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ENTREPRENEURSHIP
AND GLOBAL
ECONOMIC GROWTH

MODELING
ECONOMIC
GROWTH IN
CONTEMPORARY
POLAND

Modeling Economic Growth in Contemporary Poland

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Modeling Economic Growth in Contemporary Poland

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liberalizacji. Wnioski dla sektora ciepłownictwa systemowego (2015). In addition to his academic and research activity, he advised numerous government bodies and committees on restructuring and regulation of energy sector as well as competition and energy policy. Currently, he is a Deputy Director of the Institute of Economics at the Polish Academy of Sciences in Warsaw.

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Introduction

Over the past 15 years, Poland has been among the fastest-growing countries in the European Union. It was the only country in the EU that avoided economic recession during the global crisis in 2008–2009. Trying to explain the sources of Poland's economic success and decouple it from simple stylised facts on economic convergence anchored in the neoclassical growth models, this book shows how the Polish economy rapidly moved away from the communist economic system, which had ended up in an economic collapse, and took the road to unprecedented growth in income and the quality of life. The authors apply the three-way perspective on drivers and barriers to Poland's economic growth.

In the first part of the monograph, special attention is given to the transition and contemporary challenges of the Polish economy. Chapter 1 focuses on the main drivers of Polish economic growth from the perspective of the past, the present and the future. It emphasises the role of capital accumulation and labour force in explaining the growth of the Polish economy. The experience of Poland from the economic transition is then discussed in depth in Chapter 2. The authors deal with four aspects of the changes in the Polish economy, i.e. stabilisation, liberalisation, institutional reforms and privatisation. The following chapter outlines the topic of income convergence process among regions in Poland. The empirical analyses included in this chapter provide important insights into the effectiveness of regional policy in Poland. Chapter 4 shifts considerations towards the transformation of the Polish economy into the Green Economy (GE). The authors apply the Green Transformation Index to analyse the transformation towards GE in Poland. The current issues related to economic resilience of the Polish economy and food security are addressed in the next two chapters. The former studies the impact of the Covid-19 pandemic and the war in Ukraine on the situation of Polish consumers and the resulting behaviour in the context of business–consumer relations. The latter identifies and reviews food security challenges that governments and societies have faced during the Covid-19 crisis and beyond, with specific emphasis on Poland.

The second part of the monograph is dedicated to the issues related to the institutional and policy framework of the Polish economy growth. In Chapter 7, the authors investigate the impact of Polish monetary policy on investment outlays in contexts of high uncertainty. The fiscal and monetary policy are also subject to a broader discussion in the next chapter. It tackles dependencies between fiscal and monetary policy and the capital market in Poland. Chapter 9 is to deepen and widen the topics concerning mutual similarity among the

characteristics of the financial sector (including the monetary policy by the central bank) and the characteristics of the real sector (e.g. economic growth), as well as cross-similarity between both sectors in Poland and selected Central and Eastern European countries. The further three chapters present non-macroeconomic policies that are key for reaping the sustainable growth in Poland. The first one portrays and evaluates the key developments in the innovation policy and national innovation system of Poland. Theoretical considerations in this chapter are supported by the empirical analyses of changes in Poland's innovation policy and innovation system frameworks. The second one shows new opportunities in Poland's decarbonisation energy policy. More specifically, it considers from an economic perspective the potential role of nuclear power in decarbonising the Polish power sector. The last part of the triptych tries to evaluate the significance of the common agricultural policy to the growth and development of agriculture and to structural transformations therein triggered primarily by the influx of additional CAP funds into Poland.

The final part of this book shows prospects of economic growth in Poland. These themes are discussed from the micro, mezo and macro perspectives. Chapter 13 tries to address the question whether imitation or innovation is the right key to the economic growth in Poland from both the conceptual and the empirical perspectives. The next chapter describes the present state and the trends in the ICT sector, which today is considered to be one of the most progressively developing part of the Polish economy. Changing the perspective, Chapter 15 presents the evolution of Poland's participation in global value chains since the mid-1990s, including its key determinants. Two further chapters bring attention to the challenges faced by the Polish companies. The first one provides a better understanding of the attitude of Polish companies towards diversity policies and reveals differences in actual and expected levels of gender diversity in corporate boards. The second one identifies the Polish companies' stability in the crisis situations especially during the Global Financial Crisis of 2007–2009 and COVID-19 crisis. This part of the monograph closes Chapter 16 relating to entrepreneurial ecosystems in Poland. It discusses and verifies the role of the entrepreneurship ecosystem in the development of enterprises in Poland.

