POLAND
COMPETITIVENESS REPORT 2021

BILATERAL ECONOMIC COOPERATION AND COMPETITIVE ADVANTAGES

Edited by
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Marzenna Anna Weresa

SGH Publishing House

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Preface

The competitiveness of economies is an issue that becomes particularly important in times of crises. The collapse triggered by the COVID-19 pandemic, spreading virtually all over the world in 2020, has a different impact on individual economies and generates multiple social and economic effects. The debate on competitiveness in times of crisis focuses not only on maintaining or improving the competitive position, but also on the emergence of new dimensions of this phenomenon and the change in the significance of the various competitiveness factors. New economic policy approaches and instruments are also being developed to strengthen the resilience of economies to the crisis and improve competitiveness in difficult times.

Joining this debate by academics and practitioners, the present monograph seeks to find out the competitive position of the Polish economy in 2020 and the direction of its changes between 2010 and 2020, and to identify the factors driving these changes in the period under analysis.

In view of the pandemic-induced strong slowdown in international trade growth and capital flows, an additional specific goal of the monograph is to determine the status of Poland's bilateral economic ties with major economic partners and to identify new areas of cooperation yet to be untapped. The results of the analyses in the monograph provide a reference point for further research into the impact of the COVID-19 pandemic on Poland's bilateral economic cooperation and indicate the directions of economic policy aimed at strengthening Poland's international relations after the pandemic.

The methodology used in this monograph for comparative studies on competitiveness was developed by a team coordinated by the World Economy Research Institute of the SGH Warsaw School of Economics in cooperation with international centers. Poland's competitive position and its changes over the period 2010–2020 have been benchmarked using a whole set of economic and social indicators reflecting: 1) the welfare level (including GDP growth rate, GDP per capita, inflation, unemployment); 2) changes in the standard of living of the population and the scale of income inequalities (including the Gini index, social progress index); 3) Poland's position in the international division of labor (including the revealed comparative advantage, inflow of foreign direct investment).

In addition, the most important economic competitiveness factors shaping Poland's economic performance so far and impacting developments in competitive position, such as innovation, labor resources and economic policy, are analyzed in depth.

The structure of the monograph corresponds to the methodological assumptions adopted. The book is divided into three parts, within which the individual chapters are organized by subject matter, and the main conclusions of the studies presented in them are laid out in the closing summary of the monograph.

Part I of the monograph begins with theoretical reflections on the competitiveness of economies in times of crisis in the context of cooperation with foreign countries (Chapter 1), which form the basis for the empirical analyses presented in the following parts of the publication. Chapters 2 and 3 contain the results of a comparative analysis of Poland's economic development trends for the period 2010–2020, taking into account income inequalities and the key aspects of social exclusion. The competitive position of the Polish economy thus determined is supplemented by international aspects in the following chapters. Chapters 4 and 5 are devoted to analyzing the competitiveness of Poland in external economic relations. This made it possible to identify changes in Polish foreign trade in 2010–2020 and to show the links between foreign direct investment and the competitiveness of the Polish economy.

Part II (Chapters 6 to 9) seeks to identify the key competitiveness factors for Poland between 2010 and 2020. To this end, a detailed analysis of Poland's innovation performance was carried out, taking into account regional and cultural aspects (Chapters 6 and 7), human resources and the labor market (Chapter 8). The broader context of the factors and conditions relating to Poland's competitiveness is provided for in the assessment of economic policies contained in Chapter 9, carried out against the background of the entire institutional architecture of the Polish economy.

The objective of Part III is to assess the level of bilateral economic relations with Poland's major economic partners, such as the US, Germany, Ukraine, Japan, South Korea, China, and India. The analyses of economic cooperation concern in particular: (1) the flow of products (trade in goods and services); (2) the flow of factors of production (in particular capital, mainly in the form of foreign direct investment) and labor (migrations, particularly relevant for relations with Ukraine).

The selection of countries for an analysis of bilateral economic relations with Poland was driven by different criteria. The US (whose bilateral economic relations with Poland are set out in Chapter 10) is Poland's important economic partner, with the relationship being strengthened by political factors, in particular the strong Polish-American partnership in the field of international security. Germany (Chapter 11) is the most important trading partner of Poland in terms of both exports and imports and plays a crucial role in linking Polish companies to global value chains. Ukraine (Chapter 12) is an important economic partner for Poland due to its geographical proximity, the size and potential of its economy, as well as cultural similarities and importance in Poland's Eastern politics. Japan (Chapter 13) and South Korea (Chapter

14) are examples of highly developed countries with a high level of innovation, which can therefore be sources of technology transfer and development models for high-tech industries. China (Chapter 15) and India (Chapter 16), as the countries with the largest populations in the world, have an enormous economic potential, albeit they differ in terms of international position. While China is the largest exporter in the global economy, gradually becoming one of the world's biggest economic powers, India, despite its enormous human capital potential, still faces many fundamental development problems. These differences affect bilateral economic links between Poland and these countries.

The monograph is wrapped up with a summary which provides a synthetic overview of the results obtained and economic policy proposals aimed at improving competitiveness in the context of the ongoing COVID-19 pandemic.

Marzenna Anna Weresa
Arkadiusz Michał Kowalski

Part I

Competitiveness of the Polish Economy in 2010–2020

International Competitiveness and Cooperation in Times of Economic Crises – Theoretical Aspects

Arkadiusz Michał Kowalski, Marzenna Anna Weresa

1.1. Introduction

The deepening internationalization of businesses and economies has various consequences for economic development and competitiveness. Openness to international cooperation, together with the ability to take a favorable position in the changing international division of labor, are important determinants of global competitiveness in the 21st century. The intensification of international cooperation in many different forms, such as international trade, foreign direct investment, technology transfer and migration, leads to closer links between countries, but in parallel to these processes there is a discussion among researchers and practitioners on whether there are limits to globalization [Karunaratne, 2012; Witt, 2019; Cabolis, 2020]. The economic crisis linked to the spread of the SARS-CoV-2 virus causing the COVID-19 pandemic has brought the rapidly progressing globalization to a grinding halt due to restrictions in international trade, investment and migration. With the global economic shock resulting from the COVID-19 pandemic, the question therefore arises as to whether and how unpredictable economic developments, which affect different forms of international cooperation, can be used to build the competitive advantage of a country in today's global economy.

The aim of the analysis in this chapter is to present the impact of the economic collapse on international competitiveness, taking into account the crisis triggered by the COVID-19 pandemic. In view of the enormous impact the coronavirus has on the physical and mental health of society, it may seem that the economic and financial consequences associated with its spread are of a secondary nature. However, in the long term, it is these changes that can be crucial to the functioning of the economy and society. The analysis presented in this chapter aims to identify new dimensions for shaping competitiveness, which may prove relevant in times of crisis.

1.2. How Do Economic Crises Change the Concept of International Competitiveness?

The assessment of the impact of crises on competitiveness should be preceded by indicating what the concept of competitiveness means in this monograph, especially since there is no single, commonly used definition of the term. The very concept of competitiveness is constantly evolving. While, according to the traditional approach, it mainly referred to changes in the productivity with which the economy uses its resources, the new approach goes beyond the economic dimension. It responds to the need to integrate social aspects and certain elements of sustainable development into the concept of competitiveness, including the pursuit of social sustainability or sustainable use of the environment [Weresa, 2015; 2016]. One such approach was presented by Aiginger and Vogel [2015], who defined competitiveness as the ability of a country (region, location) to deliver beyond-GDP goals. This approach reflects the complex nature of the concept of competitiveness, which refers not only to the level of per capita income, but also to other related economic, social and environmental factors.

The global economic crisis linked to the spread of SARS-CoV-2 makes resilience of an economy to crisis, i.e. its ability to recover from or adjust to adverse exogenous shocks and to benefit from positive shocks [Briguglio et al., 2009, p. 5] an important dimension of competitiveness. This characteristic is the opposite of vulnerabilities and depends on both exogenous factors, i.e. the nature and strength of shocks and transmission channels, and as endogenous factors – in particular the structural and institutional characteristics of the economy [Wojtyna, 2010]. According to Gourinchas [2020], the effects of the economic shock associated with the COVID-19 pandemic can be divided into three types:

1) medical shocks – workers affected by SARS-CoV-2 are unable to work and are not producing GDP;
2) economic shocks – resulting from the use of social distancing measures imposed by governments;
3) expectation shocks.

The significance of the impact of the COVID-19 pandemic on international competitiveness is due to the fact that governments have put in place public health containment measures that would seem extreme in all other circumstances. Controlling the epidemic means "flattening the epidemiological curve". This is done by slowing down the rate of infection by imposing social distancing measures which involve reducing person-to-person contact and the operation of businesses, public institutions,

educational and cultural establishments, as well travel bans, or compulsory quarantining of individuals exposed to contact with infected people. The social distancing policies strongly affect economic performance. Gourinchas [2020] claims that in the short term flattening the infection curve inevitably steepens the macroeconomic recession curve, resulting in a dramatic plunge in e.g. production and trade. While the former is comparable to the start of the global financial crisis, the decline in services caused by the COVID-19 pandemic appears larger. Odendahl and Springford [2020] point in this context to the difference between the post-epidemic recovery in industry, which may experience a sharp rebound, and the service sector, which may suffer the consequences of the crisis for a longer period of time.

1.3. Crises, Innovation and Business Cycles

A crisis can foster increased levels of competition and therefore force economic operators to boost their ability to innovate as a competitive factor. Innovative measures taken by an enterprise are intended to give it a competitive edge by becoming a first mover [Kowalski, 2011]. In particular, innovation can be considered as a factor offsetting the negative effects of the economic crisis linked to the spread of the COVID-19 virus. This is supported by the theory of economics, including J.A. Schumpeter's [1942] concept of creative destruction. In essence, it is a process that continuously revolutionizes economic structures from within, incessantly destroying old systems and incessantly creating new, more efficient ones.

The concept of creative destruction can be considered at three levels [Zorska, 2011, p. 21]:

- in the microeconomic dimension, in which the term refers to processes taking place within enterprises, where innovation induces changes in the functioning of the economic entity and its structures are destroyed and replaced by new ones, better adapted to the environment;
- in the mesoeconomic dimension, where economic transformations involve industries and regions;
- in the macroeconomic dimension, where creative destruction is linked to changes in an economy which is developing in an unstable manner due to the impact of factors affecting process continuity and upsetting equilibrium.

According to Schumpeter's concept, the process of creative destruction underpins change and all progress in the economy. The stimulus that initiates this process is innovation at the microeconomic level – that of a single company, which means withdrawing from existing methods of operation in production, disposing of them

and implementing new solutions that increase production, sales and profits. This encourages other companies to undertake similar changes, resulting in various structural changes in the industry concerned, i.e. at the mesoeconomic level. Today, the problem of mesoeconomic creative destruction is also addressed in a broader context and may involve elements such as industrial structures, traditional business regulations, classic competitive strategies, and standard technological assumptions and concepts of scientific and technical progress [Domański, 2010, p. 38]. Innovations and structural transformations implemented are conducive to economic development and increase in competitiveness at macroeconomic level. In the subsequent period of creative destruction, however, competition between companies, as well as insufficient demand, lead to lower profits and clearing of the market of unviable businesses. The economic crisis is therefore characterized by increased competition, forcing companies to innovate in order to develop a better competitive position [Filippetti, Archibugi, 2011]. Consolidation and concentration of industry follow, including the formation of various types of cooperation arrangements. In many cases, structural problems in traditional sectors of the economy are the catalyst for the emergence of new technologies and industrial clusters. According to Mokyr [1997], a real industrial revolution consists not just of technological innovations but of such innovations that make an impact at the level of industrial organization. Moreover, crisis results in new specialization patterns, i.e. the emergence of new industries and technological solutions, which is crucial to economic recovery. An economic crisis may affect the development of a new sector and/or entirely new technologies through:

- recombination of existing knowledge and techniques, relieved of legacy ties imposing on them a specific way and context of use;
- adopting an existing technological solution in a completely new context, which can be defined as exaptation; this type of innovation, although not a major innovative development, opens up new markets and applications for existing technologies and determines the emergence of new technological trajectories [Siedlok, Andriani, 2007].

An economic crisis can become a catalyst for the recombination of techniques and self-organization. The collapse of traditional industries releases resources, knowledge, and physical infrastructure. In this case, crisis enables new capabilities, technologies, business models and organizations to be created. On the one hand, the problems associated with existing economic activity force companies to seek new markets and applications of their knowledge and, on the other hand, encourage them to cooperate and develop a new "economic ecosystem". In this situation, entities are subject to coevolution and actively shape the new economic space by means of their own resources. Thus, crisis increases the chances for the emergence of knowledge

recombination and exaptation processes and, as a result, the creation and development of new socio-technological systems, technologies and markets [Kowalski, 2011].

In Schumpeter's concept of creative destruction, the feature of innovations is that they do not appear regularly, resulting in fluctuations in the product growth rate and cyclical development of the economy. Combining Schumpeter's concept to the theory of business cycles, it can be demonstrated that recovery from crisis and the beginning of long economic cycles, known as Kondratiev waves, have historically been conditioned by the emergence and spread of base inventions such as:

1) steam engine and technological solutions enabling the development of the textile industry (1st wave: 1780–1850);
2) railway and heavy industry (2nd wave: 1850–1890);
3) electrical engineering and chemistry (3rd wave: 1890–1940);
4) automotive industry and petrochemicals (4th wave: 1940–1990);
5) information technologies (5th wave: 1990s).

It is worth noting the shortening of the duration of the successive business cycles and the fact that it was not until the last period that services became a driver of economic growth, while in the previous stages these were base innovations of an industrial nature. In this context, it is reasonable to ask in which area innovation can contribute to economic boost in the face of the global economic crisis linked to the spread of the SARS-CoV-2 virus and the epidemic emergency declared in many countries. When looking for a remedy for crisis in the concept of creative destruction, it is necessary to emphasize the need to develop innovative solutions, particularly in two areas:

1) information and communication technologies, which make it possible to use more frequently telework, distant education, and telehealth, in order to raise health security and at least partially mitigate the consequences of the pandemic;
2) work on innovative medicines, including the COVID-19 vaccine.

It is worth noting that the first of these areas is directly linked to the transformation process of the Fourth Industrial Revolution, which means the development of digital technology and electronics and the integration of digital and physical systems across all sectors of the economy. The use of new technologies enables the creation of an interactive network of products, machines and manpower, enhances links in the value chain and impacts the conditions for competition [Weresa, Kowalski, 2019]. The digital transformation of ICT-driven manufacturing processes is manifested in the form of many different solutions, such as the Internet of Things, artificial intelligence, big data analytics, cloud computing, augmented reality [Kagermann et al., 2013; Armengaud et al., 2017]. New business models are emerging, and modern technologies are gradually changing the functioning of public administration, which translates into the competitiveness of economies and regions [Porter, Heppelmann, 2014].

1.4. Dimensions of the Competitiveness of the Economy in the Face of the Crisis

Income competitiveness

Key dimensions of international competitiveness include income competitiveness, which concerns the ability of an economy to ensure a certain level of income for its population in order to enhance the quality of life. The basic measures of income competitiveness refer to gross domestic product (GDP), most commonly GDP per capita determined on the basis of purchasing power parity, which is one of the most widely used macroeconomic measures. This indicator has long remained an indicator used for the division of the world into developed and developing countries, showing the polarization in the socio-economic development of individual countries [Kowalski, 2020]. At the same time, GDP remains the most widely used measure of the impact of an economic crisis on national economies in the context of both its current and projected effects. Moreover, this indicator is applied in the commonly used definition of economic recession, which is considered to be a period in which, for at least two consecutive quarters, there is a decrease in economic activity in the country, reflected by a decline in the value of gross domestic product in real terms, i.e. the value of all goods and services produced in the country, adjusted for the inflation rate [Claessens et al., 2012; Dzikowska, Gorynia, Jankowska, 2015]. At the same time, it should be noted that this definition is the subject of much controversy. For example, Drozdowicz-Bieć [2006] points out that the economy may see a GDP drop in one quarter only, and if it is accompanied by a sharp decrease in the standard of living of the population, an increase in unemployment and a decrease in production volumes, such a situation can be classified as recession. Another scenario assumes that when GDP alternately declines and increases slightly over successive quarters, and the period lasts long enough, then there is also a recession. Therefore, there are limitations to the use of the GDP ratio in economic analyses, even though it is one of the most widely used measures in international competitiveness research. It should be noted, for example, that it does not fully reflect the actual state of the economy, competitiveness factors and many important aspects of the quality of life of the population, including, for example, income inequalities between different social groups. Moreover, GDP per capita is unreliable in assessing one of the most important elements of today's economies, namely innovation [Coyle, 2015]. All the constraints in determining socio-economic success through the lens of income competitiveness have contributed to the development of research into the other dimensions of competitiveness described further on in the chapter.

Competitiveness – international dimension

The international dimension of competitiveness is manifested in the economic relations of a country with foreign countries, which can be studied jointly or separately as foreign trade competitiveness and investment competitiveness.

The form of economic links between countries most frequently studied in the literature is foreign trade and competitiveness means in this context the *ability to sell* on foreign markets goods and services produced in a country [for more, see Misala, 2014; Weresa, Kowalski, 2019; 2020]. Approached statistically, competitiveness in international trade is reflected in a country's relative (comparative) advantages, which can be upgraded by the country, through active economic policies, into dynamic competitive advantages.

International flows of factors of production, in particular foreign direct investment, are the second element of international competitiveness, which can be described as investment competitiveness. It is reflected in the country's *ability to attract* foreign inputs, including capital, and to benefit from the transfer and use of domestic production factors abroad.

In the literature on the subject, the motives for the development of international exchange of goods and services and the flow of production factors are widely discussed. An analysis of international trade, from the concepts of Adam Smith and David Ricardo to modern trade theories[1], enhanced by approaches explaining international flows of productive capital [Dunning, 1981; Dunning, Lundan, 2008; Markusen, 2002; Markusen, Strand, 2009], allows identifying the most important ones, such as:

- differentiation of countries in terms of endowment with production factors;
- uneven level of technological progress;
- differences between countries in the size and structure of demand and consumer preferences;
- market size, which determines, among other things, the economies of scale;
- structure of markets (number of companies and intensity of competition);
- geopolitical and cultural factors (geographical location determining location-specific or agglomeration advantages);
- socio-economic policy.

The importance of factors determining the development of the international competitiveness of countries changes over time [Bieńkowski, Weresa, Radło, 2010], and the impact of individual determinants and their groups varies between countries with different levels of economic development. From a theory perspective, this means

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[1]   Cf. a broad review of trade theories as presented by Krugman, Obstfeld, Melitz [2015].

that countries differ in terms of the production function, basic resource endowment and the consumption function. These issues deserve attention in analyses of the international aspects of competitiveness.

Technological and digital competitiveness

The technological dimension of competitiveness is closely linked to the interdependence between competitiveness and innovation, but even in the digital age productivity remains essential [Delgado et al., 2012; Porter, Heppelmann, 2014; Zamora-Torres, 2014; Radman, Belin, 2017]. Technological competitiveness can be defined narrowly, focusing on technology and adaptability in this area [Aiginger, Vogel, 2015; Fagerberg, 1996]. In its broadest sense, attention is paid to the country's potential to develop new technical knowledge and its ability to develop further, economically useful technologies [Aschhoff et al., 2010].

