of other goods. Other authors, however, argue that the same products can be produced in many different ways. Hence, how you produce a good also matters for several reasons. First, technology differs across countries. Take the example of rice. Technology (land size, seeds, irrigation technique and harvesting methods) differs significantly among countries, and the output of rice per hectare is more than twice as high in richer countries than in poorer ones (Gollin, Lagakos and Waugh 2013). Second, the quality of goods may vary significantly across countries. The average unit value of exports tends to increase with the level of GDP per capita (Hummels and Klenow 2005, Maloney and Lederman 2012). Third, the production of export goods has become increasingly unbundled. This means that even if a country exports a certain good, it may not have produced the whole good nor have the capability to actually produce the entire good and may, in fact, have contributed relatively little to the entire production process.

The production of goods has become increasingly fragmented across countries. Due to falling trade costs, greater global openness and cooperation on trade policy and the ICT revolution, production processes have become increasingly unbundled across countries. Goods and services that were once produced in a single country have become part of a global production chain. A production chain encompasses the entire process required to convert raw materials, labor, capital and knowledge into intermediate products and final goods, ranging from design to manufacturing of parts, assembly of final products to marketing and distribution. In a Global Value Chain (GVC), production is divided into many small stages of specialization along the chain that can be carried out where the necessary inputs are available at competitive prices (UNIDO 2009; Globerman 2011). GVCs can, thus, be thought of as factories that cross international borders. The rise of GVCs has con-

tributed to a dramatic shift in global trade. As many as 3,000 bilateral investment treaties have been signed to create the framework of deep agreements necessary to move final goods and services around the globe and to internationalize entire processes of production. Today, intermediate inputs account for roughly two-thirds of international trade (Jones and Kierjowski 2001).

As countries increasingly rely on intermediate imports due to growing GVCs, gross exports may not accurately reflect their impact on the economy. Exports can contribute to economic and productivity growth not only because they enable countries to import, but also through their impact on the domestic market. Exports create employment and labor income, raising domestic demand. Exports also require inputs. The higher the proportion of intermediate goods provided by domestic suppliers, the higher the indirect impact of exports on employment and labor income. Domestic suppliers to exporters are also likely to benefit from technological spill-over: they may be induced to upgrade skills and innovation to meet the productivity, efficiency and sophistication required by global buyers. They also will be subject to stringent requirements of quality, cost and reliability, which is likely to boost their productivity. An approach that focuses on value added in exports can, thus, shed some light on the true contribution to the domestic economy of a country's exports (OECD/WTO/UNCTAD, 2013; Francois, Manchin, and Tomberger 2014). Data for the purposes of this study have been taken from the OECD-WTO TiVA data base and the World Bank's newly developed database on trade in value added.[54]

One measure that captures how a certain good is produced in a country is the domestic value added to its exports. Gross exports can be broken down into the domestic value added of exports (DVAX) and their foreign value. The DVAX captures the backward linkages between the exported good and the domestic economy in a particular sector.[55] It can be further separated into three sub-components: i) the direct (domestic) value of exports, which is gross exports minus domestic and foreign inputs and would capture, in the above example, the direct value added of the machinery sector; ii) the indirect (domestic) value of exports, which is the value added of domestically produced inputs, for example, from services or the plastics industry; and iii) the reimported domestic value added, which is the value added in foreign inputs that were originally produced domestically. The last component tends to be small for small exporters like Bulgaria, but can be significant for big global exporters such as China, Germany or the US.[56]

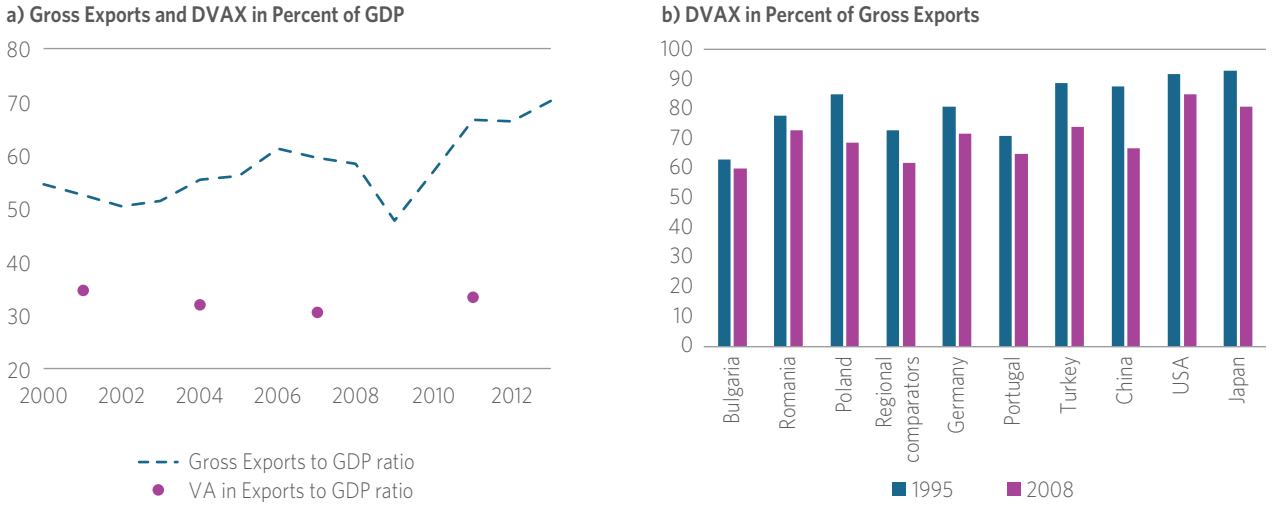
Though Bulgaria has increased its exports markedly since 2000, their value added as a share of GDP has declined. Gross exports more than quintupled between 2000 and 2013, leading to an increase in DVAX (Figure 4.9). Yet, DVAX as a share of GDP declined from 35 percent to 33 percent of GDP and from more than 65 percent of the total value of exports in 2001 to 50 percent in 2011. The latter implies that for every Euro

[54] The World Bank's data based on trade in valued added covers the years 2001, 2004, 2007 and 2011. The OECD WTO TiVA data base is available for 1995, 2000, 2005, 2008, and 2009 at http://stats.oecd.org/index.aspx?queryid=47807.

[55] For example, exports from the machinery sector can comprise the direct value added in machinery production as well as the value-added of intermediate inputs that the domestic plastics industry and other sector have provided for the production of the exported machinery goods.

[56] The analysis of trade in value added at the level of individual sectors can be undertaken in two alternative ways that yield complementary insights: An evaluation based on backward linkages and an analysis based on forward linkages. The latter approach accounts for all the value-added that a sector provides directly to its own exports, but also indirectly to the exports of other sectors. For example, the exports of the machinery sector would consist of the direct value-added in machinery production for exports, but also a share of the value-added from exports of food that was produced using machinery of domestic origin. While this chapter focuses on backward linkages, chapter V will discuss forward linkages in services.

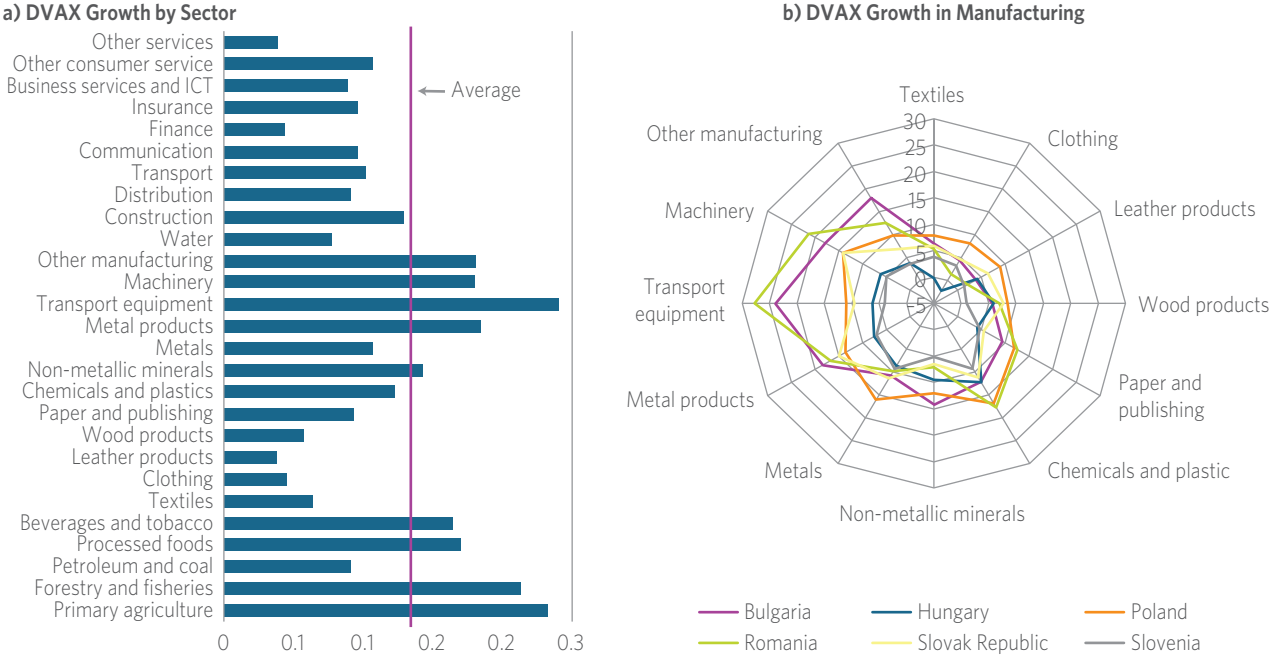
FIGURE 4.9: EVOLUTION OF BULGARIA'S GROSS EXPORTS AND DVAX



Source: World Bank Data on Value Added in Exports.

Source: OECD WTO TiVA data base.

FIGURE 4.10: BULGARIA'S ANNUAL DVAX GROWTH BY SECTORS (2004–2011)



Source: Trade in Value-Added Database, World Bank.

worth of exported goods and services, 50 cents were produced abroad and only 50 cents were created in Bulgaria. Cross-country data suggests that the share of DVAX in Bulgaria is below the average of regional comparators: In 2008, Bulgaria's DVAX as a share of gross exports was 60 percent.

Bulgaria's DVAX growth varied significantly across sectors and was relatively weak in services exports. Agriculture, metals and fabricated metal products, transport equipment, and machinery had the highest growth in DVAX between 2004 and 2011 (Figure 4.10). During this period, Bul-

garia's DVAX growth exceeded that of other regional comparator countries such as Hungary, Poland, Romania, the Slovak Republic, and Slovenia in agriculture, petroleum and coal, processed foods and beverages, and tobacco. DVAX growth in transport equipment was far above the average, but fell short of Romania's. Exports of light industry products (clothing, leather and wood products) grew relatively modestly throughout the region, yet Polish producers managed to achieve a higher DVAX growth in all of these sectors than their Bulgarian counterparts. Value-added growth in services exports was weak compared to the above-listed comparator countries, as will be discussed in more detail in Chapter 5.

4.4 The Role of GVCs in Boosting Domestic Value Added

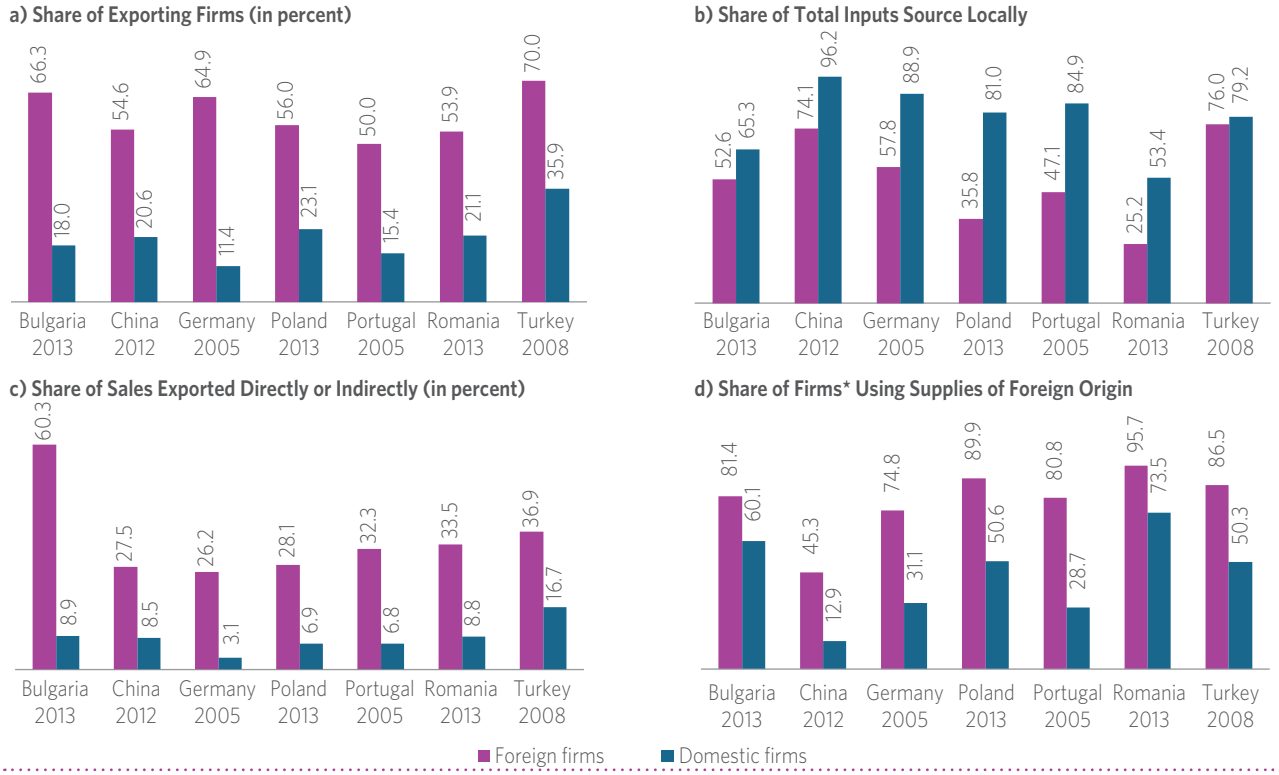
Global Value Chains can open opportunities for firms to boost productivity growth. Firms are linked to GVCs as sellers or as buyers. A domestic firm is a GVC seller if it supplies multinational firms in the country or exports products. A domestic firm is a GVC buyer if it sources intermediates from abroad. GVCs can help firms boost their productivity not only by enabling them to exploit economies of scales, but also through a variety of other channels. First, GVCs can accelerate technology transfers. They induce exporting firms as well as domestic suppliers to upgrade their technology to meet the productivity, efficiency and sophistication requirements demanded by global buyers. And they also facilitate the import of intermediate inputs with new technologies. Second, GVC participation may increase the demand for skilled workers and thus induce firms to train workers in order to compete in international markets and use the new technologies that have come available. Third, GVC participation may stimulate investments in infrastructure that would otherwise not be profitable, spurring local production. Fourth, increasing GVC participation exposes existing GVC participants to more competition, which ultimately also affects the market structure of domestic firms. For example, multinationals tend to demand higher-quality inputs, which may provide incentives for local suppliers to upgrade their technology, share their knowledge with local firms and, ultimately, increase competition between local firms.

Bulgaria's integration into GVCs was positively associated with DVAX growth, but less than its peers. In Bulgaria, around 65 percent of foreign-owned firms[57] and only 18 percent of domestically owned firms export at least 1 percent of their production (see Figure 4.11a). The share of domestically owned firms that export more than 1 percent of their production is somewhat higher in Romania (21.1 percent), Poland (23.1 percent), and it is almost twice as high in Turkey (35.9 percent). Domestically owned exporters tend to source only 65.3 percent of the inputs locally, which is lower than for most comparator countries. Foreign firms in Bulgaria source about 52.6 percent of their inputs locally, suggesting that backward linkages of FDI fall in the medium range (Figure 4.11b). Foreign firms in Bulgaria export 60.3 percent of their total sales, which is the highest number in the sample. This suggests that many foreign firms view Bulgaria as an export platform with lower costs or as an entry point into the EU (Figure 4.11c).

Bulgaria's domestic value chain is short, limiting the potential for DVAX growth. Bulgaria's domestic value chain is relatively short, which means that the average number of production steps performed in Bulgaria, and thus opportunities to increase DVAX along the chain, are low compared to other countries. In 2012, Bulgaria's

[57] Firm-level analysis in this chapter is based on data from the World Bank Enterprise Surveys. One major advantage of the Enterprise Surveys is that the survey questions are the same across all countries. Moreover, in most cases they represent a stratified random sample of firms using three levels of stratification: sector, firm size, and region.

FIGURE 4.11: GVC INTEGRATION



Source: Own illustration. Data: Enterprise Surveys. *Includes manufacturing firms only.

domestic value chain showed an average length of production steps of 0.024 as opposed to 0.25 among regional comparator countries (Figure 4.12).[58]

Some firms tend to benefit more from GVC participation than others. In our sample of European firms,[59] firms that were large, exporter firms, multinational, with a higher R&D intensity and more-skilled workers benefitted more from GVC integration. Also, a smaller technology gap between the domestic and foreign firms helps productivity spillovers in GVCs.

Host country characteristics are also important for firms to reap the benefits of participating in GVCs. We find that for the European firms sampled, the key factors include a country's labor market regulations, protection of intellectual property rights, access to finance, learning and innovation infrastructure, trade, investment and industrial policy, institutions and governance, and competition. Gains from structural integration in GVCs also tend to be higher in countries with more innovation.[60]

4.5 Improving Bulgaria's Export Performance

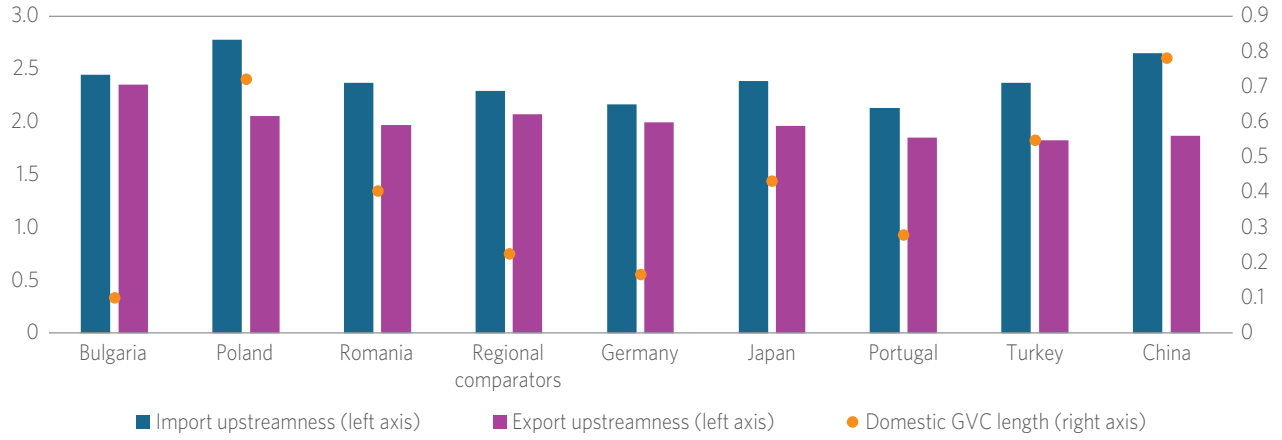
There is ample scope for improving Bulgaria's integration into GVCs and

[58] The length of a domestic value chain is calculated as the difference between the upstreamness of imports and exports (Pol, Chor, Fally and Hillberry, 2012.)

[59] We use the Amadeus data base for this regression. Empirical specifications are summarized in Taglioni and Winkler (2014).

[60] This is similar to the findings of Meyer and Sinani (2009). The authors conclude that R&D intensity in the private sector and the number of patents per billion US dollars granted to host country residents is associated with significantly higher spillover effects.

FIGURE 4.12: THE LENGTH OF DOMESTIC GVCS



Source: WB staff calculations.

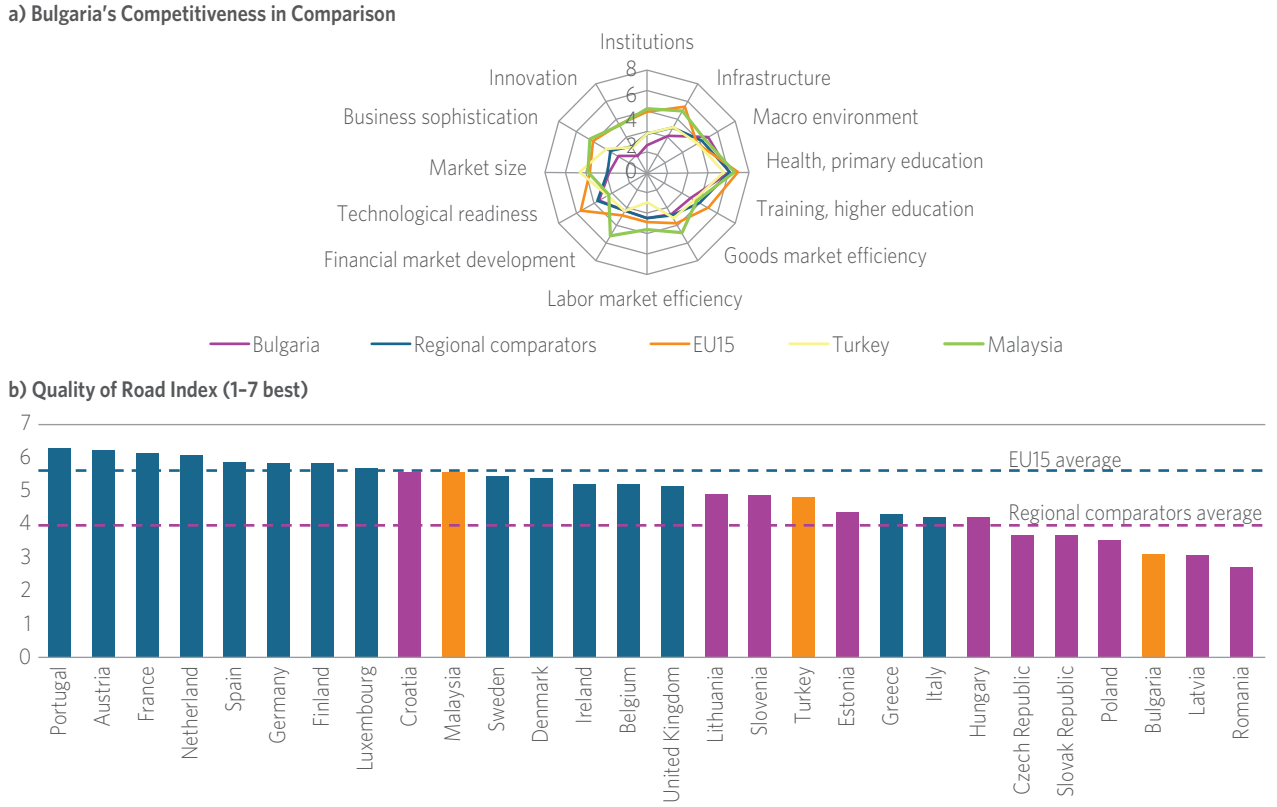
boosting exports. As discussed above, Bulgaria's sales of inputs for exports to other countries tend to be of low value added. Its domestic value chain is rather short and Bulgaria's exporters tend to be located far from final demand. This seems to constrain the growth of domestic value added of individual manufacturing sectors and services, such as food and beverages, textiles and apparel and machinery, where higher value-added tasks (as percentage of output of final good) are typically found at the very beginning or the end of the value chain. Finally, the limited length of the domestic value chain may constrain DVAX growth in sectors such as food and beverages, textile and apparel, metals and transport equipment. That's because a higher number of domestic production steps would afford the opportunity to generate higher domestic value added, either directly within a sector or indirectly through backward linkages to other sectors.

Policy interventions for improving GVC integration could focus on three key channels: a) facilitate entry into GVCs by attracting FDI into domestic firms; b) improve backward linkages of FDI and c) promote the absorptive capacity of domestic firms in order to better benefit from GVC integration. Reforms that improve performance in one of these dimensions are also likely to improve performance in another. For example, promoting the absorptive capacity of domestic firms is likely to help strengthen backward linkages of FDI and to facilitate the entry of domestic firms into GVCs, assuming that foreign investors will make use of local firms if these are able to provide inputs at the required quality and competitive prices.[61] Policies should therefore focus on both of the key GVC actors, foreign investors and domestic firms, by attracting the former and supporting the latter in acquiring capacities to master the GVC integration successfully.

Bulgaria has been quite successful in attracting FDI. In the early 2000s, many countries in the region became attractive FDI countries due to an affordable and skilled labor force, a favorable business environment, an advantageous location on the periphery of Europe, and the promise of EU accession. This led to a flood of foreign investments in the region, which increased steadily throughout the pre-crisis period. The 2008 global financial crisis slowed down FDI inflows and revealed underlying

[61] Foreign investors could follow co-location and co-sourcing strategies, i.e. source from international suppliers abroad or require their established suppliers to locate in the country, so this is not a given.

FIGURE 4.13: BULGARIA'S GLOBAL COMPETITIVENESS INDEX, SUBCOMPONENTS



Source: World Economic Forum Global Competitiveness Report 2014–2015.

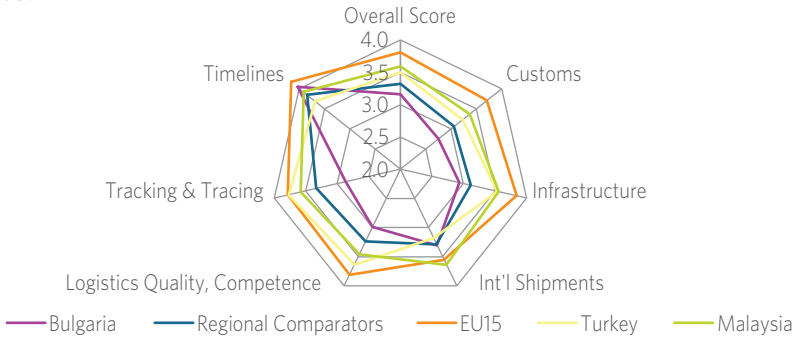
weaknesses, including in Bulgaria. Yet, Bulgaria's FDI inflows as a share of GDP averaged close to 3 percent of GDP between 2011 and 2013. In 2013, Bulgaria was among the 15 European countries with the highest number of new FDI-related jobs (Ernst and Young 2014). Empirical studies on Bulgaria have found that market potential, low labor costs, a well-trained and motivated workforce, proximity to the EU and improvements in the economic and business environment were key determinants of FDI in the early 2000s. However, the lack of educational improvement of the labor force and of efficient institutions seem to have become increasingly important constraints to FDI in recent years (Sakali 2013).

