# 1H//780123(039) BRUNO S. SERGI

ENTREPRENEURSHIP AND GLOBAL ECONOMIC GROWTH

MODELING ECONOMIC GROWTH IN CONTEMPORARY BELARUS

## **Table of Contents**

List of Figures	lX
List of Tables	XV
About the Editor	XXI
About the Contributors	xxiii
Introduction to Entrepreneurship and Global Economic Growth Series	xxxv
Introduction to Modeling Economic Growth in Contemporary Belarus	xxxix
Acknowledgments	xlv
Chapter 1: Belarus in Global Ratings: Position and Dynamics Nina Bohdan and Veronika Garkavaya	1
Chapter 2: FinTech and Commercial Banking Development  I Belarus  I Belarus  I Karachun, Alexey Korotkevich and Dzmitry Marushka	25
Chapter 3: Future of the Belarusian IT Sector: From IT Outsourcing to Industry 4.0?  Uladzimir Parkhimenka	41
Chapter 4: Industrial Development, Structural Changes, and Industrial Policy in Belarus  Yyacheslav Shutsilin, Andrey Filiptsou and Yuliya Vashkevich	63

Chapter 5: Technological Parks, Clusters, and Innovation Networks: Expected Transformation of Innovative Sector Alexey Korotkevich, Irina Karachun, Dzmitry Marushka and Hanna Vashchyla	73
Chapter 6: Belarus on the Way to Sustainable Development: Circular Economy and Green Technologies Olga Shimova	89
Chapter 7: Changes in Fuel and Energy Industry: What to Expect after the Launch of Belarusian Nuclear Power Plant?  Tatsiana Zoryna	107
Chapter 8: Agrarian Sector: Trends, Scenarios, Policy Natallia Kireyenka	129
Chapter 9: How to Make Money on Geography: Transportation and Logistics Services in Belarus  Anna Koroleva and Alina Dutina	147
Chapter 10: The Development of the Tourism and Hospitality Industry  Aliaksandr I. Tarasionak and Viktoryia M. Dziadok	163
Chapter 11: Education and Innovation Growth: Establishing Entrepreneurial Universities  Alena Vankevich	181
Chapter 12: Public–Private Partnerships and Social Innovation in Belarus  Maryna Karpitskaya	193
Chapter 13: Administrative Arrangement, Spatial Development, and Regional Policy in Belarus  Vladimir S. Fateyev	205
Chapter 14: Smart Cities Volha Holubava	223

Chapter 15: What Belarus Produces, Exports, and Imports: Analyzing Trade in Value Added Aliaksei Bykau and Stanislau Vysotski	235
Chapter 16: Foreign Investments and TNCs  Aleksey V. Danilchenko, Elena V. Bertosh, Pavel P. Artsemyeu and Roman D. Osipov	249
Chapter 17: The Policy of the National Bank of the Republic of Belarus to Ensure Financial Stability: Achievements, Problems, and Prospects  Ludmila Stefanovich	269
Chapter 18: Improving Fiscal Policies: Evolution or Revolution?  Alena Kireyeva and Irina Loukianova	289
Chapter 19: Economic Growth in Belarus: Analysis, Forecasts, and Scenarios  Vladimir Shimov, Aliaksei Bykau and Tatsiana Khvalko	307
Chapter 20: Foreign Economic Policy of Belarus: Integration and Multivector  Alla Pranevich and Aksana Shkutsko	323
Index	341

## **List of Figures**

Chapter 1		
Figure 1.1	Ranking Positions of Belarus From the Project "Doing Business."	
Figure 1.2	Rankings in Doing Business Topics – Belarus	
Figure 1.3	Ease of Doing Business Score on Doing Business Topics – Belarus.	
Figure 1.4	Dynamic of Ranking ICT Development Index for Belarus. IDI, ICT Development Index; ICT, information and communication technology	1
Figure 1.5	Percentage of Individuals Using the Internet (2000–2017) in Belarus and Commonwealth of Independent States (CIS)	1
Figure 1.6	Information and Communication Technology (ICT) Capacity Index	1
Figure 1.7	Level of E-Government Development in Belarus.	2
Chapter 2		
Figure 2.1	ATMs per 100,000 Adults from 2008 to 2016	3
Figure 2.2	Belarus Digital Infrastructure in 2018	3.
Chapter 3		
Figure 3.1	Dynamics of Computer Services Exports in Balance of Payment of the Republic of Belarus	4:
Figure 3.2	Dynamics of Production Structure in High-Tech Park Companies. ICT, information and communication technology	48
Figure 3.3	Dynamics of Computer Services Exports Per Capita in the Republic of Belarus in 2001–2018 and	1,
	Computer Services Exports Per Capita in Selected	50