The COVID-19 pandemic has increased interest in digital competitiveness, especially as empirical research confirms the positive impact of digital technologies on productivity [Radman, Belin, 2017; Cockburn, Henderson, Stern, 2018; Monaco, Bell, Nyamwena, 2019]. Digital technologies are part of what are referred to as key enabling technologies [Guellec, Paunov, 2018]. Digitalization fosters the emergence of new business models, changes the ways companies communicate with the market, and stimulates the development of innovations – not only technological, but also organizational and social. Digital technologies enable the opening up of new markets for goods and resources, as well as the development of networks of cooperation between manufacturers, suppliers and users, thus increasing the economies of scale [Santos et al., 2017]. As a result, there may be an additional increase in productivity, which means an improvement in competitiveness, also in its traditional dimensions.

Sustainable competitiveness

The 21st century has brought major changes to the global economy, from the dot-com bubble crisis, accompanying the arrival of the new millennium, through the global economic and financial crisis of 2007–2009, to the COVID-19 pandemic the world has been struggling with since 2019. These turbulent events have changed the perception of competitiveness. Social and environmental factors have become more important. The concept of **sustainable competitiveness has emerged, implying a long-term improvement in the productivity of factors of production, resulting from the resources, technologies and institutional factors available, taking into account socio-economic policies, while ensuring sustainable social development**

and environmental sustainability [cf. Blanke et. al., 2011; Corrigan et al., 2014; Weresa, 2016]. This way, competitiveness analyses have been enhanced by including two groups of issues – social and environmental factors.

Social sustainability issues involve ensuring safe living conditions for citizens and widespread and easy access to healthcare. Moreover, an important aspect of the social component of competitiveness is inclusive development, conditioned by the inclusion of all members of society in active participation in socio-economic life. According to Corrigan et al. [2014], social sustainability is primarily reflected in:

- access to basic necessities (sanitation, drinkable water and healthcare);
- low vulnerability to economic exclusion (low unemployment, extent of the informal economy, and social safety net protection),
- social cohesion (income inequality level, social mobility and youth employment opportunities).

In addition to social issues, sustainable competitiveness also covers environmental issues. This involves the efficient use of natural resources to ensure the prosperity of society [Corrigan et al., 2014]. Environmental sustainability involves:

- government policies on environmental protection (regulations regarding land devastation protection, enforcement of environmental regulations, engagement in international work on environmental protection regulations);
- the responsible use of natural resources;
- the degree of environment degradation and related improvement measures.

One of the measures of sustainable competitiveness is the Social Progress Index, which consists of the degree of satisfaction of basic human needs, opportunity for personal development and participation in the wellbeing attained [Porter et. al., 2015].

Relational competitiveness

In times of crisis caused by the COVID-19 pandemic, it appears that a new dimension of competitiveness linked to social capital is gaining in significance, which can be described as relational competitiveness. Relational capital, defined as "the potential an organization has due to ex-firm intangibles [which] include the knowledge embedded in customers, suppliers, the government or related industry associations", is an element of social capital [Bontis, 1999]. Relational capital consists of a set of diverse relationships between institutions, businesses and people, based on conscious membership of a community and the potential for cooperation between culturally similar entities. Historically, the importance of certain aspects related to the concept of relational capital refers to the issue of the industrial district, in which the system of relations between individual entities, as well as the dynamics of cooperation and competition

between them were considered to be the main factors of local development [Lerro, Schiuma, 2009, p. 291]. Relational capital fosters the emergence and development of clusters, helping to accelerate knowledge and technology transfer and stimulate labor mobility. It is also crucial for creating long-lasting links between science, the economy and administration within innovation systems, which can lead to better development and implementation of new solutions.

Referring to the essence of relational capital, a new dimension of competitiveness can therefore be identified – **relational competitiveness. It means the ability to improve productivity through the appropriate use of relational capital available in the economy, and the ability to use the resources and to create new relationships in order to ensure a stable framework for multidimensional cooperation in all areas of social and economic activity**.

Empirical studies conducted by Park, Vertinsky and Lee [2012] showed that an adequate level of relational capital is a necessary, albeit insufficient, condition for the effective transfer of hidden knowledge. Furthermore, the contribution of this factor is an important element in the development of the innovation environment [Cantonese, 2012; Dorrego et al., 2013]. The increase in relational capital is important in the context of combating economic crises, as it contributes to strengthening mutual trust between participants in social and economic life, which increases the tendency to cooperate and engage in public activities. This decreases information constraints and reduces information asymmetry between entities. A situation where market players in different industries have more or less access to information can be a crisis factor, as evidenced by empirical research on the 2008 economic collapse [Shambhala, 2009]. It therefore appears that adequate relational capital can be an important competitiveness driver, especially in times of crises. It is undoubtedly indispensable to rebuild the pandemic-hampered economic cooperation with foreign countries.

1.5. Summary and Conclusions

The spread of the COVID-19 pandemic has various economic and social implications, affecting the competitiveness of businesses, regions and economies. Rebuilding economies after the pandemic requires drawing on the experience of overcoming previous crises. Looking at this phenomenon through the lens of Schumpeter's creative destruction, it can be noticed that in the long run, despite many adverse consequences, the pandemic crisis can be an opportunity for transformation towards a more sustainable economy – in both the social and environmental dimensions. Linking this notion to the concept of business cycles [Schumpeter, 1939] may provide a theoretical background, helpful

in understanding the crisis mechanism and assessing its effects from a competitive perspective. The analysis of these approaches shows that innovation can be a factor counteracting the negative effects of the crisis caused by the COVID-19 pandemic. One of the directions of innovation development is the mass digitalization of all domains of human activity: the economy, culture, social relations, etc. When considering these issues, some areas are emerging where digitalization and other technological innovations, as well as social innovations and those related to the implementation of new business models, will be of prime importance in the post-pandemic world. In the context of improving competitiveness in its sustainable dimension, the transformation of the health, education and environmental protection systems seems crucial. The COVID-19 pandemic has also highlighted the importance of relational capital, which is essential for improving productivity and wellbeing (Figure 1.1).

Figure 1.1. Innovation and relational capital and competitiveness in the times of the COVID-19 pandemic
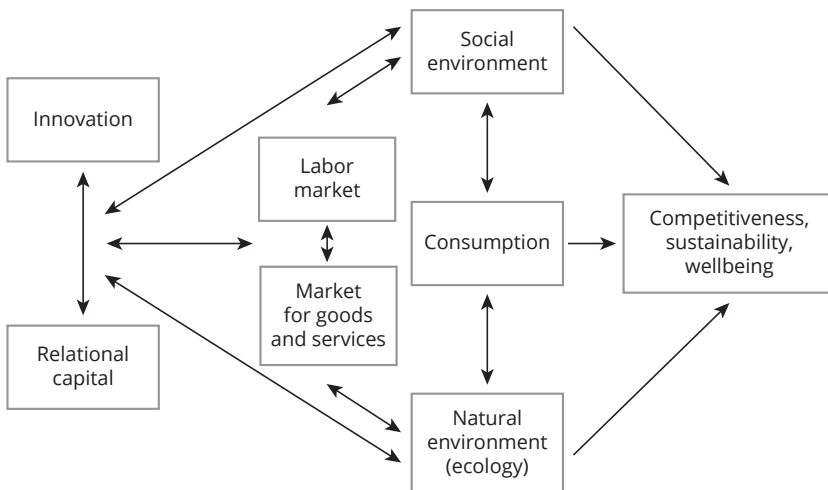
Source: Compilation by the authors.

Relational competitiveness seems to be an issue that is gaining in importance both in terms of stimulating innovation and strengthening cooperation at all possible levels, including the international one, and in the context of rebuilding the social ties broken by the pandemic. This dimension of competitiveness is also of major significance for the development of economic cooperation with foreign countries and reaping the benefits of it.

Bibliography

Aiginger, K., Vogel, J. [2015], *Competitiveness: from a Misleading Concept to a Strategy Supporting Beyond GDP Goals*, "Competitiveness Review", 25(5), pp. 497–523.

Armengaud, E. et al. [2017], *Industry 4.0 as Digitalization over the Entire Product Lifecycle: Opportunities in the Automotive Domain*, in: *Systems, Software and Services Process Improvement* (pp. 334–351), J. Stolfa, S. Stolfa, R. O'Connor, R. Messnarz (eds), Springer, Cham.

Aschhoff, B., Crass, D., Cremers, K., Grimpe, Ch., Rammer, Ch. [2010], *European Competitiveness in Key Enabling Technologies*, https://nanonet.pl/wp-content/uploads/2018/02/European-Competitiveness-in-Key-Enabling-Technologies.pdf (accessed: 15.09.2020).

Bieńkowski, W., Weresa, M.A., Radło, M.J. (eds.) [2010], *Konkurencyjność Polski na tle zmian gospodarczych w krajach OECD. Ewolucja znaczenia czynników konkurencyjności*, SGH Publishing House, Warsaw.

Bontis, N. [1999], *Managing Organizational Knowledge by Diagnosing Intellectual Capital: Framing and Advancing the State of the Field*, "International Journal of Technology Management", 8 (5–8), pp. 448–449.

Briguglio, L., Cordina, G., Farrugia, N., Vella, S. [2009], *Economic Vulnerability and Resilience: Concepts and Measurements*, "Oxford Development Studies", 37(3), pp. 229–247.

Claessens, C., Kose, M.A., Terrones, M.E. [2012], *How do Business and Financial Cycles Interact?*, "Journal of International Economics", 87(1), pp. 178–190.

Cockburn, I., Henderson, R., Stern, S. [2018], *The Impact of Artificial Intelligence on Innovation*, NBER Working Paper No. 24449, National Bureau of Economic Research, Cambridge.

Corrigan, G., Crotti, R., Drzeniek-Hanouz, M., Serin, C. [2014], *Assessing Progress toward Sustainable Competitiveness*, in: *Global Competitiveness Report 2014–2015*, K. Schwab (ed.), World Economic Forum, Geneva, pp. 53–83.

Coyle, D. (2015). *GDP: A Brief but Affectionate History – Revised and expanded Edition*, Princeton University Press, Princeton – Oxford.

Delgado, M., Ketels, Ch., Porter, M.E., Stern, S. [2012], *The Determinants of National Competitiveness*, NBER Working Paper No. 18249, National Bureau of Economic Research, Cambridge.

Domański, R. [2010], *Mechanizm ewolucji przestrzennego zagospodarowania*, in: *Przekształcenia struktur regionalnych. Aspekty społeczne, ekonomiczne i przyrodnicze* S. Ciok, P. Migoń (eds.), Instytut Geografii i Rozwoju Regionalnego Uniwersytetu Wrocławskiego, Wrocław, pp. 35–46.

Dorrego, P.F., Costa, R.V., Fernández-Jardon Fernández, C. [2013], *Product Innovation and Relational Capital: Evidence From Portugal*, "The Electronic Journal of Knowledge Management", 11(4), pp. 295–308.

Drozdowicz-Bieć, M. [2006], *Podstawowe pojęcia i definicje*, "Prace i Materiały Instytutu Rozwoju Gospodarczego SGH", 77, pp. 9–31.

Dunning, J.H. [1981], *International Production and the Multinational Enterprise*, Alen & Unwin, London.

Dunning, J.H., Lundan, S.M. [2008], *Multinational Enterprises and the Global Economy*, Edward Elgar, Cheltenham – Northampton.

Dzikowska, M., Gorynia, M., Jankowska, B. [2015], *Globalny kryzys gospodarczy – próba pomiaru efektów dla poszczególnych krajów*, "Ekonomista", 6, pp. 733–759.

Fagerberg, J. [1996], *Technology and Competitiveness*, "Oxford Review of Economic Policy", 12(3), pp. 39–51. DOI: 10.1093/oxrep/12.3.39.

Filippetti, A., Archibugi, D. [2011], *Innovation in Times of Crisis: National Systems of Innovation, Structure, and Demand*, "Research Policy", 40(2), pp. 179–192.

Gourinchas, P.O. [2020], *Flattening the Pandemic and Recession Curves*, in: *Mitigating the COVID Economic Crisis: Act Fast and Do Whatever*, R. Baldwin, B. Weder di Mauro (eds), Centre for Economic Policy Research (CEPR) Press, London.

Guellec, D., Paunov, C. [2018], *Innovation Policy in the Digital Age*, OECD Science, Technology and Innovation Policy Papers, No. 59, OECD Publishing, Paris.

Kagermann, H., Helbig, J., Hellinger, A., Wahlster, W. [2013], *Recommendations for Implementing the Strategic Initiative INDUSTRIE 4.0: Securing the Future of German Manufacturing Industry*, Forschungsunion und Acatech, Frankfurt am Main.

Kantanen, H. [2012], *Identity, Image and Stakeholder Dialogue*, "Corporate Communications: An International Journal", 17(1), pp. 56–72.

Kowalski, A.M. [2011], *Wpływ kryzysu gospodarczego na procesy współpracy i konkurencji*, "Master of Business Administration", 109(2), pp. 30–42.

Kowalski, A.M. [2020], *Global South-Global North Differences*, in: *No Poverty. Encyclopedia of the UN Sustainable Development Goals* (pp. 1–12), W. Leal Filho et al. (eds), Springer, Cham.

Krugman, P., Obstfeld, M., Melitz, M. [2015], *International Trade: Theory and Policy*, Pearson, Boston.

Lerro, A., Schiuma, G. [2009], *Knowledge-Based Dynamics of Regional Development: the Case of Basilicata Region*, "Journal of Knowledge Management", 13(5), p. 291.

Markusen, J.R. [2002], Multinational Firms and the Theory of International Trade, The MIT Press, Cambridge, MA.

Markusen, J.R., Strand, B. [2009], *Adapting the Knowledge-Capital Model of the Multinational Enterprise to Trade and Investment in Business Services*, "The World Economy", 32(1), pp. 6–29.

Misala, J. [2014], *Theoretical Grounds of the Development of Long-Term Competitive Advantages in International Trade*, in: *Innovation, Human Capital and Trade Competitiveness. How Are They Connected and Why Do They Matter?*, M.A. Weresa (ed.), Springer, Cham, pp. 3–51.

Mokyr, J. [1997], *Are We Living in the Middle of an Industrial Revolution?*, "Economic Review", 82(2), p. 35.

Monaco, L., Bell, J., Nyamwena, J. [2019], *Understanding Technological Competitiveness and Supply Chain Deepening in Plastic Auto Components in Thailand: Possible Lessons for South Africa*, CCRED Working Paper No. 1. DOI: 10.2139/ssrn.3384027.

Odendahl, Ch., Springford, J. [2020], *Bold Policies Needed to Counter the Coronavirus Recession,* in: *Mitigating the COVID Economic Crisis: Act Fast and Do Whatever*, R. Baldwin, B. Weder di Mauro (eds), Centre for Economic Policy Research (CEPR) Press, London, pp. 145–150.

Park, C., Vertinsky, I., Lee, C. [2012], *Korean International Joint Ventures: How the Exchange Climate Affects Tacit Knowledge Transfer from Foreign Parents*, "International Marketing Review", 29(2), pp. 151–174.

Porter, M.E., Heppelmann, J.E. [2014], *How Smart, Connected Products are Transforming Competition*, "Harvard Business Review", 92(11), pp. 64–88.

Radman, G., Belin, A. [2017], *Competitiveness in Technology and Innovation: How to Keep On?*, "International Journal of Digital Technology & Economy", 2(1), pp. 45–56.

Santos, C., Mehrsai, A., Barros, A.C., Araújo, M., Ares, E. [2017], *Towards Industry 4.0. – an Overview of European Strategic Roadmaps*, "Procedia Manufacturing", 13, pp. 972–979.

Schumpeter, J.A. [1939], *Business Cycles. A Theoretical, Historical and Statistical Analysis of the Capitalist Process*, McGraw-Hill, New York.

Schumpeter, J.A. [1942], *Capitalism, Socialism and Democracy*, Harper & Row, New York.

Siedlok, F., Andriani, P. [2007], *Formacja oraz identyfikacja klastrów w fazie embrionalnej. Przykład klastra technologii podwodnych w regionie Północno-Wschodniej Anglii,* "Zarządzanie Publiczne", 1, pp. 79–94.

Szambelańczyk, J. [2009], *Kapitał społeczny jako warunek stabilności systemu bankowego,* in: *Globalny kryzys finansowy i jego konsekwencje w opiniach ekonomistów polskich*, idem (ed.). Związek Banków Polskich and Ernst & Young, Warsaw, pp. 91–106.

Weresa, M.A. [2015], *Innovation and Sustainable Competitiveness: Evidence from Poland*, "International Journal of Transitions and Innovation Systems", 4 (3–4), pp. 150–163.

Weresa, M.A. [2016], *The Competitiveness of EU Member States from Central and Eastern Europe in 2007–2014*, in: *Competitiveness of CEE Economies and Businesses. Multidisciplinary Perspectives on Challenges and Opportunities*, P. Trąpczyński, Ł. Puślecki, M. Jarosiński (eds), Springer International Publishing, Switzerland, pp. 3–23.

Weresa, M.A., Kowalski, A.M. [2019], *Competitive Position of the Polish Economy in the Context of Digital Economy*, in: *Poland: Competitiveness Report 2019. International Competitiveness in the Context of Development of Industry 4.0*, A.K. Kowalski, M.A. Weresa (eds), SGH Publishing House, Warsaw, pp. 297–308.

Weresa, M.A., Kowalski, A.M. [2020], Competitiveness of the Service Sector Concept Approach, Definition and Measurement Methods. in: *Poland. Competitiveness Report 2020. Focus of Service Sector,* A.K. Kowalski, M.A. Weresa (eds.), SGH Publishing House, Warsaw, pp. 13–28.

Wojtyna, A. [2010], *Gospodarki wschodzące w obliczu kryzysu finansowego: duża odporność czy podatność?*, "Gospodarka Narodowa", 242(9), pp. 25–45.

Zamora-Torres, A. [2014], *Countries Competitiveness on Innovation and Technology*, "Global Journal of Business Research", 8(5), pp. 73–83.

Zorska, A. [2011], *Koncepcja twórczej destrukcji J.A. Schumpetera i jej odniesienie do przemian gospodarczych w dobie obecnej rewolucji naukowo-technologicznej*, in: *Chaos czy twórcza destrukcja? Ku nowym modelom w gospodarce i polityce*, A. Zorska (ed.), SGH Publishing House, Warsaw, pp. 19–54.

Chapter 2

Development of the Polish Economy in 2010–2020 Compared with Other EU Countries and Poland's Selected Economic Partners

Ryszard Rapacki, Mariusz Próchniak

2.1. Introduction

This chapter provides an assessment of the prevailing development tendencies of the Polish economy in 2010–2020. It also seeks to identify the nearest and slightly more distant development prospects for Poland under the dramatically altered conditions faced by economies and societies in the wake of the global coronavirus pandemic continuing since early 2020.