This book is suitable for practitioners and academics interested in discovering the foundations for the Polish growth miracle and finding whether this growth will likely last in the future.

Preface

Leszek Balcerowicz

Warsaw School of Economics

Warsaw, 13th April, 2023

The post-communist transition in Europe is one of the most important transformations in modern history. Like other radical shifts in history, its timing and its crucial events were totally unexpected. Market-oriented reforms had been introduced under democratic political regimes in the post-communist transition. Therefore, the transition was both economic and political.

Poland was a pioneer in this transition respect entering the path towards a well-functioning market economy. The exceptional growth performance of the Polish economy after 1989 obviously poses questions about its causes. This book tries to give an answer to this question raised by tackling the most important issues from Poland's recent and past: the sources of economic success, the process of transition and structural achievements.

Poland's transition is analysed in the micro, mezo and macro perspectives and takes into account: the whole economy, financial market, fiscal policy, monetary policy, entrepreneurship behaviour and new technologies. The authors provide in-depth analyses and consider the changes in the Poland's external conditions: the 2007–2009 global financial crisis, the Covid-19 pandemic and the war in Ukraine. This book sheds light on actions providing food security, implementing a diversity policy and response to climate changes in the context of the Polish economy and firms. In my opinion, it deserves to be thoroughly read.

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Part 1
Transition and Contemporary Challenges of
the Polish Economy

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Chapter 1

Factors of Polish Economic Growth – Past and the Future

Jakub Bis and Jakub Czerniak

Abstract

Research Background: Authors investigate the key factors contributing to Poland's economic growth since 1989, including capital accumulation, technological progress, labour force and productivity and European integration.

Purpose of the Article: Through the analysis of macroeconomic indicators, comparison with selected countries and review of relevant literature and policies, authors aim to offer a comprehensive understanding of Poland's growth story, providing valuable insights for informed policy recommendations and fostering sustainable economic development.

Methodology: This study utilises a mixed-methods approach, combining quantitative analysis of macroeconomic indicators with qualitative examination of literature, policy documents and expert opinions. This comprehensive analysis allows us to assess Poland's economic growth, compare its performance with selected countries and identify underlying factors driving growth and potential future challenges.

Findings: Understanding the drivers of Poland's growth is essential for effective policy formulation and promoting sustainable development, while acknowledging the potential threats to maintaining its high growth rate such as modest innovation performance, population ageing, growing public debt and reliance on coal-based energy. The findings provide valuable insights into Poland's economic trajectory and form the basis for informed policy recommendations.

Keywords: GDP growth rate; GDP per capita; capital accumulation; labour force; growth risks; population ageing

Introduction

The Polish economy, located in Central Europe, has a dynamic history transitioning from a centrally planned system under communist rule to a thriving market-oriented economy. The fall of communism in 1989 marked a turning point, with Poland implementing economic reforms, including liberalisation, privatisation and stabilisation measures. EU membership in 2004 further accelerated growth, granting access to the Single Market and attracting investment. Over the past three decades, Poland has emerged as a leader in European economic growth. According to World Bank data, from 1990 (\$1,731 in current prices) to 2021 (\$17,999 in current prices), Poland's Gross Domestic Product (GDP) per capita increased over tenfold (World Bank, 2023d). Following the 1989 political transformation, the economy underwent numerous reforms, adopting policies of openness to global markets and integrating with the European Union. Despite rapid growth, Poland still lags behind the most advanced European economies. In 2021, its GDP per capita in purchasing power standard (PPS) was 77% of the EU average.