Though Bulgaria has made some progress in enabling a more competitive environment, it is still lagging in several key dimensions. Bulgaria offers a stable macro-economic environment and an investor-friendly tax system. With the second-lowest public debt ratio in the EU and a strong peg to the Euro, Bulgaria has been able to maintain a stable macroeconomic environment in the post-crisis years. Its tax system is considered very business-friendly, with a flat rate of 10 percent on corporate income. Bulgaria is, however, lagging behind in terms of infrastructure, higher education, business sophistication, innovation, and institutions (Figure 4.13a)

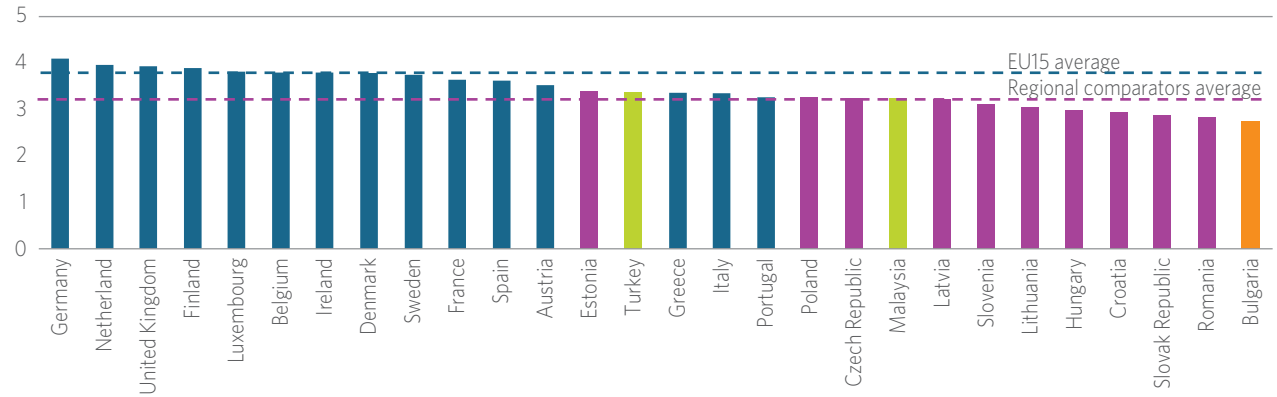
Successful GVC integration will require Bulgaria to upgrade its connectivity to international markets beyond improving its road infrastructure. Poor connectivity means high costs, low speed, and high uncertainty for GVC participants. For GVCs, import barriers, as well as traditional export barriers matter since a country's ability to participate in GVCs depends

FIGURE 4.14: BULGARIA'S LOGISTICS PERFORMANCE (1–7, BEST)

a) Logistics Performance Index



b) Customs Sub-Score



Source: Logistic Performance Indicators, World Bank.

as much on its capacity to efficiently import inputs as on its capacity to export goods. Bulgaria is still lagging behind in infrastructure, particularly roads, when compared to other EU countries and countries like Turkey and Malaysia (Figure 4.13b). In terms of logistics, Bulgaria ranks lowest (47th) among its peer countries according to the overall International Logistics Performance Index (LPI). Designed by the World Bank, it takes into account a country's customs efficiency, quality of trade and transport infrastructure, ease of arranging shipments, quality of logistics services and the ability to track consignments and delivery times. (Figure 4.14). Also, when countries like Bulgaria are dominated by small and medium enterprises (SMEs) they find it more difficult to enter GVCs unless their SMEs are part of a well-established and integrated industrial cluster (for example, Becattini 1990 and Porter 1990).

Establishing a clear and comprehensive framework to support the upgrading of domestic SMEs will be important to foster the integration of domestic firms into GVCs. Access to sources of funding is critical for upgrading SMEs. Markets tend to provide too little finance to SMEs than is socially desirable. The government should support programs that facilitate the connection between SMEs and global suppliers; the Czech supplier development program, established in 1999, takes measures to support the internationalization of SMEs. Finally, policy makers can play an important role in helping domestic firms with product and quality certifications as well as to comply with world-class process and product standards.

Bulgaria lags in terms of innovation. In fact, it has the lowest share of innovative firms in the EU, the lowest R&D spending and low R&D outputs like patents and high-tech exports. Business R&D spending in 2011 was 0.3 percent in Bulgaria, compared to 1.23 percent in the EU. Public R&D spending is 0.29 percent, compared to an EU average of 0.76 percent in 2013. The large number of small firms in Bulgaria is likely to depress innovation. Innovating firms in Bulgaria tend to have double the number of employees of domestic companies and include many more large firms with 250+ employees (World Bank 2013b). The National Reform Program 2011–2015 aims to increase R&D spending. Yet, the low level of R&D spending, in particular by firms, along with limited linkages between research and companies, constitute a challenge for the government's efforts at improving innovation.

FDI seems to have played a role in improving innovation. In fact, one in four among the innovating firms that are exporting goods from Bulgaria have received significant FDI, compared to one in 15 in the non-exporting innovative group. Patent activity in Bulgaria is now also on the rise, propelled by R&D-intensive FDI in the IT industry. Most new patents granted to Bulgarians by the United States Patents and Trademarks Office (USPTO) are related to high-tech industries, especially computers, and include fields like communication and navigation technology, data processing, software and memory. The rise in the number of patents is driven by the creation of new R&D facilities by multinationals in the IT industry focused on cloud computing and other cutting-edge software development. In fact, collaboration between foreign researchers and firms, mostly from Belgium, Germany, Japan, Sweden and the USA, have picked up in the late 1990s and co-inventions account for more than half of Bulgaria's patents at the USPTO (World Bank 2013b).

The development of a National Innovation Strategy was an important step—but coordination among the different stakeholders would need to be improved. Stakeholder consensus is crucial to a successful innovation strategy. Bulgaria first formulated a National Innovation Strategy in 2004, which was amended in 2006 and later expanded with the National Reform Program 2011–15 in 2011. Formulation of a national strategy was a necessary first step to improve the Bulgarian innovation system, but not a sufficient one. An effective innovation system also requires strong and transparent policy coordination and implementation as well as accountability, which could be strengthened in Bulgaria. For instance, the Priority Axis 1 of the Competitiveness operational program that aims to foster private sector innovation had contracted only 43.4 percent and disbursed only 3.7 percent of the available funds by the end of 2012. Moreover, the disbursements were directed to the applicants who complied with the application procedures rather than to the activities that bore the highest potential for economic growth.

Lack of access to finance and weak protection of property rights is likely to constrain R&D and integration in GVCs, in particular, for small firms. While access to finance is a constraint in the overall investment climate, it is more binding in the case of innovation and for SMEs in particular. Another investment climate constraint with particular importance with respect to innovation is protection of intellectual property rights. Even though progress has been made on the protection of intellectual rights, there is still room for improvement. Bulgaria's "Smart Specialization" strategy intends to address these challenges among others.

Strengthening tertiary education may help attract foreign investors and fuel innovation. Bulgaria's enrollment rate for tertiary education has expanded significantly, rising from 26 to 42 percent of the population aged 19–23 between 2000 and 2012. Tertiary attainment rates across the

population have increased, financial and social returns to tertiary education attainment remain high and unemployment among students with tertiary education is low. Despite the achievements of the past two decades, higher education in Bulgaria continues to face challenges with regard to quality, efficiency and accountability. Better coordination between universities, career centers and the business community will be important to ensure that students can acquire the skills employers need. (World Bank 2012, World Bank 2013a). In the GVC context, it may be also important to establish incentives for foreign investors and other international buyers to work with local universities, research institutes and training institutes, for example through internships, outplacements and joint training and curriculum development.[62]

Building a business environment that creates incentives for firms to innovate and is attractive for foreign investors is essential to boost Bulgaria's exports. As discussed in chapter 2, profit-seeking firms will only invest in innovation if the expected returns are high enough and if the firms can actually reap the benefits. A stable political environment, vigorous protection of property rights and strong institutions that protect firms from diversion seem key for boosting innovation and higher value-added exports.

[62] A good general education is equally important to ensure that firms innovate and are able to absorb new technologies. Policy measures to improve general education are discussed in Chapter 2.

Annex 4.1: Composition of Bulgaria's Exports

PS Community	Exports 08–12, %	Annual Export Growth 96–12, %		Prod with RCA>1	Int. Margin Prod		Ext. Margin Prod	
		Bulgaria	World		1996	2012	1996	2012
Mining	13.7	14.3	12.0	5/24	0.89	0.50	38	93
Const material & equip	13.2	17.4	7.0	24/44	0.09	0.37	96	100
Machinery	11.7	11.9	6.7	10/125	0.04	0.09	97	99
Garments	10.7	9.9	6.5	28/42	0.19	0.32	100	100
Cereals & veg oils	7.8	26.8	7.9	9/21	0.15	1.07	41	77
Electronics	5.1	15.6	5.9	3/52	0.01	0.06	95	100
Other Chemicals	4.6	10.5	8.7	4/24	0.13	0.17	99	100
Metal products	4.2	5.4	7.2	3/17	0.31	0.23	99	99
Food Processing	3.8	5.4	7.1	9/26	0.28	0.21	96	100
Chemicals & health prod	2.4	5.9	8.4	3/64	0.06	0.04	94	88
Processed minerals	2.1	9.2	8.5	4/23	0.20	0.20	82	95
Tobacco	1.9	3.5	2.7	4/5	1.08	1.21	99	100
Inorganic salts & acids	1.9	7.9	7.6	4/10	0.52	0.55	95	93
Meat and eggs	1.5	7.4	6.5	6/23	0.18	0.20	91	99
Misc Agriculture	1.2	8.3	6.7	4/22	0.20	0.24	92	95
Petrochemicals	1.2	8.5	8.2	2/5	0.19	0.20	100	100
Textile & Fabrics	1.1	2.9	2.3	8/32	0.14	0.15	95	98
Home & office products	1.0	15.7	6.5	2/23	0.04	0.14	79	97

(continued on next page)

Annex 4.1: Composition of Bulgaria's Exports *(continued)*

PS Community	Exports 08–12, %	Annual Export Growth 96–12, %		Prod with RCA>1	Int. Margin Prod		Ext. Margin Prod	
		Bulgaria	World		1996	2012	1996	2012
Boilers	0.9	10.6	7.0	2/14	0.08	0.14	94	97
Milk & cheese	0.7	14.7	6.2	1/7	0.06	0.18	83	95
Beer, Spirits & cigarts	0.7	5.6	7.6	1/6	0.24	0.18	97	98
Agrochemicals	0.7	-3.1	8.9	2/12	1.06	0.17	87	84
Ships	0.7	2.9	9.4	1/8	0.20	0.09	98	80
Pulp and paper	0.6	9.0	2.1	1/11	0.05	0.14	94	94
Animal Fibers	0.5	16.5	0.6	2/7	0.13	1.67	72	58
Trop treecrops & flwrs	0.2	5.5	7.9	1/14	0.05	0.03	85	92
Aircraft	0.2	10.6	5.7	0/10	0.03	0.02	37	100
Cotton, rice, soy, etc	0.2	4.6	6.8	1/16	0.10	0.06	74	96
Oil	0.2	22.0	12.6	0/4	0.01	0.01	8	25
Fish & Seafood	0.2	0.4	5.9	0/11	0.07	0.03	91	98
Leather	0.1	3.6	3.0	3/12	0.10	0.10	93	96
Coal	0.1	5.1	11.7	0/6	0.26	0.01	11	98
Fruit	0.0	5.2	5.9	0/4	0.04	0.03	100	100
Precious Stones	0.0	—	6.8	0/4	—	0.00	—	94

Source: Authors' calculations.

SERVICES

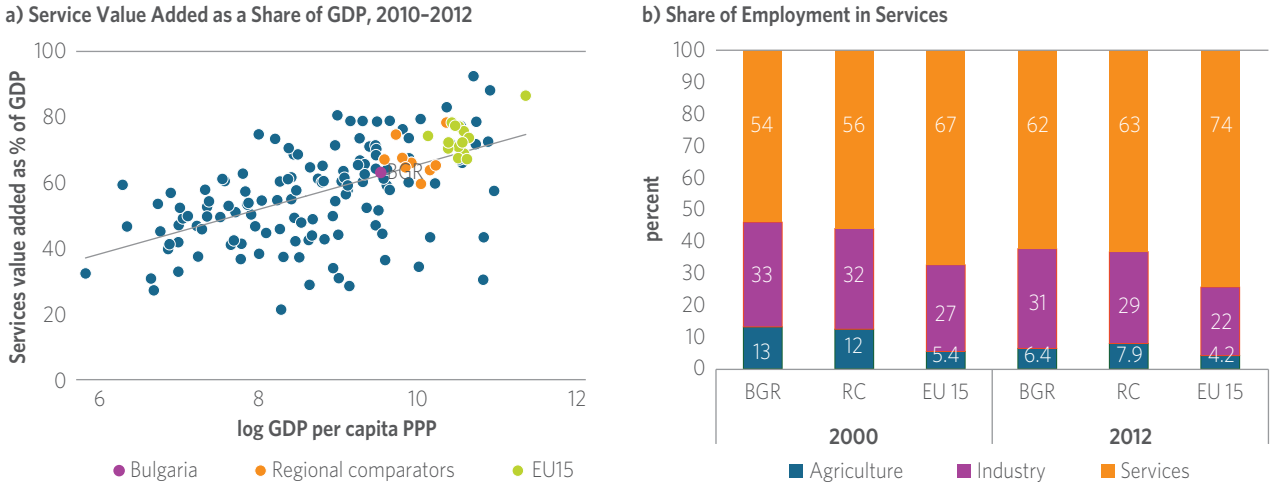
The service sector plays a pivotal role in the economy-wide productivity. Finance, accounting, transportation, communications, legal support, and other commercial services are not only forms of economic output in themselves, but are also critical as inputs into other economic sectors. High-quality, low-cost services can boost firm productivity and enhance overall competitiveness. A strong service sector is also vital to diversifying and expanding a country's exports. As exporting firms tend to be more productive, expanding a country's exports signifies an increase in aggregate productivity as resources are reallocated from less productive, non-exporting firms to more productive exporters (Melitz 2003). Meanwhile, service imports can serve as an important channel for introducing new technologies to the domestic economy. In Bulgaria, for example, co-innovations between foreign and domestic researchers have led to a significant increase in Bulgarian patents (see Chapter 4).[63]

Bulgaria's services sector has expanded significantly since 2000, both in terms of value added and employment, but it remains relatively small by European standards. Increases in GDP per capita have been associated with greater nominal value added by the service sector and a greater share of services in total employment over the last two decades. Worldwide, there is a strong positive correlation between a country's level of development and the size of its services sector. Though Bulgaria's share of value added of services in GDP increased from 62.3 percent in 2000 to 66.6 percent in 2013 and is broadly in line with per capita GDP, it remains somewhat below the average of regional comparator countries of 66 percent and the EU15 percent average of 75 (Figure 5.1a). Bulgaria's services sector is also an important source of employment. In 2012, services accounted for 62 percent of employment in Bulgaria. This is only slightly below the regional comparator average of 65 percent, but significantly lower than the EU15 share of 74 percent (Figure 5.1b).

Services have become an increasingly important driver of exports in Bulgaria. Many services require face-to-face presence of buyer and seller are, thus, less tradable than most goods. But falling travel costs and improvements in information and communications technology are providing unprecedented opportunities to expand trade in services. While trade in the 20th century was primarily a matter of selling goods (Baldwin 2011 and 2012), trade in

[63] See Francois & Woerz (2008); and for the positive link between trade liberalization of the services sectors and manufacturing productivity Arnold, Mattoo, & Narciso (2008), Arnold, Javorcik, & Mattoo (2007).

FIGURE 5.1: VALUE ADDED AND EMPLOYMENT OF SERVICES



Source: World Development Indicators and Eurostat.
Note: RC refers to Regional Comparators.

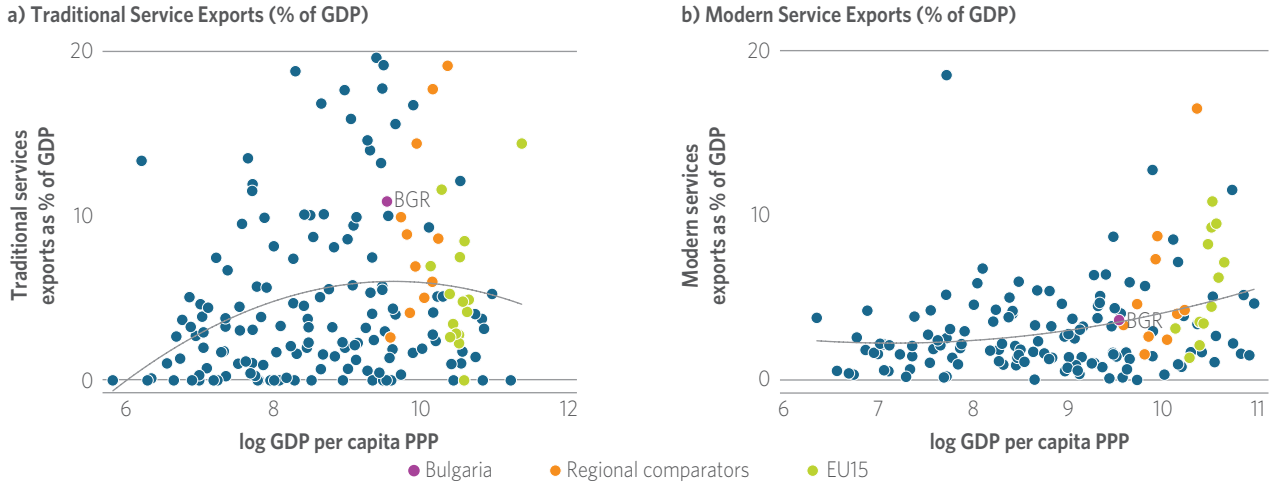
the 21st century involves flows of goods, services, ideas, investment, training, know-how, and intellectual property, all of which are necessary to shift production to multiple locations (Jones 2000, Grossman and Rossi-Hansberg 2008, Feenstra 2010, and Helpman 2011). Trade in services has become essential for coordinating increasingly dispersed production models and moving swiftly to exploit price, cost and wage differentials. Today, a large number of developing countries are successfully exporting a diverse range of services not only within their own regions, but also to emerging economies and high-income countries worldwide. Bulgaria is no exception, and the value added by services exports has increased steeply since 2000, both in absolute terms and as a share of GDP. Yet Bulgaria's service exports sector is among the least sophisticated in the EU. Also, a relatively large share of Bulgaria's services goes to primary production as an input and relatively little into manufacturing, suggesting that there is still untapped potential for Bulgaria to further develop its service sector.

The objective of this chapter is to identify the trends that have shaped the development of Bulgaria's service sector, assess its economic potential and outline key constraints that have limited its exports and diversification. The chapter examines the performance of the services sector both in terms of domestic development and export-orientation, explore the potential to increase service exports, describe the linkages between services and other economic sectors, and analyze of the regulatory environment in which Bulgaria's major service industries operate. The chapter will conclude with a set of policy options designed to improve the performance of the service sector.

5.1 Service Exports

Bulgaria's services exports are relatively large given its GDP, but they remain dominated by traditional services. In 2013, Bulgaria's services exports amounted to 14 percent of GDP, similar to the average of benchmark countries, and lower than the EU15 average of 22 percent. Most exports are from traditional services, such as travel and transportation, which require face-to-face interaction between buyer and seller. Modern services, which can be traded across borders remotely, are a small part of total

FIGURE 5.2: MODERN AND TRADITIONAL SERVICE EXPORTS BY GDP PER CAPITA (2011–13)



Source: World Development Indicators.

services exports.[64] As countries develop, traditional service exports tend to stabilize as a share of GDP, while modern service exports tend to increase (Figure 5.2).[65] Bulgaria's modern service exports have been increasing in recent years, but slowly and from a lower baseline than in many benchmark countries. In fact, Bulgaria's modern service exports, shown here by proxy as Other Commercial Services (OCS), have increased as a share of total services from 23 percent in 2000 to 28 percent by 2011–2013. During the same time period, Poland's share of modern services climbed from 24 percent to 42 percent, while Romania's share of modern services rose from 43 percent to 63 percent–twice Bulgaria's share.

Bulgaria's service exports have remained relatively unsophisticated and undiversified. One way to measure export sophistication is to identify exports that are produced predominantly by higher income countries, and which are therefore associated with higher productivity levels, and then determine the share of these services in the total exports of a given country (Hausmann, Hwang, and Rodrik 2006).[66] In 2005, the sophistication of Bulgaria's service exports was broadly in line with its level of development. "Exports have become more sophisticated in recent years but by 2012 they had begun to fall short relative to Bulgaria's per capita GDP (Figure 5.3a). By contrast, most regional comparator countries have shown improvement in their level of export sophistication not only in absolute terms, but also relative to their per capita GDP. Bulgaria's service exports are also relatively undiversified compared to other benchmark countries, though its diversification is consistent with its level of development as measured by GDP per capita (Figure 5.3b).

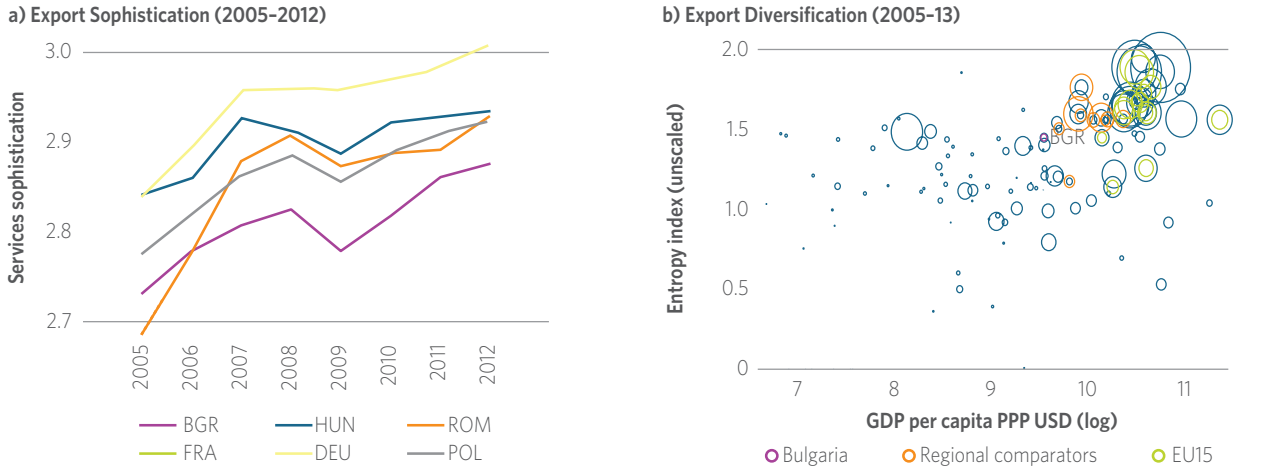
The information and communications technology (ITC) industry leads

[64] Examples of modern services include communications, banking, insurance, business services, remote-access services, medical transcription, call centers, and certain educational services.

[65] In this graph modern services are proxied using the services category Other Commercial Services (OCS), which includes communications, construction, insurance, financial services, other business services, computer and information services, personal recreation and cultural services, and royalties.

[66] Hausmann, Hwang, and Rodrik (2007) use Comtrade data to construct a panel of nearly 80 countries beginning in 1962. Combining global export data with country data on GDP per capita they calculate PRODY's per product category as a global measure of the income potential of a product. The EXPY is a country-specific measure of income potential based on PRODY and country-specific export data. See Chapter III for a more thorough discussion of the EXPY.

FIGURE 5.3: THE SOPHISTICATION AND DIVERSIFICATION OF BULGARIA'S SERVICE EXPORTS



Source: Trade in Services Database, IMF BOPS and World Development Indicators.

TABLE 5.1: SERVICES EXPORTS BY CATEGORY AS A SHARE OF TOTAL EXPORTS

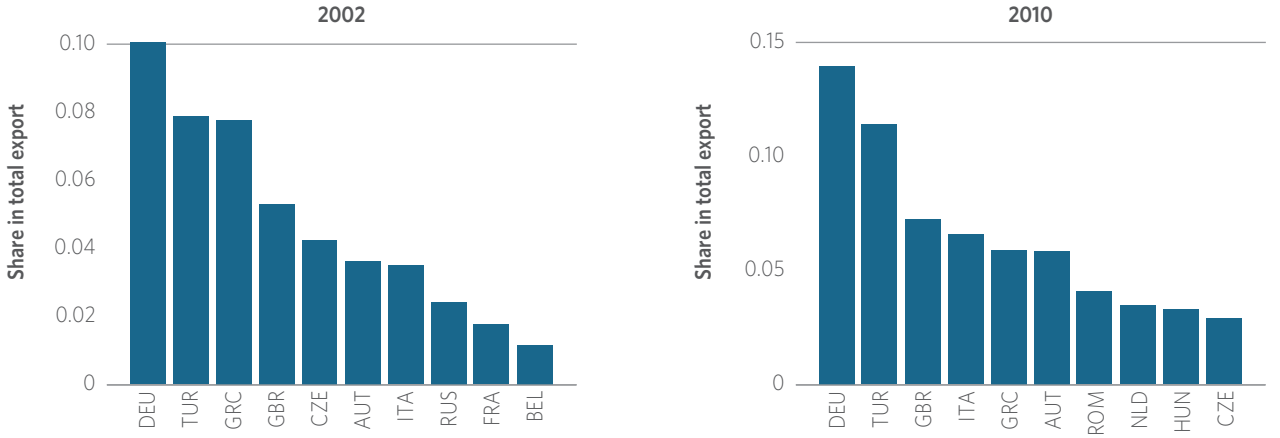
	Bulgaria		Poland		Romania		Slovakia	
	2005	2011–2013	2005	2011–2013	2005	2011–2013	2005	2011–2013
Transportation	27.6	20.2	33.6	29.8	17.2	25.8	25.2	24.3
Travel	55.4	52.3	38.7	28.6	10.9	11.7	24.9	29.5
Maintenance & Repairs	0.0	0.0	0.0	0.0	0.0	0.0	1.7	5.9
Construction	2.4	1.9	5.3	4.1	2.0	3.4	1.7	0.7
Insurance	0.7	2.1	0.4	0.9	0.3	1.2	2.2	2.3
Finance	0.4	0.8	1.4	1.2	1.1	2.0	0.5	1.0
Telecommunications	4.0	9.9	3.1	7.9	8.5	15.0	7.1	8.5
Intellectual Property	0.1	0.3	0.4	0.7	0.5	2.4	0.2	0.8
Other Business	8.6	11.7	16.5	25.7	10.7	21.3	1.5	1.9
Cultural and Recreational	0.9	0.8	0.6	1.1	1.0	0.9	0.0	0.0
Manufacturing Services	0.0	0.0	0.0	0.0	47.8	16.3	35.0	25.2

Source: IMF BOPS. Note: Telecommunications refers to telecommunication, computer and information services.

the modern services exports. ICT-related service exports (listed in Table 5.1 as telecommunications) accounted for just 4 percent of total service exports in 2005, but by 2011–13 that share had more than doubled to 9.9 percent. Bulgaria's ICT industry is relatively large compared to most regional comparator countries, with the exception of Romania. The strong growth of ICT exports enabled Bulgaria to significantly improve its revealed comparative advantage (RCA) index score for this category, and in 2013 ICT was Bulgaria's only modern service category with an RCA greater than 1.[67] Meanwhile, exports of "other business

[67] The Revealed Comparative Advantage index measure's a country's comparative advantage; it was developed by Hungarian economist Bela Balassa (1965 and 1989). It is calculated as the ratio of product *k*'s share in

FIGURE 5.4: SERVICE EXPORTS BY DESTINATION, 2002 AND 2010



Source: WB Trade in Services Database.

services," which includes research and development, management consulting and professional services, technical and trade-related services and operational leasing has also grown significantly as a share of total services exports, but the RCA index for this category has only increased slightly, rising from 0.40 in 2005 to 0.47 in 2013.