Combined with the need to prepare this chapter (as well as the whole monograph) earlier than in previous years, this factor strongly affects its content and structure. First, the unexpected outbreak and the subsequent spread of the COVID-19 pandemic in 2020 translated into a strong negative external shock that triggered a deep recession in the global economy and – with few exceptions – in the economies of individual countries. It brought about an unprecedented growth of uncertainty, which "nullified", as it were, previous, fairly optimistic, economic forecasts, including those relating to future development trajectories of the Polish economy, based on extrapolation of prior trends. Secondly, at the time of writing this text (October 2020), only partial, incomplete statistical data was available (both for Poland and for other EU member states) concerning the main macroeconomic variables, including the GDP growth rate. Consequently, the analyses and assessments provided in this chapter use the available time series covering the years 2010–2019, and, where possible and substantively reasonable, reference is made to partial data for the first half-year of 2020.

The study presented here is structured as follows. Sub-chapter 2.2 outlines the international background of our assessment, i.e. the main development tendencies in the world economy. The principal part of the analysis starts with demonstration

of the potential of the Polish economy (2.3). Next, subchapter 2.4 provides an assessment of the paths of economic growth and the real convergence process in Poland in 2010–2019. The assessments performed in that part are complemented with a brief overview of the latest short-term forecasts, developed after the COVID-19 pandemic outbreak, of the economic situation in Poland and in our main economic partners in 2020. The following subchapter (2.5) contains a comparative analysis of the economic development level and living standards in Poland compared with other EU member states. The last part of the study attempts to outline the main, and most likely, directions of impact of the ongoing pandemic on key macroeconomic variables and future economic development paths in Poland.

2.2. International Background

Before moving on to the principal part of our analysis, we will first outline the most important developments in the global economy in 2012–2019, i.e. in period directly preceding the outbreak of the global coronavirus pandemic (in the absence of longer, comparable time series and complete 2020 data).

Table 2.1. Economic growth in the world in 2012–2019 (growth rate in %)

Years	2012–2015 (annual average)	2016	2017	2018	2019
World[*]	2.7[***]	2.5	3.2	3.0	2.3
Developed economies	1.6	1.7	2.4	2.2	1.7
Euro area	0.6	1.9	2.5	1.9	1.2
USA	2.4	1.6	2.4	2.9	2.2
Japan	1.3	0.6	1.9	0.8	0.7
Transition economies	1.3	0.8	2.2	2.7	1.9
Russia	1.0	0.3	1.6	2.3	1.1
Developing economies of which least developed countries	4.6 4.9	4.0 4.0	4.5 4.5	4.2 4.6	3.4 4.9
Africa[**]	3.9	1.7	2.7	2.6	2.9
Southeast Asia	6.0	6.1	6.1	5.7	4.8
China	7.5	6.7	6.8	6.6	6.1
India	6.8	8.2	7.2	6.8	5.7
Latin America	1.7	–1.1	1.2	0.9	0.1

[*] At 2010 market exchange rates. [**] Excluding Libya. [***] 2013–2015.

Note: Growth rates for the individual groups have been calculated as the weighted average of GDP growth rates of the countries forming each group. Weights based on 2010 prices and exchange rates.

Source: UN [2020].

According to the data provided in Table 2.1, world gross domestic product increased in 2019 by 2.3%, i.e. at a slower rate than in 2016–2018, and slightly slower than the medium-term trend reported in 2010–2015.

The slowdown witnessed in the global economy in 2019 was a cumulative effect of a lower economic growth rate in almost all the groups of countries listed in the table, including in particular developed economies (down from 2.2% in 2018 to 1.7%), as well as in transition countries (from 2.7% to 1.9%) and in developing economies (from 4.2% to 3.4%, respectively). Only the growth rate of the least developed economies was slightly faster than in 2018 (up from 2.6% to 2.9%) and Africa (from 2.6% to 2.9%). The economic slowdown involved, among other countries, the main centers of global economy, including the euro area, the USA, and Japan.

Against this background, economic growth rates in Southeast Asia were relatively favorable, although also there a slowdown could be seen (from 5.7% in 2018 to 4.8% in 2019), observed especially in China (6.6% to 6.1%) and in India (6.8% to 5.7%). On the other hand, growth rates in Latin America practically meant economic recession and, in relative terms, a negative contribution to the global development dynamics in 2019.

2.3. Size of the Polish Economy

The analysis of Poland's economic performance in 2020 and its international competitive position will begin with the presentation of a brief assessment of the economic potential of our country against the background of the world economy, as well as Poland's position in this respect in the European Union. In the previous editions of this monograph, the benchmark was the group of 28 EU member states[1]. Given that, as of 1 February 2020, the United Kingdom is no longer part of the European Union, the benchmark we have adopted is the current membership of the EU, i.e. the group of 27 member states (EU-27). By the same token, the Western Europe area is a group of 14 countries (EU-14).

The basic measure of the size of an economy is the value of the gross domestic product (GDP) generated in a country in a particular year. Despite its many shortcomings and limitations, it is still the broadest measure of economic activity, widely used in macroeconomic analyses. In international comparisons, the GDP values of individual countries denominated in local currencies are converted into international currency

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[1] The content of this and successive sub-chapters refers to the earlier editions of the *Report.* See, e.g., Matkowski, Rapacki and Próchniak [2016]; Rapacki and Próchniak [2020].

(e.g. USD or EUR) using current market exchange rates (CERs) or conventional conversion factors called purchasing power parities (PPPs). The GDP value calculated at PPP is believed to better represent the real value of output produced in a given country, as it takes into account the differences in prices of goods and services between the country and its international environment; it is also less susceptible to the impact of exchange rate fluctuations. For this reason, this metric is used more often in broad international comparisons. On the other hand, the currency conversion coefficients used to calculate GDP at PPP are inaccurate and often inflate the value of that measure for less developed countries compared to its value in more developed countries (the same reservation applies to GDP per capita). In our study, the values of total GDP and GDP per capita will be shown based on both of these approaches: converted into international currency at CER and at PPP, so as to ensure more comprehensive comparisons.

According to the IMF's preliminary estimates of October 2020 [IMF, 2020], Poland's GDP converted at CER amounted to USD 580.9 bn last year, whereas at PPP was more than twice as high (USD 1,286.9 bn). In terms of GDP value at CER, Poland ranked 23rd among the world's largest economies (between Iran and Sweden), and in terms of GDP value at PPP it was 20th (between Egypt and Taiwan)[2]. Compared with 2019, Poland's position in the CER-based global ranking of economies improved by three slots owing to an expected relatively shallow recession of its economy in the wake of the coronavirus pandemic, when benchmarked against other countries with a similar economic potential. Poland's share in the global value of output increased slightly, when measured at PPP (to 1.0%), whereas at CER it did not change and still stood at 0.7%. This indicator, reflecting Poland's position in the global economy, has remained relatively stable for many years, while the exact position of Poland in the world ranking of economies by GDP size changes every year due to cyclical fluctuations in output, changes in inflation rates and exchange rates, as well as adjustments of GDP data and currency conversion factors.

Let us now look at the data showing Poland's economic position in the European Union (EU-27). Table 2.2 presents the GDP values for the individual EU member states in 2020, expressed in USD at current market exchange rates (CERs) and at purchasing power parity (PPP). All the GDP data for 2020 are based on preliminary estimates published by the IMF in October 2020 [IMF, 2020b], which are subject

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2   The CER-based ranking covers 193 countries. The USA, China and Japan are ranked at the top three positions, whereas the bottom three (in descending order) are held by Kiribati, Nauru and Tuvalu. The PPP-based ranking also covers 193 countries. The top three positions are held by China, the USA, and India, while the bottom three (in descending order) are the Marshall Islands, Nauru, and Tuvalu.

to change[3]. The ranking of the EU member states' economies provided in the table has been drawn up in accordance with the CER-measured GDP value; the positions of individual countries in the alternative ranking based on the PPP-measured GDP value are shown in brackets.

The European Union consists of 27 countries of highly diverse sizes and economic potential. The four largest countries in terms of population and production volume – Germany, France, Italy, and Spain – represent 57% of the total population of the EU-28 countries and produce 63% of the total GDP at CER or 67% at PPP. All the 14 countries currently forming the EU and included in the Western Europe area (EU-14) represent 77% of the total population and produce 89% of the total GDP at CER or 82% at PPP. In contrast, the 13 new member states that joined the EU in 2004 and 2007 or later, i.e. 11 CEE countries, plus Cyprus and Malta, represent 23% of the total population, but generate only 11% or 18%, respectively, of the Community's total GDP. This substantial asymmetry between the old EU and the new member states (more broadly, between Western Europe and Central and Eastern Europe) should be kept in mind when considering Poland's position in the European Union.

Table 2.2. EU-27 member states according to GDP value in 2020 (USD bn)

Rank	Country	GDP at CER		GDP at PPP	
		USD bn	% (EU-27 = 100)	USD bn	% (EU-27 = 100)
1 (1)	Germany	3,780.6	25.3	4,454.5	23.0
2 (2)	France	2,551.5	17.1	2954.2	15.2
3 (3)	Italy	1,848.2	12.4	2,415.4	12.5
4 (4)	Spain	1,247.5	8.4	1,773.4	9.1
5 (6)	Netherlands	886.3	5.9	986.8	5.1
6 (5)	Poland	580.9	3.9	1,280.7	6.6
7 (9)	Sweden	529.1	3.5	551.5	2.8
8 (8)	Belgium	503.4	3.4	575.8	3.0
9 (10)	Austria	432.9	2.9	493.2	2.5
10 (11)	Ireland	399.1	2.7	447.7	2.3
11 (14)	Denmark	339.6	2.3	335.8	1.7
12 (17)	Finland	267.9	1.8	272.7	1.4
13 (7)	Romania	248.6	1.7	584.9	3.0

[3]   In the previous editions of this monograph, we used euro-denominated data in this sub-chapter, published by the European Commission. Since, at the time of writing this report, the autumn 2020 release of the European Commission's cyclic publication *Statistical Annex of European Economy* has not yet appeared, and its last available edition released in spring 2020 contains highly outdated data, we have decided to use the IMF's October 2020 data which are the most up-to-date estimates.

cont. Table 2.2

Rank	Country	GDP at CER		GDP at PPP	
		USD bn	% (EU-27 = 100)	USD bn	% (EU-27 = 100)
14 (12)	Czech Republic	242.0	1.6	430.9	2.2
15 (13)	Portugal	221.7	1.5	339.9	1.8
16 (16)	Greece	194.4	1.3	310.7	1.6
17 (15)	Hungary	149.9	1.0	316.3	1.6
18 (18)	Slovakia	101.9	0.7	175.7	0.9
19 (23)	Luxembourg	68.6	0.5	70.7	0.4
20 (19)	Bulgaria	67.9	0.5	164.1	0.8
21 (20)	Croatia	56.8	0.4	112.0	0.6
22 (21)	Lithuania	55.1	0.4	106.9	0.6
23 (22)	Slovenia	51.8	0.3	79.7	0.4
24 (24)	Latvia	33.0	0.2	58.6	0.3
25 (25)	Estonia	30.5	0.2	49.1	0.3
26 (26)	Cyprus	23.2	0.2	34.6	0.2
27 (27)	Malta	14.3	0.1	21.6	0.1
EU-27		14,926.5	100.0	19,397.3	100.0
EU-14		13,270.6	88.9	15,982.3	82.4

Note: The 2020 GDP data are the IMF's preliminary estimates of October 2020. The country's position shown in the first column corresponds to the value of GDP at CER and PPP (in brackets). Contributions to total EU-28 GDP have been calculated by the authors.

Source: The authors' calculations based on IMF [IMF, 2020b] data.

Poland is the largest country among the new member states of the European Union. This concerns both its territory and population, and GDP size. In the current European Union (EU-27), Poland ranks 5th or 6th in terms of both its territory and population size and its DGP at PPP and CER. It is worth noting that Poland's position in the European economy has improved significantly since joining the EU. The country's share in total GDP of all EU member states has been growing steadily.

2.4. Economic Growth and Real Convergence

According to our analyses presented in the previous editions of the *Report*, throughout the systemic transformation period, i.e. in the years 1990–2019, Poland remained the fastest-growing economy in the whole Central and Eastern European region (CEE-11). The average annual GDP growth rate in Poland was the highest in this group of countries and almost three times as high as a similar average rate in the "old" EU-15 countries. Poland's economic growth followed a similar path

against the CEE-11 and EU-15 over the period 2004–2019, i.e. after EU accession. The situation changed slightly in this respect after the 2008 global financial crisis – between 2010 and 2019 Poland lost its leading position in the region. The respective data is provided in Table 2.3[4].

Table 2.3. GDP growth in 1990–2019

Country	GDP growth rate (constant prices)				Real GDP level in 2019		
	average annual growth rate (%)	annual growth rate (%)					
	1990–2019	2010	2018	2019	1989 = 100	2004 = 100	2010 = 100
Poland	**3.2**	**3.6**	**5.3**	**4.1**	**256**	**180**	**137**
Bulgaria	0.9	0.6	3.1	3.4	133	157	125
Croatia	0.5	–1.5	2.7	2.9	116	120	112
Czech Republic	1.8	2.3	2.8	2.6	169	147	122
Estonia	2.0	2.7	4.8	4.3	184	149	138
Hungary	1.7	0.7	5.1	4.9	164	134	130
Lithuania	1.1	1.5	3.6	3.9	137	158	138
Latvia	0.9	–4.5	4.3	2.2	132	146	135
Romania	1.7	–3.9	4.4	4.1	163	170	141
Slovakia	2.5	5.7	4.0	2.3	207	173	128
Slovenia	1.9	1.3	4.1	2.4	173	134	118
EU-15*	1.3	2.2	1.8	1.3	149	120	113

* Weighted average.
Historical EBRD data referring to 1989 was also used to calculate the growth rates, based on 1989 = 100.

Source: Eurostat [2020]; European Commission [2020]; authors' calculations.

In 1990–2019, Poland was the only country in the CEE to have increased its GDP level more than two and a half times (with an index of 256). This translated into an average annual growth rate (taking into account the 1990–1991 transformation recession) of 3.2%. The only country in the CEE-11 group with comparable growth dynamics was Slovakia (2.5% annually).

After Poland's EU accession, its GDP increased by 80% (i.e., at an average annual rate of approx. 4.2%). Just as throughout the systemic transformation period, Poland then maintained its leader position among the new EU member states in this respect (a similar result was achieved by Slovakia at the time, at 73%, and Romania, at 70%). In addition, Poland significantly outpaced the EU-15 countries in terms of development dynamics.

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4   Table 2.3 does not present economic growth forecasts for 2020 (they are provided in Table 2.5). Therefore, we are benchmarking the GDP growth trajectories in the individual countries against the group of 15 Western European countries (EU-15), because the United Kingdom was still an EU member at the time.

Poland lost its position of economic growth leader in the CEE group in 2010–2019; at the same time, its "growth comparative advantage" also decreased significantly relative to the EU-15 (the chain GDP growth indices in the period were 137 and 113, respectively, see Table 2.3). This was mainly due to a significant slowdown in Poland's growth – the average annual GDP growth rate was then 3.2%, i.e., 1 pp less than in 2004–2019, i.e. after the country's accession to the EU (4.2%). It cannot be ruled out that the developments described here may be the first harbinger of the secular changes to the hitherto growth trajectories in the EU member states, mentioned in the previous editions of this monograph, and of the deceleration or even reversal of the real convergence process of the Polish economy with the EU-15 countries [Matkowski, Próchniak and Rapacki, 2016].

As a result of the combined impact of the trends presented above, Poland managed to significantly reduce its gap in economic development relative to the whole (except for Ireland) group of EU member states, as well as all countries of the CEE region in 1990–2019.

As far as the EU-15 is concerned, the real convergence process in Poland was unfolding at the fastest rate with regard to the United Kingdom, Italy, and Greece. In relation to the last-mentioned country, Poland completely closed the gap in 2015, and in the following years overtook it in terms of GDP per capita. This marked a historical precedent, as Poland outpaced one of the "old" EU member states in terms of economic development level.

Table 2.4. New EU member states' development gap in relation to EU-15 in 1989–2019 (GDP per capita at PPP, EU-15 = 100)

Country	1989	2004	2010	2018	2019
Poland	**38**	**43**	**57**	**66**	**68**
Bulgaria	47	30	42	47	49
Croatia	51	50	54	59	60
Czech Republic	75	69	76	84	85
Estonia	54	48	69	76	78
Hungary	56	55	61	66	68
Lithuania	55	44	67	75	77
Latvia	52	41	57	64	65
Romania	34	30	49	61	63
Slovakia	59	50	69	68	69
Slovenia	74	75	74	81	81

Source: IMF – 1989 [IMF, 2005]; Eurostat – 2004 and 2010 [Eurostat, 2020]; European Commission – 2018–2019 [European Commission, 2020]; calculations by the authors.

Within the CEE group of new member states, Poland has been the most successful in narrowing the distance between its level of economic development and that of the richest countries, i.e. Slovenia and the Czech Republic.

As shown in Table 2.4, in 2019 Poland's PPP-measured GDP per capita stood at 68% of the EU-15 average[5]. This implies that between 1989 and 2019 Poland narrowed by 30 pp the development gap with the "old" Union, of which 25 pp after its EU accession (i.e. between 2004 and 2019). This lends itself to the conclusion that the rate of real convergence accelerated markedly in Poland after joining the EU; while it stood at an average of 0.5 pp in 1990–2003, it increased fourfold over the 2004–2019 period to almost 2 p.p. annually.

When compared to the other new EU member states from CEE, Poland's results are relatively favorable, especially in terms of the entire systemic transformation period to date. In 1990–2019, Poland was a definite leader in the process of real convergence toward the EU-15 countries among the new EU member states. However, Poland lost this position after 2004. During the period following the EU enlargement, the real convergence process proceeded the fastest in Lithuania (33 pp), Romania (33 pp), and Estonia (30 pp). At the same time, Poland also saw a divergence process in relation to some CEE countries, as its development gap increased after 2004 relative to Estonia and Lithuania, while also Romania edged closer to Poland in terms of development level.

What is more, Poland's pace of catching up with more developed EU-15 countries clearly slowed down between 2010 and 2019. While Poland narrowed the development gap with the EU-15 by 14 pp during the first six years of its EU membership (2004–2010), over the following nine years the country's development gap decreased by only 11 pp. The massive shock triggered by the outbreak of the pandemic and the spread of the COVID-19 virus witnessed at the beginning of 2020 invalidated all previous economic forecasts and strongly put into question the ability to continue the previous trajectories of economic growth and the real convergence process. At the time of writing this text (October 2020), the world as a whole and most countries (including Poland) were expected to plunge into economic crisis that would manifest itself in a steep decline of output levels and increase of unemployment.

The pandemic showed how illusory and unreliable economic forecasts can be, irrespective of whether they are based on expert predictions or on less or more formalized econometric models[6], as it is assumed that certain fundamental factors affecting the economic, political and social situation in the world will not change. Thus, unexpected

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[5] It should be noted, however, that, when converted at the (current) market exchange rate, Poland's GDP per capita represented only 31% of the EU-15 average in 2019 (calculations by the authors based on Eurostat data).