Figure 3.4	Dynamics of Average Salary Levels in ICT Sector and at HTP Companies in Comparison to the National Level	53
Figure 3.5	Dynamics of Information and Communication Technology Sector's Gross Value Added Share in the Total Gross Value Added in the Republic of Belarus in 2009–2017, in percent	53
Figure 3.6	Dynamics of High-Tech Park Company Number in 2009–2018	56
Figure 3.7	Dynamics of Monthly Revenues per Employee and Salary at High-Tech Park Companies	58
Chapter 4		
Figure 4.1	GDP Structure in the Republic of Belarus and the World	64
Figure 4.2	The Structure of Fixed Capital in the Republic of Belarus by Sectors of the Economy at the Beginning of 2018	65
Figure 4.3	The Structure of Fixed Capital and Employment in the Republic of Belarus by Organizations of Various Forms of Ownership	66
Figure 4.4	Industrial Production in Belarus, in percent from 2011 to 2017	66
Figure 4.5	Industrial Policy Directions	67
Chapter 5		
Figure 5.1	The Main Types of Technology Parks, Residents, and Their Products	75
Figure 5.2	Number of Residents and Number of Employees of Residents of Technoparks of Belarus	
E'. 52	in 2018	78
Figure 5.3	Dynamics of Indicators of Knowledge-Intensive GDP, Innovative Activity of Organizations, and the Coefficient of Inventive Activity for	0.1
Figure 5.4	2013–2017  Number of Employees with Academic Degrees	81
	Involved in Research and Development for 2010–2017: (a) PhDs; (b) Doctors of Science	83
Chapter 6		
Figure 6.1	The Sustainable Development Goals	92

Chapter 7	
Figure 7.1	Fuel and Energy Industry of the Republic of
E' 50	Belarus Management Structure
Figure 7.2	Belarusian Energy System Chart
Figure 7.3	Dynamics of Peat Production and Peat Product Export
Figure 7.4	Dynamics and Structure of Petrochemical Products Production
Figure 7.5	Dynamics and Relative Weight of Natural Gas Consumption (Including Associated Gas) in Belarusian Energy System (BES)
Figure 7.6	Dynamics of GDP Energy Intensity (in percent to 2010).
Chapter 9	
Figure 9.1	The Share of Belarusian Exports in the World Shipping Services
Figure 9.2	Structure of Cargo Turnover by Types of Transport, in percent of the Total
Figure 9.3	Export and Import of Transport Services (According to the Balance of Payments Methodology, Million Dollars)
Figure 9.4	The Share of Investment (percent) in Fixed Assets in the Transport Industry (in the Total Investment).
Figure 9.5	Highways of Belarus
Figure 9.6	European Transport Corridors
Chapter 10	
Figure 10.1	Dynamics in the Number of Organizations Engaged in Tourist Activities, 2005–2018
Figure 10.2	Dynamics of the Structure of Enterprises by Types of Tourist Activities, 2005–2018
Figure 10.3	Distribution of Hotels With Star Rating by Regions and Minsk, 2018.
Chapter 11	
Figure 11.1	Number of Specialists per 10,000 Employed in the Economy, 2017
Chapter 13	
Figure 13.1	Administrative Structure in the Republic of Belarus.