There appears to be potential for increased trade with Germany and Hungary. Germany and Turkey are Bulgaria's main service-export partners. Together, they accounted for about 25 percent of Bulgaria's service exports in 2010, up from 10 percent in 2002 (Figure 5.4). The UK is Bulgaria's third-largest market for service exports. A useful measure for assessing trade prospects is the trade complementarity index, which assesses how well a country's imports match its exports. Bulgaria's exports to Germany, for example, are complementary,[68] suggesting that Bulgaria exports services to Germany in which Germany lacks a comparative advantage. The data shows that most services exported to both Germany and the UK are in Transport and Travel services, together with Other Business services. Within Other Business services (apart from Distribution and Leasing services) most trade to Germany is in Professional services such as Legal, Accounting, Management consulting and Public Relations whereas that to the UK is in Research and Development and Services between related enterprises. Bulgaria's services trade with Germany is also less intense[69] compared to other countries that export to Germany. This indicates the potential to

country *i*'s exports to its share in world trade. A country is considered to have a real comparative advantage if this index is greater than 1. The RCA index is a useful tool to assess a country's evolving trade pattern. Among the service categories listed in Table 4.1, Bulgaria had a real comparative advantage in travel, transportation and ICT in 2013.

[68] The trade complementarity (TC) between countries k and j is defined as: *TCij = 100 – sum (|mik – xij| / 2),* where xij is the share of good i in the global exports of country j and mik is the share of good i in all imports of country k. The index is zero when no goods are exported by one country or imported by the other and 100 when the export and import shares exactly match.

[69] The trade intensity index (T) is used to determine whether the value of trade between two countries is greater or smaller than would be expected on the basis of their importance in world trade. It is defined as the share of one country's exports to a given partner divided by the share of world exports to that partner. It is calculated as: *Tij = (xij/Xit)/(xwj/Xwt),* where xij and xwj are the values of country i's exports and of world exports to country j and where Xit and Xwt are country i's total exports and total world exports, respectively. An index of more (less) than unity indicates a bilateral trade flow that is larger (smaller) than would be expected given the partner country's importance in world trade.

TABLE 5.2: REGRESSION RESULTS FROM THE GRAVITY MODEL FOR TRADE IN SERVICES, 2011

	(1) NO FE	(2) WITH FE
ln (distance)	-1.165***	-1.152***
	(0.044)	(0.054)
Contiguity	0.022	0.376*
	(0.210)	(0.194)
Common language	1.180***	0.601***
	(0.153)	(0.117)
Common colonizer	-0.161	0.616***
	(0.428)	(0.205)
STRI index Mode 1 exporter	-0.016***	
	(0.003)	
STRI index Mode 1 importer	-0.009***	
	(0.002)	
ln (GDP) exporter	1.176***	
	(0.027)	
ln(GDP) importer	0.947***	
	(0.020)	
Observations	2,431	5,015
R-squared	0.686	0.807
RMSE	1.708	1.417

Source: Author's calculations.
Notes: Robust standard errors in parentheses clustered by country-pairs *** p<0.01, ** p<0.05, * p<0.1

further increase Bulgarian service exports to Germany. Bulgaria's trade in services with Hungary also shows a high degree of complementarity and low trade intensity. In this case, transport and travel services in addition to Other Business services are exported a lot to Hungary. Within Business services the lion's share of exports are in Advertising and Market Research, plus to a lesser extent in Research and Development and Professional services. Meanwhile, Bulgaria's complementarity index with Turkey has been declining.

Structural factors seem to significantly constrain Bulgaria's trade in services. Trade in services tends to increase when trading partners are near to one another, have large service markets, share a common language, and have less restrictive service-trade regulations. The use of a gravity model[70] can help assess whether Bulgaria is currently near its service-trade potential, or whether country-specific barriers between Bulgaria and its trading partners may be constraining trade in services. The model shows that service trade increases significantly with the proximity of trading partners, market size in terms of GDP, fewer regulatory restrictions as measured by the World Bank's Services Trade Restriction Index (STRI)[71] and the use of a common language (Table 5.2). Controlling

[70] Anderson and van Wincoop (2003), Feenstra (2004), and Baldwin and Taglioni (2006), among others, offer extensive literature reviews on the use of gravity equations in the empirical literature on trade.

[71] The World Bank's Services Trade Restrictions Database covers 103 countries, 19 subsectors and 34 country-subsector mode combinations. It assess policy regimes for each subsector-mode and groups these

for fixed effects, i.e. constant unobserved country-specific characteristics, corroborates these findings and increases the explanatory power of the model. This suggests that country-specific structural factors or policy barriers beyond what can be measured by the STRI are key to explaining bilateral services trade. This is particularly true for Bulgaria, in which structural factors appear to play a major role. These factors may include labor force skills, ICT infrastructure, domestic regulatory barriers not captured in the STRI, and other trade-related issues described in detail below.

Bulgaria's integration into the EU appears to have significantly facilitated the growth of trade in services. EU accession has reduced bilateral regulatory policy difference between Bulgaria and other EU economies, promoting increased trade in services with fellow EU member states. Comparing Bulgaria's trade in services as predicted by the gravity model without fixed effects with actual bilateral trade in services, we find that actual trade flows are higher than predicted for all regional comparator countries, broadly in line with predictions for most EU15 countries, and less than predicted for the US, Japan and emerging markets such as China, Brazil and India. This suggests that there is still scope for Bulgaria to expand on both developed EU and emerging market economies.

5.2 Value Added by the Service Sector and its Links to Other Sectors

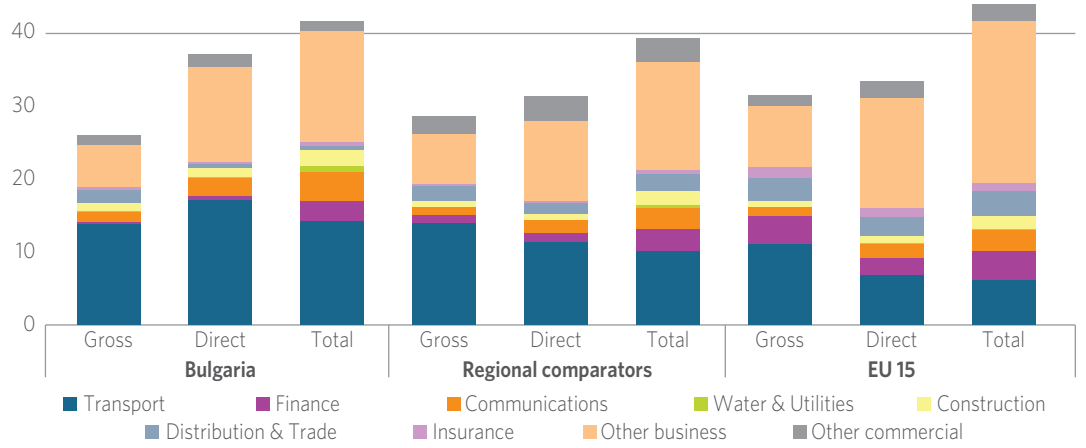
Services impact other sectors through forward and backward linkages. Forward linkages reflect the importance of the service sector as an intermediate input into other industries or sectors and are calculated as the service sector's contribution to the value added by downstream industries and sectors. Backward linkages, conversely, reflect how much added value the service sector obtains from upstream industries and sectors. Forward linkages tend to be particularly important for finance, communications, construction, and other business services, while backward linkages tend to be most important for transportation and distribution. In addition, in subsequent text the concept of "direct" or domestic value added captures backward linkages whereas the notion of "total" value added captures forward and backward linkages. The contribution of forward linkages is therefore the difference between the total and direct value added.

Unlike manufacturing exports, the total value added by services exports tends to exceed the value of gross exports.[72] This is primarily due to the fact that the manufacturing sector frequently purchases inputs from other sectors, such as services, while the service sector purchases few inputs from other sectors but makes a major contribution to the value of their output. While the value added in the production of goods exports tends to increase with a country's level of development (see Chapter 4), there is no systematic relationship between a country's level of development and the value added in its gross services exports. However, the export share of value added by some individual service categories, such as

policies into five categories with associated scores: completely open (0); virtually open but with minor restrictions (25); major restrictions (50); virtually closed with limited opportunities to enter and operate (75). The categories are then aggregated by mode, sector and country. The model here uses the country indices for importers and exporters. It is available at http://iresearch.worldbank.org/servicetrade/aboutData.htm

[72] This analysis uses input-output data from the Global Trade Analysis Project (GTAP) to construct country-specific measures of the direct and indirect contribution of services to the value added contained in a given country's domestic production and exports. Specifically, the dataset contains two matrices, a domestic value added table and an export value added table, which identifies the value added contribution of particular inputs to sectors that either sell the final good to the domestic market or export it. The cross-country dataset covers about 100 countries spanning intermittent years from 1992 to 2011.

FIGURE 5.5: SHARE OF SERVICE EXPORTS IN TOTAL EXPORTS BY SERVICE TYPE IN 2011



Source: GTAP database and authors' calculations.

transportation and distribution, tends to decline as a share of exports as countries become richer.

Though Bulgaria lags behind other EU countries in terms of its gross exports of modern services, the value added of its services exports is quite high. While gross service exports as a share of total exports is below the average of regional comparators, both the direct (i.e. domestic) value added and total value added of its services exports is relatively high (Figure 5.5). This is largely due to its exports of transport services and other business services. The transport sector contributed 14.2 percent to the total value added by exports in 2011, while other business services contributed 15.3 percent. The value that services added to manufacturing exports represented the third largest share of valued added by exports, at 9.3 percent. However, neither transport services, nor other business services have a strong connection to the manufacturing sector. Only 1.9 percent of the value added by transport service exports and 3.4 percent of the value added by other business service exports is applied to manufacturing exports, suggesting that most of the value added by these service exports is destined for final consumption abroad.

Improving competition in the services sectors appears to most relevant factor to improve productivity among Bulgarian firms that rely on service inputs. This is the case for manufacturing as well as for service firms that use services as inputs.[73] In particular, reforming the energy and telecommunications subsectors substantially improve TFP in other sectors of the Bulgarian economy. In addition, the deregulation of insurance significantly boosts TFP across sectors.[74] We also find that the presence of foreign services firms accelerates productivity growth among domestic firms that rely on service inputs. The impact of an increase in the share of service exports on TFP growth among downstream firms is weaker, suggesting that the pass-through

[73] In Bulgaria, services represent around 50 percent of the total inputs consumed by the manufacturing sector, and this share increases to almost 80 percent for the service sector. These figures exclude personal services such as health, household services and education.

[74] Given these results it is likely that deregulation in other sectors, such as transport and banking, would also have a positive impact on TFP. Yet the EBRD index for banking reform in Bulgaria has almost reached its maximum value, meaning that privatization and liberalization in the banking sector in Bulgaria are almost complete. Meanwhile, the EBRD's transport index only covers road transport, which shows little variation over time.

FIGURE 5.6: COMPETITION INDEXES AND TFP IN BULGARIA, 2011

Source: Authors' calculations using Bulgarian firm-level data.

effect of more productive service firms to each downstream user is relatively weak. However, an increase in competition in a given services subsector significantly improves TFP growth among downstream firms. Indeed, competition appears to be the most robust factor affecting TFP. In sum, next to reforms in services sectors such as increased privatization and entry of foreign firms, sheer competition in services sectors seem to be also a real driver for higher productivity effects in downstream industries that rely on services as inputs (Figure 5.6). However, the pass-through effect of higher productivity from service exporters to downstream firms seems to be relatively weak. Therefore, an additional policy question would be why this trickle-down effect seems to disappear halfway down the production chain.

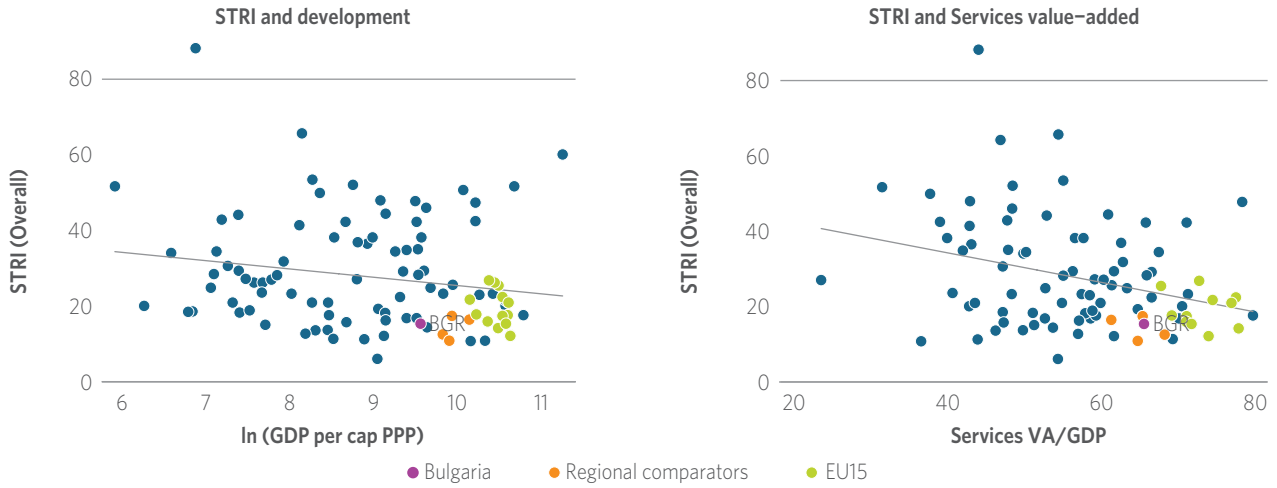
5.3 Trade in Services: Barriers and Catalysts

In every country, services are subject to specific regulatory requirements. Regulations can increase costs and restrict the growth of trade in services. Overall, trade costs tend to be relatively high for services and have been estimated at double the cost for traded goods (Miroudot, Sauvage, and Shepherd, 2010). In some cases this may be caused by deliberately protectionist regulatory policies, but more often service exports suffer due to measures that are intended to reduce market failures in the service sector, but which inadvertently restrict trade in services. Moreover, regulations that are inefficiently implemented can unnecessarily restrict trade in services. For example, in the case of professional services the recognition of qualification that aims to ensure the quality of the service can actually, if too burdensome, increase costs to access market.

Regulatory restrictions in Bulgaria's service sector compare favorably with countries at similar income levels and are in line with most other EU countries.[75] One measure of regulatory restrictions is the World Bank's Services Trade Restrictiveness Index (STRI), which reflects the restrictiveness of a country's services regime vis-à-vis its trading partners. It does not apply to the EU's internal regime for trade in services. According to the STRI, Bulgaria has fewer restrictions on trade in

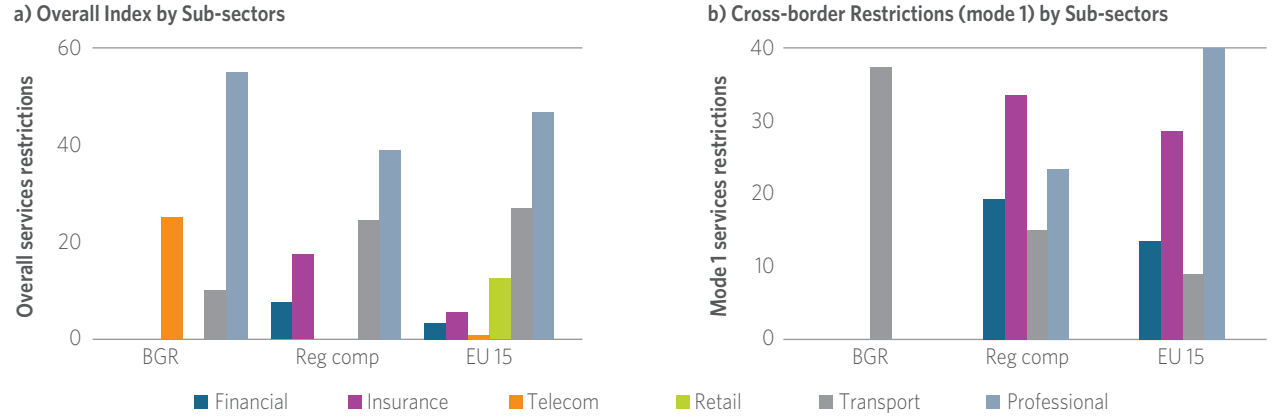
[75] See ANNEX 1 for a description of the STRI. The STRI measure increases in value with more restrictive trade policy regulations in Finance, Telecom, Retail, Transport and Professional services.

FIGURE 5.7: STRI SCORE AND VALUE ADDED OF SERVICES IN % OF GDP IN 2012



Source: Borchert *et al.* (2012) and WDI. Note a lower STRI index indicates lower service trade restrictions.

FIGURE 5.8: SERVICES TRADE RESTRICTIVENESS IN BULGARIA AND EU COMPARISON GROUPS



Source: Borchert *et al.* (2012).

services than many of its trading partners, such as Turkey or Hungary, and even some EU countries (Figure 5.7). Like most EU countries, Bulgaria's restrictions on trade in services are also low relative to its income level. It is likely that EU accession and the adoption of the EU "Services Directive" at least partially explain Bulgaria's relative strong STRI score.

However, regulatory restrictions on the telecommunications and professional services subsectors are relatively high in Bulgaria.[76] According to the STRI, Bulgaria's regulations for banking, insurance and distribution service are relatively unrestrictive compared to the unweighted averages for regional comparators and the EU15. On the other hand, professional services are very restrictive compared to the average of the benchmark countries as well as regional peers such as Romania and Poland (Figure 5.8a).

[76] The professional services indicator refers exclusively to legal and accountancy and auditing services.

In Bulgaria, the transport sector is protected by cross-border regulations, while both telecommunications and professional services are restricted by limits on the commercial presence of these firms. Within each subsector, the STRI provides information regarding regulatory restrictions on the most relevant modes of supply: (mode 1) cross-border supply of financial, transportation and professional services; (mode 3) commercial presence[77] or FDI in each subsector; and (mode 4) the presence of firms supplying individual professional services.[78] While Bulgaria performs quite well with respect to restrictions on transportation services as a whole, it performs poorly in terms of mode 1, which covers cross-border regulations. Indeed, transport services are the exception to Bulgaria's otherwise relative open border policies. Bulgaria's international passenger air transport law heavily restricts entry into the domestic air carrier market and governs the operation of air transport services. Regulatory protections under mode 3 (commercial presence) are a major constraint on services in Bulgaria, especially regarding telecommunications and professional services. Only Germany, among EU countries, and Turkey have higher regulatory barriers in professional services than Bulgaria However, not all professional services are restricted. Accounting and auditing services are subject to only minor restrictions, while legal services is the most tightly controlled professional services category in Bulgaria and is virtually closed to non-citizens. Other restrictions are summarized in Annex 5.2.

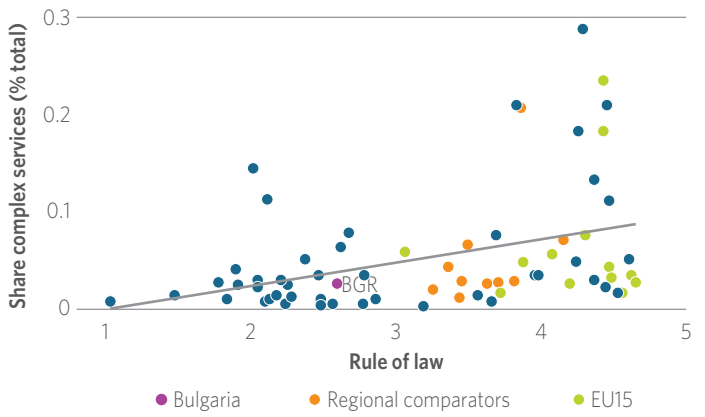
Domestic enabling factors can also play an important role in boosting services exports. These include the level of human capital, including skills and the level of entrepreneurship or natural resources for attracting tourists. They also include infrastructure, which is particularly essential for trade in telecommunications and travel services, plus institutions, which largely determine the overall ease of doing business or which determine the general regulatory environment of a country (Goswami *et al*. 2012, Van der Marel, 2011). As discussed in Chapter 2, while many regional benchmark countries continued to improve their regulatory quality (which is the perceived ability of the government to formulate and implement sound policies and regulations to promote the development of the private sector) and their rule of law (which captures to what extent agents have confidence in and abide by the rules of society, including the reliable enforcement of contracts and protection of property rights, sound policy and security institutions, and an efficient, transparent court system), even after EU accession these indicators have remained stagnant for Bulgaria.

In Bulgaria, weaknesses in rule of law may inhibit the growth of complex service exports. Complex services may include professional services, such as accounting and legal advice as well as finance and insurance (Costinot 2007), which require many contractual obligations and, thus, strong legal institutions to enforce. Amin and Mattoo (2006) consider that because of the complex web of transactions involved in the production of many services and because services are more relationship-specific than goods, regulatory and contract-enforcing institutions (such as the rule of law) play a key role in their development. In fact, there is a clear correlation between a country's

[77] Under the GATS, "commercial presence" refers to any type of business or professional establishment, including (i) the institution, acquisition or maintenance of a juridical person, or (ii) the creation or maintenance of a branch or a representative office within the territory of a member state for the purpose of supplying a commercial service. This analysis covers four types of commercial presence: a firm from country B might open a branch or subsidiary in the territory of country A, it might acquire part or all of an existing firm in the territory of country A, or it might enter into a joint venture with an existing firm in the territory of country A. Thus, the service is provided within A by a locally-established affiliate, subsidiary, or branch of the foreign-owned and controlled firm.

[78] Mode 2 which refers to consumption abroad are not covered by the STRI.

FIGURE 5.9: COMPLEXITY OF SERVICES AND RULE OF LAW IN 2010



Source: Authors' calculations; Trade in Services database; Governance Indicators.

rule-of-law indicators and the share of complex services in its economy. Bulgaria not only has the lowest rule-of-law indicators among all EU countries, but its share of complex services is even smaller than these indicators would predict (Figure 5.9).

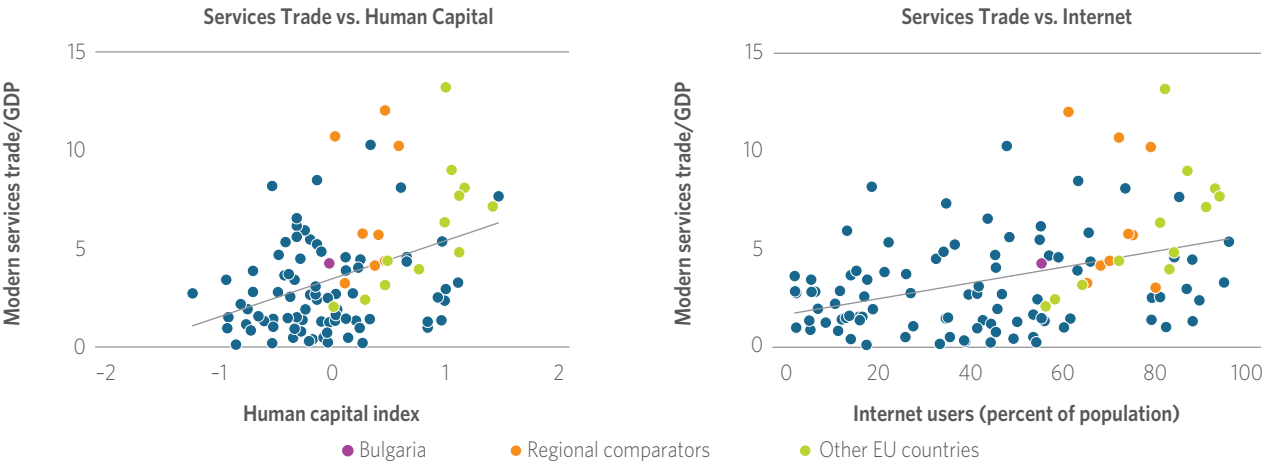
Investment in human capital and ICT infrastructure could potentially increase Bulgaria's service exports. Some modern service types, such as computer services and other business services, tend to be highly skill intensive (Nusbaumer, 1987; Gibbs, 1986; Jensen, 2008; van der Marel, 2012). Countries with a higher Human Capital Index[79] tend to export more modern services. Similarly, trade in services tends to increase with better ICT infrastructure. Technological advances have dramatically reduced the cost of delivering many cross-border services, and electronic infrastructure has a demonstrably positive effect on service exports (Freund and Weinhold, 2000). (Figure 5.10). In Bulgaria, the mobile phone market is dynamic with a high and increasing penetration rate and three competing operation. The fixed line market, however, is dominated by the incumbent. Bulgaria's broadband speed has, however, significantly improved in recent years.

5.4 Improving Service Performance

Services performance in Bulgaria are influenced by two policy levels. The first level is the domestic level which encompasses the policies that the Bulgarian authorities can undertake to increase the role of services in the performance of the

[79] The Human Capital Index explores the contributors and inhibitors to the development and deployment of a healthy, educated and productive labor force.

FIGURE 5.10: MODE 3 BARRIERS AND MODE 1 SERVICES TRADE IN 2012



Source: Authors' calculations; Governance Indicators; STRI.

economy. At this level, there are initiatives that can be undertaken by the government to enhance factors which have the greatest influence on services performance: infrastructure (physical, electronic or logistical), skills and institutions. The second policy level is defined by the EU policies. At the European level the integration of services faces a number of limitations which can only be overcome through cooperation among EU members. In this level, Bulgaria should actively pursue improving the services integration process which will bring the additional efficiency gains.