[6] These include, e.g., β- and σ-convergence coefficients presented in previous editions of this monograph.

disturbances that may affect the world as a whole are hard to foresee. For example, economic forecasts developed in the 1930s did not provide for the outbreak of World War II; in the 1970s, the world was taken by surprise by the rapid growth of oil prices; the economic development forecasts of the socialist countries in the 1970s and '80s did not anticipate the fall of socialism in Europe. Likewise, forecasts formulated in recent years did not assume the outbreak of the coronavirus pandemic which nullified all prior projections of economic growth, showing they have no application value in the face of such shocks.

Table 2.5 presents economic growth forecasts for 2020, derived from two sources (European Commission and IMF), drawn up in different periods before and in the course of the pandemic for selected EU member states. The data shows that until the end of 2019 all forecasts of the European Commission and the IMF provided for a positive GDP growth in 2020. The outbreak of the pandemic exposed the scale of their inaccuracy.

Table 2.5. Total real GDP growth rate forecasts for 2020 drawn up by the IMF and the European Commission (%)

Forecast date	Poland	Czech Republic	Slovakia	Hungary	Germany	France	Spain	Italy
International Monetary Fund forecasts								
October 2020	–3.6	–6.5	–7.1	–6.1	–6.0	–9.8	–12.8	–10.6
April 2020	–4.6	–6.5	–6.2	–3.1	–7.0	–7.2	–8.0	–9.1
October 2019	3.1	2.6	2.7	3.3	1.2	1.3	1.8	0.5
October 2018	3.0	2.5	3.8	2.6	1.6	1.6	1.9	0.9
October 2017	2.8	2.3	3.5	2.6	1.4	1.9	1.9	1.0
European Commission forecasts								
Spring 2020	–4.3	–6.2	–6.7	–7.0	–6.5	–8.2	–9.4	–9.5
Autumn 2019	3.3	2.2	2.6	2.8	1.0	1.3	1.5	0.4
Autumn 2018	3.3	2.6	3.5	2.6	1.7	1.6	2.0	1.3

Source: IMF [2017, 2018, 2019, 2020a, 2020b] and European Commission [2018, 2019, 2020].

For example, the latest IMF forecast of October 2020 [IMF, 2020b] provides for a deep recession in most countries of the world. According to it, in 2020, GDP will shrink in Poland by 3.6%, in the Czech Republic by 6.5%, in Slovakia by 7.1%, in Hungary by 6.1%, in Germany by 6.0%, in France by 9.8%, in Spain by 12.8%, and in Italy by 10.6%[7]. At this point, it is worth noting that, thus far, Poland's economy has been coping relatively well with the coronavirus pandemic. Recession is not as deep in Poland as in the other Visegrad Group countries or in the largest "old" EU member states. What

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[7]   Paradoxically, the expected recession can translate into Poland's further income convergence toward the EU-14 average, as the GDP drop in Poland was expected to be shallower than in the "old" EU countries.

is more, between April and October 2020, the IMF revised upwards the economic growth forecasts for Poland (from –4.6% to –3.6%). Hopefully, in the coming months (or even years), the Polish economy will demonstrate similar resilience to coronavirus shocks and the decline of income will not be so steep as, e.g., in the Mediterranean countries or, even closer, in our southern neighbors.

2.5. Socio-Economic Development and the Standard of Living

The basic indicator of the level of socio-economic development and standard of living is the gross domestic product per capita. Figure 2.1 shows the ranking of the countries currently forming the European Union in terms of GDP per capita at PPP in 2004 and 2020. It allows the current level of real income in individual countries to be compared, as well as its changes since 2004, i.e. the largest-ever enlargement of the EU to the Central and Eastern European region. The GDP per capita data for 2020 are preliminary estimates as of October 2020.

Estimates show that in 2020 the PPP-measured average GDP per capita in the European Union member states (EU-27) amounted to USD 43,616, and in the pre-enlargement EU member states (EU-14) it was USD 46,864.

The levels of income are highly divergent across the EU member states. The leader in terms of GDP per capita is Luxembourg (USD 112,875)[8], with Ireland ranking second (USD 89,383). The following countries also report high per capita income levels (USD 45,000 to 60,000): Denmark, the Netherlands, Austria, Germany, Sweden, Belgium, Finland and France. Malta, the Czech Republic and Italy have slightly lower per capita income (between 40,000 and 45,000). Other EU countries generate lower income (less than USD 40,000). In Central and Eastern Europe, GDP per capita ranges between USD 23,741 (in Bulgaria) and USD 40,293 (in the Czech Republic).

Viewed against this background, Poland's position is not particularly impressive. With the value of GDP per capita at PPP equal to USD 33,739 in 2020, Poland ranked 19th, falling within the lower income bracket among the enlarged EU countries, ahead of Portugal, Hungary, Slovakia, Latvia, Romania, Greece, Croatia, and Bulgaria. Owing to a relatively shallow recession during the coronavirus pandemic, compared with other European countries, Poland's ranking in terms of per capita income at PPP improved by several places on previous years.

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[8]   The exceptionally high value of GDP per capita in Luxembourg does not accurately reflect the difference in the standard of living in that country in relation to other Western European states; this results mainly from the high income earned by transnational corporations, banks and financial institutions headquartered there.

Figure 2.1. Ranking of EU-27 countries in terms of GDP per capita at PPP (USD)

Country	2004	2020
EU-27	27,751	43,616
EU-14	31,996	46,864
1. Luxembourg	75,874	112,875
2. Ireland	40,128	89,383
3. Denmark	37,782	57,781
4. Netherlands	37,253	57,101
5. Austria	35,137	55,406
6. Germany	32,636	53,571
7. Sweden	34,858	52,477
8. Belgium	33,536	50,114
9. Finland	33,067	49,334
10. France	32,282	45,454
11. Malta	21,563	43,087
12. Czech Republic	21,039	40,293
13. Italy	32,561	40,066
14. Cyprus	28,227	39,079
15. Lithuania	14,626	38,605
16. Slovenia	22,379	38,506
17. Spain	27,848	38,143
18. Estonia	18,012	37,033
19. Poland	14,345	33,739
20. Portugal	22,826	33,131
21. Hungary	18,560	32,434
22. Slovak Republic	16,253	32,184
23. Latvia	13,485	30,579
24. Romania	11,801	30,141
25. Greece	25,498	29,045
26. Croatia	16,193	27,681
27. Bulgaria	9,963	23,741

■ 2004   ■ 2020

Note: The ranking is based on preliminary PPP-measured GDP data for 2020.

Source: Compiled by the authors from IMF data [IMF, 2020b].

Presented below (in Table 2.6) is the level of economic development of different groups of countries in 2004–2020, measured by the value of GDP per capita at PPP. The table provides data on the European Union member states (EU-27), and selected other groups, classified mainly according to the geographical criterion. The data contained on Table 2.6 make it possible to find out whether the other groups of countries have moved closer to the EU member states over the past 16 years in terms of development level, or divergence tendencies occurred in them instead.

Among five groups of countries other than the EU, only two: the Commonwealth of Independent States (CIS) and Southeast Asia have markedly narrowed their development gap with the EU-27 in terms of GDP per capita. The CIS group improved its relative level of economic development from 38% of the European Union (EU-27) average in 2004 to 47% in 2020 (i.e., by 9 pp), and the Asian group narrowed the gap from 19% to 31% (by 12 pp). The other three groups (Latin America, Middle East, and Africa) have not reduced their income gap at all, and, in some cases, even increased it significantly, which means a real divergence with the EU.

Table 2.6. The economic development level of the EU compared with other country groups in the world

Group	Number of countries	GDP per capita at purchasing power parity				
		2004	2010	2015	2019	2020
In international dollars (current prices)						
European Union (EU-27)	27	27,751	33,350	38,439	46,640	43,616
Commonwealth of Independent States	12	10,535	15,439	17,838	20,949	20,317
Southeast Asia	26	5385	8507	10,812	13,174	13,341[*]
Latin America and Caribbean	34	10,376	13,599	15,139	16,199	15,361[**]
Middle East and North Africa	17	14,694	18,394	17,397	18,093	16,943
sub-Saharan Africa	48	2,464[***]	3,314[***]	3,763	4,033	3,853
EU-27 = 100						
European Union (EU-27)	27	100.0	100.0	100.0	100.0	100.0
Commonwealth of Independent States	12	38.0	46.3	46.4	44.9	46.6
Southeast Asia	26	19.4	25.5	28.1	28.2	30.6[*]
Latin America and Caribbean	34	37.4	40.8	39.4	34.7	35.2[**]
Middle East and North Africa	17	52.9	55.2	45.3	38.8	38.8
sub-Saharan Africa	48	8.9[***]	9.9[***]	9.8	8.6	8.8

[*] Excluding Pakistan. [**] Excluding Venezuela. [***] Excluding South Sudan.
All averages are weighted.

Source: Compiled by the authors from IMF data [IMF, 2020b].

The GDP per capita index used in the analysis presented is merely an approximate and indicative measure of living standards. Its value depends on many different factors, not only economic ones. In the literature, there are a number of measures of the level of socio-economic development alternative to GDP per capita. One of them is the Human Development Index (HDI) published by the United Nations. It is the geometric mean of three indices expressing: Gross National Income (GNI) per capita, life expectancy, and education level, which reflect the three main tiers of social development: a long and healthy life, solid knowledge and a decent standard of living. The index ranges from 0 to 1 (higher values indicating a higher level of development).

According to the UNDP [2019] report, referring to 2018 data, the global classification leaders in terms of HDI are: Norway, Switzerland, Ireland, Germany, Hongkong, Australia, Iceland, Sweden, Singapore, the Netherlands, Denmark, Finland, Canada, New Zealand, the United Kingdom, and the USA. Among the CEE countries, Slovenia ranks highest in this category (24th), followed by: the Czech Republic (26th), Estonia (30th), Poland (32nd), Lithuania (34th), Slovakia (36th), Latvia (39th), Hungary (43rd), Croatia (46th), Bulgaria and Romania (joint 52nd). In terms of the value of this indicator, Poland ranks slightly above the CEE average (the indicator value for Poland equals 0.872 against the average of 0.858 for 11 CEE countries), but it ranks only 32nd in the world in this category, among 189 classified countries. Among the EU countries, Poland holds the 20th position, ahead of Lithuania, Slovakia, Latvia, Portugal, Hungary, Croatia, Bulgaria, and Romania. The value of the HDI for Poland has been steadily increasing, which testifies to the sustainability of the country's socio-economic development. At the same time, its position in the global HDI ranking remains quite remote, although it is still higher than its corresponding place in the world in terms of the GDP per capita-measured economic development level alone (45th in 2018 according to IMF data) [IMF, 2019].

2.6. Major Directions of COVID-19 Pandemic Impact on the Economy

The global outbreak of the coronavirus pandemic in early 2020 means an unprecedented, both in terms of its scale, complexity and multidimensionality of possible effects, adverse, asymmetric external shock which may mark a pivotal moment of history or at least accelerate the process of reaching the turning point on the existing trajectories of economic and institutional development of individual countries and the whole global order [Acemoglu, Robinson, 2014].

The COVID-19 pandemic has revealed the huge scale, speed, extraordinary complexity and interdependence of individual phenomena which are all too often

treated by economists as "exogenous" ones. It has also immeasurably increased the uncertainty and unpredictability of future development trends accompanying economic processes (and the entire existence of individuals and societies [Próchniak et al., 2020].

Therefore, the speculative scenarios currently being formulated for further developments fall somewhere between the expectation of profound changes in production and consumption patterns and an ideological revaluation of lifestyles linked to the multidimensional crisis, which will affect, albeit in a different way and to varying degrees, the countries of both rich and poor capitalism or, at most, the strengthening of hitherto trends affecting the socio-economic systems of the end of the 20th century (the Fourth Industrial Revolution, globalization, growing inequalities, climate crisis).

Finally, the course of the epidemic has revealed the failure of market mechanisms, the accumulation of technological, financial and political effects, the diversity of presumably long-term social impacts, the huge scale of interventions of nation states whose authorities balance between limiting the loss of human potential and the loss of economic potential, often counting their own political benefits differently from social costs [Próchniak et al., 2020].

In view of the above observations, the possible, most likely directions of the ongoing pandemic's impact on the economy are signaled below, with a particular focus on the labor market [Próchniak et al., 2020]:

- the COVID-19 pandemic has accelerated the economic slowdown anticipated for some time now, whose adverse effects will be experienced by labor markets mainly in the countries that are in a vulnerable position in the global value added chain;
- what must be a response to the immediate and deferred effects of the crisis are constructive measures by governments involving all labor market participants (mainly the employers' community and trade unions); this will allow difficult challenges to be addressed, related to non-standard forms of employment, precarization and increased unemployment, through compromise and dialogue rather than social conflict; social partnership may also delay the prospective need to implement the universal basic income mechanism and the disappearance of collective labor protection measures;
- in Poland, the effects of the crisis will be felt to a slightly lesser extent than in most CEE countries and will primarily affect industrial jobs, which will exacerbate the trend towards deregulation and de-standardization of the labor market;
- permanent changes in the structure of labor demand are also possible: the scope of precarization will increase, as will the economic role and share of low-paid work lacking social safety net, supervised by algorithms and largely automated (e.g. in warehouses and in food deliveries on bicycles and scooters).

In the era of the coronavirus pandemic, any future development scenarios should be viewed with some reserve. We are living in times which are so uncertain that economic growth dynamics in the world is likely to unfold in various directions in the years ahead. In addition to pessimistic scenarios, it is also worth mentioning some relatively optimistic alternatives for further changes in production and unemployment rates.

Table 2.7 presents forecasts of the economic growth rates and unemployment rates in selected EU countries until 2025, calculated on the basis of IMF data. They show that the world will quickly rebound from the crisis caused by the coronavirus pandemic. After the 2020 recession, EU countries will bounce back from the bottom and enter the path of relatively rapid economic growth in 2021. The forecast provides for a GDP growth of 4.6% in Poland in 2021. Growth prospects are even better for some other EU countries over the same period (Spain 7.2%, Slovakia 6.9%, France 6.0%, Italy 5.2%, the Czech Republic 5.1%). The unemployment rate will not show a particularly sharp growth, either (except for Spain and Italy, where it will remain at double-digit levels until 2025).

Table 2.7. Forecasts of economic growth rate and unemployment rate for 2020–2025

Country	2020	2021	2022	2023	2024	2025
Total real GDP growth rate (%)						
Poland	–3.6	4.6	4.5	3.7	2.9	2.4
Czech Republic	–6.5	5.1	4.3	4.0	3.0	2.5
Slovakia	–7.1	6.9	4.8	3.8	2.8	2.5
Hungary	–6.1	3.9	4.0	3.8	3.2	2.6
Germany	–6.0	4.2	3.1	1.8	1.3	1.2
France	–9.8	6.0	2.9	2.3	1.9	1.7
Spain	–12.8	7.2	4.5	3.4	2.8	1.5
Italy	–10.6	5.2	2.6	1.7	0.9	0.9
Unemployment rate (%)						
Poland	3.8	5.1	4.9	4.7	4.5	4.5
Czech Republic	3.1	3.4	3.2	3.0	2.8	2.8
Slovakia	7.8	7.1	6.6	6.4	6.4	6.6
Hungary	6.1	4.7	3.9	3.7	3.5	3.4
Germany	4.3	4.2	3.7	3.6	3.5	3.4
France	8.9	10.2	9.5	9.0	8.7	8.5
Spain	16.8	16.8	15.7	14.9	14.4	14.2
Italy	11.0	11.8	10.8	10.3	10.2	10.2

Source: IMF [2020b].

The scenario outlined in Table 2.7 is optimistic. However, at the time of writing this text (end of October 2020), it is necessary to consider how realistic it remains in the face of current events. In France, a curfew was imposed, the streets of Paris were deserted; in Madrid, the police guard the entrance to the city; many villages in the north and south of Italy have been closed; in many countries, drastic restrictions (including complete lockdowns) are in place on the operation of bars and restaurants. It cannot be ruled out that similar restrictions will appear in Poland – one can imagine (something still inconceivable a year ago) that the streets of Polish cities will be patrolled by the territorial defense force, people will not be allowed to leave home at night, food service establishments will be closed, and a total ban will be imposed on the organization of sports and cultural events; there will also be restrictions, as in martial law, on the movement of people. In view of this (increasingly likely) direction of possible developments, it appears that the economic growth rate forecasts presented in Table 2.7 are overly optimistic and can only come true if the coronavirus vaccine is invented and rapidly made widely available. However, this is becoming increasingly less likely due to prolonged work in this field from spring 2020 and the emergence of a second and third waves of the pandemic in Europe.

To sum up, in the current situation, it is difficult to build credible scenarios for future economic growth in the world, as much depends on the further development of the coronavirus pandemic, as well as on the extent to which the institutional changes introduced under the Anti-Crisis Shield in Poland and similar measures in other countries will prove profound and lasting [Próchniak et al., 2020].

Bibliography

Acemoglu, D., Robinson, J. [2012], *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. New York, Crown.

European Commission [2018], *Statistical Annex of European Economy*, Autumn.

European Commission [2019], *Statistical Annex of European Economy*, Autumn.

European Commission (2020), *Statistical Annex of European Economy*, Spring.

Eurostat [2020], *Database*, https://ec.europa.eu/eurostat/data/database (accessed: 10.10.2020].

IMF [2005], *World Economic Outlook Database*, September.

IMF [2017], *World Economic Outlook Database*, October.

IMF [2018], *World Economic Outlook Database*, October.

IMF [2019], *World Economic Outlook Database*, October.

IMF [2020a], *World Economic Outlook Database*, April.

IMF [2020b], *World Economic Outlook Database*, October.

Matkowski, Z., Próchniak, M., Rapacki, R. [2016], *Income Convergence in Poland vis-à-vis the EU: Major Trends and Prospects*, in: *Poland: Competitiveness Report 2016. The Role of Economic Policy and Institutions*, M.A. Weresa (ed.), SGH Publishing House, Warsaw, pp. 37–55.

Matkowski, Z., Rapacki, R., Próchniak, M. [2016], *Comparative Economic Performance: Poland and the European Union,* in: *Poland. Competitiveness Report 2016. The Role of Economic Policy and Institutions*, M.A. Weresa (ed.). SGH Publishing House, Warsaw, pp. 11–35.

Próchniak, M., Gardawski, J., Lissowska, M., Maszczyk, P., Rapacki, R., Sulejewicz, A., Towalski, R. [2020], *Ścieżki rozwojowe krajów i regionów Europy Środkowo-Wschodniej*, in: *Raport SGH i Forum Ekonomicznego 2020*, M. Strojny (ed.), SGH Publishing House, Warsaw, pp. 15–59.

Rapacki, R., Próchniak, M. [2020], *Development of the Polish Economy in 2010–2019 Compared with Other EU Countries and Selected Emerging Markets, with a Particular Focus on the Service Sector*, in: *Poland. Competitiveness Report 2020. International Competitiveness in the Context of Development of the Service Sector*, A.M. Kowalski, M.A. Weresa (eds.), SGH Publishing House, Warsaw, pp. 45–66.