Understanding the factors driving Poland's economic growth after 1989 is crucial for formulating effective policies and fostering sustainable development. With a diverse economy, grasping the interplay of various factors can help navigate challenges and capitalise on opportunities. This chapter examines key factors contributing to Poland's economic growth, including capital accumulation, technological progress, labour force and productivity and European integration. By exploring these factors, we aim to provide insights into Poland's growth trajectory and potential future developments. The last section of this chapter also presents potential threats to maintaining the high growth rate of Polish GDP, such as modest innovation performance, population ageing, growing public debt and energy mix based on coal.

Polish GDP Growth in Comparison With Selected Countries.

Fig. 1 shows the rate of growth of Polish GDP, from 1993 to 2021, compared to the other Visegrad Group countries (Czechia, Hungary and Slovak Republic) and to its neighbouring country (and the biggest European economy as well) – Germany. During the last almost 30 years, the Polish economy usually experienced a higher rate of growth than the above-mentioned countries, both in times of expansion, and in times of slowdown or even recession. Poland demonstrated remarkable resilience during the 2009 global financial crisis. While most countries experienced economic contractions, Poland's economy continued to grow, albeit at a slower pace (2.83%). Like other countries in the region, Poland's economy contracted in 2020 due to the COVID-19 pandemic (−2.02%). However, the contraction was less severe than in Czechia (−5.50%) and the Slovak Republic (−3.37%).

Poland's economy rebounded in 2021 with a growth rate of 6.85%, showcasing its ability to recover from economic shocks. Although Germany has the largest economy in Europe, Poland's growth rates often exceeded Germany's during the

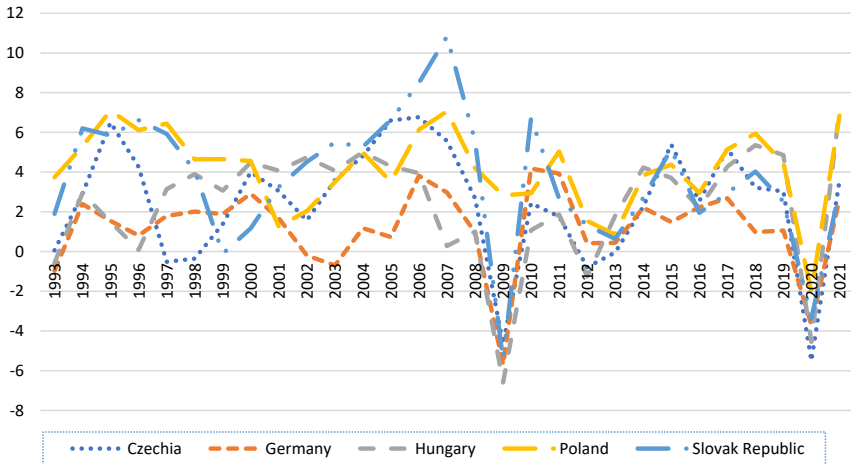


Fig. 1. GDP Growth (Annual %) 1993–2021 – Czechia, Germany, Hungary, Poland, Slovak Republic. *Source:* Own study based on <https://data.worldbank.org/> (World Bank, 2023c).

period of analysis. This suggests that Poland has made significant progress in catching up with more developed Western European economies. According to the latest OECD data, Poland's GDP rate of growth was 4.9% in 2022, but it is expected to shrink to 0.9% in 2023 and 2.4% in 2024 (OECD, 2023).

Capital Accumulation and Its Importance in Polish Economic Growth

Capital accumulation has played a significant role in driving Poland's economic growth. By increasing the stock of productive assets and enhancing the quality of these assets, capital accumulation supports higher output levels, improves productivity and fosters long-term growth. Gross fixed capital formation (GFCF) indicator represents the value of additions to fixed assets purchased by businesses, government and households within a country's economy. It is a measure of net investments in physical assets, such as infrastructure and machinery. According to the World Bank, Poland's GFCF as a percentage of GDP has remained relatively stable, hovering around 18%–20% since the early 1990s. The GFCF in Poland increased from \$24.78 billion in 1995 to \$115.8 billion in 2019, reflecting a strong trend in capital accumulation (World Bank, 2023b). Another indicator measure is gross domestic savings – the difference between a country's GDP and its total consumption. It provides an insight into the availability of domestic resources for investments in capital accumulation. World Bank data shows that Poland's gross

domestic savings increased from \$31.04 billion in 1995 to \$168.97 billion in 2021 (World Bank, 2023e).