At the domestic level Bulgaria should enhance the main determinants of services performance. Empirical research finds a robust and significant relationship between institutions and the competitiveness of services. Van der Marel (2011) finds that countries with more sophisticated governance frameworks are better able to export services sectors in which behind-the-border barriers are play a crucial role. Amin and Mattoo (2006) find that countries with better institutions have larger and more dynamic services sectors. In order to move towards more sophisticated (modern or complex services) which are correlated with stronger institutional frameworks, Bulgaria should strengthen critical components of governance such as the rule of law and regulatory quality which are below its peer countries. In addition, strengthening domestic competition in the service sector is important as this seems to be a robust factor in explaining economy-wide TFP in Bulgaria. This suggests that an easy market entry and exit of firms by creating a friendly climate for doing business or by lowering administrative start-up burdens in Bulgaria could further stimulate productivity. Hence, the impact of liberalization does not only come from access to services import through foreign firm in the domestic market or from increasing the variety produced by domestic exporters, but in large part come from increased competition due to the size of the domestic markets compared to trade (Mustilli and Pelkmans, 2013).

The upgrading of skills should be a priority to move towards more sophisticated services. Years of schooling, secondary school enrollment, and high school educational attainment in both the importing and exporting country affect services trade (Lennon, 2009 and van der Marel, 2011). While the overall services trade performance of Bulgaria seems to be in line with the skills availability, attention should be paid to increasing skills relevant for services. There are two aspects which require attention. On the one hand, Bulgarian qualified professionals are migrating to other European countries reducing the availability of skills which are required for the development of new modern services as well as services necessary for the production process of other economic activities. On the other hand, many graduates are not adequately equipped for the labor market needs. In other words, in order to attract FDI to the service sectors as well as developing new services activities a better match between demand and availability of skills in Bulgaria is critical.

The implementation of the EU Services Directive should also be a priority. Accelerating the implementation of the EU Services Directive and the specific directives dealing with regulated sectors such as financial services, computer and ICT services, transportation, professional services, healthcare, and temporary cross-border services, could be an important step in enhancing Bulgaria's competitiveness and boosting economy-wide growth. Specific areas which may require attention are, first, the need to clarify the scope and implementation of the Directive in Bulgaria's domestic law. For example, the law refers to 'legislative requirements', rather than 'requirements' as provided in the Services Directive. The latter not only covers the legislation, but also the administrative provisions and practice, case-law, and rules of professional bodies and organizations. This may have a direct

impact on the Bulgarian implementation of the Directive's provisions by narrowing the application of the national law. Second, it seems to be a second inconsistency relating to the principle of proportionality. The Bulgarian law does not contain a reference regarding the proportionality of any domestic regulatory requirement aiming to achieve a legitimate policy objective. Under the EU Directive these requirements 'must not go beyond what is necessary to attain that objective'. In other words, any requirements that may be imposed needs to achieve a specific policy objective to not be considered a barrier to services providers. Finally, another potential inconsistency relates to 'public policy' concept in the EU Directive. In the Bulgarian law, this is transposed as 'public order'. These differences, together with an absence of a definition of the term "public order", and inconsistent interpretation by the Bulgarian courts of the notion of 'public order' could result in ambiguity and a lack of legal certainty (see Milieu, 2011).

There are great benefits in deepening the EU services integration process. While the EU services Directive provides for the removal of barriers which affect intra-services trade, it also allows for considerable space for introducing domestic regulations on a narrow number of cases, as well as for non EU members. This is feature is also relevant because of the greater non-tradability of the sectors covered by the Services Directive (Mustilli and Pelkmans, 2013). Two effects will arise with this regulatory space. The first one is regulatory heterogeneity which means that some members do regulates a particular activity and others may not. The second one is that significant variations can be observed among sectors and measures. In other words, when EU Member States regulate in their spheres of competence, their regulatory approach differ both in terms of instruments and specific requirements. Kox and Lejour (2005) estimate the determinants of bilateral service trade for 9 out of the 14 EU countries for the period 1999–2001. They find a negative and significant effect of the level of regulations as well as the heterogeneity of regulations on service trade. While it would be very difficult to recommend a specific regulatory convergence path due to the difference among EU members, a possible solution could be to assess, for priority sectors, those regulatory practices which may have a biggest impact on investment when convergence takes place. One option which is contemplate in the Services Directive is through administrative cooperation among member states which would allow for the elimination of unnecessary regulations through confidence building and mutual recognition.

Cooperation at the EU level is also necessary for other service sectors relevant to Bulgaria's competitiveness. Mustilli and Pelkmans (2013, p.38) find that there is no genuine internal market for 4 network industries' services. Moreover, they also conclude that barriers to EU-wide services exchange in eCommunications, electricity, and gas and freight rail are formidable. The problems in these markets go beyond the issues addressed by the respective Directives and deal with problems which affect the actual organization of the markets, infrastructure coordination, and the lack of an adequate European governance structure (for example, on rail transport). Finally, limitations on the temporary cross-border provision of services remain. In particular, on posted workers regulations on minimum wages. What matters for the purpose of this chapter is that the remaining imperfections in the European services integration which may as well affect the performance of services cannot be solved exclusively by Bulgaria but requires actively cooperating with other EU members to fully reap the benefits of services integration.

Annex 5.1: World Bank Services Trade Restrictiveness Index (STRI) Database

The database encompasses information from a total of 103 countries, of which 79 are developing countries and 24 OECD countries, broadly representing all the regions and income groups in the world (Borchert *et al.*, 2012b). The information was collected during 2007–2008. However, an update by the authors using the original methodology for information as of 2012 did not reveal significant changes from the earlier data.

The database focuses on five major services sectors, namely financial services (banking and insurance), telecommunications, retail distribution, transportation and professional services (exclusively, accounting and legal services), with each sector further disaggregated into subsectors as applicable. Within each subsector, the database covers the most relevant modes of supplying the respective service: establishing commercial presence or FDI (mode 3) in every subsector; cross-border trade in services (mode 1) in financial, transportation and some professional services; and the presence of service supplying individuals (mode 4) in professional services.

The measures affecting commercial presence are classified under the following broad categories: (1) Requirements on the legal form of entry and restrictions on foreign equity; (2) Limits on licenses and discrimination in the allocation of licenses; (3) Transparency and accountability of licensing; (4) Restrictions on ongoing operations; (5) Relevant aspects of the regulatory environment.

For certain sectors, this information is supplemented with specific issues relevant for the sector such as regulation to ensure access to the market in telecommunications, for example. For cross-border transactions, the focus is on conditions under which trade take place, while temporary movement of people is covered only in professional services.

Within each subsector-mode policy regimes are assessed in their entirety and map the bundle of applied policies into five broad categories (with associated scores): (i) Completely open (0); (ii) Virtually open but with minor restrictions (25); (iii) Major restrictions (50); (iv) Virtually closed with limited opportunities to enter and operate (75); (v) Completely closed (100).

Annex 5.2: Major Bulgaria Policy Restrictions under Modes 1 and 3 in 2009

Bulgaria	Mode 1	Mode 3
Financial Services		
Banking	Allowed	There are no restrictions
Insurance	Allowed	Insurance firms from non-EU member states must obtain a license in order to carry out insurance business in Bulgaria, whereas those from EU member states may operate in Bulgaria freely. A foreign firm applying for a license must submit evidence of its right to perform insurance activities in the home country.
Telecommunications		
Fixed Telecommunications	Not applicable	There are no restrictions, except VOIP (Voice over Internet Protocol) may not be allowed.
Mobile telecommunications	Not applicable	There are no restrictions, except that the number of licenses may be limited due to availability of frequency and VOIP may not be allowed.
Transportation		
Air Passenger International	Not applicable	The limit on foreign ownership is 49 percent for international services, unless indicated otherwise in international treaties. The licensing conditions may stipulate additional obligations under the BASA (Bilateral Air Services Agreements) for certain routes.
Professional		
Accounting	Allowed.	A branch is not allowed. Separate legal entity could be registered under the Commerce Act of Bulgaria or in accordance with the legislation of another EU member state or a signatory to the Agreement on the European Economic Area.
Auditing	Allowed.	A branch is not allowed. The manager and more than half of the partners must be registered certified public accountants, but not necessarily locally licensed.
Legal Advice Foreign Law	Allowed.	Applicants must be registered in Bulgaria as a lawyer partnership or law firm. All partners must be registered in Bulgaria and licensed and qualified in the respective laws of foreign countries. The name of a law firm can only include the names of the partners, so a foreign firm would not be able to use its name unless the names of the partners were registered in Bulgaria as well.
Legal Advice Domestic Law		Not allowed. Applicants must be registered in Bulgaria as a lawyer partnership or law firm. All partners must be registered and licensed in Bulgaria. The name of a law firm can only include the names of the partners, so a foreign firm would not be able to use its name unless the names of the partners were registered in Bulgaria as well.
Legal Representation in Court		Not allowed. Applicants must be registered in Bulgaria as a lawyer partnership or law firm. All partners must be registered and licensed in Bulgaria. The name of a law firm can only include the names of the partners, so a foreign firm would not be able to use its name unless the names of the partners were registered in Bulgaria as well.

Source: Borchert *et al.* (2012) and STRI Database.

CHAPTER 6

FIRMS

Assessing the microeconomic underpinnings of aggregate TFP growth is important for understanding the drivers and constraints to productivity growth. Aggregate TFP growth is calculated as a residual, capturing output growth that cannot be explained by factors of production, such as capital stock and effective labor units (see Chapter 3). As a residual, TFP growth can capture things, such as externalities and measurement errors, which are not necessarily related to technical change. Firm-level productivity measures, therefore, provide a useful complementary measure to aggregate TFP growth. Moreover, many of the mechanisms through which distortionary policy transmits onto aggregate productivity can be more easily identified with firm level data. For example, barriers to business creation and restrictions to entrepreneurship can have a detrimental effect on TFP by reducing competition and discouraging innovation. Finally, the extent of resource misallocation in an economy can be quantified with firm-level data.

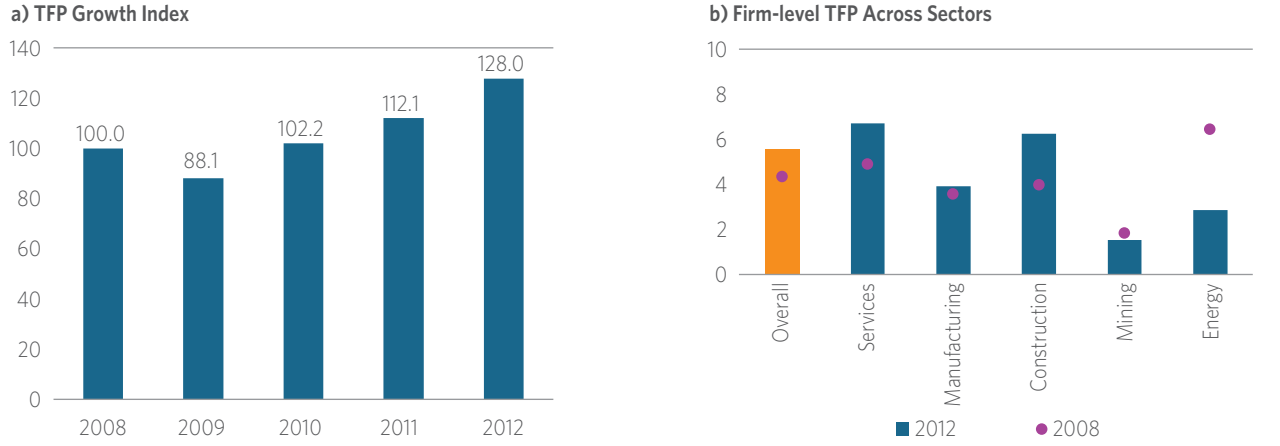
This analysis draws on a unique and comprehensive Bulgarian firm-level data set. It uses the non-financial Enterprise Data (NED) from the National Statistical Institute (NSI) of Bulgaria, which is the most comprehensive available establishment-level dataset for this economy. The dataset covers the industrial and service sectors. It includes a significantly larger number of firms than the Amadeus data base. In particular, the NED has a better coverage of small and micro firms,[80] more variables and less missing values. Because of confidentiality issue our data set does not include firm-level information for sectors with a limited number of firms. These sectors range from beer production to nuclear power plants and constitute around [20 percent] of the value-added of Bulgaria's firms. The data set includes around 2.6 million firm observations for the years 2005 to 2012 of which 391,552 provided information on value added, tangible fixed assets and employment, which are required to estimate TFP.[81]

This chapter is organized as follows. The next section summarizes some stylized facts about Bulgaria's firms. Section

[80] The average firm size in manufacturing in 2011, for example, was 80 employees in Amadeus and 38 employees in the NED.

[81] Following the approach described in Hsieh and Klenow (2009), we assume that firms operate with a Cobb-Douglas production function and use labor income shares estimated for Germany at the NACE 2 digit industry level. To calculate output of firms in real terms we estimate the quantity produced by each firm within the 2-digit sector, the 2-digit level sectoral aggregate demand and the sectoral price index using a a CES (constant elasticity of substitution) demand system at the NACE 2-digit level. This approach enables us to obtain a measure of firm-level productivity which is free from idiosyncratic demand shocks.

FIGURE 6.1: TFP PRODUCTIVITY



Source: WB staff calculations using the NSI's NED. Note that mining and energy firms in this sample are not representative of these two sectors as a whole, as a significant share of firms was excluded from the sample due to confidentiality reasons.

2 discusses firm-level productivity growth dynamics. Next, we analyze the degree of misallocation in the economy. The final section discusses possible constraints to firm-level productivity growth.

6.1 Types of Firms and Productivity Growth

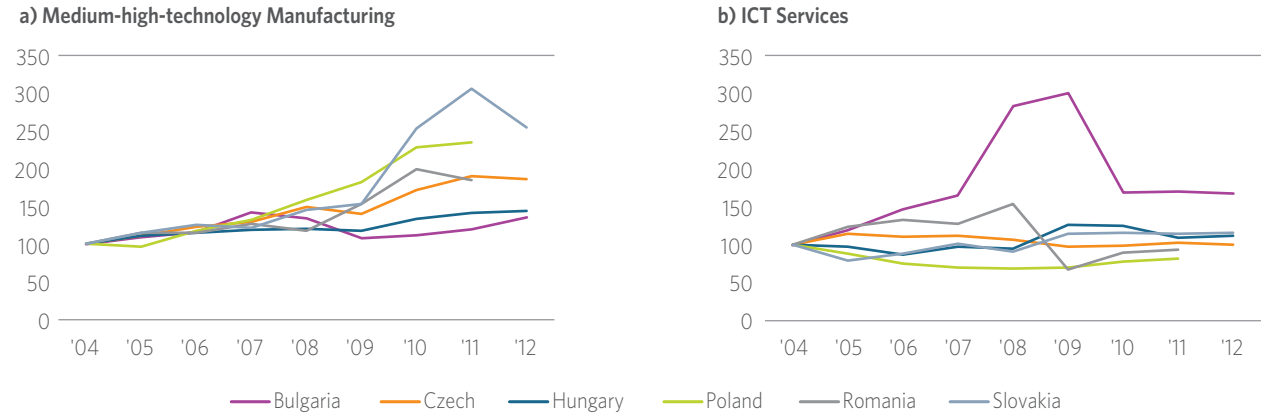
Firm-level TFP growth has become a key driver of growth since the 2008/09 global crisis. Real value added of Bulgaria's firms, employment and real tangible fixed assets still remain around 25 percent below their 2008 level. TFP has, however, grown strongly (Figure 6.1a), increasing by 28 percent between 2008 and 2012 and outpacing labor productivity growth. TFP growth in manufacturing and construction was particularly strong. TFP growth of manufacturing was significantly below the economy-wide average. (Figure 6.1b).

Labor productivity growth of Bulgaria's medium-high-technology manufacturing sector[82] has stagnated, while productivity growth of ICT services has been strong. Growing steadily prior to the 2008 global crisis, real labor productivity of Bulgaria's medium- to high-tech manufacturing sector, i.e. engineering-related manufacturing, declined steeply after the crisis and has not caught up with its 2007 level (see Figure 6.2a). Its real labor productivity growth remains significantly below that of Bulgaria's peers. Labor productivity growth of Bulgaria's ICT sector was, however, strong and has significantly exceeded the growth observed in the Czech Republic, Hungary, Poland, Romania and Slovakia (Figure 6.2b).

The share of small firms has increased significantly in the manufacturing sector as incumbent firms struggled to adjust to the economic reality of the 2008 crisis. Bulgaria has a relatively high share of small firms. According to Eurostat data from 2012, 44.5 percent of Bulgarian firms have less than 10 employees, a share that is only exceeded in the EU by Croatia, Hungary and the UK. According to the NED, between 2005 and 2012 the share of manufacturing firms with less than

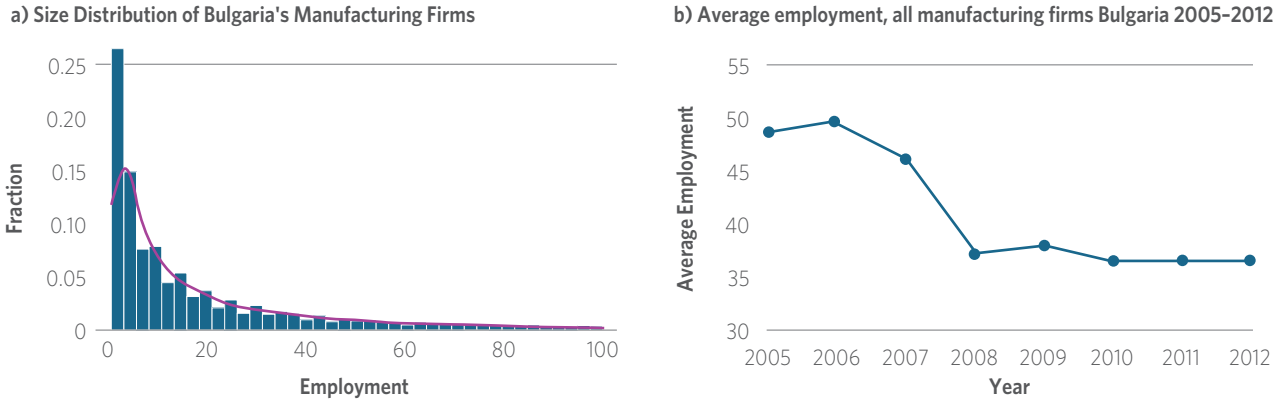
[82] The medium-high-technology manufacturing sector includes according to Eurostat manufacture of: i) chemicals and chemical products; ii) weapons and ammunition; iii) electrical equipment; iv) machinery and equipment; v) motor vehicles, trailers and semi-trailers; vi) other transport equipment; and vii) medical and dental instruments and supplies.

FIGURE 6.2: LABOR PRODUCTIVITY INDEX ACROSS COUNTRIES (2004 = 100)



Source: WB staff calculations based on Eurostat data.

FIGURE 6.3: FIRM SIZE DISTRIBUTION AND TRENDS



Source: WB staff calculations based on NED.

10 employees increased from 67.3 percent to 74.0 percent. The share of small firms in the service sector only increased slightly from 92.8 percent to 94.3 percent. In fact, there is barely any firm with more than 40 employees in Bulgaria's service sector.[83] Average employment per manufacturing firm declined from 50 employees to 35 employees between 2005 and 2012.

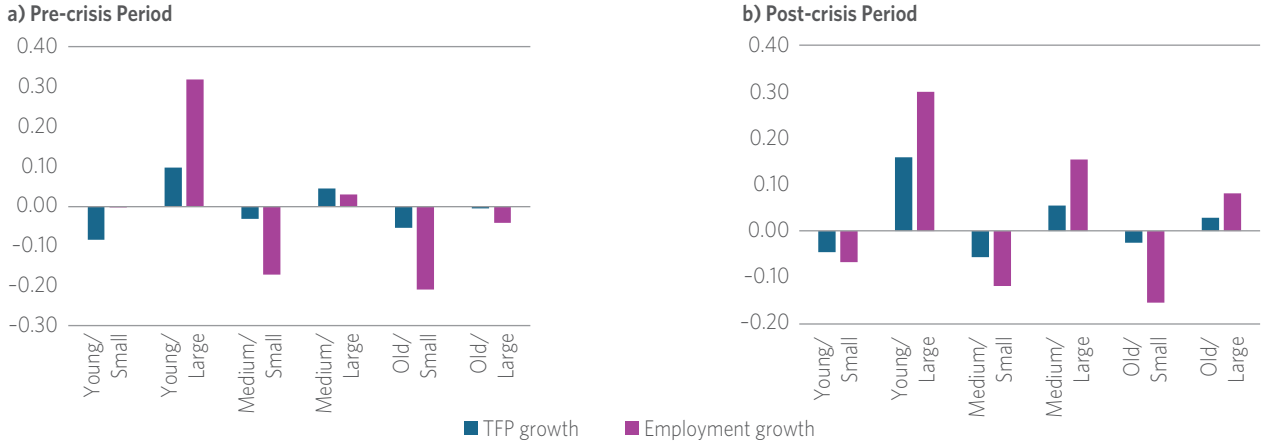
Larger firms performed better than small firms in terms of productivity and employment growth.[84] In general, large firms outperformed their industry average in terms of productivity growth and were able to translate productivity improvements into net employment creation. Small firms, experienced TFP and employment growth below their industry average. (Figure 6.3).

Younger firms significantly outperformed older firms. For the purpose of this chapter, we split our analysis into two

[83] Firms in the services sector tend to be smaller in many countries (Buera, Kaboski and Shin 2011). But the share of small firms with less than 10 employees in Bulgaria's services sector is high by EU standards.

[84] For the purpose of this chapter, we define small firms as firms with less than 10 employees. This sample does not include firms that entered or exited the sample between 2005 and 2008 or 2009and 2012.

FIGURE 6.4: PRODUCTIVITY AND EMPLOYMENT GROWTH BY FIRM TYPE*



Source: WB staff calculations using the NSI's NED.
Notes: *relative to industry average.

time periods: the pre-crisis period covers 2005 to 2008, the post-crisis period includes years 2009 to 2012. A firm is young (middle-age) if it is not more than 5 (between 5 and 15) years old at the beginning of the period, i.e. 2005 and 2009, respectively (see also, Fort, Haltiwanger, Jarmin, and Miranda 2013, for a similar approach). The data shows that young firms consistently outperformed older firms in terms of productivity growth, particularly, in the post-crisis period. Moreover, young and large firms, which benefited more from FDI than other firm types, experienced the highest productivity and employment gains in the pre-crisis and the post-crisis period.[85] The fact that firms that are classified as young during the 2009–2012 period started formal operations between 2005–2009 and performed strongly relative to their industry average suggests that firms that entered during the EU accession period were best equipped to meet the challenges of the post-crisis period.

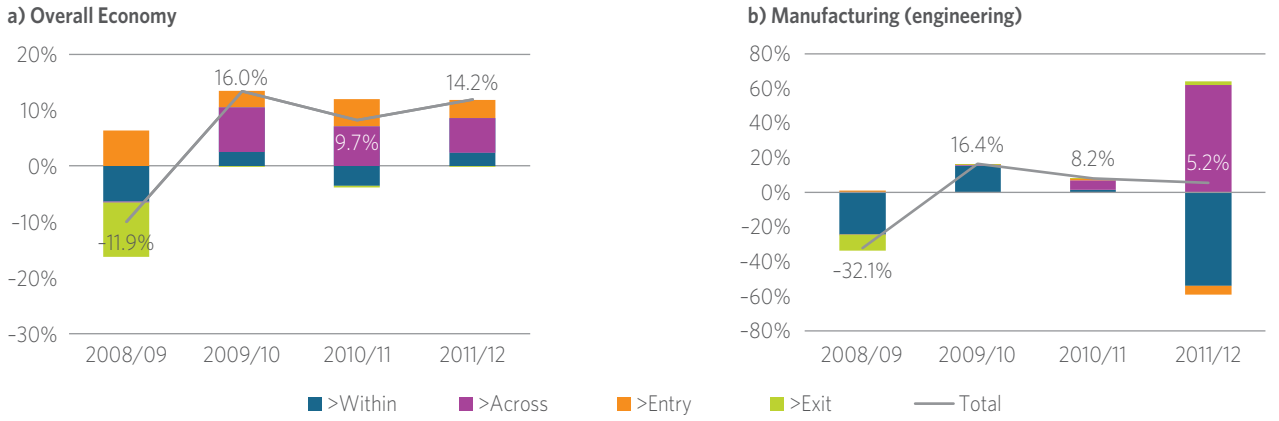
Productivity and employment growth have largely moved in the same direction. For most firm-groups, productivity growth and employment were positively correlated. Only old firms have shown a decline in employment and above average TFP growth in the pre-crisis period suggesting some labor shedding. Old firms were already in operation before the transition in 1989 and reforms in the context of the EU accession and the crisis may have forced these firms to restructure and shed workers.

6.2 Firm-Level Dynamics and Structural Change

Re-allocation of workers from less productive to more productive firms has been the key driver of productivity growth since 2009. Firm-level productivity growth can be decomposed into contributions stemming from resource reallocation, entry and exit, and within firm productivity growth (Foster, Haltiwanger, and Krizan 2000). In 2009, employment declined steeply. Since then, more productive firms have increased their relative employment share. Productivity growth "within" firms has, however, been limited. Among Bulgaria's medium-to high manufacturing sector, "within" productivity

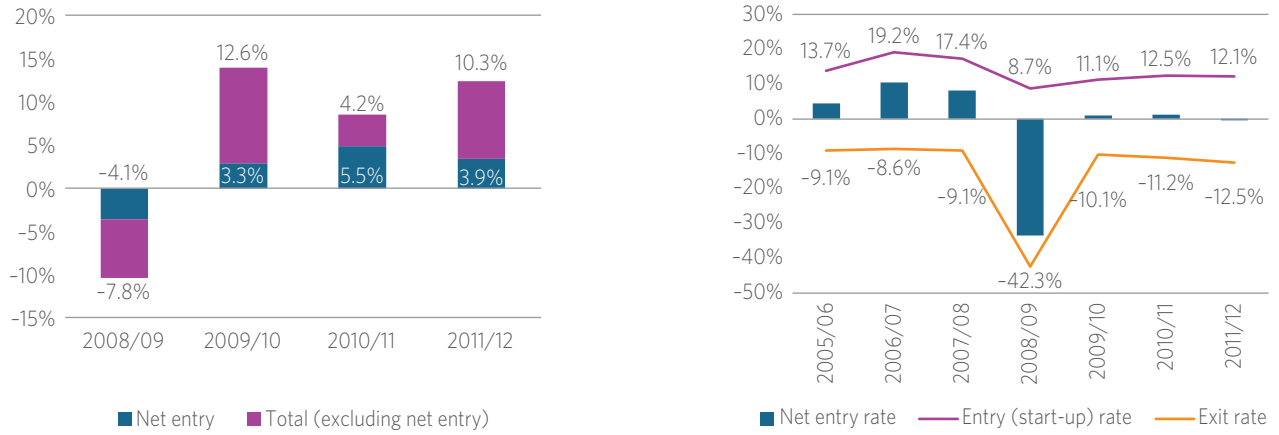
[85] The share of young-large firms with FDI was 12.6 percent in 2005 and 10.2 percent in 2008, which compares to an average of 2.4 percent in 2005 and 7.0 percent in 2008 for other types of firms.