UN [2020], *World Economic Situation and Prospects 2020*, United Nations, New York.

UNDP [2019]. *Human Development Report 2019. Beyond Income, Beyond Averages, Beyond Today: Inequalities in Human Development in the 21st Century,* United Nations Development Programme, New York.

Income Inequality, Poverty Risk and Other Selected Aspects of Social Exclusion in Poland Compared with Other EU Countries

Patrycja Graca-Gelert

3.1. Introduction

A large majority of definitions of country or region competitiveness disregard issues related to income inequalities, poverty risk or other aspects of social exclusion. The measurement of the latter primarily takes into account labor market and education variables. For many years now (starting in 2007), the successive editions of this monograph have emphasized the impact of income disparities, poverty and other elements of social exclusion in building the competitiveness of individual countries on the global stage. What plays a key role in this regard is the improvement of the living standard of society, which is largely dependent on the degree of social inclusion, which encompasses, e.g., the sense of equality and reduced risk of poverty.

The principal objective of the study presented in this chapter is to show the main tendencies in income inequality, the risk of poverty and other selected aspects of social exclusion in Poland compared with other EU countries in 2010–2019. In addition, more space is devoted to an analysis of the structure of income inequality in Poland, extending the study period in some cases to 2003. For Poland, the decomposition of income spreads for socio-economic groups, residence classes and regions is performed, as well as an analysis of the direct impact of the child support benefit under the "Family 500+" program on income disparities in Poland.

3.2. Income Inequality and Poverty in Poland

An analysis of income inequality and poverty or risk of poverty is a rather complex research problem. It was emphasized many times in the previous editions of this monograph that the difficulty in interpreting income inequality and poverty largely
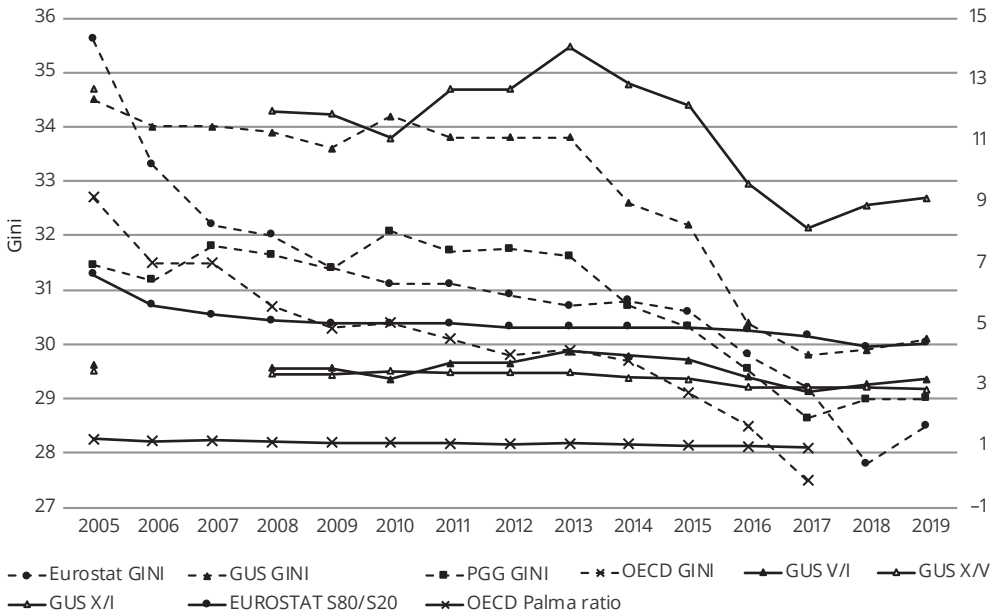
depends on the assumptions underlying the analysis. Major aspects of these issues include the choice of a focal variable, its proper definition, selection of reliable data of an appropriately high quality, and data adjustment, e.g. through the application of an equivalence scale, i.e. at-risk-of-poverty threshold, as well as a choice of dispersion measures or poverty metrics. The subject-matter is highly complex, and the related literature is quite extensive; nevertheless, the issues go beyond the scope of this chapter and therefore we merely note the importance of the problem.

To study income inequality, poverty and the risk of poverty in Poland, the highest possible quality data (including individual data or micro data) were selected and subjected to appropriate adjustment processes (described further on in this chapter). The study draws on data from various sources and presents the tendencies and structure of income inequalities and poverty taking into account numerous measures so as to ensure that the picture emerging from the analysis is as exhaustive as possible. At this point, it should be emphasized that none of the tools and data sources used is free from deficiencies, but we are putting aside a detailed discussion on this subject here, and in particular we do not address the question of a possible underestimation of the scale of income disparities and poverty resulting from the characteristics of the survey data, which are the source of estimates for both phenomena. Strictly speaking, the data used in this study come from three sources – household budget surveys (HBS) by Statistics Poland (GUS), EU-SILC (data provided by Statistics Poland and compiled in accordance with the Eurostat methodology), and the OECD. Data descriptions together with main differences concerning the measures adopted are shown directly under the respective charts and tables.

Figure 3.1 shows time series representing different measures of income inequality, data sources, and definitions of income and equivalence scales. The time series do not fully coincide with the study period presented in the chart, which results from the unavailability of data for certain years. We have decided to present income inequality trends dating back as far as 2005, as changes in inequality are usually spread over time, which makes it worth extending the period of the phenomenon under analysis. Despite what may seem a relatively narrow vertical scale, differences in income inequality trends are clearly visible. The measures shown in the chart can be divided into two groups – Gini coefficients and quantile measures. The time series assigned to the Gini coefficient are marked in broken line, whereas quantile measures are represented by a continuous line. In fact, regardless of the source of the data, the Gini measures indicate an overall decrease in income disparities during the period under study, although in recent years there has been some slowdown of this trend and even a slight increase in inequality. The decrease in income inequality from 2005 is quite significant compared with the inequalities in other EU countries (see: Table 3.6 – although the

data in the tables cover the post-2010 period only), and it even appears to be one of the most noticeable trends among the EU countries.

Figure 3.1. Income inequality in Poland in 2005–2019 (%)*

– • – Eurostat GINI   – ▲ – GUS GINI   – ■ – PGG GINI   – ✕ – OECD GINI   ▲ GUS V/I   △ GUS X/V
△ GUS X/I   ● EUROSTAT S80/S20   ✕ OECD Palma ratio

* Eurostat – equivalized disposable household income (modified OECD equivalence scale; the unit of reference is the person; the source is EU-SILC – data collected by Statistics Poland (GUS) in accordance with Eurostat methodology); GUS – disposable household income (equivalence scale – none, per capita approach was adopted; the data source is HBS); PGG GINI – equivalized disposable household income (modified OECD equivalence scale; the unit of reference is the household; the data source is HBS); OECD GINI and OECD Palma ratio – equivalized disposable household income (square root equivalence scale, the unit of reference is the person). Dispersion measures used: Gini coefficient – takes into account income inequalities within the whole distribution, and its value ranges between 0 (0%) for a perfectly equal income distribution and 1 (100%) for an extremely unequal income distribution (the Gini coefficient is expressed here in %); S80/S20 – quintile ratio index, representing the ratio of income of the 20% of the population with the highest income to that of the 20% of the population with the lowest income; X/I, V/I and X/V – income ratios of the 10th and 1st deciles, the 5th and 1st deciles, and the 10th and 5th deciles, respectively, of income distribution; the Palma ratio – the ratio of income received by 10% of the population representing the top income bracket divided by income received by 40% of the population representing the lower part of income distribution.
Source: Eurostat EU-SILC [2020]; [Statistics Poland, 2020a, Tables 5 and 6, p. 338]. OECD [2020]; compilation by the author based on Statistics Poland household budget surveys.

Having regard to the quantile measures, it should be emphasized that each of them describes inequalities in a different part of the income distribution. Thus, for example, the GUS X/I measure indicates differences between the extreme deciles, GUS X/V shows the disparities between the highest and the median, and GUS V/I – between the median and the lowest decile of income distribution. Data from household budget surveys clearly show that changes in income disparities, which translated into overall income inequality, occurred mainly in the lower part of the distribution. The two other income dispersion

measures indicate smaller changes in inequality (they take into account the relation of total income instead of average income in quantiles, as is the case with the GUS X/I, GUS X/V and GUS V/I measures). S80/S20 is quite convergent in terms of the tendencies observed with the Gini coefficient reported by Eurostat, and the Palma index used in OECD studies takes almost the same value over the entire period represented in the chart, although in reality it decreases slightly over time. As intended by its author, the Palma ratio is to show real changes in income inequality, with the share of income of 50% of the average-income population remaining fairly stable over time, as concluded from research and observations by Jose Gabriel Palma. If this interpretation were applied for the purposes of the study presented, it would follow that income inequalities in Poland have been decreasing steadily at a low rate from mid-2010s.

The analysis of income inequalities within the various socio-economic groups (Figure 3.2) shows that the largest and most variable income disparity between 2003 and 2019 occurred in the group of farmers' households, which is nothing unusual, since, firstly, this group includes both many poor villagers and very wealthy owners of large farms in Poland, and, secondly, incomes in this group are characterized by relatively high variability. Pensioner households were among the groups with the lowest and least variable income inequalities, which should not come as a surprise, either. The level of the Gini coefficient closest to the overall income inequality (bold line) was observed for the group of workers' households. Although this cannot be inferred from the analysis so far, as will be mentioned in connection with the decomposition of inequalities presented later in the text, this fact is mainly due to the large share of both the population of worker households and their incomes in the total population and total income, respectively. From 2005, income inequalities in cities in general were lower than in rural areas.

A slightly deeper analysis of the structure of income disparities can be made after decomposing income inequality. Below are the results of the decomposition of income inequality in Poland for the Gini coefficient. The choice of this meter is mainly due to the fact that it is a measure of dispersion to which we refer primarily in this chapter. For the purposes of the presented studies, inequality decomposition of two types was carried out. The theoretical framework for decomposition by group was briefly overviewed, followed by the results of the distribution of inequalities by socio-economic group and sub-group, place of residence class and macroregion, together with an interpretation of the results obtained. The analysis period covers, depending on the grouping, 2017–2019 (socio-economic groups and sub-groups), 2016–2019 (classes of place of residence) and 2018–2019 (macroregion). Each edition of the *Report* presented results relating only to the last year for which full data were available, but this time we have decided to collect the results from previous studies in order to trace the dynamics of the structure

of inequality. The short two-year research period for the analysis of macroregion data shows that in 2018 there was a change in territorial division, so that decomposition estimates for 2018–2019 have limited comparability with previous years.

Figure 3.2. Household income inequality by socio-economic group and by place of residence (urban/rural) in Poland in 2010–2019 (%)*
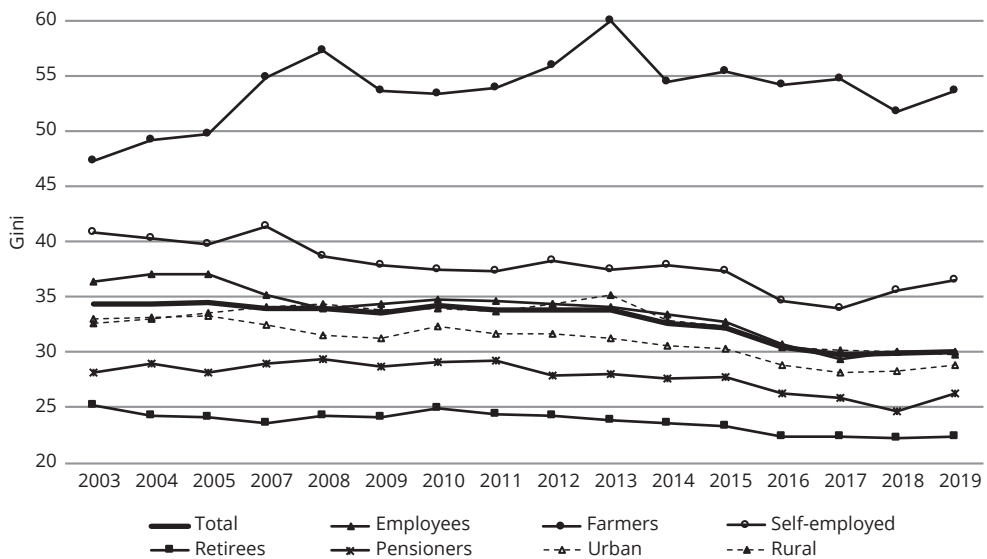
ᵃ Per capita disposable household income (with the household as the unit of reference).

Source: Compiled on the basis of Statistics Poland data [2020a, Table 5, p. 338].

Next, the decomposition of the Gini coefficient by source of income, or, more specifically, the child support benefit "500+" and other income, will be presented. The aim of such extensive research is to try to estimate the impact of the „500+" benefit on income inequality in Poland. The analysis period in this case will be 2016–2019.

The decomposition of the Gini coefficient by group and by source of income analyzed in the study presented in this chapter was performed on the basis of individual non-identifiable data from household budget surveys (HBS). Unlike previous editions of the *Report*, we have chosen not to present calculations taking into account two definitions of income and two types of equivalence scale. In our view, such a differentiated analysis did not provide much added value to the interpretation of the structure of income inequality, as the overall conclusions seemed fairly convergent. Besides, we wanted to focus on the analysis of decomposition over time and presentation of results relating to two types of definitions of income and equivalence scale could distort the image of income inequalities in Poland during the period under study. The calculations were carried out using the DAD 4.6 program [Duclos, Araar, Fortin, 2010].

The general form of the decomposition of the Gini coefficient by group can be written as follows [see, e.g., Deutsch, Silber, 1999; Bellú, Liberati, 2006; Lambert, Aronson, 1993][1]:

$$I_O = I_W + I_B + I_R = G_O = \left(\sum_{k=1}^{K} P_k S_k G_k\right) + \left(\frac{2cov[y_0, F(y_0)]}{\mu_0}\right) + \left(G_O - [I_W + I_B]\right), \quad (1)$$

where I_0 is overall income inequality, I_W means the contribution of intra-group inequalities to overall income inequality, I_B represents the contribution of inter-group inequalities to overall income inequality, I_R is the residual term, G_O is the Gini coefficient for overall income, K is the number of analyzed groups ($k = 1, …, K$), P_k means the population share of group k, S_k is the income share of group k, G_k represents income inequality in group k measured with the use of the Gini coefficient, y_0 is income, μ_0 means average income, and $F(y_0)$ is the cumulative distribution of total income.

While the intra-group and the inter-group income inequality components do not pose major interpretation difficulties, it is worth looking more closely at the role of the residual term. It shows to what extent overall income inequality results from the overlap of the distributions of income. The more the income distributions of each group are disjoint (do not overlap), the smaller the value of this element will be, closer to zero (which is obtained in the case of completely disjoint distributions of the analyzed groups). The variable I_B can be thought of as an element of inter-group net income inequality, and the sum ($I_B + I_R$) as a component of inter-group gross income inequality.

The first results which will be presented is the decomposition of inequalities by socio-economic group. The division used is a concept authored by Statistics Poland. According to this classification, there are five socio-economic groups – households of workers, farmers, self-employed, pensioners and those living on unearned sources. If we look at the last three rows of the inequality decomposition for 2019 (Table 3.1), we will see that the income disparities between households in Poland were generally due to income inequalities between households in different groups, the spread of average incomes between groups and the effect of overlapping income distributions of different socio-economic groups. If we take into account the intergroup distribution of gross income, it should be noted that this component was crucial in explaining income inequality in Poland in 2019. Among intra-group inequalities, by far the largest contribution to overall inequalities was the income disparity among worker households due to the group's relatively high share of income and the total population, as mentioned earlier. Pensioners' incomes ranked second (for the same reasons), while the income

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[1]   The individual components of the decomposition below are described in greater detail in the 2018 *Report* [Weresa, Kowalski (eds.), 2018].

spreads of households living on unearned sources had a marginal impact on income inequality in Poland in 2019. If we analyze the structure of inequalities among these socio-economic groups in the previous two years, we will come to similar conclusions, although it must be said that the role of intra-group inequalities was gaining, albeit slightly, in significance. Other features of the structure of inequality do not indicate any unidirectional trends.

Table 3.1. Decomposition of the Gini coefficient* by socio-economic group and sub-group (in accordance with Statistics Poland definition) in Poland in 2017–2019

Year	Group	Gini coefficient	Population share	Income share	Absolute contribution	Relative contribution
2017	workers	0.256	0.502	0.552	0.071	0.248
	farmers	0.526	0.039	0.045	0.001	0.003
	self-employed	0.305	0.071	0.097	0.002	0.007
	pensioners	0.230	0.342	0.277	0.022	0.076
	living on unearned sources	0.316	0.045	0.029	0.000	0.001
	intra-group inequalities	–	–	–	0.096	0.336
	inter-group inequalities	–	–	–	0.095	0.331
	residual term	–	–	–	0.095	0.333
2018	workers	0.261	0.502	0.556	0.073	0.252
	farmers	0.514	0.037	0.042	0.001	0.003
	self-employed	0.316	0.072	0.097	0.002	0.008
	pensioners	0.231	0.349	0.280	0.023	0.078
	living on unearned sources	0.344	0.039	0.025	0.000	0.001
	intra-group inequalities	–	–	–	0.099	0.341
	inter-group inequalities	–	–	–	0.095	0.326
	residual term	–	–	–	0.096	0.332
2019	workers	0.265	0.497	0.542	0.071	0.246
	farmers	0.525	0.035	0.038	0.001	0.002
	self-employed	0.325	0.079	0.103	0.003	0.009
	pensioners	0.235	0.350	0.293	0.024	0.083
	living on unearned sources	0.321	0.039	0.024	0.000	0.001
	intra-group inequalities	–	–	–	0.099	0.342
	inter-group inequalities	–	–	–	0.086	0.296
	residual term	–	–	–	0.105	0.362

* The calculations use disposable income per equivalent unit (modified OECD scale). The values of the Gini coefficient for individual socio-economic groups are expressed not as percentages (as, e.g., in Figures 3.1.1 and 3.2), but as decimal fractions.

Source: Compiled by the author based on Statistics Poland household budget surveys.

If the socio-economic groups are additionally disaggregated into sub-groups (according to Statistics Poland classification), it will turn out that in the worker households group income inequalities were influenced more by income of non-manual workers – in this case, all elements of the intra-group inequality component are higher compared with households of manual workers. This concerns both the scale of income inequality and the share of total population and share of total income. Having broken down the pensioner households' group into sub-groups, it is concluded, as intuition would suggest, that pensioners' incomes are key to explaining the total income inequality, be it due to a significantly larger size of this group. Other conclusions on the dynamics of the structure of inequalities seem to be in line with those concerning decomposition by socio-economic group, with disaggregation of groups into sub-groups causing the intra-group inequality component to assume much lower values each year.