Figure 13.2	Main Subjects (Public Authorities) Developing, Coordinating, and Implementing the Regional Policy in the Republic of Belarus	218
Chapter 14		
Figure 14.1	Housing Fund in the Republic of Belarus	226
Figure 14.2	Improvement of Housing Stock in 2017, in percent.	227
Chapter 15		
Figure 15.1	Values of Direct and Indirect Value Added	
	Components in Some Industries of the Belarusian Economy	244
Figure 15.2	Domestic Value Added Share in Exports, as a Share	277
C	of Gross Exports, for a Number of Countries of	
T: 4.5.0	Central and Eastern Europe in 2011, rel. units	245
Figure 15.3	Structure of Major Gross Exports Items and Value Added Component of Gross Exports of the	
	Republic of Belarus, and Import Intensity of	
	Exports (IIEs) in 2016	246
Chapter 16		
Figure 16.1	The Structure of FDI in the Economy of the	
	Republic of Belarus.	251
Figure 16.2	The Ratio between FDI in the Form of Equity Participation and FDI in the Form of Profit	
	Reinvestment (Million USD)	252
Figure 16.3	The Prevalence of the City of Minsk and the Minsk	
•	Region in the Distribution of Incoming FDI	264
Figure 16.4	The Prevalence of the City of Minsk and the Minsk	264
Figure 16.5	Region in the Regional GDP	264
rigule 10.5	Employed in Enterprises in Various Forms of	
	Ownership	265
Chapter 18		
Figure 18.1	EU-28 Tax Revenues, 2000, 2010, 2016	293
Figure 18.2	Total Receipts From Taxes and Compulsory Actual	
	Social Contributions, 2010–2016	293
Figure 18.3	Level of Centralization of Financial Resources in	204
Figure 18 4	Different Countries in 2017, percent of GDP Rates of the Main Taxes in 2018	294 294
1211LL 10.4	INDIAN OF THE INTERNAL FUNCTION OF THE AND A	/ 74

	List of Figures	xiii
Figure 18.5	Dynamics of Centralization Level, in percent	295
Figure 18.6	Structure of Tax Revenues of the Budget of the Republic of Belarus (Social Insurance	
	Contributions not taken into Consideration)	295
Figure 18.7	Quality Structure of the Tax Incentives	300
Chapter 19		
Figure 19.1	Decomposition of Economic Growth in Belarus From 2001–2017, in percent	311
Figure 19.2	Dependence of Economic Growth in Belarus (in percent) on Changes in the World Oil Prices (in	
	percent to the Previous Year)	311
Figure 19.3	Limitation of Economic Growth of Belarus by the Balance of Payments	312
Figure 19.4	Equivalent to the Foreign Trade Balance by Type of Economic Activity, USD Million at the Nominal	21.5
	Exchange Rate, 2014	315
Figure 19.5	Forecast of Changes in the Contribution of Main Products to GDP and the Trade Balance in	
	2014–2025 Million USD	318

### **List of Tables**

Chapter 1		
Table 1.1	Belarus's Human Development Index Trends Based on Consistent Time Series Data and New	
	Goalposts	3
Table 1.2	Belarus's Human Development Index (HDI) and Component Indicators for 2017 Relative to Groups of Countries.	4
Table 1.3	Belarus's Inequality-adjusted Human Development Index (IHDI) for 2017 Relative to Selected Groups of Countries.	5
Table 1.4	Belarus's GDI for 2017 Relative to Selected Groups of Countries.	6
Table 1.5	Information and Communication Technology (ICT) Capacity Index	13
Table 1.6	Dynamics of Ranking the Global Index of Innovations – Belarus	15
Table 1.7	The Global Innovation Index and Its Components for Belarus in 2015–2018	15
Table 1.8	Quality of Life Index (Minsk, 2019)	17
Table 1.9	Belarus' Rank in the Rule of Law on Basic	19
Table 1.10	Principles	19
i dole 1.10	Governance in Belarus	20
Table 1.11	Belarus' Place in the World Arena	21
Chapter 2		
Table 2.1	Account Ownership at a Financial Institution	
	or with a Mobile-Money-Service Provider in	2.1
T-11 22	Belarus.	31
Table 2.2	Digital Payments Segment in Belarus	35

Chapter 5	
Table 3.1	Main Statistical Indicators of the Belarusian Information and Communication Technology (ICT) Sector Development in 2011–2017
Table 3.2	Dynamics of High-Tech Park Development Indicators in 2011-2017.
Table 3.3	Selected Software Startups with Belarusian Origin or Connections
Chapter 5	
Table 5.1	Tax and Custom Preferences of the Chinese-Belarusian Industrial Park Residents
Table 5.2	Selected Innovation Indicators of the European Innovation Scoreboard (EIS $-2017$ ) for Belarus
Chapter 7	
Table 7.1	Total Installed Capacity of Belarusian Energy System as of January 1, 2019
Table 7.2	Energy Balance in the Republic of Belarus in 2017 (Thousand Tons in Coal Equivalent)
Table 7.3	Foreign Trade Turnover of Power and Energy Resources in the Republic of Belarus during 2010–2017 (Thousand Tons in Coal Equivalent)
Table 7.4	Indicators of Energy Security in the Republic of Belarus.
Table 7.5	Production of Electrical Energy by Renewable Energy Resources Connected to Electrical Network of "Belenergo"
Chapter 8	
Table 8.1	The Main Socioeconomic Indicators of Agricultural Development in the Republic of Belarus, 2010–2017
Table 8.2	Structure of Agricultural Products by Types and Categories of Farms, 2010–2017 (Percentage of
Table 8.3	Total Agricultural Output; at Current Prices) Achievement of Indicators From the State Program for the Development of Agrarian Business in the Republic of Belarus for 2016–2020 for the Production of Agricultural Products. Plays
	Production of Agricultural Products, Raw Materials, and Food, 2017.