FIGURE 6.5: TFP GROWTH DECOMPOSITION



Source: WB staff calculations based on the NSI's Non-financial enterprise data (2005-2012).

FIGURE 6.6: TFP GROWTH DECOMPOSITION

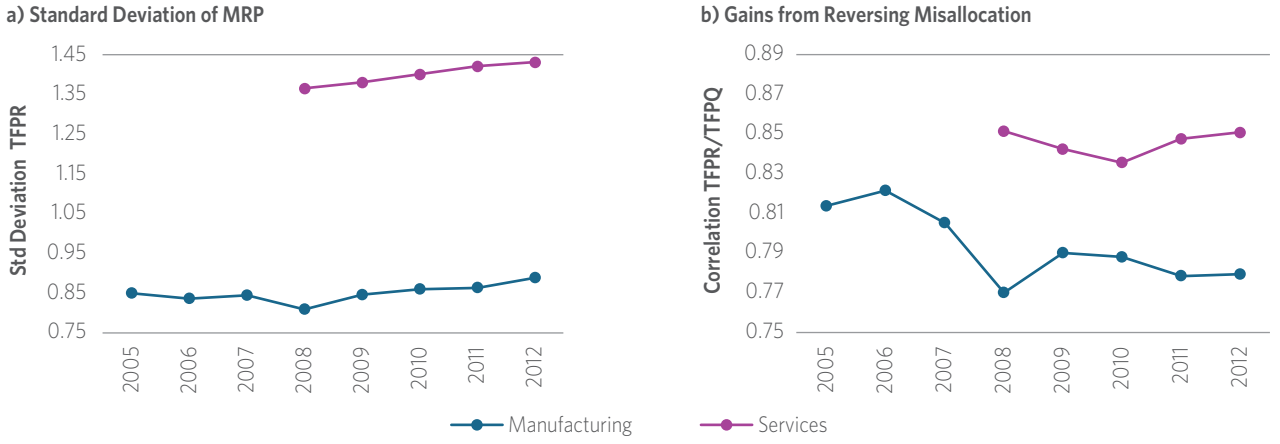


Source: WB staff calculations based on the NSI's Non-financial enterprise data (2005-2012).

growth was particularly weak in engineering related manufacturing (Figure 6.5b) and relatively strong in the chemical and pharmaceutical industry.

Firm entry and exit has contributed positively to productivity since the crisis, especially in the services sector. Between 2010 and 2012, TFP growth related to firm entry and exit increased by 3.3 and 5.5 percent, respectively, contributing around 30 percent to economy-wide, firm-level TFP growth (Figure 6.6a). Entry and exit rates were similar (Figure 6.6b), suggesting that firms with higher productivity entered the market as firms with below average productivity exited. The positive contribution of entry and exit dynamics to TFP growth was to a large extent driven by the services sector. Among manufacturing industries, only entry and exit dynamics in the food and apparel sector contributed positively to TFP growth. The chemical and pharmaceutical industry registered some TFP growth gains due to entry and exit prior to 2009 but little since then. For the engineering sector, the contribution was zero. According to Eurostat data,

FIGURE 6.7: MEASURES OF MISALLOCATION



Source: WB staff calculations based on the NSI's Non-financial enterprise data (2005-2012).

entry rates in Bulgaria are slightly above the benchmark country average, but below the average of regional comparators in manufacturing.

6.3 Misallocation

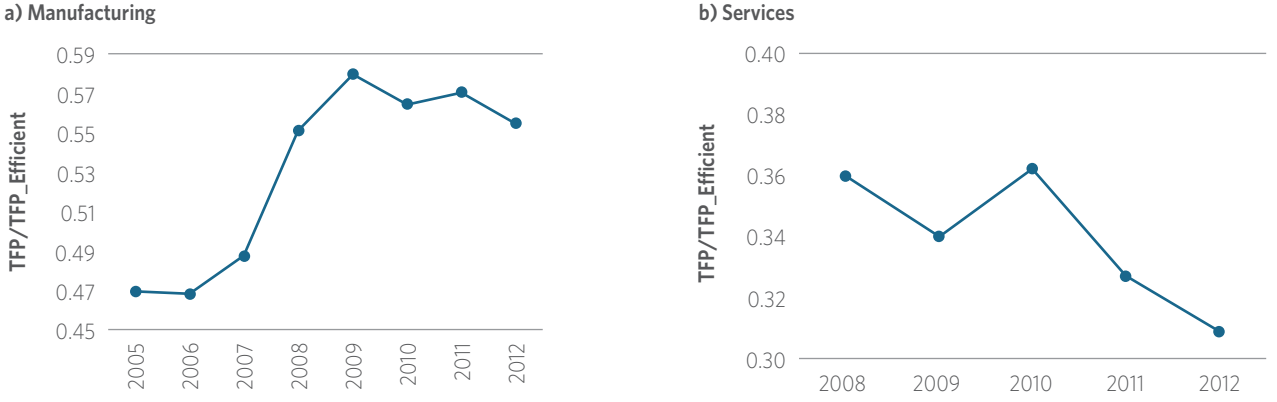
If resources are misallocated a re-allocation of factors of production would increase aggregate TFP growth. For example, take two firms in the textile sector from the NED data. Productivity of firm 1 is twice as high as the average productivity in its sector and it hired 19 full time paid employees in 2006. Firm 2, whose productivity level is only 2 percent of the average productivity level in the industry, employed additional 2 workers in the same year. If these additional workers were allocated to firm 1 instead total textile manufacturing output would increase. In order to measure misallocation, we use two indicators. The first indicator is the standard deviation of the value of marginal products across firms within an industry. According to economic theory, labor and capital should flow across firms until the value of the marginal revenue products of capital and labor are equalized across firms within a given sector in a frictionless economy. Therefore, the higher the standard deviation the larger is the degree of misallocation.[86] Since there are few completely frictionless economies in the world, we compare Bulgaria with an economy with relatively little frictions, such as Germany. The second indicator uses the correlation between the firm-level marginal revenue products and firm-level TFP. Several studies have found that misallocation tends to be particularly harmful if it firms that are inefficiently large have a low productivity level (Restuccia and Rogerson 2008, Fattal Jaef 2014).[87]

Bulgaria is suffering from a significant and increasing degree of misallocation. The standard deviation of the marginal revenue of firms is significantly above the benchmark value of zero (Figure 6.7a). The degree of misallocation decreased slightly in 2008 when Bulgaria accessed the European Union, but has been

[86] For each two-digit industry, we calculate the standard deviation of the logarithm of the ration between a firm's marginal revenue product and the average marginal product in the industry.

[87] Recall that in a Cobb-Douglas production function, marginal products are diminishing as factors of production increase. Thus, an excess of labor and capital manifests manifests itself as a low marginal product, while a scarcity of the productive factors translates into a high value of the marginal products.

FIGURE 6.8: OBSERVED VERSUS EFFICIENT TFP



Source: WB staff calculations based on the NSI's Non-financial enterprise data (2005-2012).

increased since then. This holds broadly for manufacturing and service sector. In fact, Bulgaria's standard deviation of TFP across firms is quite high, compared to other countries, including China. Our second misallocation measure of the correlation between firm-level marginal revenue productivity and TFP suggests a decline in misallocation prior to the 2008 global crisis and some improvements even after the crisis. (Figure 6.7b). The latter may be due to the fact that large firms had the largest productivity gains in the economy, in particular those firms, benefitting from FDI.

Due to misallocation, Bulgaria's manufacturing and service sectors are operating significantly below their potential. Figure 6.8a shows the ratio of actual aggregate TFP relative to the efficient TFP.[88] A number less than one indicates that the economy is operating below the production possibility frontier. In manufacturing, TFP was only 45 percent of the efficient level in 2005 and 55 percent of the efficient level in 2012. The TFP of the service sector, dropped from 36 percent of the efficient level in 2008 to 30 percent by 2012.

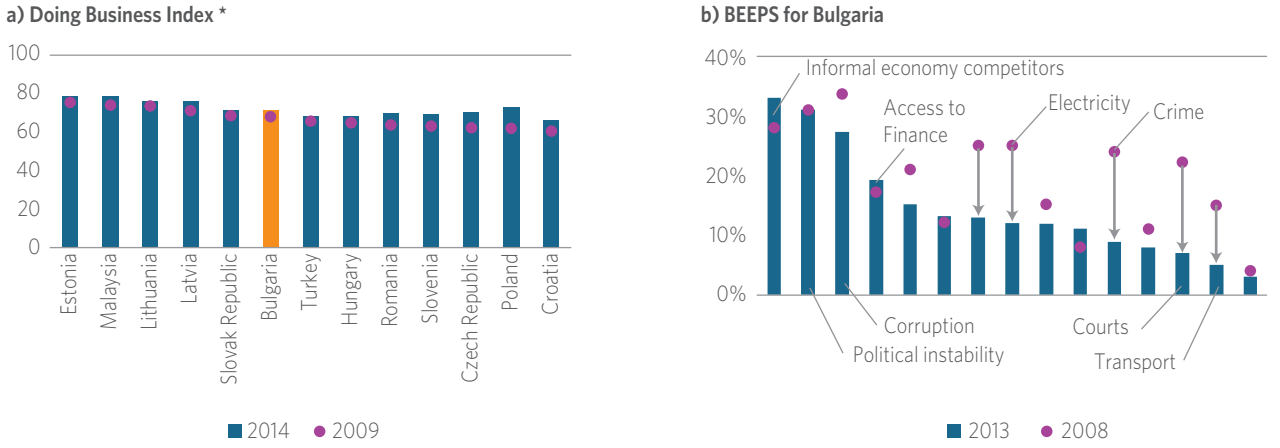
Misallocation tends to be higher in sectors with a high share of pre-transition firms and less competition. Sectors with a high share of incumbent firms, i.e. firms that have been operating since 1989, tend to have a larger degree of misallocation. Also, sectors with a higher concentration as measured by the Herfindahl index, had a higher standard deviation, suggesting a more severe misallocation. However, the correlation between MRP and TFP was less positive, suggesting that overall large firms in these sectors were reasonably productive. Finally, sectors with a higher share of financially unconstrained firms, i.e. firms with cash in excess of the investment in fixed tangible assets, tend to have a significantly higher degree of misallocation.

6.4 Possible Constraints to Firm-Level Productivity Growth

There exist significant empirical literature that improving the business environment can help boost productivity growth. For example, between 2001 and 2004, an increase in infrastructural quality, financial development, labor market flexibility, labor quality and market competition, significantly raises TFP at the average firm

[88] The efficient TFP is calculated by equalizing marginal revenue products across firms within NACE 2 digit industries.

FIGURE 6.9: BULGARIA'S BUSINESS ENVIRONMENT



Source: Doing Business (2015), and BEEPS (2008, 2013).
*Distance to frontier.

in Bulgaria, Croatia, Czech Republic, Estonia, Poland, Romania, Serbia and Ukraine (Anos-Casero and Udomsaph 2009). Escribano and Guasch (2012) find that investment climate variables, such as red tape, corruption and crime, infrastructure quality and innovation account for more than 30 percent of the difference in average productivity across firms in six Latin American countries.

Bulgaria's investment climate as measured by the World Bank's Doing Business Indicators falls in the mid-range of the benchmark countries, although it scores low on key governance indicators. Though Bulgaria's Distance to Frontier of the World Bank's Doing Business Indicator lies in the middle of the benchmark country range and is slightly better than that of comparators such as Turkey, it has made little progress in improving its investment climate since 2008 (Figure 6.9a). According to BEEPS survey data, "competitors from informal economy", "political instability", and "corruption" are lingering issues for Bulgaria's business environment (Figure 6.9b). These are also indicators which tend to constrain FDI.[89] As discussed in Chapter 2, Bulgaria also ranks very low with respect to key governance indicators.

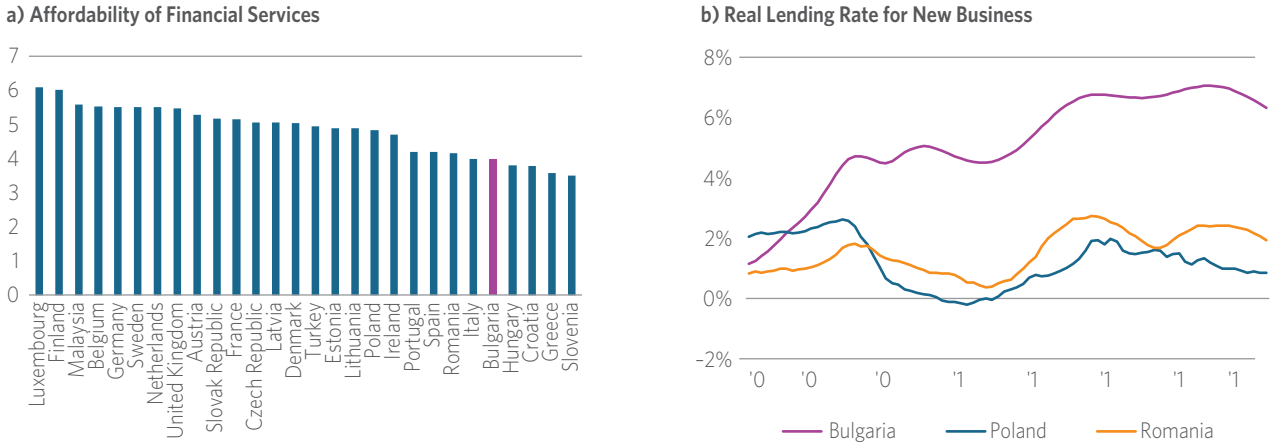
Apart from governance related variables, firms identify access to finance as a binding constraint. Between 2008 and 2013, the share of Bulgarian firms which considered access to finance to be the most binding constraint has increased.[90] More than 50 percent of companies participating in the BEEPs stated the interest rates are too high. While companies generally prefer to face lower interest rates, affordability of finance seems to be relatively low in Bulgaria. The World Economic Forum identifies Bulgaria's as a country with one of the least affordable financial services among EU countries (Figure 6.10a). Its real lending rate for new businesses has increased steeply since mid-2008 and is significantly higher than, for example, in Poland or Romania (Figure 6.10a).

Lack of competition in the basic metal industry may also depress the

[89] The Bulgarian Government has adopted an anti-corruption strategy which is currently being updated. The results of the implementation of the previous strategy seem to have been limited.

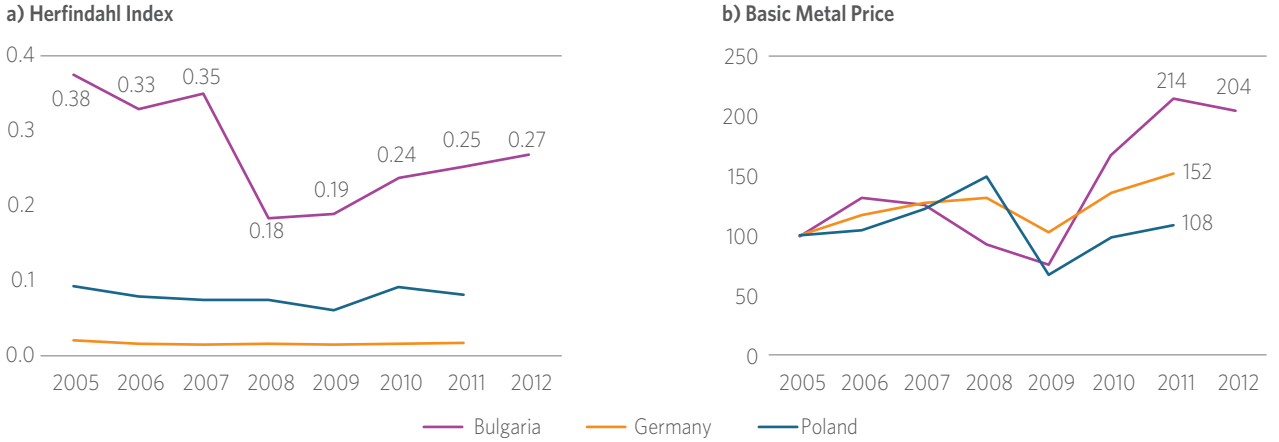
[90] According to the NED data, firms with better access to finance had significantly higher productivity growth. We are not able to identify from the data whether this is a causal effect. This finding may simply reflect the fact that banks lend to better performing firms.

FIGURE 6.10: ACCESS TO FINANCE



Source: World Economic Forum's Global Competitiveness Report (2014–2015). WB staff calculations based on Haver Analytics (original data from each country's central bank)

FIGURE 6.11: BASIC METAL INDUSTRY INDICATORS



Source: WB staff calculations from Haver Analytics.

performance of the engineering manufacturing sector. Basic metal is a key input for engineering manufacturing. Bulgaria's basic metal industry is dominated by a few firms. Its Herfindahl index is 20–30 percent compared to 1 percent in Germany and 7 percent in Poland. The index has deteriorated since 2009. At the same time, the price index of basic metal has nearly doubled. As argued in chapter 4 and as discussed below, improving competition in the upstream sector of value chains is likely to boost the productivity growth of the downstream industry. Promoting competition in the basic metal industry seems, important for boosting productivity growth in engineering manufacturing.

Regulatory reforms that directly affect the performance of the service sector may also have important implications for the productivity of other sectors, including manufacturing. It is therefore useful to assess how reforms targeted to the service sector affect the total

factor productivity (TFP) of firms in other downstream sectors (Arnold *et al.* 2010, 2011).[91] Measures of service-sector liberalization or de-regulation are adapted from the "Structural Change Indicators" used by the European Bank for Reconstruction and Development (EBRD),[92] which cover the following service subsectors: banking, non-bank financial services (e.g. insurance), land transportation (road and rail), telecommunications, and water and electric utilities. The analysis also uses a second set of outcome variables. These variables include (i) the fraction of foreign owned firms in sectoral sales, (ii) the level of competition in the sector, and (iii) the extent to which service providers are also exporters. These variables are calculated from the NED firm-level data, which includes information on foreign ownership.[93] The level of competition in each service subsector is calculated through two measures of market concentration: (i) the Herfindahl Index, which is the sum of the squared market shares of all firms in a given subsector, and (ii) the combined market share of the four largest firms in each subsector. We also control for the fact that service providers in Bulgaria are exporters. This is done using data on the share of export revenue in total revenue of each exporting services firm. The reason for including this variable is because exporters tend to be more productive than non-exporters. Productivity in downstream activities could increase if regulatory changes enabled more exporting service providers to also supply services to domestic downstream industries.[94] The full empirical strategy and estimates are summarized in Annex 6.1.

Services liberalization appears to improve productivity among Bulgarian firms that rely on service inputs. This is the case for manufacturing as well as for service firms that use services as inputs.[95] In particular, reforming the energy and telecommunications subsectors would substantially improve TFP in other sectors of the Bulgarian economy. In addition, the deregulation of insurance significantly boosts TFP across sectors.[96] We also find that the presence of foreign services firms accelerates productivity growth among domestic firms that rely on service inputs. The impact of an increase in the share of service exports on TFP growth among downstream firms is weaker, suggesting that the pass-through effect of more productive service firms to each downstream user is relatively weak. However, an increase in competition in a given services subsector significantly improves TFP growth among downstream firms. Indeed, competition appears to be the most robust factor affecting TFP. In sum, next to reforms in services sectors such as increased privatization and the entry of foreign firms, competition in services sectors

[91] For a summary of how firm-level TFP is calculated, see Annex 2.

[92] The EBRD structural change indicators provide a quantitative foundation for analyzing reform progress, particular in terms of privatization and competition, in the following five sectors: enterprises, markets and trade, the financial sector and infrastructure. See http://www.ebrd.com/pages/research/economics/data/macro/sci_methodology.shtml

[93] For a description of the data see Annex 4. Only 6.4 percent of all observations (i.e. firms) record a foreign ownership share greater than zero. To calculate the domestic market share of foreign-owned firms the foreign ownership share is multiplied by the firm's revenue. This share of foreign output is calculated at the 2-digit level as provided in the original data for all service subsectors. The data include the organizational structure of each firm, but does not allow for an assessment of differences between private and public ownership.

[94] 35 percent of firms with a foreign ownership stake are also exporters.

[95] In Bulgaria, services represent around 50 percent of the total inputs consumed by the manufacturing sector, and this share increases to almost 80 percent for the service sector. These figures exclude personal services such as health, household services and education.

[96] Given these results it is likely that deregulation in other sectors, such as transport and banking, would also have a positive impact on TFP. Yet the EBRD index for banking reform in Bulgaria has almost reached its maximum value, meaning that privatization and liberalization in the banking sector in Bulgaria are almost complete. Meanwhile, the EBRD's transport index only covers road transport, which shows little variation over time.

also seems to be a real driver for higher productivity effects in downstream industries that rely on services as inputs.

The findings of this analysis suggest that increasing domestic competition could be a successful strategy for boosting productivity growth. Indeed, the regression analysis suggests that the degree of competition is a critical factor in overall productivity. One important policy question is whether domestic firms are truly able to benefit from the spill-over effects that foreign firms are supposed to bring to the Bulgarian economy. Meanwhile, higher productivity rates should translate in lower input prices. However, the pass-through effect of higher productivity from service exporters to downstream firms seems to be relatively weak. Therefore, an additional policy question would be why this trickle-down effect seems to disappear halfway down the production chain.

Annex 6.1: Service Sector Reforms and Economy-Wide Productivity

Reforms targeted to the service sector affect the total factor productivity (TFP) of firms in other downstream sectors (Arnold *et al.* 2010, 2011). In this analysis the measures of service-sector liberalization or de-regulation are adapted from the "Structural Change Indicators" used by the European Bank for Reconstruction and Development (EBRD),[97] which cover the following service subsectors: banking, non-bank financial services (e.g. insurance), land transportation (road and rail), telecommunications, and water and electric utilities. The analysis also uses a second set of outcome variables. These variables include (i) the fraction of foreign owned firms in sectoral sales, (ii) the level of competition in the sector, and (iii) the extent to which service providers are also exporters. These variables are calculated from the original firm-level data, which is taken from the Bulgarian Firm Census, and which includes information on foreign ownership.[98] The level of competition in each service subsector is calculated through two measures of market concentration: (i) the Herfindahl Index, which is the sum of the squared market shares of all firms in a given subsector, and (ii) the combined market share of the four largest firms in each subsector. We also control for the fact that service providers in Bulgaria are exporters. This is done using data on the share of export revenue in total revenue of each exporting services firm. The reason for including this variable is because exporters tend to be more productive than non-exporters. Productivity in downstream activities could increase if regulatory changes enabled more exporting service providers to also supply services to domestic downstream industries.[99]

Downstream performance is measured as Total Factor Productivity (TFP). The strategy chosen is to compute productivity using a Cobb-Douglas production function at the firm level, with common labour shares within firms in each 2-digit sector. These calculations are based on Hsieh and Klenow (2009, 2014). As a result, various productivity terms are computed of which we use the physical productivity of a firm, relative to the average physical productivity of the 2-digit sector it belongs to.[100] This is a so-called

As in Arnold *et al.* (2010; 2011) the identification strategy used in this empirical exercise relies on the assumption that industries and sectors which are more dependent on services inputs will feel the services sectors reforms to a greater extent than industries which are less reliant on services as part of their inputs. To take stock of this inter-sectoral effects each of the reform proxies is interacted with the input-dependence of each industry (and sector) on services inputs. The national input-output table of Bulgaria provides information on the reliance of each 2-digit industry on services. For our analysis we take the earliest year possible, which is

[97] The EBRD structural change indicators provide a quantitative foundation for analyzing reform progress, particular in terms of privatization and competition, in the following five sectors: enterprises, markets and trade, the financial sector and infrastructure. See http://www.ebrd.com/pages/research/economics/data/macro/sci_methodology.shtml

[98] Only 6.4 percent of all observations (i.e. firms) record a foreign ownership share greater than zero.[100] To calculate the domestic market share of foreign-owned firms the foreign ownership share is multiplied by the firm's revenue. This share of foreign output is calculated at the 2-digit level as provided in the original data for all service subsectors. The data include the organizational structure of each firm, but does not allow for an assessment of differences between private and public ownership.

[99] 35 percent of firms with a foreign ownership stake are also exporters.

[100] A second estimate is to use the revenue productivity of a firm, relative to the average revenue productivity of the 2-digit sector it belongs to. However, physical productivity gives a better approximation of the true productivity level in Bulgaria.

2008.[101] Hence, the dependent variables measuring services linkages using the services reform indicators can be written as follows:

$$services\ linkage_{jt} = \sum_{k} a_{jk} * reform\ index_{kt}$$

where a_{jk} is the amount of inputs sourced by any industry or sector j from services sector k, computed as a share of the overall input use. The second term on the right-hand side of this equation represents one of the reform measures in services sector k over time t as explained above, namely the EBRD indices, foreign and export share of firm sales, plus the competition indicators. Together this multiplication of sectoral services reform indices and input-output coefficients are summed over each sector as found in the data set for Bulgaria at 2-digit NACE level.

Finally, to measure the effect of reform in upstream services sectors on firm productivity in Bulgaria the following regression equation is estimated:

$$lnTFP_{ijt} = \theta services\ linkage_{jt-1} + \theta X_{jt} + \delta_i + \gamma_t + \varepsilon_{it}$$

where $lnTFP_{ijt}$ is the physical productivity in logs measured as TFP for each Bulgarian firm i in sector j in time t using the methodology put forward by Hsieh and Klenow (2009, 2014). Note that the services linkages terms are all lagged in the regression estimation. The term X includes additional control variables that could affect the productivity of Bulgarian firm, which is in this case a dummy indicator which is equal to one if the foreign ownership share of firm i is larger than 10 percent.[102] In addition to these control variables fixed effects by firm (δ) and year (γ) are also included. The former captures all unobserved effects by the firm such as location, size and other characteristics whereas the latter corrects for any time-level trend such as macroeconomic shocks. Finally, an error term (ε) is included which is clustered by sector-year as this is our highest dimension in our panel.

[101] This year lies in the middle of our small panel data. However, Arnold *et al.* (2010) also use input-output matrix of a year which lies in the middle of their panel survey. Moreover, as the authors note, using input-output tables rather than firm-level data on the services input reliance has the advantage of avoiding firm-level correlation with productivity performance of each firm in the data set.

[102] One could also think that additional sector-level factor could affect the productivity term of the firm, such as tariffs or input tariffs. Yet, since sector j includes all sectors of the economy (agriculture, manufacturing and services) we are not able to include tariffs for all sectors. Moreover, European Union tariff line classified under the NACE Rrev.2 form are hard to obtain. Arnold *et al.* (2010; 2011) show however that these latter two trade policy barriers do not alter their results and do not constitute any significant effect on productivity.