Investments are a crucial factor in socio-economic development, especially for underdeveloped countries. K. Rittenbruch emphasises the role of export-oriented investments, referred to as ‘base activity’ (Rittenbruch, 1968). In the ‘big push’ theory, P. N. Rosenstein-Rodan proposes autonomous investments, mainly in infrastructure, financed from public sources as a developmental impulse for underdeveloped areas (Rosenstein-Rodan, 1943). A. O. Hirschman suggests that the development of underdeveloped areas can be achieved through investments in ‘bottlenecks’ of development, and the surpluses obtained in this way can be reinvested to stimulate economic growth. These areas should implement appropriate incentives and investment incentives to stimulate the development of relevant sectors of the economy. A. O. Hirschman also warns of the social and psychological barriers present in underdeveloped countries, which can hinder development convergence (Hirschman, 1958). Like Rittenbruch and Hirschman, Kaldor highlights the crucial role of exports in accelerating the economic growth, arguing that export activity contributes to improving efficiency through internal and external savings. If wages do not rise as fast as productivity, the competitive position of the underdeveloped areas increases, leading to the inflow of further investments and economic growth (Kaldor, 1970).

N. G. Mankiw et al. present an empirical analysis that highlights the importance of investment in both physical and human capital for long-term economic growth. The authors extend Solow’s growth model to include human capital, and their findings underscore the importance of investments in education and physical capital to increase productivity and drive economic growth (Mankiw et al., 1992). M. Mahmoodi and E. Mahmoodi studied the causality relationship between foreign direct investment (FDI), exports and economic growth in European and Asian developing countries, finding bidirectional causality between GDP and FDI in European countries, and between exports and economic growth in Asian countries. The study also reveals long-run causality between exports, FDI and economic growth for both panels. The results suggest that European countries can promote economic growth by attracting FDI, while Asian countries can achieve higher growth by increasing exports, with policy recommendations including expanding free trade zones, reducing export taxes and improving quality control and training programs (Mahmoodi and Mahmoodi, 2016). Interestingly, enough research shows that convergence in labour productivity levels among these nations appears to correspond to their convergence in schooling levels. However, econometric results mostly fail to show a significant impact of formal education, growth in educational attainment or interaction effects between schooling and R&D on country labour productivity growth (Wolff, 2000).

Investments in physical capital, such as infrastructure, have been crucial in modernising Poland’s economy. Upgrades to transportation networks, energy systems and telecommunications have facilitated better connectivity, reduced logistics costs and increased the attractiveness of Poland as a destination for FDI. The development of industrial parks and special economic zones has further

stimulated business activity and job creation. FDI represents an essential source of capital and knowledge transfer, which can contribute to economic growth. World Bank data indicates that Poland's FDI net inflows have increased over the past three decades, from \$89 million in 1990 to \$37.1 billion in 2021 (World Bank, 2023a).

Human capital investments have also contributed to Poland's growth. Prioritising education and skills development has led to a well-educated and skilled labour force, which in turn, has attracted multinational corporations seeking a competitive workforce. The enrollment rate in higher education in Poland has increased significantly over the past decades. In 1990, the gross enrollment ratio was 20%, while in 2019 it reached 70% (World Bank, 2023f). This trend demonstrates the growing emphasis on higher education in Poland. Another measure indicating the high quality of education in Poland is the Programme for International Student Assessment (PISA), which is an international study that evaluates 15-year-old students' performance in mathematics, science and reading. PISA scores serve as an indicator of the quality of education and the skills of the workforce. In 2018, Poland scored above the OECD average in all three subjects (OECD, 2018).