Table 8.4	Production of Agricultural Products Per Capita in the Republic of Belarus, 2010–2017, kg	138
Table 8.5	Consumption Per Capita of Staple Food in the	139
Table 8.6	Republic of Belarus, 2010–2017, kg Integral Assessment of Food Security in the	135
	Republic of Belarus from the Standpoint of Physical Accessibility, 2010–2017, Coefficient	139
Table 8.7	General Balance of Foreign Trade in Belarus in Agricultural Products and Foodstuffs, 2010–2017,	1.46
Table 8.8	\$ Million	140 142
Chapter 9		
Table 9.1	The Volume of Cargo Transportation by Types of Transport in 2010–2018, Thousand Tons	151
Table 9.2	Dynamics of Freight Turnover by Types of Public Transport from 2010–2018, Billion tons/km	152
Chapter 10		
Table 10.1	Dynamics of the Number of Main Organizations From the Tourism and Hospitality Industry, 2005–	
T 11 10 2	2018	165
Table 10.2	Occupancy and Capacity of Hotels and Similar Accommodation Facilities in Belarus, 2000–2018	167
Table 10.3	The Level of Development of Accommodation Sector in Belarus in Comparison with Other	
Table 10.4	Countries, beds per 1,000 Inhabitants  Concepts and Indicators for Assessing Tourism	167
	Competitiveness of Countries	172
Table 10.5	Assessment of Tourism Competitiveness in Belarus	
	and Neighboring Countries, $\tilde{I}_{\text{in}}$	175
Chapter 11		
Table 11.1	Dynamics of the Belarus Education System, 2010–2017	182
Chapter 12		
Table 12.1	Analysis of the Institutional Conditions for Implementing Social Innovation in the Framework of PPP Projects in the Republic of Belarus	199

#### xviii List of Tables

Chapter 15	
Table 13.1	Territory, Population, and Administrative Structure in the Republic of Belarus
Table 13.2	Life Expectancy at Birth in the Regions of the Republic of Belarus in 1990–2017 (Number of Years)
Table 13.3	Share of Belarusian Regions and Minsk in GDP by Some Socioeconomic Indicators in 2018, in percent.
Chapter 15	
Table 15.1	Trade Balance of Belarus, by Basic Products, Billion USD in Current Prices
Table 15.2	Gross Value Added by Sector, Percent to GDP
Chapter 16	
Table 16.1	Rating of the Top 2000 of the Largest World Companies (According to <i>Forbes</i> ), Having Representative Offices in the Republic of Belarus.
Table 16.2	Dynamics of the Main Forms of Foreign Economic Activity (in percent to the Number of Respondents).
Table 16.3	The Dynamics of the Factors Hindering the Development of Foreign Economic Activity of the Enterprise (in percent of the Number of Respondents)
Table 16.4	Indicators of the Doing Business 2018 Report
Chapter 17	
Table 17.1	Assets of the Financial Sector in the Republic of Belarus, Million USD
Table 17.2	The Structure of Assets in the Financial Sector of the Republic of Belarus, in percent
Table 17.3	The Base Indicators of the Banking Sector in the Republic of Belarus as of January 1, 2019
Table 17.4	The Refinancing Rate of the National Bank in the Republic of Belarus and Core Inflation
Table 17.5	De-dollarization of the Economy
Chapter 19	
Table 19.1	Macroeconomic Indicators of the Belarusian Economy, in Dynamics with Breakdown by the Periods, 2000–2018

	List of Tables	xix
Table 19.2	Scenarios of Economic Growth for 2023–2025	317
Chapter 20 Table 20.1	The Development of Integration Engagement between the Republic of Belarus and the Countries of the Former Soviet Union	336