ANNEX TABLE 6.1A: EBRD INDICATORS BY SERVICE SUBSECTOR

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
EBRD All	0.433***						
	(0.155)						
EBRD Banking		0.786					-2.157*
		(0.638)					(1.185)
EBRD Insurance			14.50*				17.40**
			(8.424)				(7.913)
EBRD Electricity				3.573***			3.415***
				(1.190)			(1.027)
EBRD Transport					-0.0992		-0.207
					(0.254)		(0.207)
EBRD Telecom						0.412***	1.136***
						(0.123)	(0.426)
FDI > 10%	-0.0777*	-0.0798*	-0.0780*	-0.0807*	-0.0793*	-0.0802*	-0.0790*
	(0.0450)	(0.0457)	(0.0457)	(0.0455)	(0.0457)	(0.0457)	(0.0455)
Observations	267,307	267,307	267,307	267,307	267,307	267,307	267,307
R-squared	0.740	0.737	0.738	0.738	0.737	0.737	0.739
RMSE	1.107	1.111	1.110	1.109	1.111	1.111	1.108

Robust standard errors in parentheses clustered by industry-year, *** p<0.01, ** p<0.05, * p<0.1. All service linkage variables are lagged by one year.

ANNEX TABLE 6.1B: PRODUCTIVITY AND FOREIGN OWNERSHIP, EXPORTING FIRMS AND COMPETITION.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Foreign linkage	0.753**				0.543	0.115	0.00284
	(0.379)				(0.418)	(0.511)	(0.437)
Export linkage		0.0482*			0.0223	-0.0184	-0.0614
		(0.0289)			(0.0333)	(0.0313)	(0.0411)
Competition 1			8.821**			9.641	
			(4.155)			(6.060)	
Competition 2				1.890**			2.828**
				(0.738)			(1.208)
FDI > 10%	-0.0564	-0.0573	-0.0564	-0.0564	-0.0564	-0.0564	-0.0569
	(0.0494)	(0.0491)	(0.0495)	(0.0499)	(0.0492)	(0.0495)	(0.0501)
Observations	232,379	232,379	232,379	232,379	232,379	232,379	232,379
R-squared	0.759	0.758	0.759	0.760	0.759	0.759	0.760
RMSE	1.100	1.100	1.098	1.097	1.100	1.098	1.096

Robust standard errors in parentheses clustered by industry-year, *** p<0.01, ** p<0.05, * p<0.1. All service linkage variables are lagged by two years. Competition 1 includes the Herfindahl Index; Competition 2 reflects the combined market share of the four largest firms.

ANNEX TABLE 6.2: EBRD INDICATORS BY SERVICE SUBSECTOR

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
EBRD All	0.433***						
	(0.155)						
EBRD Banking		0.786					-2.157*
		(0.638)					(1.185)
EBRD Insurance			14.50*				17.40**
			(8.424)				(7.913)
EBRD Electricity				3.573***			3.415***
				(1.190)			(1.027)
EBRD Transport					-0.0992		-0.207
					(0.254)		(0.207)
EBRD Telecom						0.412***	1.136***
						(0.123)	(0.426)
FDI > 10%	-0.0777*	-0.0798*	-0.0780*	-0.0807*	-0.0793*	-0.0802*	-0.0790*
	(0.0450)	(0.0457)	(0.0457)	(0.0455)	(0.0457)	(0.0457)	(0.0455)
Observations	267,307	267,307	267,307	267,307	267,307	267,307	267,307
R-squared	0.740	0.737	0.738	0.738	0.737	0.737	0.739
RMSE	1.107	1.111	1.110	1.109	1.111	1.111	1.108

Robust standard errors in parentheses clustered by industry-year, *** p<0.01, ** p<0.05, * p<0.1. All service linkage variables are lagged by one year.

ANNEX TABLE 6.3: PRODUCTIVITY AND FOREIGN OWNERSHIP, EXPORTING FIRMS AND COMPETITION.

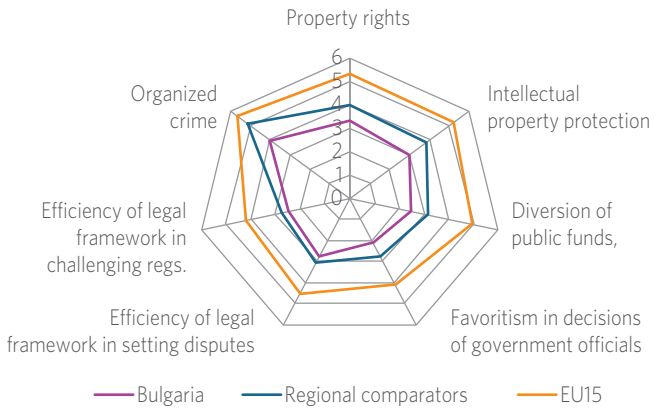
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Foreign linkage	0.753**				0.543	0.115	0.00284
	(0.379)				(0.418)	(0.511)	(0.437)
Export linkage		0.0482*			0.0223	-0.0184	-0.0614
		(0.0289)			(0.0333)	(0.0313)	(0.0411)
Competition 1			8.821**			9.641	
			(4.155)			(6.060)	
Competition 2				1.890**			2.828**
				(0.738)			(1.208)
FDI > 10%	-0.0564	-0.0573	-0.0564	-0.0564	-0.0564	-0.0564	-0.0569
	(0.0494)	(0.0491)	(0.0495)	(0.0499)	(0.0492)	(0.0495)	(0.0501)
Observations	232,379	232,379	232,379	232,379	232,379	232,379	232,379
R-squared	0.759	0.758	0.759	0.760	0.759	0.759	0.760
RMSE	1.100	1.100	1.098	1.097	1.100	1.098	1.096

Robust standard errors in parentheses clustered by industry-year, *** p<0.01, ** p<0.05, * p<0.1. All service linkage variables are lagged by two years. Competition 1 includes the Herfindahl Index; Competition 2 reflects the combined market share of the four largest firms.

JUDICIARY

A well-functioning judicial system is an essential element of a healthy, supportive and competitive business climate. An effective judiciary provides a critical degree of predictability in economic relationships, levels the playing field between firms, and ensures that private citizens, business entities and public officials are all equally accountable under the law. Judicial institutions protect property rights, enforce contracts, ensure that economic regulations are respected, obviate or resolve economic conflicts, and combat corruption and other illicit practices. Empirical evidence confirms that high-quality legal institutions are correlated with robust FDI inflows (Benassy-Quere 2007), while weak contract enforcement raises the cost of borrowing (Bae and Goyal 2009), inhibiting investment and slowing GDP growth (Djankov et al. 2008). Firms also tend to be smaller in countries with a weak judicial system (Beck et al. 2006). Giacomelli and Menon (2012) determine that halving the length of civil proceedings increases average firm size in Italian municipalities by 8–12 percent. Inefficient courts also tend to slow rates of firm creation and destruction (Garcia-Posada and Mora-Sanguinetti 2012), and weak labor courts can negatively affect employment allocation, damaging productivity growth (Gianfreda Vallanti 2013). Finally, strong contract-enforcement institutions tend to be positively correlated with more sophisticated exports (Berkowitz et al. 2006, see also chapter IV for empirical evidence for Bulgaria).

FIGURE 7.1: PROPERTY PROTECTION

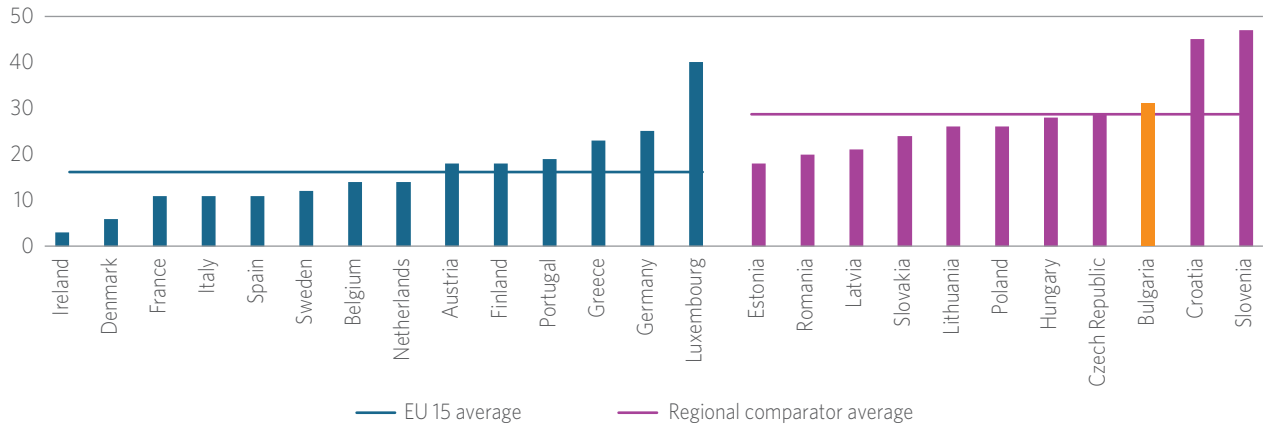


Source: World Economic Forum (2014).

Bulgaria's judicial system is weak according to key indicators. The Global Competitiveness Report for 2014–2015[103] ranks Bulgaria 110th out of 144 countries on the protection of property rights, remarkably low for an EU member state. Moreover, Bulgaria ranks 124th on the efficiency of the legal framework in settling disputes and in challenging regulations (Figure 7.1), and

[103] http://www.weforum.org/reports/global-competitiveness-report-2014-2015.

FIGURE 7.2: NUMBER OF JUDGES PER 100,000 PEOPLE IN 2012



Source: CEPEJ (2014).

126th in judicial independence. Among other adverse consequences, the poor performance of the judicial system reduces its effectiveness in fighting corruption, which according the business survey is one of the most significant obstacles of doing business in Bulgaria (BEEPS 2014). Bulgarian firms have little trust in the efficiency or integrity of the country's courts. In 2013, only 22 percent of Bulgarian firms believed that the court system was fair, impartial and incorrupt, while 58 percent of the general population believed that bribery and abuse of power for personal gain were widespread in the courts, far higher than the EU average of 23 percent.[104]

Yet, Bulgaria's judicial system is not under-funded by regional standards. In 2012 the central government spent about 0.6 percent of GDP on the justice system, including roughly 0.3 percent on the nation's courts. This rate is similar to that of Slovenia, the UK and Poland (European Commission 2014c).[105] In addition, more than 90 percent of these expenditures are devoted to personnel costs, while capital costs are less than 0.5 percent. In fact, Bulgaria employs a relatively large number of judges and court staff. With 31 judges per 100,000 people, Bulgaria ranks fourth in the EU in judges per person (Figure 7.2). Bulgaria also employs 83 non-judge court staff per 100,000 people, significantly higher than the EU average of 71 (CEPEJ 2014). Meanwhile, the number of new court cases decreased by more than 10 percent during 2011–2013.

This chapter assesses Bulgaria's judicial system through the lens of the private sector. It explores three core dimensions of performance: (i) the efficiency of judicial service delivery; (ii) the quality of judicial services; and (iii) ease of access to judicial services. Where appropriate, the analysis draws on cross-country data to put Bulgaria's judicial system into a broader European context. This chapter uses various data sources, included official statistical data generated by Bulgaria's judicial system, a range of European and international surveys and assessments, the Judicial Public Expenditure and Institutional Review carried out by the World Bank (2008), and analyses produced by Bulgarian civil society organizations. These sources are complemented by interviews with members of the Supreme Judicial Council (SJC), gov-

[104] Special Eurobarometer 397, 2014.

[105] Due to the overall level of GDP compared to other member countries, Bulgaria still has one of the lowest levels of funding per inhabitant in the EU.

ernment officials, judges, attorneys and private-sector representatives.

7.1 Assessing the Performance of Bulgaria's Judicial System

Like other public institutions, the judicial system exists to provide essential services to the private sector and civil society. In addition to resolving disputes and safeguarding legal rights, the courts also execute a number of essential administrative functions such as maintaining public records and registries. The judicial system's performance can therefore be analyzed from a service delivery perspective, in much the same way that one might evaluate the education or public health systems, by measuring the efficiency of service delivery, the quality of the services provided, and the ease of access to these services.[106] The overall effectiveness of the judicial system reflects its performance in each of these three dimensions.

Judicial Efficiency

Several metrics can be used to assess the efficiency of courts. These include the length of proceedings for different case types, as well as the allocation of the workload and the distribution of available human and financial resources across the judicial system. Improving efficiency of judicial service delivery would—among other things—require that relevant performance data can easily be generated and are then used for management purposes which is currently not the case.

Length of Judicial Proceedings

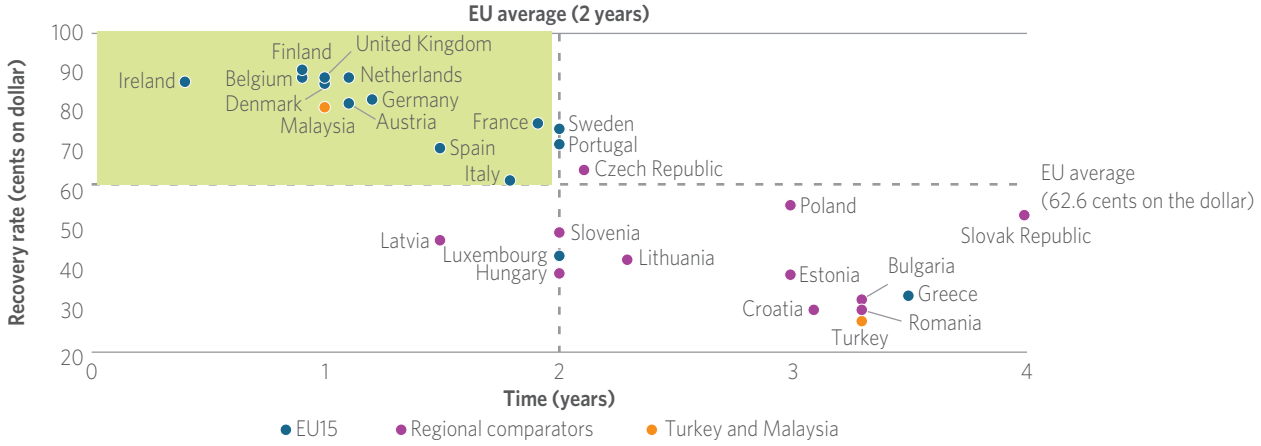
Protracted judicial proceedings increase costs and may adversely affect the business of a firm seeking to resolve a case. In addition, the expectation that a case will take a long time to resolve can distort incentives to litigate, weakening the effectiveness of laws and regulations and generally undermining the rule of law. Because long delays and costly proceedings tend to favor those with the greatest access to legal and financial resources, lengthy court cases systematically advantage large firms over their small- and medium-sized competitors.

The available evidence regarding the length of court proceedings is inconclusive but it seems that certain cases may be lengthy. Bulgaria does not keep official statistics on the average length of different types of courts cases,[107] and two EU studies concluded that Bulgaria performs fairly well on some case types. According to the 2014 EU Justice Scoreboard, the average duration of first-instance, non-criminal court cases in Bulgaria was fewer than 100 days in 2012, placing Bulgaria among the top ten performers in the EU. Bulgaria also ranked sixth in the EU in 2012 in terms of the time needed to resolve administrative cases (European Commission 2014c). However, insolvency cases tend to be very lengthy, and Bulgaria's recovery rate is one of the lowest in the region. In 2013, only three EU countries took as much or more time to resolve insolvency cases than Bulgaria (Figure 7.3). Moreover, according to the BEEPS (2013), only 9 percent of Bulgarian firms consider the court system expeditious. A study of commercial and administrative litigation found that 44 percent of companies involved encountered unreasonable delays. More than half of these companies blamed the delays on the courts

[106] From this perspective, a lack of judicial independence will mainly affect impartiality of decisions and therefore the quality of services provided. After all, judicial independence is granted to ensure impartiality of decisions. Judicial corruption equally affects impartiality in favor of one of the parties and therefore negatively affects the quality of services provided.

[107] A few individual courts include such data in their annual reports; however, given the great disparities in the speed of judicial proceedings in different regions, such incidental data cannot be used to draw a generalized conclusion.

FIGURE 7.3: AVERAGE LENGTH OF INSOLVENCY PROCEEDINGS



Source: World Bank staff calculations based on World Bank Doing Business Survey (2015).

themselves. Moreover, 44 percent of respondents who chose not to litigate cited the anticipated length of the proceedings as the most significant deterrent (Alpha Research 2010). In-depth interviews conducted for the purposes of this chapter further confirmed that businesses expect considerable delays in judicial proceedings in the larger Bulgarian courts and especially in Sofia. Interviews conducted for the World Justice Project (2014) provide further confirmation of Bulgaria's low justice sector efficiency.

Recent surveys provide insight into the causes of lengthy court proceedings. The most commonly cited reasons were the postponement of hearings and the long intervals between scheduled hearings (44 percent of respondents), and the fact that hearings may be postponed multiple times (37 percent). 31 percent of respondents reported routine delays in pursuing lawsuits, and 28 percent complained of long intervals between filing a claim and receiving an initial hearing (Alpha Research 2014). Delays do not seem to be excessive in all situation, but they are especially problematic in lawsuits concerning commercial representation, banking and currency transactions, and property disputes, as well as interlocutory and enforcement proceedings.

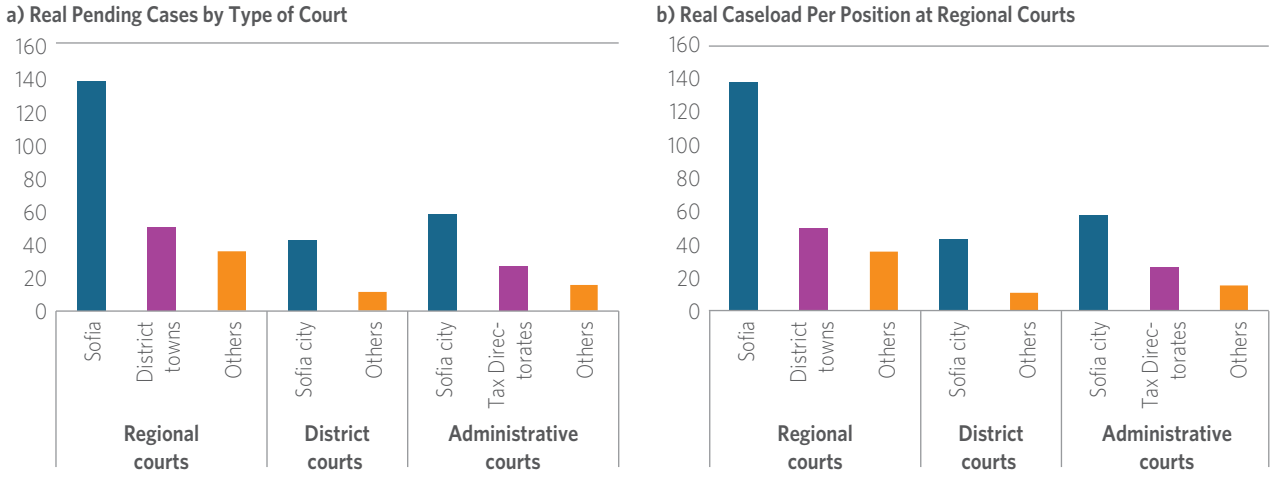
Inconsistencies between Caseload Allocation and Human Resources Allocation

When caseloads are distributed unevenly, the judicial system's resources are not utilized efficiently. In judicial systems that are vulnerable to excessive politicization or undue influence by the executive, the uneven distribution of caseloads creates opportunities for officials to favor certain judges over others. Patronage arrangements may enable certain judges to receive smaller caseloads and preferred cases, while others are burdened with excessive caseloads that cause them to miss deadlines and produce lower quality decisions.

The average number of pending cases in Bulgaria appears to be relatively low, and the country's disposition rates[108] have improved. In 2012, Bulgaria

[108] The disposition rate is the percentage of completed versus incoming cases. A disposition rate of 100 percent means that the number of completed cases equals the number of incoming cases. A rate below 100 percent means that the number of pending cases is gradually increasing, as the number of cases entering the system exceeds the number of completed cases, whereas a rate above 100 percent implies that the system is reducing its overall caseload.

FIGURE 7.4: MONTHLY CASELOADS IN DIFFERENT COURTS, 2013



Source: World Bank staff calculations based on MoJ data.

had one of the lowest numbers of pending non-criminal, first-instance cases per capita in the EU (European Commission 2014c). There has also been a gradual decrease in the number of incoming cases at the Civil Division of the Supreme Court of Cassation and at the Supreme Administrative Court. Disposition rates have improved across the board, exceeding 100 percent for the first time in 2013.[109] Only the district courts, including the Sofia City Court, exhibited declining disposition rates. The country's two Supreme Courts have also seen their disposition rates rise above 100 percent in recent years.

However, the judicial workload is very unevenly distributed between courts and among judges. Courts in Sofia tend to have a much higher number of pending cases per judge than other courts. Judges in Sofia also tend to have a much larger workload than their counterparts elsewhere in the country. On average, judges at the Sofia Regional Court handled three times as many cases as judges in other municipal courts and four times as many as judges in other regional courts (Figure 7.4a).[110] The disparity in caseloads between Sofia and other jurisdictions holds true for both district courts and administrative courts (Figure 7.4b). The real monthly caseload of the Sofia City Court, which is the first-instance court for a large portion of business disputes, is almost four times larger than the average monthly caseload for the rest of the district courts. Similarly, judges at the Sofia City Administrative Court have more than twice the average workload of the other four administrative courts in Plovdiv, Varna, Bourgas and Veliko Turnovo and almost four times the average workload for the rest of the administrative courts. The uneven distribution of the workload among administrative courts is due in part to their rules of jurisdiction. Administrative jurisdiction is determined by the central or territorial headquarters of the administrative agency. Consequently, cases involving national agencies are typically heard in Sofia.

Judges on the most overloaded courts are vulnerable to inconsistently

[109] These data include all courts in the country except military and supreme courts.

[110] These figures refer to the real caseload, i.e. the average number of cases divided by the number of judges who were actually working in the court during the period. This disparity is to some extent the result of a rapid increase in the monthly caseload per judge at the regional courts in Sofia, which rose from around 91 in 2009 to 138 in 2013 while the caseload in other regional courts remained largely constant.

applied disciplinary sanctions. The judicial system's internal disciplinary procedures have been criticized for being excessively arbitrary and capricious. Consequently, judges that face an excessively burdensome workload may be vulnerable to undue influence (European Commission 2014a, European Commission 2014b, Bulgarian Institute for Legal Initiatives 2013).[111]

Secondment of judges has been introduced to address the uneven distribution of judges across the courts and improve service delivery at locations with the highest concentration of economic activity and population but secondments are not an effective solution. The Sofia City Court, for example, has received 30 judges seconded from other courts (Sofia City Court 2013). While secondments can increase flexibility in human resources management to better match the caseload, Bulgarian judges who are seconded to fill positions at an overloaded court often come from similarly overloaded courts. Secondments of judges as currently practiced are not an effective solution to the unbalanced workload in the judicial sector. Moreover, the secondment system is itself problematic, as it circumvents the ordinary rules for career growth and gives excessive discretion to the administrative heads of the respective courts. These officials are responsible for seconding judges and for the duration of their assignments, giving them a degree of leverage that has led to the perception of impropriety. According to the registry of secondments published on the website of the SJC, 151 judges are currently seconded to courts to which they were not originally appointed.

The Fragmentation of Case-Management Systems

Fragmented case-management systems undermine the efficiency of the judicial system. Bulgarian courts use several different case-management systems, which are not always compatible with one another. The SJC conducted comparative analyses of the different existing systems and developed interoperability modules and other temporary solutions, though these have had the perverse effect of postponing the permanent solution of adopting a single system. The draft Sector Strategy for Introducing E-governance and E-justice 2014–2020 envisions the introduction of a unified court information system, but key implementation decisions have not yet been made. In the meantime, the fragmentation of case-management systems makes it difficult to generate consistent and relevant statistics on judicial system performance. Without this information policymakers cannot effectively target reforms or precisely measure their impact.

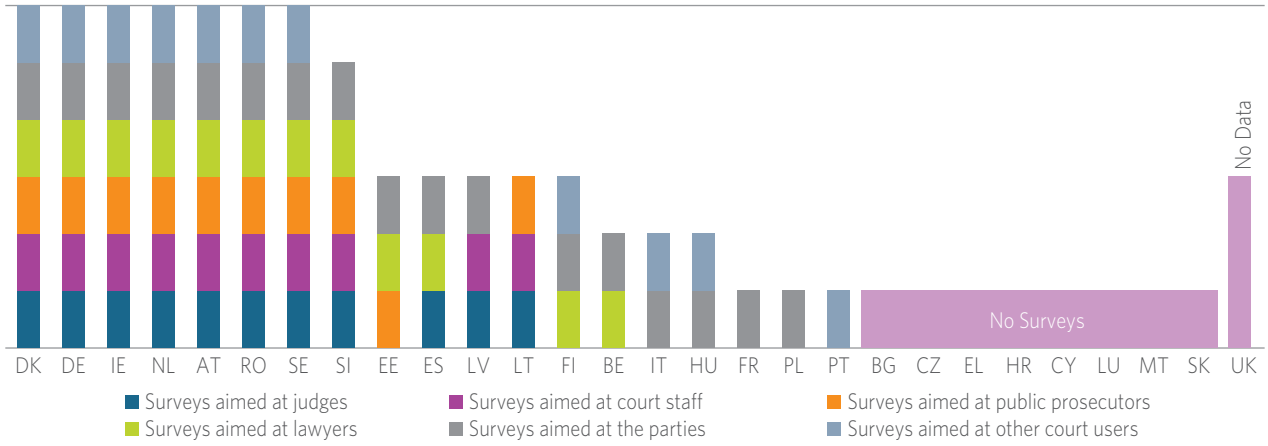
The Bulgarian judiciary makes very limited use of information and communications technology (ICT), which could significantly improve case management. In a recent study by the European Commission for the Efficiency of Justice (2014) only 4 EU member states scored lower than Bulgaria in the use of ICT by the courts. ICT can improve the efficiency and quality of judicial services and expand judicial access. The benefits of random case assignment though ICT and the advantages of e-justice systems are discussed in greater detail in the sections below.

7.2 The Quality of Judicial Services

The judicial system's performance in terms of quality of services is harder to measure than its efficiency, particularly since Bulgaria does not conduct sys-

[111] The Supreme Judicial Council works on developing a weighed caseload formula that also takes into account the complexity of cases, which is important for budgetary planning and for evaluating judges' workload. It is expected that the surveys for that purpose will be completed in late 2014 and thereafter the formula should be implemented. There is no clarity as yet with regard to an implementation road-map.