Table 3.2. Decomposition of the Gini coefficient* by socio-economic sub-group (in accordance with Statistics Poland definition) in Poland in 2017–2019

Year	Group	Gini coefficient	Population share	Income share	Absolute contribution	Relative contribution
2017	manual workers	0.209	0.243	0.220	0.011	0.039
	non-manual workers	0.260	0.259	0.332	0.022	0.078
	old-age pensioners	0.224	0.285	0.239	0.015	0.053
	disability pensioners	0.229	0.057	0.038	0.000	0.002
	living on social benefits	0.271	0.031	0.018	0.000	0.001
	living on other unearned sources	0.366	0.014	0.011	0.000	0.000
	farmers	0.526	0.039	0.045	0.001	0.003
	self-employed	0.305	0.071	0.097	0.002	0.007
	intra-group inequalities	–	–	–	0.053	0.184
	inter-group inequalities	–	–	–	0.124	0.435
	residual term	–	–	–	0.109	0.382
2018	manual workers	0.208	0.238	0.218	0.011	0.037
	non-manual workers	0.272	0.265	0.337	0.024	0.084
	farmers	0.514	0.037	0.042	0.001	0.003
	self-employed	0.316	0.072	0.097	0.002	0.008
	old-age pensioners	0.227	0.298	0.247	0.017	0.058
	disability pensioners	0.221	0.051	0.033	0.000	0.001
	living on social benefits	0.290	0.024	0.014	0.000	0.000
	living on other unearned sources	0.396	0.014	0.011	0.000	0.000
	intra-group inequalities	–	–	–	0.055	0.191
	inter-group inequalities	–	–	–	0.123	0.425
	residual term	–	–	–	0.111	0.383

Year	Group	Gini coefficient	Population share	Income share	Absolute contribution	Relative contribution
2019	manual workers	0.229	0.234	0.217	0.012	0.040
	non-manual workers	0.270	0.263	0.325	0.023	0.080
	farmers	0.525	0.035	0.038	0.001	0.002
	self-employed	0.325	0.079	0.103	0.003	0.009
	old-age pensioners	0.231	0.304	0.261	0.018	0.063
	disability pensioners	0.237	0.047	0.032	0.000	0.001
	living on social benefits	0.239	0.027	0.014	0.000	0.000
	living on other unearned sources	0.410	0.012	0.009	0.000	0.000
	intra-group inequalities	–	–	–	0.057	0.196
	inter-group inequalities	–	–	–	0.109	0.378
	residual term	–	–	–	0.124	0.427

[*] The calculations use disposable income per equivalent unit (modified OECD scale). The values of the Gini coefficient for individual socio-economic groups are expressed not as percentages (as, e.g., in Figures 3.1.1 and 3.2), but as decimal fractions.

Source: Ibid.

The results of decomposition of the Gini coefficient by place of residence class (Table 3.3) indicate that the largest contributors to explaining the total income inequality were inter-group inequalities, i.e. income differences between households from places of different sizes. As regards intra-group inequalities, there is a clear dominance of incomes among residents of rural areas, although it is in the largest cities that the Gini coefficient assumes the highest value. The high significance of rural areas is due mainly to the large share of those households in the total population and total income. In terms of total income inequality, incomes of residents of medium-sized cities (with population of 100–199 k) were of the least significance, owing to the low value pf all three elements of the intra-group inequality component – income inequality and the share of total income and total population. As for changes in the structure of inequalities over time, a constant decrease can be observed in the share of net inter-group inequalities, which testifies to the equalization of average incomes of households from different-sized locations.

In the case of inequality decomposition by macroregion, it can be seen that the net impact of intra-group and inter-group inequalities is the lowest of all the decomposition types discussed so far. The Mazowieckie voivodeship and the Southern macroregion, composed of the Śląskie and Małopolskie voivodeships are leading in terms of contribution to total income inequality (in this component of intra-group inequalities). Both macroregions are characterized by a high share of the population and total income, but their contribution to inequalities of different as regard the direction of

impact – the Southern macroregion is characterized by the lowest income inequality and the Mazowiecki voivodeship shows the highest income disparities. Over two years, the role of differences in the average incomes of individual macroregions in explaining total income inequalities in Poland was seen to decrease slightly.

Table 3.3. Decomposition of the Gini coefficient* by size of place of residence of households in Poland in 2016–2019

Year	Group	Gini coefficient	Population share	Income share	Absolute contribution	Relative contribution
2016	Population of 500k and more	0.311	0.149	0.206	0.010	0.032
	Population of 200–499k	0.264	0.100	0.111	0.003	0.010
	Population of 100–199k	0.258	0.094	0.098	0.002	0.008
	Population of 20–99k	0.252	0.200	0.197	0.010	0.034
	population of less than 20k	0.259	0.131	0.122	0.004	0.014
	rural areas	0.297	0.326	0.267	0.026	0.087
	intra-group inequalities	–	–	–	0.055	0.185
	inter-group inequalities	–	–	–	0.099	0.335
	residual term	–	–	–	0.142	0.479
2017	Population of 500k and more	0.307	0.146	0.189	0.008	0.030
	Population of 200–499k	0.267	0.099	0.108	0.003	0.010
	Population of 100–199k	0.245	0.094	0.096	0.002	0.008
	Population of 20–99k	0.251	0.205	0.197	0.010	0.035
	population of less than 20k	0.244	0.130	0.120	0.004	0.013
	rural areas	0.303	0.326	0.289	0.029	0.100
	intra-group inequalities	–	–	–	0.056	0.196
	inter-group inequalities	–	–	–	0.069	0.242
	residual term	–	–	–	0.161	0.562
2018	Population of 500k and more	0.311	0.146	0.189	0.009	0.030
	Population of 200–499k	0.273	0.099	0.108	0.003	0.010
	Population of 100–199k	0.252	0.095	0.095	0.002	0.008
	Population of 20–99k	0.255	0.206	0.199	0.010	0.036
	population of less than 20k	0.253	0.129	0.120	0.004	0.013
	rural areas	0.303	0.326	0.289	0.029	0.098
	intra-group inequalities	–	–	–	0.057	0.195
	inter-group inequalities	–	–	–	0.069	0.237
	residual term	–	–	–	0.164	0.567

Year	Group	Gini coefficient	Population share	Income share	Absolute contribution	Relative contribution
2019	Population of 500k and more	0.322	0.147	0.186	0.009	0.030
	Population of 200–499k	0.272	0.100	0.109	0.003	0.010
	Population of 100–199k	0.250	0.090	0.091	0.002	0.007
	Population of 20–99k	0.259	0.206	0.202	0.011	0.037
	population of less than 20k	0.248	0.131	0.123	0.004	0.014
	rural areas	0.299	0.326	0.290	0.028	0.098
	intra-group inequalities	–	–	–	0.057	0.196
	inter-group inequalities	–	–	–	0.064	0.222
	residual term	–	–	–	0.169	0.582

[*] The calculations use disposable income per equivalent unit (modified OECD scale). The values of the Gini coefficient for individual socio-economic groups are expressed not as percentages (as, e.g., in Figures 3.1.1 and 3.2), but as decimal fractions.

Source: Ibid.

Moving on to presentation of the results of the decomposition of income inequality in Poland by source of income ("500+" child-support benefit and other income), it should be emphasized that estimates of the effect of the "500+" benefit were made without taking into account a counterfactual scenario, i.e. ignoring a change in economic stimuli resulting from the introduction of the child support benefit. In other words, the decomposition presented below simply shows the difference between actual income inequality and disparities of income excluding the child support benefit.

Table 3.4. Decomposition of the Gini coefficient* by region of residence of households in Poland in 2018 and 2019**

Year	Group	Gini coefficient	Population share	Income share	Absolute contribution	Relative contribution
2018	Southern macroregion	0.250	0.208	0.210	0.011	0.038
	North-Western macroregion	0.264	0.156	0.154	0.006	0.022
	South-Western macroregion	0.288	0.106	0.105	0.003	0.011
	Northern macroregion	0.299	0.146	0.143	0.006	0.021
	Central macroregion	0.266	0.100	0.091	0.002	0.008
	Eastern macroregion	0.275	0.134	0.116	0.004	0.015
	Mazowieckie macroregion	0.352	0.150	0.180	0.010	0.033
	intra-group inequalities	–	–	–	0.043	0.148
	inter-group inequalities	–	–	–	0.049	0.170
	residual term	–	–	–	0.198	0.682

cont. Table 3.4

Year	Group	Gini coefficient	Population share	Income share	Absolute contribution	Relative contribution
2019	Southern macroregion	0.253	0.206	0.210	0.011	0.038
	North-Western macroregion	0.258	0.158	0.156	0.006	0.022
	South-Western macroregion	0.291	0.105	0.107	0.003	0.011
	Northern macroregion	0.313	0.147	0.144	0.007	0.023
	Central macroregion	0.290	0.099	0.093	0.003	0.009
	Eastern macroregion	0.266	0.135	0.117	0.004	0.014
	Mazowieckie macroregion	0.339	0.151	0.174	0.009	0.031
	intra-group inequalities	–	–	–	0.043	0.148
	inter-group inequalities	–	–	–	0.042	0.145
	residual term	–	–	–	0.205	0.707

* The calculations use disposable income per equivalent unit (modified OECD scale). The values of the Gini coefficient for individual socio-economic groups are expressed not as percentages (as, e.g., in Figures 3.1.1 and 3.2), but as decimal fractions. ** Central region – Łódzkie and Świętokrzyskie voivodeships; Southern region – Śląskie and Małopolskie voivodeships; Eastern region– Podlaskie, Lubelskie and Podkarpackie voivodeships; North-Western region – Zachodniopomorskie, Lubuskie and Wielkopolskie voivodeships; South-Western region – Dolnośląskie and Opolskie voivodeships; Southern region – Pomorskie, Kujawsko-Pomorskie and Warmińsko-Mazurskie voivodeships; Mazowieckie region – the Mazowieckie regional and Warsaw capital subregions.

Source: Ibid.

To calculate the decomposition of the Gini coefficient by source of income, the Lerman and Yitzhaki [1985] method has been used in the following form:

$$
\begin{cases}
G_0 = \dfrac{2\sum_{k=1}^{K} cov[y_k, F(y_0)]}{\mu_0} = \\[2ex]
= \sum_{k=1}^{K} \left(\dfrac{cov[y_k, F(y_0)]}{cov[y_k, F(y_k)]} \right) \times \left(\dfrac{2cov[y_k, F(y_k)]}{\mu_k} \right) \times \left(\dfrac{\mu_k}{\mu_0} \right) = \\[2ex]
= \sum_{k=1}^{K} R_k G_k S_k,
\end{cases}
\tag{2}
$$

where G_0 is the Gini coefficient relevant to household income, and y_0, μ_0 and $F(y_0)$ mean household income, average household income and the cumulative distribution of overall household income, respectively. There are K components of household income in the formula $y_0 = \sum_{k=1}^{K} y_k$, where $y_1, \ldots, y_k$ are components of income, S_k is the share of the k-th component of overall household income, Gk is the Gini coefficient relevant to the k-th component of income, and Rk is the Gini correlation of the k-th component with overall household income. The product of G_k and R_k is interpreted as the concentration coefficient for the k-th component of income, sometimes referred to as pseudo-Gini.

Marginal effects of the change of the following income components on overall income inequality have been calculated as follows [Stark, Taylor, Yitzhaki, 1986]:

$$\frac{\partial G_0 / \partial e_k}{G_0} = \frac{S_k R_k G_k}{G_0} - S_k, \tag{3}$$

taking into account an exogenous change in each household income coming from the k-th component of income equal to $e_k y_k$, with e_k close to 1.

Table 3.5. Decomposition of the Gini coefficient* by child support benefit (500+) and other income in Poland in 2016–2019

Source of income	Year	Share in total income (Sk)	Gini coefficient for a given source of income (Gk)	Gini correlation of a given source of income with cumulative distribution of total income (Rk)	Concentration coefficient for a given source of income (Gk · Rk)	Contribution of a given source of income to Gini coefficient for total income in absolute terms (SkGkRk)	Contribution of a given source of income to Gini coefficient for total income in relative terms (SkGkRk/G0)	Effect of marginal percentage change in income from the k-th source on overall income inequality
Available income per equivalent unit*	2016	1	0.295	1	0.295	1	1	0
	2017	1	0.286	1	0.286	1	1	0
	2018	1	0.290	1	0.290	1	1	0
	2019	1	0.290	1	0.290	1	1	0
Available income – child support benefit (per equivalent unit)	2016	0.982	0.307	0.993	0.304	0.299	1.013	0.030
	2017	0.967	0.299	0.995	0.298	0.288	1.006	0.039
	2018	0.970	0.304	0.990	0.300	0.291	1.006	0.036
	2019	0.966	0.305	0.992	0.303	0.292	1.010	0.044
Child support benefit per equivalent unit	2016	0.018	0.906	–0.233	–0.211	–0.004	–0.013	–0.031
	2017	0.033	0.828	–0.059	–0.049	–0.002	–0.006	–0.039
	2018	0.030	0.832	–0.071	–0.059	–0.002	–0.006	–0.036
	2019	0.034	0.779	–0.107	0.083	0.003	–0.010	0.044

* The calculations use disposable income per equivalent unit (modified OECD scale). The values of the Gini coefficient for individual socio-economic groups are expressed not as percentages (as, e.g., in Figures 3.1.1 and 3.2), but as decimal fractions.

Source: Ibid.

Moving on to the discussion of the results of income inequality decomposition in Poland by source of income, which consist for the purposes of our analysis of the "500+" child support benefit and other income, it can be noted, first, that the overall income inequality in each year under study is lower than where the child support benefit is disregarded, which points to a negative impact of the transfer on income inequality in Poland. Second, the impact reduces inequalities in absolute terms, which is indicated by negative signs of concentration coefficients (the last four rows in the

sixth column), as well as a negative effect of the benefit change for overall income inequality. Third, a decline in transfer inequality can be seen between 2016 and 2019 and, fourth, an increase in its significance in explaining the total income inequality in Poland in that period.

Figure 3.3 shows time series for different measures of poverty or risk of poverty in Poland in 2010–2019. Each of them shows a slightly different picture of the phenomenon discussed. An astonishing example is the significant increase in statutory poverty in 2013, which was mainly influenced by indexing the poverty threshold. All measures based on data from the Statistics Poland household budget survey show a decrease in poverty in 2019 compared to the previous year. Only EU-SILC data, i.e. the relative at-risk-of-poverty rate published by Eurostat, show a slight increase. Overall, the data presented in the chart below certainly do not indicate an increase in the scale of poverty in Poland.

Figure 3.3. Poverty and the risk of poverty for different poverty lines* in Poland, 2010–2019 (%)
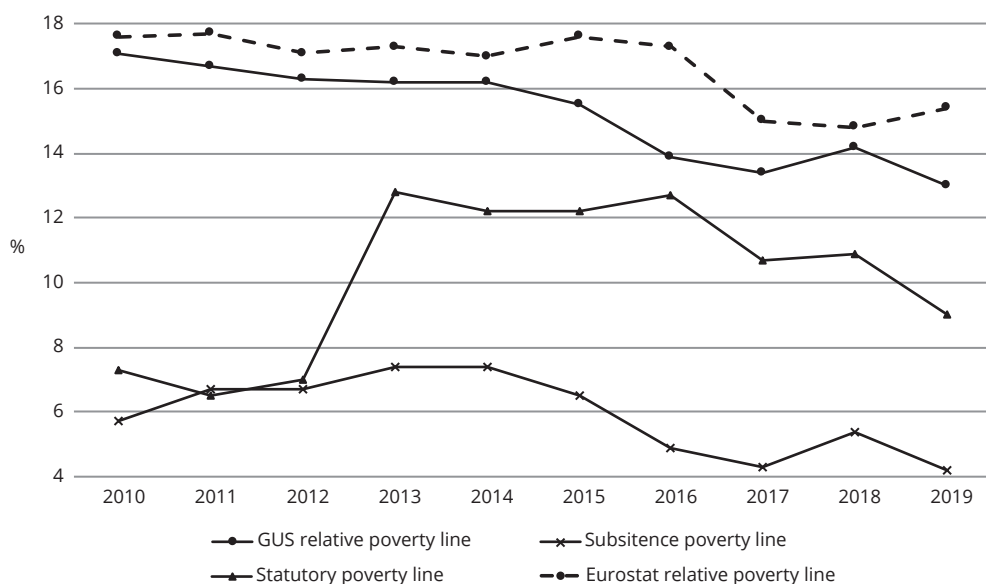
* In the case of the extreme poverty rate, a poverty line has been used, calculated on the basis of the subsistence minimum (estimated by the Institute of Labor and Social Affairs). The threshold takes into account only those needs that cannot be deferred, and consumption below this level leads to biological deprivation. The statutory poverty line is the amount which, in accordance with applicable Act on Social Assistance, entitles one to apply for a social assistance cash benefit. The relative poverty line is set at 50% of the mean monthly household expenditure calculated on the basis of the household budget surveys [Statistics Poland, 2018, p. 1]. The Eurostat at-risk-of-poverty rate taken into account in the chart is calculated on the basis of the poverty line set at 60% of median equivalized disposable income, according to EU-SILC data.

Source: Eurostat [2020]; Statistics Poland, 2012b, Chart 1, p. 1.

This sub-chapter does not undertake a more detailed analysis of poverty and the risk of poverty in Poland, but it is worth signaling some important features of this phenomenon. Statistics Poland [2020b, pp. 1–3] states that no major structural changes have been observed in this case in recent years. Households at greater risk of poverty (especially extreme poverty) include households that are mainly dependent on non-pension social benefits, large families, households with low education and economic activity levels, people with disabilities and, to a greater extent, residents of villages and small towns.

3.3. Income Inequality, Poverty Risk and Other Aspects of Social Exclusion in Poland Compared with Other EU Countries in 2010–2019

Income inequality measured by the Gini coefficient in relation to the whole European Union did not change significantly in 2019 compared with the previous year, decreasing by just 0.1 pp to 30.7%. That said, it should be noted that the Gini coefficient for the EU is calculated as an average weighted by the population of all EU countries, meaning that in fact this measure does not cover income inequality in a distribution forming a set of incomes of people living in all households of EU countries. In other words, in should be borne in mind that it is not a measure of "global" income inequality in the EU. As regards the range specific to the Gini coefficient in the group of all EU countries, it increased due to a noticeable aggravation of inequality in Bulgaria (from 39.6% to 40.8% between 2018 and 2019), while the income differential in the country with the lowest level of inequality – Slovakia – did not change in 2019 and stood at 20.9%. The countries with the lowest income inequalities in 2019 included three Central and Eastern European countries – Slovakia, Slovenia and the Czech Republic, while the highest inequalities observed in the same group of countries were Bulgaria, Lithuania and Latvia. According to EU-SILC data, Poland saw a noticeable increase in income differential from 27.8% in 2018 to 28.5% in 2019, while still remaining below the EU average.

As the Gini coefficient measures the dispersion of a variable (in this case, income) throughout its distribution, it is also worth looking at the other income inequality indicators – quantile measures – shown in Table 3.6, as they complement the picture of the structure of income inequality within the distribution. Thus, using the S80/S20 quantile inequality measure, which is the ratio of the sum of incomes of the 20% of the highest-income population (the highest quintile) and the sum of incomes of the 20% of the lowest-income population (the lowest quintile), the overall differences can

be analyzed in disparities within countries, for example in Poland and France, even though the Gini coefficient is the same for them – 28.5%. In France, inequalities tend to concentrate at the top of the distribution, whereas in Poland they mainly occupy the lower part of the distribution (see also: S80/S50 and S50/S20 variables). Of course, one should also bear in mind that country rankings developed on the basis of the different variables – Gini, S80/S20, S80/S50, S50/S20 – do not coincide although all those indicators are measures of dispersion.