The European Union has had a significant impact on the growth of the Polish economy by providing financial support for various projects and initiatives aimed at modernising the country's infrastructure, enhancing human capital, fostering innovation and promoting regional development. Since the beginning of Poland's membership in the European Union (from May 2004 to August 2022), transfers amounted to over 224 billion euros, while during this time, Poland contributed to the EU budget just under 75 billion euros. The balance of settlements amounted to almost 150 billion euros (Ministry of Finance, 2023). These funds have accelerated economic growth, improved the business environment and attracted additional investments, contributing to Poland's impressive economic performance in recent years.

Polish Labour Force and Productivity

Poland's transition from a centrally planned economy to a market-oriented one in the early 1990s led to significant economic growth, mainly driven by the restructuring of the economy and the shift from heavy industries and agriculture to services and knowledge-based industries. This transformation required a change in the labour force, as people had to adapt to new industries and acquire new skills.

Education and skill development have been crucial factors in Polish economic growth. Additionally, the Polish workforce is generally known for its strong work ethic, resilience and adaptability, which has contributed to increased productivity. Poland's accession to the European Union in 2004 facilitated the free movement of labour, leading to increased labour migration. Many young and skilled workers sought better job opportunities and higher wages abroad, resulting in a decline in the size of the labour force in Poland. This emigration led to a potential brain

drain and labour shortage, which could negatively impact economic growth. Nowadays, in Poland we have a problem with the ageing population. As the population gets older, the labour force participation rate may decline, leading to a potential labour shortage in the future. This demographic shift may put additional pressure on social security and pension systems, potentially impacting economic growth (Fig. 2)

From 1992 to 2021, Poland experienced remarkable growth in GDP per capita, increasing from \$26,605 to \$74,890. This substantial increase suggests that labour productivity in Poland improved considerably during this period. The steady growth trajectory indicates that the Polish economy has been consistently enhancing its efficiency and output. From 1992 to 2021, Poland’s GDP per capita increased significantly around 181%. During the same period, Germany’s GDP per capita increased approximately 24%. Although Germany’s GDP per capita remains higher than Poland’s, Poland’s growth rate has been considerably faster. Though Poland started with a lower GDP per capita than Czechia and Hungary and a similar GDP per capita to the Slovak Republic in 1992, it has experienced the fastest growth rate among the four countries from 1992 to 2021. This rapid growth reflects Poland’s successful economic transformation and integration into the European and global economies. Czechia, Hungary and the Slovak Republic have also experienced substantial growth, but at a slower pace compared to Poland.

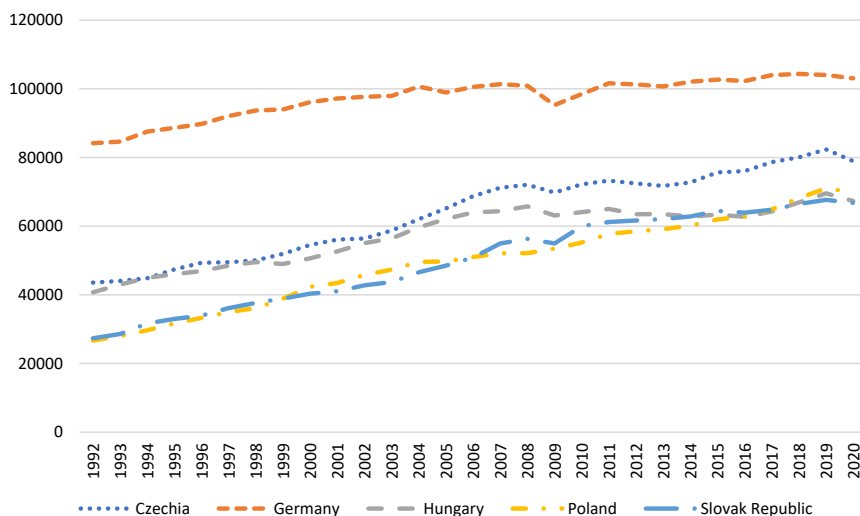


Fig. 2. GDP per Person Employed (Constant 2017 PPP \$) – Czechia, Germany, Hungary, Poland and Slovak Republic. *Source:* Own study based on <https://data.worldbank.org/> (World Bank, 2023g).