FIGURE 7.5: JUSTICE-SECTOR SURVEYS IN 2012



Source: EU Justice Scoreboard, 2014. pp. 17. Figure 15.

tematic satisfaction surveys. There is a strong subjective element involved in assessing the fairness of court decisions, and low-quality judicial performance is often the result of multiple, complex causes. Satisfaction surveys are the most commonly used method for assessing the quality of judicial services. Unlike most EU countries, Bulgaria's judiciary does not conduct satisfaction surveys among litigants or legal professionals. Surveys by nongovernmental organizations working in the justice sector usually focus on a particular aspect of the judiciary's functioning that the organization is interested in. They utilize a variety of methodologies, and their results are generally not comparable over time.

Unpredictability in the Legal System

The inconsistent and unpredictable application of laws in the judicial processes is a serious concern for the Bulgarian private sector. All of the business representatives interviewed for this chapter were critical of the justice system's reliability. Corporate lawyers described a serious lack of consistency and predictability not only between courts, but also within each court, with near-identical cases resulting in widely different decisions. However, it is not clear whether this is due to the absence of a common understanding of the applicable rules, or to undue influence and systemic partiality.

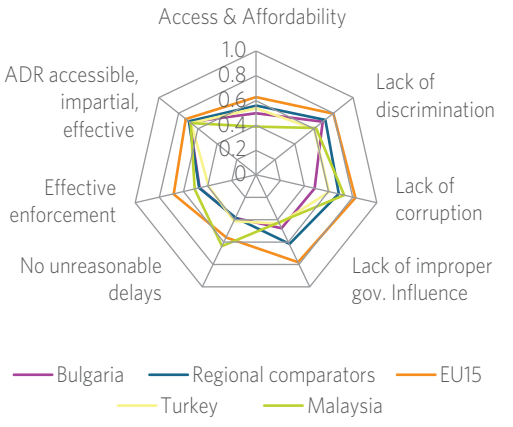
Bulgaria's legal education system does not prepare the judiciary to uniformly adjudicate complex business disputes. Interviewees reported that judges' understanding of the business environment is too limited and that a reliance on underqualified court experts exacerbates the problem. In addition, legal education is viewed as excessively theoretical, and proper legal writing skills are not sufficiently developed in law school (Bulgaria Institute for Legal Initiatives 2009), encouraging judges to simply repeat legal provisions verbatim rather than providing a well-reasoned justification for their decisions. The National Institute of Justice has improved the competence of newly appointed judges through the mandatory initial training that it provides, but midcareer training will be required to enable sitting judges to better adjudicate business disputes.

The Supreme Courts have begun issuing interpretative, guidance-oriented decisions designed to address judicial inconsistencies, but progress to

date has been limited. The Supreme Court of Cassation has recently stepped up efforts to provide explicit guidance to lower courts, but its commercial chamber has not followed suit.[114] The court has not issued a single guidance-oriented decision in the complex area of bankruptcy, and the commercial courts are clogged with difficult bankruptcy cases. The Supreme Administrative Court has issued fewer guidance-oriented decisions than the Supreme Court of Cassation,[115] in some instances even refusing to issue such a decision when one was requested. This has further aggravated the problems facing the judiciary, as it could be regarded as practical endorsement of the inconsistency with which cases are decided.

The usefulness of online judicial reporting is limited. Most courts comply with the Judicial System Act, which requires them to publish all decisions on their public websites. The Sofia Regional Court is lagging behind, but this is likely due to its enormous caseload. However, the way the search function is designed makes it virtually impossible to track decisions based on specific legal provisions or topics, and to find a court decision, the user must already know the case number. As a result, the current system of online reporting does not facilitate analysis of judicial inconsistencies.

FIGURE 7.6: THE PERFORMANCE OF THE BULGARIAN JUSTICE SECTOR



Source: World Bank Staff calculations based on data from the World Justice Project (2014). The scale is zero to one (best).
Notes: ADR stands for Alternative Dispute Resolution and refers to various types of out-of-court settlement. Calculations exclude countries for which Justice Project scores do not exist (Latvia, Lithuania, Slovakia for regional comparators; Ireland, Luxembourg for EU 15).

Judicial Corruption and Undue Influence

Court users often regard inconsistent judicial practices as a sign of undue influence or corruption. Corruption analyses consistently rank Bulgaria's judiciary among the most problematic institutions in the country. For example, in Transparency International's 2013 Global Corruption Barometer the judiciary scored worse than any other institution in Bulgaria, as 86 percent of respondents described it as either corrupt or extremely corrupt. 13 percent of respondents reported having paid a bribe to a judicial official in the last 12 months. The reported incidence of judicial bribery was second only to that of police bribery (Transparency International 2013). Corruption and undue influence were also identified as major problems, along with unreasonable delays, in the World Justice Project's 2014 Rule of Law Index. And only 9 percent of Bulgarians[116] believe there are enough successful prosecutions to deter people from corruption in Bulgaria, by far the lowest level of any European country.

The potential manipulation of the case assignment process so that certain cases are assigned to specific judges is a major liability in the justice sector. The Judicial System Act mandates random case assignment through an electronic system. This is meant to prevent interested parties from finding ways to assign their case to a

[112] See Supreme Court of Cassation at http://www.vks.bg/vks_p10_02.htm.
[113] See Supreme Administrative Court at http://www.sac.government.bg/pages/bg/interpretations.
[114] Special Eurobarometer 397, 2014.

specific judge and to prevent judges themselves from influencing the assignment of cases vulnerable to corruption (e.g. bankruptcy disputes involving significant assets). However, the Administrative Procedure Code allows for a weakened application of this requirement. A comprehensive report by a Bulgarian research institute (Bulgarian Institute for Legal Initiatives 2013b) found that the case-assignment software used by the majority of courts is very easy to manipulate without detection. The report generated intense media attention, prompting the SJC to address some of the issues it identified. The problems with random case assignment are not limited to software vulnerabilities. The administrative practices of courts may allow judges' caseloads to be altered in ways that affect case assignment. For example, recent media reports cast doubts on the random selection of judges and their independence for the high visibility case involving the insolvency procedure for the fourth largest bank in Bulgaria. Additionally, the internal rules of the Supreme Administrative Court mandate random case assignment for only one of the judges on each 5-judge panel, which effectively eliminates the randomness principle with regard to the majority of the judges on the panel.

The perception of corruption and undue influence in the judiciary is common among representatives of the private sector. Respondents describe the procedure for judicial appointments, and especially for administrative heads, as well as the internal disciplinary process and the case-assignment system as particularly suspect (European Commission 2014b). Also, the perception of corruption is amplified by appointment procedures to the highest judicial bodies that are seen as non-transparent and not competitive (European Commission 2014b). Corporate lawyers are particularly skeptical of the potential for fair judgments in cases involving large sums of money or high-level political interests. This view is shared by researchers, including the Center for the Study of Democracy (2013). Impartiality is also a concern in some of the smaller courts, where local power dynamics and patronage arrangements may be a significant factor in deciding a case. In corporate bankruptcy cases, creditors complain that borrowers often move their company headquarters to a more favorable jurisdiction before filing for bankruptcy, hoping to use their local connections to influence the process. The perception of unfairness erodes the trust of the private sector and civil society in the very rule of law, exacerbates economic uncertainty, distorts financial incentives and undermines business relationships.[117]

The media's ability to promote public accountability and encourage judicial reform appears to be diminishing. According to the World Economic Forum (2014) Bulgaria's international ranking for press freedom fell from 80th in 2012 to 87th in 2013 and reached 100th in 2014. While litigants have long attempted to influence individual judicial decisions, it has been claimed that more extreme examples of state capture by powerful business groups through the increasing concentration of financial and media resources are becoming increasingly common (Center for the Study of Democracy 2013). To prosecute these sensitive cases, law-enforcement bodies require a clear political mandate (Ibid 2012).

7.3 Access to Judicial Services

In general the affordability and accessibility of civil justice institutions is not the most pressing challenge for court users, but high fees for certain types of cases may present an obstacle for some

[115] The Inspectorate of the SJC is perceived as ineffective in addressing improprieties in the system. The few corporate lawyers interviewed who had alerted the Inspectorate of improprieties reported that the responses they received, if any, had contained formalistic refusals to examine the issue in question. In some cases the Inspectorate's behavior discouraged further complaints.

citizens. Court fees in Bulgaria are relatively low (World Bank 2008). In some instances they may be so low as to encourage frivolous litigation. However, this appears to be restricted to small claims. In commercial disputes, larger businesses tend to view courts as easily accessible, whereas the cost of litigation may discourage small- and medium-sized enterprises from pursuing cases.[116] Some business associations[117] and attorneys[118] have criticized the 4 percent court fee for civil and commercial cases, claiming that it represents a significant deterrent for smaller businesses.[119] Indeed, some small firms may attempt to minimize this fee by claiming only a part of the overall amount initially and then increasing the claim to the full amount in a subsequent trial, once the claimant is more confident as to the outcome of the case.

The potential for e-justice systems to facilitate access to court services is still underutilized in Bulgaria. Compared to other EU member states, the country's judiciary is still overwhelmingly paper-based, and most court documents cannot be filed electronically.[120] The Sector Strategy for Introducing E-governance and E-justice 2014–2020 calls for the introduction of new computerized systems, including the development of a Unified E-justice Portal.[121]

7.4 Conclusion: Strengthening Bulgaria's Judiciary

To reform the judicial system, Bulgaria must establish a system to accurately measure and manage the performance of judicial institutions. This will require defining key performance indicators and developing tools for routine data collection. The unevenness of institutional performance across the judicial system underscores the importance of disaggregating the data at the court level. Data sources should include user surveys designed to gauge the quality of judicial services and measure the incidence and perception of corruption. The choice of indicators should reflect the priorities of the Bulgarian authorities under the Cooperation and Verification Mechanism, and court performance data should be made available to the public. More precise and detailed monitoring would provide a basis for the SJC and the Ministry of Justice to better coordinate their respective policies. Over the medium term the sector's ICT systems should be strengthened through the establishment of a unified case-management system and standard reporting approaches.

A strong and sustained commitment to fighting internal corruption will be essential for the judicial system to restore the confidence of the business community and the general population in its integrity and impartiality. This will require substantial political will at the highest levels of the judicial leadership. While the executive and legislatives branches of government should be part of the process, the initiative must come from within the judiciary. While judicial independence must be safeguarded, clear rules for professional ethics among judges and court staff should be combined with a disciplinary sys-

[116] See 2010 Index of Commercial and Administrative Litigation, Alpha Research on the commission of the Bulgarian Institute for Legal Initiatives, p. 5–6 at http://www.bili-bg.org/cdir/bili-bg.org/files/2010_Index_of_Commercial_and_Administrative_Litigation_EN.pdf.

[117] http://www.bia-bg.com/news/13089.

[118] http://www.braykov.com/bg/post/comment/91.

[119] In Bulgaria, court fees are not used as a mechanism to appropriately manage the workload in the system. Interviews suggest that, for example fees, in administrative litigation, bankruptcy and criminal complaints of private nature (BGN 12) may be too low whereas some of the fees for civil/commercial litigation may be too high.

[120] Some courts (i.e. the courts in Blagoevgrad judicial district) have piloted a system for distant access to case files. The Law on Electronic Document and Electronic Signature does not cover the use of these tools for judicial proceedings.

[121] In April 2014, MOJ announced that it has already drafted amendments to the judicial system act that would allow introduction of e-justice.

tem that is willing and able to sanction breaches of conduct at all levels. The judiciary should establish simple mechanisms to solicit and address complaints about corrupt practices, identify vulnerabilities and distinguish between different types of corruption (i.e. petty, administrative corruption and corruption among judges). Technical reforms to address specific issues could include an improved random case assignment system within the future unified case management system (European Commission 2014b). The judiciary should take the lead in communicating progress on these issues to the public, and it must be fully candid and transparent about the justice sector's remaining weaknesses.

Since Bulgaria's judicial system is sufficiently resourced and given the current economic situation, hiring of new judges and assistants or an increase of the overall court budget per se should not be envisaged as a way to improve performance. Instead, the focus should be on improving the resource mix with a more significant investment in innovation, reflecting the need for a system in transition to improve the way it operates as reflected in its key performance indicators. The government should also analyze the management of judicial resources and evaluate their impact on service delivery.

The distribution of personnel and financial resources within the judicial system should better reflect the distribution of cases. This can be achieved through two complementary approaches. In the short term the Bulgarian authorities may consider reallocating judges and other staff between courts, but the drawbacks of the current secondment system are substantial. Over the longer term officials should consider changing the way cases are assigned to different courts in order to achieve greater balance between caseloads and human resources. Reorganizing the judicial map could significantly reduce the current imbalance. Initial steps in this area have already been taken by the SJC, and these efforts should continue (European Commission 2014b).

Targeted training is necessary to increase the capacity of judges to adjudicate commercial and bankruptcy cases. This training should focus on the knowledge deficiencies identified. It should also be complemented by training on the economic context of business issues that firms bring before the court.

The inconsistency and unpredictability of court decisions requires urgent attention. Judicial policymakers should identify areas where the inconsistent application of the law is most extreme and consequential, both in terms of the number of cases involved and their economic impact. Engaging with the business community and lawyer associations would be a critical first step. Formal mechanisms for encouraging consistency, such as guidance-oriented decisions, should be intensified and expanded among high-level courts. Such decisions should be complemented by the creation of more informal mechanisms such as forums for judges to discuss diverging interpretations of the law that may affect a significant number of cases and develop an informal professional consensus on these issues. While autonomy over the decisions in each case is a matter of judicial independence, guidance and discussion can help to build a common understanding of the relevant issues and encourage judicial consistency. In addition to these internal mechanisms, a more easily searchable database of court decisions would facilitate judicial oversight and could strengthen uniformity of case-law.

Finally, the structure of court fees should be reviewed to address unbalanced judicial access among large and small enterprises. Adjusting the fee schedule would not only eliminate an important obstacle to justice for small and medium firms, but could also help to manage the inflow of cases into the judicial system by discouraging frivolous litigation. This would free up additional court capacity and improve the quality of judicial services.

CHAPTER 8

PRODUCTIVITY GROWTH AND SHARED PROSPERITY

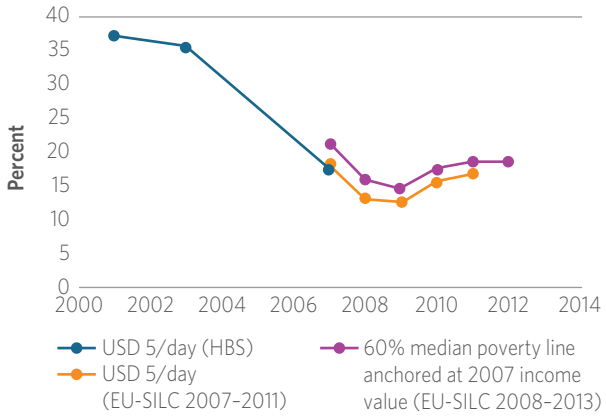
Productivity growth is an important driver of long-term growth. Yet, its link with poverty reduction and shared prosperity is far from obvious. Reducing poverty and improving shared prosperity, measured as the income growth of the bottom 40 percent of the population, are the World Bank's operational goals. Since Simon Kuznets proposed in the 1950s—a time of low inequality—that income inequality, which is closely related to shared prosperity, increases as economies grow, there has been an intense debate about the link between growth and income inequality. But as data on economic variables and poverty has become available for more countries and longer time periods, evidence has emerged that in general economic growth is good for the poor (Dollar and Kraay 2005) and that there is no clear correlation between growth and income inequality (Ravallion 2001, Dollar, Kleineberg and Kraay 2014). That does not mean that different countries have not experienced periods where growth and income inequality have gone hand in hand. It also does not mean that every inequality is bad for growth. To the contrary, inequalities can provide incentives to invest in education and innovation. They can foster entrepreneurship, thereby boosting productivity and economic growth. But inequalities can deprive individuals of opportunities and harm poverty reduction and economic outcomes, especially if they are the outcome of lack of opportunities for specific segments of the population due to discrimination, lack of access to finance, corruption and rent-seeking.

Bulgaria's strong progress in reducing poverty prior to 2008 has stalled in recent years. Poverty,[122] measured as the proportion of the population living on less than USD 5 per day in PPP terms fell from 37 percent in 2001 to 13 percent in 2008, driven by strong employment growth in in construction, trade, tourism, and real estate. Since 2009 poverty has increased as a result of the economic downturn, rising to nearly 17 percent in 2011. In search of better opportunities, nearly 100,000 Bulgarians, mostly young people, have left the country since 2007. Shared prosperity measures the income or consumption of the bottom 40 percent of the population as a share of total income. It can be decomposed into a measure of average income growth and inequality.

[122] These poverty rates are based on the USD 5 per day international poverty line. However, an identical pattern of increasing poverty from 2009 to 2011 emerges using other poverty lines that are constant in real terms over time, such as the EU "anchored" poverty line, which uses each member state's national poverty line in 2008 and updates it only for inflation.

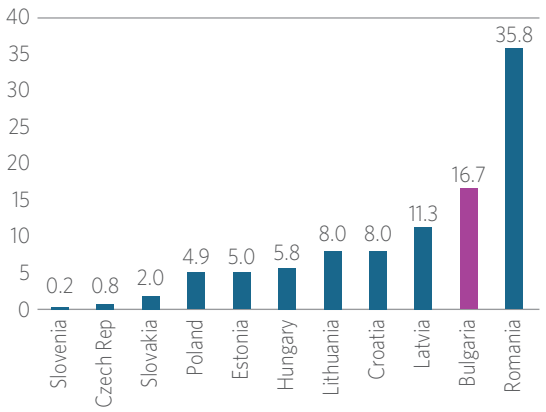
FIGURE 8.1: POVERTY HEADCOUNT

a) Bulgaria's Trend in Poverty



Source: ECAPOV database using Household Budget Survey, EU-SILC and Eurostat.
Note: EU-SILC 2008–2013 surveys used, which reflect household incomes from 2007–2012.

b) Poverty in Comparison



Source: EU-SILC (2011 income reference year).

Bulgaria's progress in shared prosperity has been limited. Income per capita of the bottom 40 percent of the population in Bulgaria increased at just 1.4 percent per year between 2007 and 2011. Relative to the rest of the population, Bulgaria's bottom 40 percent have, however, fared reasonably well as the per-capita income of the top 60 percent grew only marginally (at 0.2 percent per year). Bulgaria's bottom 40 tend to have a low level of education. In fact, nearly half of the working age adults in the bottom 40 percent have not completed secondary education and thus have limited opportunities to find a job. 15 year-olds from the bottom 40 perform significantly worse in PISA than the top 60. Finding a job has been extremely difficult since 2009, especially for low skilled labor. Those who do work are often underemployed and tend to be in low-wage occupations.

Bulgaria's poverty and inequality are high by EU standards. Bulgaria has currently the second highest rate of poverty and social exclusion in the EU. Poverty in Bulgaria is strongly related to the labor market status. In fact, for Bulgaria, the share of working poor among the total poor population is 7.2 percent, below the median of benchmark countries of 7.4 percent. Bulgarians living in rural areas and belonging to ethnic minorities are more likely to be poor. Income inequality in Bulgaria is among the highest in the EU. Bulgaria's Gini coefficient for income after social transfers is 0.34, exceeded only by Greece, Latvia, Portugal and Spain within the EU. Bulgaria's increase in inequality was steeper than in any other regional comparator country.

Bringing together the analysis of the previous chapters, this chapter assesses productivity growth, convergence, and shared prosperity under different scenarios. A CGE model with a poverty module is used to analyze the effect of different policy options on macroeconomic variables, poverty and shared prosperity. The simulations are done for the period 2013–2050. The results show that removing the supply constraints of a declining population will be key for Bulgaria to increase exports and boost growth, and that the combination of different reforms can create powerful synergies for accelerating convergence of Bulgaria to the EU per capita income average. Under all scenarios, the welfare—measured here as real consumption per capita—of the bottom 40 percent

increases significantly but the share of the consumption of the bottom 40 percent in total consumption declines.

8.1 Baseline and Alternative Scenarios

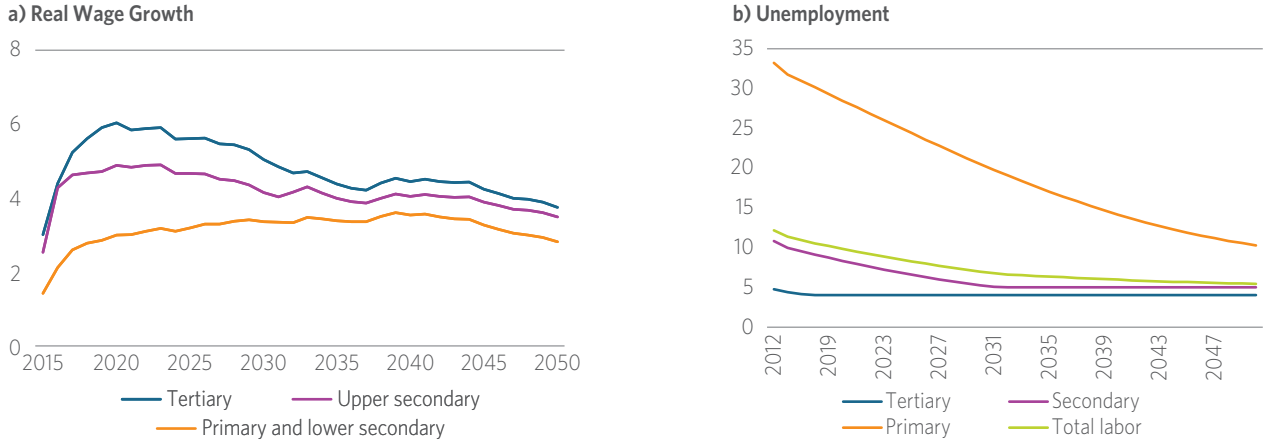
Under the baseline projections, GDP growth is projected to decline (Table 8.1). GDP growth is expected to climb to up to 2.7 percent by 2020 and then to decline gradually to 1.7 percent as productivity growth declines. Due to the continuously decreasing population, labor becomes scarcer over the projection horizon. The base scenario assumes that technology is slightly labor augmenting, making it easier for technology to substitute for labor. In the medium-term, technological change, labor scarcity and initially strong GDP growth lead to strong wage growth. Wage growth decelerates over time but exceeds GDP growth throughout the projection period. As a result, the labor share in value added increases over time. Unemployment converges to the lowest level for educated workers, but also unemployment of the least skilled workers falls significantly over time (Figure 8.2). A detailed description of the assumptions underlying the baseline can be found in Annex 8.1.

Total real consumption per-capita by household increases rapidly during the whole period and poverty declines. Urban households with secondary and tertiary education belong to those gaining most, while both rural and urban households with the lowest educational level have the lowest increases in per capita consumption. The poverty rate falls from [18.7] percent in 2013 to 0.5 percent by the end of the projection period. Per-capita welfare of the bottom 40 percent of households, measured by consumption, doubles over the projection horizon. The

TABLE 8.1: BASELINE PROJECTIONS

	2013	2015	2020	2025	2030	2035	2040	2045	2050
(in percent of GDP)									
Consumption – private	65.6	65.3	64.0	63.2	62.6	62.1	61.6	61.3	61.1
Consumption – government	15.1	15.1	15.1	15.1	15.3	15.6	16.0	16.6	17.0
Investment – private	18.6	18.8	19.5	19.3	19.2	19.1	19.1	19.1	19.1
Investment – government	4.1	4.5	3.5	3.3	3.2	3.0	2.9	2.8	2.8
Exports	63.8	63.4	64.1	64.0	63.0	61.5	59.5	57.6	55.9
Imports	67.2	67.1	66.2	65.0	63.3	61.3	59.3	57.4	56.0
Gross national savings	18.1	18.5	17.3	16.9	16.7	16.5	16.3	16.2	16.2
Gross domestic savings	19.4	19.6	20.9	21.7	22.1	22.3	22.3	22.2	21.9
Foreign government debt	13.4	17.3	25.4	32.6	39.2	45.2	50.6	55.4	60.0
Foreign private debt	34.0	39.9	51.6	62.1	72.0	81.6	90.6	98.9	106.7
Domestic government debt	20.6	22.6	26.2	29.5	32.8	36.4	40.0	43.5	46.8
(real annual growth rate)									
GDP at market prices	0.8	2.0	2.7	2.4	2.2	1.9	1.8	1.7	1.7
GDP at factor cost	0.9	2.0	2.7	2.6	2.4	2.3	2.2	2.1	2.0
GNI per capita	1.2	2.4	3.1	3.1	3.0	2.7	2.6	2.6	2.5
Unemployment rate (%)	12.2	11.8	9.9	8.3	7.0	6.4	6.0	5.7	5.4
Headcount poverty rate (%)		18.7	12.7	8.3	5.4	3.8	2.8	2.0	1.5

FIGURE 8.2: REAL WAGE GROWTH AND UNEMPLOYMENT BY EDUCATIONAL ATTAINMENT



Source: MAMS simulations.

share of the welfare of the bottom 40 percent of households in total welfare declines slightly. This distributional change is relatively small, however, especially when taking into account the length of the study period.