In addition to disparities in disposable income, it is also worth noting the impact of social transfers on changes in income inequality. This impact can be considered both including and excluding pensions. It is, of course, merely a simple analysis, without a counterfactual simulation, i.e. it does not take into account the impact of social transfers on the level of income inequalities by changing economic incentives, but it nevertheless makes it possible to define and assess in general terms the impact of government redistribution through the social transfer system (after taxation, as we are talking about disposable income). Portugal, Greece, Germany and Sweden are among the countries with the highest income inequalities before social transfers, including pensions, are taken into account in disposable income. The smallest income disparities in this respect occur in Slovakia, the Czech Republic and Slovenia. If pensions are included in the analysis, the ranking of the countries with the highest income inequality will change – the largest disparities will occur in this case in Bulgaria, the United Kingdom and Lithuania. Pensions in Portugal, Greece, Germany and Sweden appear to reduce income inequality relatively strongly. The biggest absolute effect of reducing inequalities through overall social transfers in 2019 was seen in these countries, and the smallest in Latvia, Bulgaria and Estonia. The absolute effect of pensions alone in 2019 was greatest in Ireland, Sweden and Denmark, and smallest in Hungary, Italy and Romania.

Table 3.6. Income inequality in Poland compared with other EU countries** in 2010, 2014 and 2019*** (%, except quantile relationships)****

Country/region	2010	2014	2018	2019	2019				
	Gini coefficient (%) after social transfers				Gini coefficient (%) before social transfers (excluding pensions)	Gini coefficient (%) before social transfers (including pensions)	S80/S20	S80/S50	S50/S20
SVK[+]	25.9	26.1	20.9	20.9	24.3	37.2	3.03	1.62	1.87
SVN	23.8	25.0	23.4	23.9	29.1	42.7	3.39	1.84	1.84
CZE	24.9	25.1	24.0	24.0	27.4	42.1	3.34	1.90	1.75
BEL	26.6	25.9	25.7	25.1	32.7	46.2	3.61	1.85	1.95

Country/region	2010	2014	2018	2019	Gini coefficient (%) before social transfers (excluding pensions)	Gini coefficient (%) before social transfers (including pensions)	S80/S20	S80/S50	S50/S20
	Gini coefficient (%) after social transfers				2019				
FIN	25.4	25.6	25.9	26.2	34.2	48.7	3.69	2.02	1.83
NLD	25.5	26.2	27.4	26.6	31.8	46.2	3.92	1.98	1.97
DNK	26.9	27.7	27.8	27.5	35.7	48.6	4.09	2.04	2.00
AUT	28.3	27.6	26.8	27.5	33.8	47.6	4.17	2.02	2.04
SWE	25.5	26.9	27.0	27.6	36.0	57.3	4.33	1.92	2.26
HUN	24.1	28.6	28.7	28.0	30.3	47.9	4.23	2.07	2.04
MLT	28.6	27.7	28.7	28.0	31.2	42.9	4.18	2.04	2.05
FRA*	29.8	29.2	28.5	28.5	34.9	50.9	4.23	2.15	1.97
POL	**31.1**	**30.8**	**27.8**	**28.5**	**32.8**	**46.5**	**4.37**	**2.09**	**2.09**
IRL*	30.7	31.1	28.9	28.9	39.3	47.6	4.23	2.16	1.96
HRV	31.6	30.2	29.7	29.3	33.1	48.4	4.77	2.06	2.30
DEU	29.3	30.7	31.1	29.7	35.2	55.4	4.89	2.08	2.34
EST	31.3	35.6	30.6	30.5	34.7	44.5	5.08	2.11	2.40
EU	30.5	31.0	30.8	30.7	35.5	50.7	5.09	2.20	2.29
GRC	32.9	34.5	32.3	31.0	34.3	55.1	5.11	2.19	2.33
CYP	30.1	34.8	29.1	31.1	34.2	47.4	4.58	2.38	1.92
PRT	33.7	34.5	32.1	31.9	34.7	55.0	5.16	2.35	2.19
LUX	27.9	28.7	33.2	32.3	37.5	52.3	5.34	2.34	2.28
ESP	33.5	34.7	33.2	33.0	36.6	48.4	5.94	2.26	2.62
ITA*	31.7	32.4	33.4	33.4	35.7	48.5	6.09	2.28	2.67
GBR*	32.9	31.6	33.5	33.5	40.4	53.7	5.63	2.44	2.31
ROU	33.5	35.0	35.1	34.8	37.3	52.1	7.08	2.33	3.03
LVA	35.9	35.5	35.6	35.2	38.0	47.7	–	2.45	2.66
LTU	37.0	35.0	36.9	35.4	39.7	50.3	6.44	2.56	2.50
BGR	33.2	35.4	39.6	40.8	44.1	54.5	8.10	3.09	2.63

* Due to the unavailability of data, 2018 figures are provided instead of 2018 data. ** The table contains international country codes (SVK – Slovakia, SVN – Slovenia, CZE – Czech Republic, BEL – Belgium, FIN – Finland, NLD – Netherlands, DNK – Denmark, AUT – Austria, SWE – Sweden, HUN – Hungary, MLT – Malta, FRA – France, POL – Poland, IRL – Ireland, HRV – Croatia, DEU – Germany, EST – Estonia, GRC – Greece, CYP – Cyprus, PRT – Portugal, LUX – Luxembourg, ESP – Spain, ITA – Italy, GBR – United Kingdom, ROU – Romania, LVA – Latvia, LTU – Lithuania, BGR – Bulgaria). *** The countries in the table arranged in ascending order of income inequality measured by the Gini coefficient, after social transfers in 2019. **** Disposable income per equivalent unit (modified OECD scale).

Source: Eurostat [2020].

Looking at the data on risk of poverty (Table 3.7), it can be seen that the ranking of countries based on them largely coincides with the ranking of countries described

according to the increasing level of income inequality. This is because, in assessing poverty, we use relative measures here, which are coupled with inequalities in the distribution of income. With poverty measures defined this way, there are almost always "poor people" in the population.

The scale of poverty risk across the EU – unlike income inequality – decreased compared to 2018 (by 0.3 pp), reaching 16.8% in 2019. It should be emphasized that the risk of poverty for the EU is measured by the weighted average of at-risk-of-poverty rates of all EU countries and the size of their population, rather than a measure of poverty regarding the distribution of income across all EU countries combined. The countries with the lowest risk of poverty in 2019 were the Czech Republic, Finland and Slovakia, with Romania, Lithuania and Bulgaria ranked among the countries with the highest levels of poverty. Poland recorded a noticeable increase in poverty in 2019 (by 0.6 pp to 15.4%) compared to a year earlier, according to EU-SILC data, and in the ranking of EU countries in terms of increasing risk of poverty it was exactly below the EU average. The risk of poverty defined this way is not only linked to the scale of income inequality but, unfortunately, also shows a negative correlation with the absolute level of poverty thresholds (around –0.4; see Table 3.7), which means that poverty in general in EU countries with high income inequalities and high at-risk-of-poverty rates is more severe.

Table 3.7. Risk of poverty in Poland compared with other EU countries** in 2010, 2014 and 2019 (%, except poverty line)***

Country/ region	2010	2014	2018	2019	2019						
	At-risk-of-poverty rate after social transfers				At-risk-of-poverty rate before social transfers (excluding pensions)	At-risk-of-poverty rate before social transfers (including pensions)	Poverty line, PPP (€)	At-risk-of-poverty gap	At-risk-of-poverty rate after social transfers for persons under 18 years of age	Persistent at-risk-of-poverty rate after social transfers
CZE	9.0	9.7	9.6	10.1	16.6	34.5	8,421	14.1	11.2	5.7
FIN	13.1	12.8	12.0	11.6	25.2	42.8	12,217	14.9	10.3	6.5
SVK*	12.0	12.6	12.2	11.9	17.7	37.1	5,846	25.6	19.0	7.7
SVN	12.7	14.5	13.3	12.0	22.0	39.2	9,980	18.2	10.5	7.4
HUN	12.3	15.0	12.8	12.3	20.0	42.9	5,616	28.9	11.5	5.1
DNK	13.3	12.1	12.7	12.5	23.7	38.9	13,423	18.8	10.3	5.9
NLD	10.3	11.6	13.3	13.2	21.4	37.4	13,181	17.1	13.6	10.1
AUT*	14.7	14.1	14.3	13.3	26.2	44.9	14,212	23.9	14.9	10.2
FRA*	13.3	13.3	13.4	13.6	23.5	45.9	12,283	16.8	18.2	7.8

Country/ region	2010	2014	2018	2019	2019						
	At-risk-of-poverty rate after social transfers				At-risk-of-poverty rate before social transfers (excluding pensions)	At-risk-of-poverty rate before social transfers (including pensions)	Poverty line, PPP (€)	At-risk-of-poverty gap	At-risk-of-poverty rate after social transfers for persons under 18 years of age	Persistent at-risk-of-poverty rate after social transfers
CYP	15.6	14.4	15.4	14.7	22.7	35.1	11,154	16.0	16.7	8.8
BEL	14.6	15.5	16.4	14.8	25.4	42.5	13,260	16.3	18.9	10.4
DEU	15.6	16.7	16.0	14.8	23.2	41.3	13,616	23.2	12.1	10.6
IRL*	15.2	16.4	14.9	14.9	30.9	41.0	11,679	15.3	15.8	10.5
POL	17.6	17.0	14.8	15.4	24.4	44.3	7,401	22.0	13.4	8.6
EU	16.5	17.2	17.1	16.8	25.1	43.2	–	24.2	19.4	11.0
MLT	15.5	15.8	16.8	17.1	23.2	36.8	11,153	17.1	20.6	13.3
SWE	14.8	15.6	16.4	17.1	28.9	44.1	12,248	21.7	21.5	7.4
PRT	17.9	19.5	17.3	17.2	22.7	43.4	6,961	22.4	18.5	12.5
LUX	14.5	16.4	16.7	17.5	26.5	46.0	17,366	24.6	24.8	8.3
GRC	20.1	22.1	18.5	17.9	23.2	48.4	5,859	27.0	21.1	11.8
HRV	20.6	19.4	19.3	18.3	24.3	41.0	6,440	26.2	17.1	14.6
GBR*	17.1	16.8	18.6	18.6	29.1	43.1	11,054	23.0	23.5	8.6
ITA*	18.7	19.4	20.3	20.3	25.9	45.8	10,029	29.5	26.2	15.3
LTU	20.5	19.1	22.9	20.6	30.1	43.0	6,905	26.0	22.7	19.2
ESP	20.7	22.2	21.5	20.7	26.9	44.3	9,703	29.1	27.4	15.1
EST	15.8	21.8	21.9	21.7	30.2	39.4	8,544	22.0	17.2	16.7
BGR	20.7	21.8	22.0	22.6	29.6	42.2	5,022	27.5	27.5	16.1
LVA	20.9	21.2	23.3	22.9	29.9	39.3	6,619	28.2	14.5	15.5
ROU	21.6	25.1	23.5	23.8	28.1	45.2	4,403	33.0	30.8	16.8

Due to the unavailability of 2019 data, 2018 data have been provided instead. Additionally: 1) for Slovakia, the value of the persistent at-risk-of-poverty rate comes from 2016 and the at-risk-of-poverty rate for persons under 18 years of age – from 2019; 2) for Austria and the EU, only the value of the persistent at-risk-of-poverty rate comes from 2018, whereas the remaining data – from 2019; 3) for France, only the values of the at-risk-of-poverty rate without social transfers (including pensions), at-risk-of-poverty gap and persistent at-risk-of-poverty rate come from 2018 instead of 2019. ** The countries listed in the table are arranged in the ascending order of the at-risk-of-poverty rate after social transfers of 2019 r. *** Risk of poverty is defined as relative poverty rates for the poverty line at 60% of the median equivalized income. Additionally: 1) the poverty line is defined for a household composed of two adults and two children under 14 years of age. 2) the at-risk-of-poverty gap shows by how much the median income of people considered poor is less than 60% of the equivalent median income i.e., the value assumed for the poverty line in the case of at-risk-of-poverty rates analyzed in the table.

Source: Ibid.

In the case of poverty, the link between at-risk-of-poverty rates with and without social transfers seems smaller than for income inequality. The countries with the highest risk of poverty in 2019, excluding all social transfers, were Greece, Luxembourg, France and Italy, and the countries with the lowest intensity of this phenomenon were the

Czech Republic, Cyprus, Malta and Slovakia. If transfers without pensions are factored in, it turns out that the greatest risk of poverty in 2019 was recorded in Ireland and the three Baltic states – Estonia, Lithuania and Latvia. In absolute terms, all social transfers resulted in a reduction in the risk of poverty the most in France, Austria and Finland (also in Poland to a fairly large extent) and the least in Latvia, Estonia and Bulgaria. If retirement pensions are excluded from the analysis, it turns out that transfers had the greatest impact on reducing the risk of poverty also in Ireland, Finland and Austria, and the smallest in Romania, Greece and Portugal.

When analyzing the risk of poverty, it is worth considering also other measures that allow the scale of the phenomenon to be estimated, such as the at-risk-of-poverty gap, the persistent at-risk-of-poverty rate and the at-risk-of-poverty rate among children. High levels of these measures may indicate an unfavorable structure of poverty, i.e. particular severity and persistent social phenomena. The largest relative difference between the median income of persons considered poor and the poverty line (representing 60% of the equivalent income in this case) in 2019 was witnessed in countries such as Romania, Italy, Spain, and Hungary, which is indicative of a large at-risk-of-poverty gap in these countries, i.e. shows how poor the people at risk of poverty are. In contrast, the lowest level of the at-risk-of-poverty gap was observed in 2019 in the Czech Republic, Finland, and Ireland. Poland was characterized by a slightly smaller at-risk-of-poverty gap than the EU average and ranks slightly better among countries in terms of the increasing at-risk-of-poverty rate among children and long-term poverty. The highest percentage of children at risk of poverty was reported in 2019 in Romania, Bulgaria, Spain, and Italy, and the lowest in Denmark, Finland, Slovenia, and the Czech Republic. As regards the risk of long-term poverty, the best performers were Hungary, the Czech Republic, Denmark and Finland, and the worst Lithuania, Romania, Estonia, and Bulgaria.

The 2015 Report dealt quite extensively with theoretical aspects of social exclusion. Here, the foremost features of the phenomenon will be overviewed in brief. Unlike income inequality and poverty or the risk of poverty, social exclusion seems an even more complex concept and phenomenon, as evidenced by different definitions or approaches to how this phenomenon is described in the source literature. What seems particularly problematic for researchers or social politicians dealing with social exclusion is the operationalization of the concept. The reason is that it is a multi-dimensional phenomenon, which cannot be represented in theory by a single indicator, even an aggregated one. Nevertheless, many researchers, as well as numerous institutions and organizations (including the European Commission) broadly use such tools to estimate the scale of the phenomenon. There is no single definition of social exclusion – different proposals for its definition were proposed in the 2015 *Report*

[Graca-Gelert, 2015], and therefore they will not be mentioned here again. However, it is worth referring to two main features of this phenomenon, about which there is a relative consensus in the literature on the subject. First, social exclusion is dynamic, which means that it is a process and not a result of process. Second, in this case we are witnessing a multi-dimensional phenomenon, due to which it can be observed at many levels at the same time. Third, depending on the conditions, time or place of impact, social exclusion may be of a different nature and mean something different. Fourth, it may be intentional (active) or unintended (passive). Fifth, it may be caused by social inclusion processes, which is why it is so important to analyze both these phenomena jointly. Sixth, social exclusion is often identified with poverty or risk of poverty, which may lead to wrong research conclusions or implications reflected at social policy level. It is worth noting that the opposite of this phenomenon is inclusive society, whereas the risk of poverty contrasts with the equal society. Social exclusion emphasizes horizontal social ties ("in" vs. "out"), while in the case of poverty focus is placed on vertical social ties ("up" vs. "down") [Silver, 2007, p. 4]. Seventh, as already mentioned, there is a huge problem with the operationalization of social exclusion, i.e. translation of theory into empirical studies. In research on this phenomenon, authors tend to us certain simple or aggregated indicators which in fact show the result or picture of an existing social situation instead of a process. In addition, unlike, e.g., poverty, there are no "thresholds" of social exclusion, above which this phenomenon does not exist. The truth is that it may affect both poor and rich people.

As the following part of the chapter will look at social exclusion in the European Union and in its individual countries, it is worth considering how the phenomenon is perceived in the EU context. For the purposes of monitoring and combating social exclusion, the following definition is assumed in the EU: "Social exclusion relates to being unable to enjoy levels of participation that most of society takes for granted. It is a complex, multi-dimensional, multi-layered and dynamic concept […]. [It is] a process whereby certain individuals are pushed to the edge of society and prevented from participating fully by virtue of their poverty, or lack of basic competencies and lifelong learning opportunities, or as a result of discrimination. This distances them from job, income and education opportunities as well as social and community networks and activities. They have little access to power and decision-making bodies and thus often feeling powerless and unable to take control over the decisions that affect their day to day lives. Social exclusion is multi-dimensional in that it encompasses income poverty, unemployment, access to education, information, childcare and health facilities, living conditions, as well as social participation. It is multi-layered insofar as the causes of exclusion can be at the national, community, household or individual level" [Eurostat, 2010, p. 7].