We present six different alternative scenarios. All scenarios highlight different policy or other changes that could boost Bulgaria's economic growth. They are compared to the baseline scenario. More specifically, the different simulations address:

i. **Increase in world market prices of exports** (pwe-rise)**.** This scenario assumes that the world market price of Bulgaria's exports increases gradually by 50 percent relative to the baseline. The increase in world market prices simulates an increase in the demand for Bulgaria's exports. How much exports increase due to price changes hinges on the possibility of increasing the supply of export goods. Given the declining labor force (and, thus, a rather inelastic labor supply at the end of the study period), growth in exports is not easy to achieve in the absence of more labor-augmenting technological change.

ii. **A 0.5 percentage point increase in TFP** (TFP-high). Under this scenario, the productivity growth rate is gradually increased until it exceeds 0.5 percentage points (by 2023) over the baseline productivity growth rate.

iii. **Return migration** (mig-pos). In this scenario, the underlying net migration assumptions of the base scenario (based on the 2013 EU population forecast) are modified. The EU population forecasts a negative net migration flow until 2032 for Bulgaria. Thereafter, migration turns positive and grows gradually. However, as labor declines, productivity grows and wages increase, Bulgaria may attract Bulgarians living abroad (see, also chapter 1 for a discussion). Under this scenario, net outmigration is reduced to 25 percent of the baseline values until 2032, and thereafter the positive net flow is increased by 75 percent. The percentages seem high, but this scenario only increases the population by 140,000 inhabitants by 2050, of which 110,000 are of working age. Put differently, the labor force will grow by 3.4 percent by year 2050 compared to the baseline, yet it still decreases significantly from the initial 2012 level by 1.2 million persons. The downside of this scenario is that the net

flow of remittances will decrease from its baseline values, as the expatriate community living outside Bulgaria diminishes and foreigners living in Bulgaria send increasing remittances back to their home countries. By 2050, remittances are projected to decrease by close to a fifth from its baseline value. Of course, the remittance effect would be mitigated and Bulgaria would benefit more from increased net migration if a larger share of migrants would be "real" immigrants and not returning expatriates.

iv. **Increases in the labor participation rate** (labpart). As reflected in the base scenario, labor force participation (LFP) rates are particularly low in Bulgaria for some population groups, including women, elderly and young people. In 2012, the LFP rate of women aged 15 to 24 was 25.3 percent according to Eurostat data. This compares to an overall LFP rate of 30.4 percent in Bulgaria, 33.1 among comparator countries and 45.6 in the EU15 among women. The LFP rate of elderly Bulgarian women aged 54 to 64 is nearly 10 percentage points below the EU15 average. General labor policies, pension reform and policies targeted at older people, youth and the Roma could help boost LFP (World Bank 2013). In this scenario, the LFP rate increases gradually between 2015 and 2024 by five percentage points. The majority of the increase in participation occurs among the least educated, as the majority of inactive persons in labor force age have that educational background. Overall, labor force increases by 228,000 persons by 2050 due to increased participation under this scenario. This increase corresponds roughly to raising the LFP rate to levels currently found in several EU countries. In 2050, the labor force participation rate will have risen to 72.9 percent; the recent (2013) activity rate for the EU28 was 72.0 percent. Bulgaria's activity rate was 68.4 percent in 2013.

v. **Higher FDI growth** (fdi-grw). As mentioned in chapters 3, 4 and 5, increasing FDI can be an important source of productivity growth in Bulgaria. In this alternative scenario, baseline FDI in Bulgaria shifts up an additional 5 percent in 2015 and increases to an additional 50 percent by 2024. However, this increase does not lead to unprecedented values, as FDI peaks at around 4.8 percent of GDP, which is significantly below the level that Bulgaria has experienced in the recent past.

vi. **Combinations of the above mentioned scenarios**. The first combination scenario assumes that higher productivity growth will make Bulgaria more attractive for return migrants and FDI. It thus combines scenarios ii), iii) and v). The second combination scenario adds an increase in export demand through high world export prices to the mix. The last combination scenario combines all 5 scenarios. The combination of these scenarios is motivated by the fact that in the real world many of the effects studied separately in the above scenarios are intertwined. FDI, for example, is not only a welcome additional source of investment funds, but more importantly, foreign investors often transfer new knowledge which is embodied in the business practices and tangible capital of the entering company, which in turn can boost the productivity growth of the economy (see also chapter 2). Development of FDI is also an indirect indicator of the business climate of a country (Giucci and Radeke, 2012). Increased FDI may lead to increased productivity through increased domestic competition or diffusion of new innovation to the domestic market. In addition, increased investments within the country create new job opportunities and higher wages, thus reducing incentives

TABLE 8.2: REAL MACRO INDICATORS BY SIMULATION

(% annual growth from first to final report year)

			i	iv	ii	iii	v	ii-iii-iv	ii-iii-iv-v	All
	2012	base	pwe-rise	labpart	tfp-high	mig-pos	fdi-grw	Comb 1	Comb 2	Comb 3
Absorption	82,324	1.98	2.86	2.24	2.46	2.04	2.09	2.62	3.51	3.77
Consumption – private	52,466	2.10	3.12	2.39	2.66	2.17	2.16	2.78	3.80	4.09
Consumption – government	12,055	0.41	0.51	0.52	0.56	0.44	0.41	0.60	0.71	0.84
Investment – private	14,447	2.59	3.34	2.83	2.96	2.63	2.92	3.29	3.99	4.20
Investment – government	2,798	1.80	2.63	2.03	2.23	1.85	1.90	2.37	3.20	3.43
Stock change	558	-5.80	-5.80	-5.80	-5.80	-5.80	-5.80	-5.80	-5.80	-5.80
Exports	51,710	2.18	2.29	2.45	2.77	2.27	2.30	2.98	3.04	3.31
Imports	53,990	2.06	3.08	2.33	2.59	2.13	2.19	2.77	3.76	4.02
GDP at market prices	80,044	2.06	2.33	2.32	2.59	2.13	2.17	2.76	3.01	3.28
GDP at factor cost	68,876	2.30	2.61	2.55	2.85	2.37	2.42	3.04	3.32	3.58
TFP index		1.75	1.72	1.80	2.18	1.77	1.75	2.21	2.16	2.22
GNI	78,861	2.12	2.53	2.38	2.68	2.19	2.22	2.85	3.22	3.48
GNDI	78,965	2.14	2.46	2.39	2.67	2.20	2.24	2.82	3.12	3.37
GNI per capita	11	2.76	3.17	3.02	3.32	2.76	2.86	3.42	3.80	4.06
GNDI per capita	11	2.78	3.10	3.03	3.31	2.77	2.87	3.39	3.69	3.95
Real exchange rate (index)		-0.69	-2.12	-0.64	-0.70	-0.66	-0.76	-0.74	-2.15	-2.11
Unemployment rate (%)	12	5.44	5.01	5.45	5.20	5.46	5.36	5.15	4.82	4.82
Headcount poverty rate (%)	21	1.55	0.34	0.85	0.51	1.55	1.36	0.51	0.17	

Note:
1. Column for initial year shows data in LCU.
2. For the unemployment and poverty rates, the base-year and simulation columns show base-year rate and simulation-specific final-year rates, respectively.

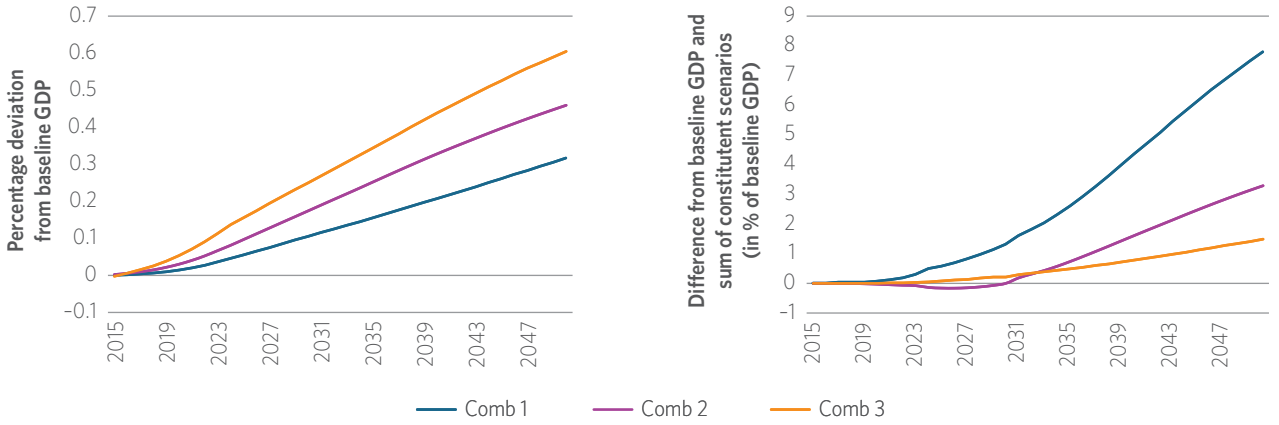
to migrate abroad. This suggests that a scenario could not only explore an increase in FDI in isolation but rather combine different elements, for example, higher productivity growth, higher FDI growth and lower migration.

Higher export world prices and productivity growth in exports do not necessarily lead to drastically higher export volumes in the absence of supply side reforms. In the absence of technological change, Bulgaria's exports are more constrained by supply factors, i.e. the declining labor force, than demand.[123] This suggests that without supply-side reforms or behavioral response in the case of sustained increases in world market prices, the additional demand is unlikely to affect exports volume significantly. As export prices increase, so do domestic prices. Private consumption rises as poverty declines (Table 8.2). The private sector also invests also significantly more, but the bulk of additional production ends up in the domestic market. In addition, a large share of the increase in export earnings is spent on increased imports for private consumption.

An overall increase in productivity in turn leads to a much higher increase

[123] The rising world market prices can also be interpreted as an improvement in the Bulgarian terms of trade.

FIGURE 8.3: COMBINATION SCENARIOS: DEVIATION OF GDP FROM BASELINE AND ADDITIONALITY



Source: Mams simulations.

in exports and GDP growth, supporting the conclusion that the key to increased exports lies on the supply side of the economy. Private consumption does not increase as much as under the export price scenario and poverty rate decline less. Yet both indicators show a considerable improvement relative to the baseline values. Similarly, higher FDI leads to a general improvement in macroeconomic indicators. In particular, exports growth is more pronounced, confirming the importance of enhancing the supply side of the Bulgarian economy.

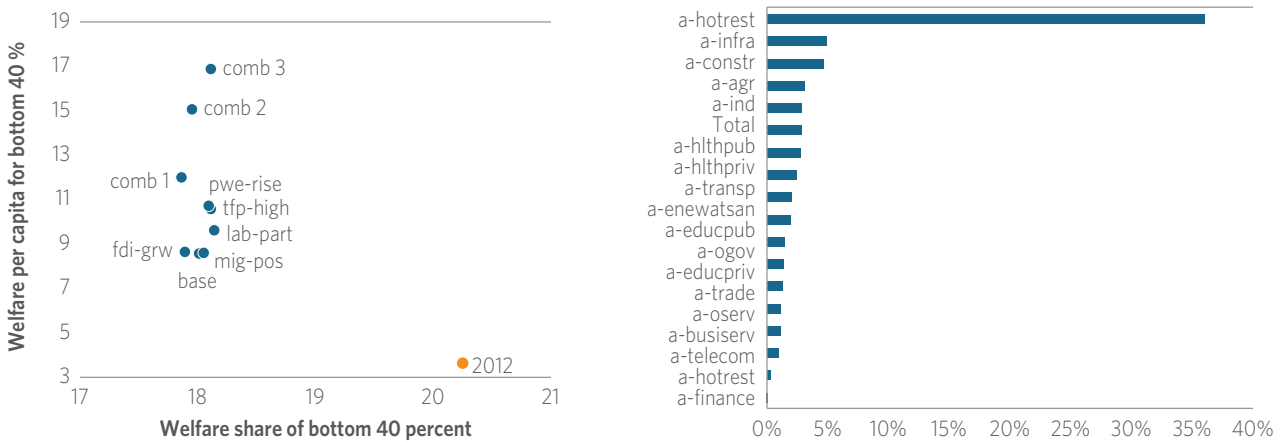
Increased return migration boosts growth but its economic impact is relatively small. There are two reasons for the relatively small economic impact. First, given the size of the Bulgarian expatriate community, the number of return migrants is likely to be limited. The second reason is that the amount of net remittances received in Bulgaria diminishes with larger return migration, depressing domestic consumption and growth.

Increasing labor force participation rates has a significant impact on growth and poverty. Similar, to the above mentioned migration scenario, the size of the labor force increases. However, the increase in the size of the labor force is much larger than under the migration scenario, the additional labor force enters the economy at a faster pace and there is no decline in remittances. As a result, real GDP per capita growth is up to 0.5 percentage points higher during the medium term and the poverty rate significantly lower at the end of the projection horizon.

Combining reforms can provide important synergies and accelerate growth. Reforms that exploit these synergies are likely to be particularly effective.[124] 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. The scenario which combines all one-off reforms has indeed the highest

[124] In World Bank (2013) we also discussed these synergies. For example, increases in the retirement age 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.

FIGURE 8.4: CHANGE IN SHARED PROSPERITY 2012–2050 AND VALUE ADDED SHARE OF LOW-SKILLED WORKERS



Source: Mams simulations.
Notes: *Data for 2012.

impact in terms of GDP growth. However, the scenario which combines productivity growth, FDI growth and net migration has highest additional impact.

The welfare per capita of the bottom 40 percent increases steeply under all scenarios and poverty would be essentially eradicated by the end of 2050. Under all scenarios, the headcount poverty rate falls below 1.6 percent while welfare per capita of the bottom 40 percent more than doubles. However, the welfare share of the bottom 40 declines (Figure 8.5). Part of this is driven by our assumption on government transfers. Government transfers can play an important role in reducing poverty. Under all the scenarios, tax rates are held at their *base* levels. On the government spending side, consumption and domestic transfers grow roughly at the same rate as the rest of the economy. This leads to distributional changes across households if certain types of factor incomes grow at rates that deviate from the average growth rate of the economy. For example, if capital and labor incomes grow more rapidly than transfers, then the population that is more active in the labor market and wealth will benefit disproportionately. Of our scenarios, a general increase in TFP growth produces the most favorable development in terms of shared prosperity.

How could shared prosperity be improved? One way could be to support industries where the value added share of the least educated is highest. One industry that stands out in Bulgaria (Figure 8.4b) is the tourism sector, which is also the largest employer of non-educated labor. Among the labor force with only primary or lower-secondary education, around 30 percent were employed in tourism in 2012. Therefore, further efforts in boosting tourism seem to be a feasible avenue to shared prosperity. Other activities fomenting the factor returns of the least educated are construction and government infrastructure services. Raising quality and equity in education would be an important factor for boosting share prosperity since it would enable more people to benefit from the gains of growth. Under many alternative scenarios, it is the households with secondary-level educational attainment that increase their earnings most. This can be explained by the low number of tertiary educated, which are fully employed early on during our study period, while the largest part of labor force has secondary-level

TABLE 8.3: TOTAL REAL CONSUMPTION PER-CAPITA BY HOUSEHOLD—ANNUAL GROWTH FROM FIRST TO FINAL REPORT YEAR (%)

	2012	base	pwe-rise	labpart	tfp-high	mig-pos
Rural hhds	5,802.5	2.3	3.3	2.6	2.9	2.3
Urban hhds	7,784.9	2.9	3.9	3.1	3.4	2.9
hhd-rur-labn	4,844.3	2.2	3.2	2.5	2.8	2.2
hhd-rur-labst	7,180.7	2.4	3.4	2.7	3.0	2.4
hhd-urb-labn	4,701.6	2.5	3.4	2.8	3.0	2.5
hhd-urb-labs	8,096.0	2.5	3.6	2.8	3.1	2.5
hhd-urb-labt	10,248.2	3.6	4.5	3.9	4.1	3.6
Total	7,202.3	2.7	3.8	3.0	3.3	2.7
	2012	**base**	**fdi-grw**	**comb-refo**	**comb-refo 2**	**comb-refo 3**
Rural hhds	5,802.5	2.3	2.3	2.9	3.9	4.2
Urban hhds	7,784.9	2.9	2.9	3.5	4.5	4.8
hhd-rur-labn	4,844.3	2.2	2.2	2.8	3.8	4.1
hhd-rur-labst	7,180.7	2.4	2.4	3.0	4.0	4.4
hhd-urb-labn	4,701.6	2.5	2.4	3.1	4.0	4.3
hhd-urb-labs	8,096.0	2.5	2.6	3.2	4.3	4.6
hhd-urb-labt	10,248.2	3.6	3.6	4.1	5.1	5.4
Total	7,202.3	2.7	2.8	3.4	4.4	4.7

Note: 2012 values are levs per capita.

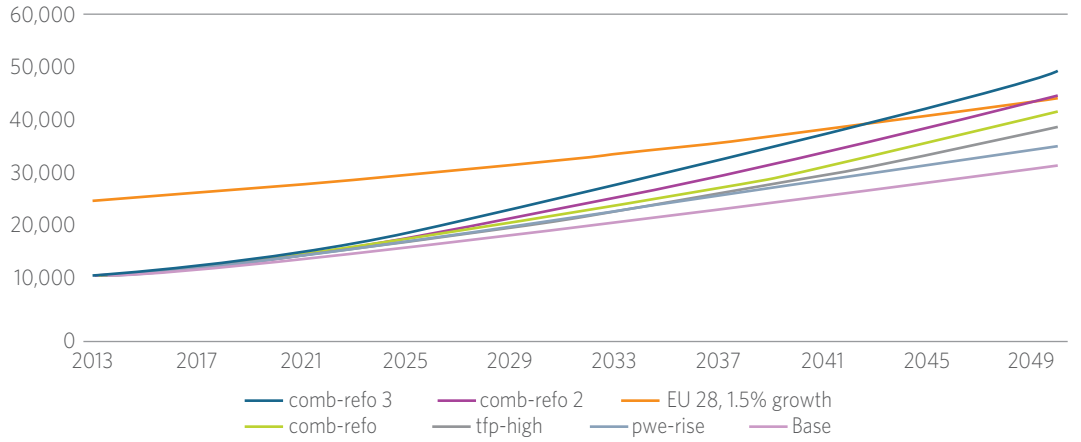
education. Hence a general employment growth is directed towards secondary-level labor force. Those without secondary education, benefit, less from stronger growth (Table 7.3). Moreover, removing inequalities that are the outcome of lack of opportunities for specific segments of the population due discrimination, lack of access to finance, corruption and rent-seeking can reduce opportunities for segments of the population and are like to suppress individual opportunities, making it difficult to reduce poverty and improve economic outcomes.

Under the most favorable reform scenarios, Bulgaria would catch up with the EU28 by 2040. The implementation of a combination of reforms would put Bulgaria on the path to convergence (Figure 8.5). Our simulations suggest that Bulgaria would need an annual growth of per-capita GDP of 3.6 per cent in order to reach the EU28 (weighted) average during the 2040s. The most promising avenue for accelerating Bulgaria's growth is improved productivity growth and higher exports earnings. Higher FDI, more immigration and increased labor force participation would also positively contribute to convergence.

8.2 Conclusion

Bulgaria's growth has been significantly below its potential. Despite solid real GDP growth per capita of 6.3 percent since 2000, Bulgaria remains the poorest EU country. Growth was less than what would have been expected given its level of GDP per capita in 2000 and despite, exceptionally large capital inflows, Bulgaria's labor productivity growth fell slightly short of the average of the benchmark countries. The income potential of Bulgaria's exports has stagnated since the mid-1990s and

FIGURE 8.5: REAL GDP PER CAPITA IN PPS EURO FOR EU28 AND BULGARIA FOR EACH SCENARIO (IN 2012 PRICES)



Source: Mams simulations.

Bulgaria has not been able to boost medium- to high-tech exports though Bulgaria has been exporting them successfully in the past. Services, some of which are inputs for many other sectors, remain constrained by lack of competition, human capital and weak governance. Firm-level data suggests that firms are working below their productive potential and that misallocation of factors of production has, in fact, increased in recent years.

Yet, outside of Bulgaria's traditional economic structure companies succeed. Bulgaria's ICT sector has become one of the largest among the benchmark countries, contributing nearly 6 percent to gross value added in 2013. Several Bulgarian SMEs in this field have been able to attract EU funding, thus, navigating access to finance problems that other new enterprises face. One of these companies is Ontotext, which with only 55 employees, produces some of the most advanced semantic technologies for the web. Another Bulgarian export success story is Walltopia, one of the world's largest producers of climbing walls for gyms.

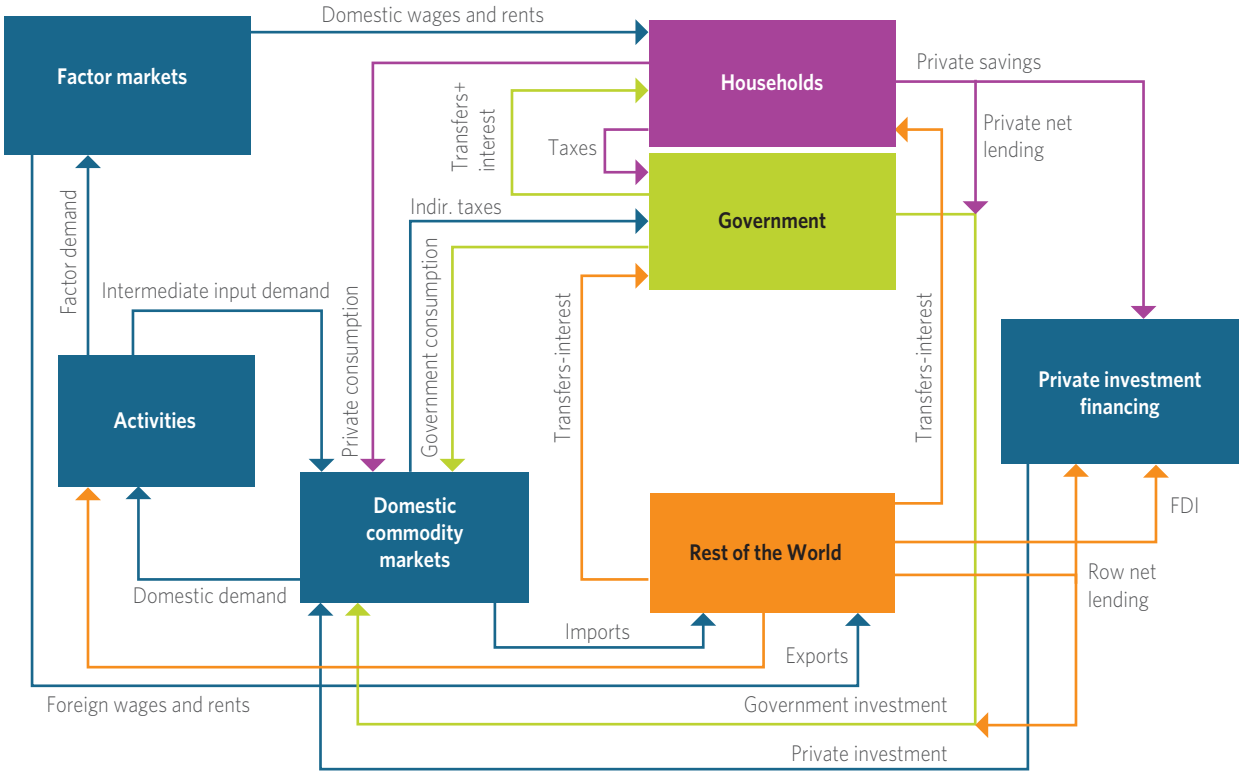
Improving the quality and equity of education and strengthening governance across seem key for accelerating growth and improving the welfare of all Bulgarians. Better governance, whether a less impartial judiciary, regulatory certainty, a lower perception of corruption or more political stability, will be important to ensure that these success stories can emerge in all sectors of the economy. Improving education will be important for ensuring that domestic and foreign firms find workers with the skills they need and to boost innovation. In its Program Declaration, Bulgaria's new Government declared that it would seek to reform the justice system, improve the investment climate, stimulate competition and invest in education and innovation. In January 2015, the Bulgaria Parliament adopted an updated justice sector strategy. This bodes well for Bulgaria's future. If fully implemented, these measures could put Bulgaria on a faster track to convergence

Annex 8.1: Key Baseline Assumption

The simulations are based on simulations with the MAMS (Maquette for MDG Simulations) a dynamic CGE model for medium and long-term scenario analysis. The key component fof the model database is a Social Accounting Matrix (SAM), built for this analysis using 2012 data from national accounts, household budget surveys, labor force data and fiscal and trade statistics. In the model, activities ("firms") produce outputs which are sold at home or abroad and use their revenues to buy intermediate inputs, hire labor and other factors of production and pay taxes (Figure 8.6). Their decisions are driven by profit maximization. MAMS distinguishes between households, government, and the rest of the world. Households receive income from wages, transfers from the government, remittances and interest (on government securities or from the rest of the word) which they use for direct taxes, savings and consumption. The government gets its revenues from taxes and transfers from abroad and spends it on consumption, transfers to households and investment. The government can also borrow externally and domestically for supplementary investment funding.

In our model and database, the Bulgarian economy consists of 13 private economic sectors, 3 types of workers and 5 different households. The SAM (and the other parts of the database of the Bulgaria MAMS) disaggregates the private sector into 13 sectors which are broadly in line with the NACE Rev. 2 classification of business sectors. The model distinguishes between workers/households with different level of education (less than completed secondary education, completed secondary

FIGURE 8.6: STRUCTURE OF THE MODEL



Source: Lofgren and Diaz-Bonilla 2010.

education or completed tertiary education) and urban and rural households.[125] Consumption parameters for the five household groups were estimated from the Bulgaria 2007 household budget survey.[126]

Bulgaria is modeled as a small open economy. This means it has no impact on world import and export prices. On the supply side of each sector, the shares of goods that are exported and sold domestically depend on the relative prices in the world and domestic markets; similarly, on the demand side, the sector shares that are met from imports and domestic sources also depend on relative prices. The rest of the world sends foreign currency to Bulgaria in the form of transfers to the government and the households, FDI, loans and export payments, which Bulgaria uses to finance imports. The balance of payment clears via adjustments in the real exchange rate. Private investment financing is provided from domestic private savings (net of lending to the government) and FDI.

Growth is endogenous. The economy grows due to accumulation of capital (determined by investment and depreciation), labor, other factors (on the basis of exogenous growth data) and due to improvements in total factor productivity (TFP). Apart from an exogenous component, TFP depends on the levels of government capital stocks and exposure to foreign trade.

MAMS includes a built-in poverty module, which assumes that the distribution of per-capita consumption follows a lognormal distribution parameterized on the basis of the observed Gini coefficient. This information and data on the national poverty rate are used to compute standard Foster-Green-Thorbecke poverty indicator[127] as well as shared prosperity indicators. The model assumes that the distribution within each of the 5 household types stays constant as the average income level for the household type changes. A change in the overall Gini coefficient reflects changes in the relative welfare positions of different household types. The shared prosperity indicator can thus be calculated using information on the average consumption per capita of each household type in each year and the overall distribution in consumption across all households.

The baseline scenario is designed to reflect macro outcomes in the absence of major new policy adjustments. Projections of population and working-age population are taken from Eurostat (Europop 2013). The labor force participation (LFP) rate is determined by assuming that age-specific labor force participation rates remain constant over time. As elderly workers have a lower LFP rate (World Bank 2013) and the share of elderly workers increases over time, the economy wide LFP rate declines towards the end of the projection horizon. Unemployment, which in the model captures un and under-employment, is endogenously determined for each type of worker.[128] The model assumes that the unemployment rate cannot go below 5 percent for low-skilled workers and 4 percent for high-skilled workers. Total factor productivity is assumed be around 2.2–2.5 percent in the first years of the study and decline to 1.2 percent per year in the long-term. This is slightly above the average TFP growth projected for the EU (European Commission

[125] There are five types of households in the model (rural with primary education, rural with secondary education or higher, urban with primary education, urban with secondary education and urban with tertiary education). In the rural area, households with secondary and tertiary level household heads were merged into one group due to small number of households with the highest educational attainment within the Bulgaria 2007 household survey data.

[126] The 2007 Bulgaria household budget survey is the latest available data.

[127] The Foster-Green-Thorbecke poverty indicator measures the share of population with an income above an agreed poverty line. For the purpose of this exercise we have used PPP adjusted $1.25 per day.

[128] There are three types of workers: workers with less than completed secondary education, with completed secondary education and with competed tertiary education.

2012). In line with World Bank (2013a), direct taxes are projected to increase from 5.1 percent of GDP to 6.1 percent of GDP and indirect taxes from 15.6 percent and 16.7 percent of GDP. Government finances are strained by the demand for age-related government services. The government is assumed to run a small deficit through the projection period, which is largely financed through additional domestic borrowing.

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