Table 3.8. The dimension of poverty or social exclusion in the "Europe 2020" strategy – targets of the EU and individual member states* and the implementation of the targets in selected years

Country/region	Cumulative change in persons at risk of poverty or social exclusion (in thousands of persons), reference year = 2008			Variables other than persons at risk of poverty or social exclusion (see the last two columns of the table)		2020 target compared with 2008 (see: notes)	Notes
	2010	2014	2019	2008	2019		
AUT	−133	−89	−227	–	–	−235 k persons	–
BEL	41	146	3	–	–	−380 k persons	–
BGR	298	512	−1,142	1,632 k persons	1,586 k persons	−260 k persons	persons at risk of monetary poverty
CYP	21	54	14	–	–	−27 k persons	–
CZE	−71	−35	−260	–	–	−100 k persons	–
DEU	−383	163	−2,098	1,630 k persons	600 k persons (decrease by 63%)	−330 k persons (or decrease by 20%)	long-term unemployed persons
DNK	120	119	52	347 k persons	380 k persons	−22 k persons	persons in households with very low work intensity
ESP	1,243	2,616	979	6.5% + 7.4% = 13.9%***	8.3% + 9.7% = 18%***	−1,400–1,500 k persons	persons aged 0–64 living in households where nobody works
EST	−2	48	27	19.50%	21.70%	reduction to 15%	at-risk-of-poverty rate after social transfers
FIN	−20	16	−62	910	849	reduction to 770 k persons	–
FRA	561	389	−30	–	–	−1,900 k persons	compared with 2007
GBR	142	1,202	1,054**	–	–	–	practically no directly specified targets; vague targets in various government documents
GRC	−15	838	116	–	–	−450 k persons	–
HRV	–	−78	−383	–	–	−150 k persons	–
HUN	154	302	−986	–	–	−450 k persons	–
IRL	171	229	−24**	4.20%	5.6% (2018)	−200 k persons	poor persons – extended definition of poverty (permanent poverty, risk of poverty or basic deprivation)

Country/region	Cumulative change in persons at risk of poverty or social exclusion (in thousands of persons), reference year = 2008			Variables other than persons at risk of poverty or social exclusion (see the last two columns of the table)		2020 target compared with 2008 (see: notes)	Notes
	2010	2014	2019	2008	2019		
ITA	–190	2,064	1,360**	–	–	–2,200 k persons	–
LTU	158	106	–176	–	–	–170 k persons	–
LUX	11	24	50	–	–	–6 k persons	–
LVA	59	–94	–222	–	–	–121 k persons	–
MLT	6	20	16	–	–	–6,56 k persons	–
NLD	51	319	380	1,053 k persons	1,157 k persons	–100 k persons	persons in households with very low work intensity
POL	**–1,083**	**–2,155**	**–4,800**	**–**	**–**	**–1,500 k persons**	**–**
PRT	–65	106	–543	–	–	–200 k persons	–
ROU	–689	–1,071	–3,041	–	–	–580 k persons	–
SVK	7	–151	–234	20.6% (2010)	16.40%	reduction to 17.2%	AROPSE****
SVN	5	49	–68	–	–	–40 k persons	–
SWE	119	224	390	14.4% (2010)	10.50%	to a level much below 14%	a much lower share of women and men aged 20–64 outside the labor force (excluding full-time students), the long-term unemployed or people on long-term sick leave
EU	516	4,635	–9,856	–	–	–20,000 k persons	–

*The countries listed in the table are arranged on alphabetical order based on the international country/region code. ** Data for 2018. *** As data expressed in thousands of people were not available, shares were used – the first value relates to the percentage of 0–17-year-olds living in households where no person works; the second figure relates to the percentage of 18–59-year-olds living in households where no person works. These figures do not exactly coincide with Spain's national target, but provide some approximation of its implementation. **** AROSPE means the rate of at risk of poverty or social exclusion.

Source: Eurostat [2020], European Commission [2020].

The above definition seems consistent with many features of social exclusion mentioned above, yet the operationalization of this phenomenon faces typical difficulties related to its measurement, as already mentioned. The policy currently in force (end of 2020) for the monitoring and combating social exclusion in the EU is the "Europe 2020" strategy adopted by the European Council in 2010. The main objective of the program is to reduce the number of people at risk of poverty and social exclusion by 20 million by 2020. However, there is a fairly large degree of freedom at country level in setting the goals for combating this phenomenon and the methods of its elimination. The main measures by which the level of social exclusion in the European Union is monitored are the at-risk-of-poverty rate, severe material deprivation and very low work intensity, as well as an aggregated indicator based on these three measures, with those included in more than one of the three indicators counted only once in the aggregated index. The at-risk-of-poverty rate is defined as in Table 3.7 – as the relative poverty rate for poverty line at 60% of the median equivalized income. The severe material deprivation indicator is the "percentage of persons in households declaring the inability to afford meeting at least 4 out of 9 following needs due to financial reasons: 1) one week annual holiday away from home, 2) a meal with meat or fish (or vegetarian equivalent) every second day, 3) keep home adequately warm, 4) face unexpected expenses (of an amount equivalent to the monthly relative poverty line in the respondent's country, in the year preceding the survey), 5) pay for arrears (mortgage or rent, utility bills or hire purchase instalments), 6) a color TV, 7) a personal car, 8) a washing machine, 9) a telephone (fixed landline or mobile)" [Statistics Poland, 2014, p. 44]. As regards the low work intensity indicator, it is the "percentage of persons aged 0–59 living in households with very low work intensity, where the adults (aged 18–59) worked less than 20% of their total work potential during the past year" [Statistics Poland, 2014, p. 44].

Table 3.8 presents the targets relating to social exclusion, set by individual EU member states. The information has been collected from several reliable sources, trying to take into account the most up-to-date data available. In addition, attention was paid to the achievement of those targets from the moment the "Europe 2020" strategy entered into effect. As can be seen, not all countries decided to formulate their targets directly on the basis of the aggregated measure of social exclusion. This is reflected in the table, which also shows the implementation of the strategy for the countries using alternative measures. If the real level of social exclusion in individual countries is compared with the targets adopted, it will turn out that only about half of the countries have succeeded in the implementation of their objectives. The countries that have managed to reduce social exclusion, with a sizeable surplus, are mainly Poland, Germany, Romania, Portugal, and Sweden. A significant increase in the level

of this phenomenon was witnessed in Italy, Spain, the Netherlands, and Estonia. At the level of the whole EU, social exclusion was managed to be reduced by less than 50% of the target. The COVID-19 pandemic is expected to render the achievement of this objective completely unrealistic.

Table 3.9 shows the different dimensions of social exclusion and the aggregated measure of social exclusion, i.e. AROPSE (at risk of poverty or social exclusion), relating to the total population in each country and by selected age and gender categories. As regards the changes over time between 2008 and 2019, the picture based on at-risk-of-poverty or social exclusion rates is slightly more optimistic than the analysis of the targets described in Table 3.8 – in most countries AROPSE was reduced during that period. Romania, Bulgaria and Poland were the most successful in this respect, while Luxembourg, Estonia and Sweden saw the largest increases in AROPSE. The countries with the lowest AROPSE levels in 2019 were the Czech Republic and Slovenia, with Bulgaria and Romania reporting the highest AROPSE rates. Overall, the AROPSE changes for the different groups listed in the table coincided with the overall AROPSE changes. However, some exceptions should be noted. In France, Belgium and Cyprus, social exclusion among children increased, even though overall AROPSE decreased in these countries. A similar development occurred in the Czech Republic and Malta for the elderly. A reduction in the risk of poverty or social exclusion among people over 60, despite the increase in overall AROPSE between 2008 and 2019, could be seen in Denmark, Cyprus, Spain, Italy, and Greece. If we look at the changes in AROPSE separately for men and women, it turns out that they were similar to those in overall AROPSE. However, the structure of gender-based exclusion is striking. Only in Finland, in 2019, AROPSE for women was lower than for men. This is certainly an important indication for EU countries in terms of reducing social exclusion among women, who are far more likely to experience this phenomenon than men. Nevertheless, the social exclusion rate improved significantly between 2008 and 2019 in several Central and Eastern European countries – in Poland, Bulgaria, Romania, Hungary, and Latvia. The situation of women in this respect deteriorated in Luxembourg and Estonia. The changes in the situation of men generally coincided with the trends observed for social exclusion among women.

Figure 3.4 shows the evolution of the different components of the aggregated social exclusion rate for Poland and the EU as a whole in 2008–2019, as well as increases in the number of socially excluded people, together with the adopted target for reducing this phenomenon at the end of 2020. As can be easily seen, Poland, despite significant increases in the number of people at risk of poverty or social exclusion until 2012, finally did quite well in reducing the latter phenomenon, with performance that went well beyond the target. There is still much work to be done within the EU, as less than 50%

of the EU target has so far been achieved, as already mentioned. In each of the three dimensions, Poland has managed to achieve a lower level of social exclusion than the EU as a whole. The greatest improvement was recorded in terms of reduction severe material deprivation, although it is only since 2016 that this variable has shown lower values than the EU average. Taking into account other variables, Poland's performance in the reduction of the risk of poverty is the weakest.

Table 3.9. Selected dimensions of social exclusion in EU member states, 2008 and 2019 (%)*

Country/ region	Risk of poverty		Severe material deprivation		Very low work intensity		AROPSE		AROPSE 0–17 years of age		AROPSE above 60 years of age		AROPSE women		AROPSE men	
	2008	2019	2008	2019	2008	2019	2008	2019	2008	2019	2008	2019	2008	2019	2008	2019
CZE	9.0	10.1	6.8	2.7	7.2	4.2	15.3	12.5	18.6	13.0	11.5	16.7	17.2	14.6	13.3	10.4
SVN	12.3	12.0	6.7	2.6	6.7	5.2	18.5	14.4	15.3	11.7	22.5	19.7	20.3	15.6	16.6	13.2
FIN	13.6	11.6	3.5	2.4	7.5	9.7	17.4	15.6	15.1	14.3	20.2	14.2	18.9	15.9	15.9	15.4
DNK	11.8	12.5	2.0	2.6	8.5	9.3	16.3	16.3	12.7	13.2	15.3	9.7	17.0	16.1	15.7	16.6
SVK	10.9	11.9	11.8	7.9	5.2	6.2	20.6	16.4	24.3	22.0	20.5	14.4	22.0	17.0	18.9	15.7
NLD	10.5	13.2	1.5	2.5	8.2	9.2	14.9	16.5	15.5	15.5	9.5	13.4	15.5	17.0	14.3	16.1
AUT	15.2	13.3	5.9	2.6	7.4	7.8	20.6	16.9	22.9	19.5	20.0	14.1	22.3	18.3	18.9	15.4
DEU	15.2	14.8	5.5	2.6	11.7	7.6	20.1	17.4	20.1	15.0	16.3	19.6	21.6	18.5	18.5	16.3
FRA	12.5	13.6	5.4	4.7	8.8	7.9	18.5	17.9	21.2	22.5	12.8	11.4	19.7	18.5	17.3	17.3
POL	**16.9**	**15.4**	**17.7**	**3.6**	**8.0**	**4.7**	**30.5**	**18.2**	**32.9**	**16.0**	**26.4**	**19.5**	**31.2**	**18.7**	**29.9**	**17.7**
SWE	13.5	17.1	1.8	1.8	7.0	8.6	16.7	18.8	17.3	23.1	13.3	14.4	17.7	19.6	15.8	18.0
HUN	12.4	12.3	17.9	8.7	12.0	5.0	28.2	18.9	33.4	22.4	17.4	15.9	29.0	19.6	27.3	18.0
BEL	14.7	14.8	5.6	4.4	11.7	12.4	20.8	19.5	21.3	22.3	21.9	16.0	22.4	20.0	19.1	18.9
MLT	15.3	17.1	4.3	3.6	8.6	4.9	20.1	20.1	25.0	23.6	25.1	27.8	21.5	21.4	18.7	18.8
LUX	13.4	17.5	0.7	1.3	4.7	7.5	15.5	20.6	20.9	25.4	5.6	10.5	16.7	21.6	14.2	19.6
IRL**	15.5	14.9	5.5	4.9	13.7	13.0	23.7	21.1	26.6	24.1	22.3	21.4	24.7	22.6	22.7	19.6
EU	16.6	16.8	8.5	5.5	9.2	8.5	23.7	21.4	26.5	23.4	21.9	19.0	25.1	22.3	22.3	20.4
PRT	18.5	17.2	9.7	5.6	6.3	6.2	26.0	21.6	29.5	22.3	27.0	20.5	26.8	22.2	25.0	20.8
CYP	15.9	14.7	9.1	9.1	4.5	6.8	23.3	22.3	21.5	23.0	42.5	23.4	25.9	23.3	20.5	21.2
GBR**	18.7	18.6	4.5	4.6	10.4	8.6	23.2	23.1	29.6	28.9	25.6	21.4	24.7	24.3	21.7	21.7
HRV***	20.6	18.3	14.3	7.2	13.9	9.2	31.1	23.3	29.4	20.7	34.4	31.5	32.1	24.3	30.1	22.1
EST	19.5	21.7	4.9	3.3	5.3	5.4	21.8	24.3	19.4	20.3	37.3	39.9	24.3	26.3	18.9	22.0
ESP	19.8	20.7	3.6	4.7	6.6	10.8	23.8	25.3	30.1	30.3	23.9	16.4	25.1	26.0	22.4	24.6
LTU	20.9	20.6	12.5	9.4	6.1	7.5	28.3	26.3	29.1	26.5	37.8	34.9	30.4	28.4	25.9	23.8
ITA**	18.9	20.3	7.5	8.5	10.4	11.3	25.5	27.3	28.4	30.6	22.8	20.5	27.4	28.4	23.5	26.1

Country/ region	Risk of poverty		Severe material deprivation		Very low work intensity		AROPSE		AROPSE 0–17 years of age		AROPSE above 60 years of age		AROPSE women		AROPSE men	
	2008	2019	2008	2019	2008	2019	2008	2019	2008	2019	2008	2019	2008	2019	2008	2019
LVA	25.9	22.9	19.3	7.8	5.4	7.6	34.2	27.3	32.4	18.9	54	45.5	36.6	29.6	31.4	24.6
GRC	20.1	17.9	11.2	16.2	7.5	13.8	28.1	30.0	28.7	30.5	27.4	21.9	29.8	30.8	26.3	29.2
ROU	23.6	23.8	32.7	14.5	8.5	6.0	44.2	31.2	50.9	35.8	46.6	31.7	45.3	32.1	43.0	30.3
BGR	21.4	22.6	41.2	19.9	8.1	9.3	44.8	32.5	44.2	33.9	61.6	43.1	46.4	34.4	43.0	30.5

[*] The countries listed in the table are arranged in the descending order of AROPSE for 2019 [**] Data from the column marked "2019" for these countries come from 2018 [***] The data from the column marked "2008" for Croatia come from 2010.

Source: Compilation by the author based on Eurostat data [Eurostat, 2020].

Figure 3.4. Social exclusion and its basic dimensions* in Poland compared with other EU countries in 2010–2017
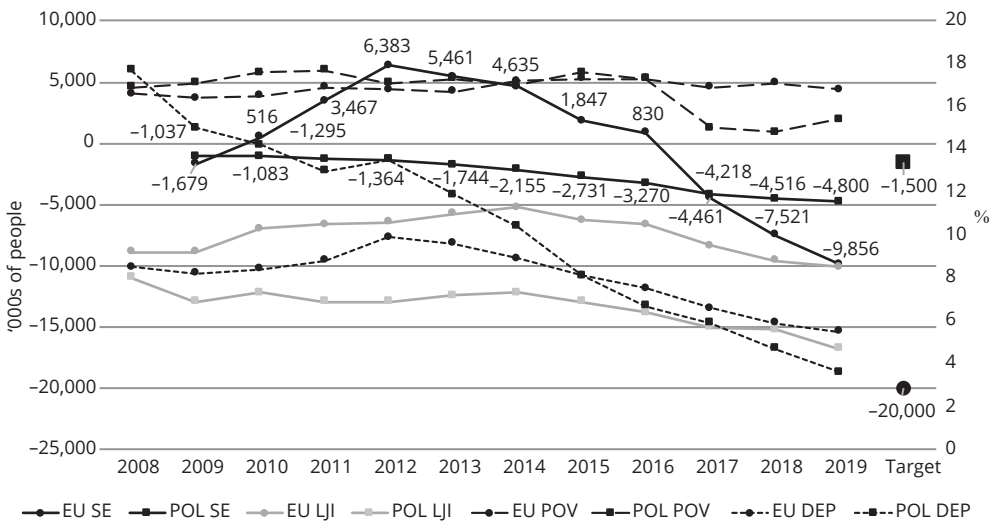
[*] The following designations are used: SE – social exclusion in thousands of people, LJI – very low labor intensity in %, DEP – severe material deprivation in %, POV – at-risk-of-poverty rate in %.

Source: Compilation by the author based on Eurostat data [Eurostat, 2020] and Table 3.8.

3.4. Conclusions

Poland stands out from other European Union countries (average) for its lower level of income inequality, risk of poverty and social exclusion and its other selected aspects such as very low work intensity and severe material deprivation. However, it is not one of the countries with the lowest rates of these variables, although over

the last decade, or even longer, it has made great progress in reducing these adverse phenomena for society, which is a welcome development in the context of improving Poland's competitiveness compared to EU countries. However, some stabilization of declining trends was observed in 2019, and some indicators of income inequality or risk of poverty even saw a slight increase.

As regards the structure of income inequality in Poland, it has remained quite stable for some years, showing fairly expected features. Income inequality is the highest and most variable among farmers, and its lowest level is recorded among pensioners. The region with the highest income disparity is the Mazowieckie voivodeship. Apart from the Southern region, the voivodeship is the greatest contributor to explaining overall income inequality owing to its large combined share in the population and income. The classes of places of residence with the highest income disparity in recent years were rural areas and the largest cities, which also have the most significant share of income inequalities. The role of the "Family 500+" child support benefit has increased slightly since 2017 in terms of negative impact on income inequality. Nevertheless, it remains small, given its absolute share in the Gini coefficient.

Bibliography

Bellú, L.G., Liberati, P. [2006], *Policy Impacts on Inequality. Decomposition of Income Inequality by Subgroups*. EASYPol, FAO.

Deutsch, J., Silber, J. [1999], *Inequality Decomposition by Population Subgroups and the Analysis of Interdistributional Inequality*, in: *Handbook on Income Inequality Measurement* (pp. 363–403), J. Silber (ed.), Kluwer Academic Publishers, DOI: 10.1007/978-94-011-4413-1.

Duclos, J.Y., Araar, A., Fortin, C. [2010], *DAD 4.6: A Software for Distributive Analysis / Analyse Distributive,* MIMAP Programme, International Development Research Centre, Government of Canada and CIRPÉE, Université Laval.

European Commission [2020], *2020 European Semester: National Reform Programmes and Stability/Convergence Programmes*, https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/european-semester-timeline/national-reform-programmes-and-stability-or-convergence-programmes/2020-european_en (accessed: 15.10.2020).

Eurostat [2010], *Combating Poverty and Social Exclusion. A Statistical Portrait of the European Union 2010*, Luxembourg. Publications Office of the European Union.

Eurostat [2020], *EU-SILC*, https://ec.europa.eu/eurostat/data/database (accessed: 25.10.2020).

Graca-Gelert, P. [2015], *Income Inequality, Poverty and Other Selected Aspects of Social Exclusion in Poland*, in: *Poland. Competitiveness Report 2015. Innovation and Poland's Performance in 2007–2014*, pp. 71–91, M.A. Weresa (ed.), Warsaw, SGH Publishing House.

Lambert, P.J., Aronson, J.R. [1993], *Inequality Decomposition Analysis and the Gini Coefficient Revisited*, "The Economic Journal", 103(420), pp. 1221–1227. DOI: 10.2307/2234247.

Lerman, R.I., Yitzhaki, S. [1985], *Income Inequality Effects by Income Source: A New Approach and Applications to the United States*, "The Review of Economics and Statistics", 67(1), pp. 151–156.

OECD [2020], *Income Distribution Database*, https://stats.oecd.org/Index.aspx?DataSetCode=IDD (accessed: 25.10.2020).

Silver, H. [2007], *The process of social exclusion: the dynamics of an evolving concept*, CPRC Working Paper no. 95.

Stark, O., Taylor, J.E., Yitzhaki, S. [1986], *Remittances and Inequality*, "The Economic Journal", 96(383), pp. 722–740.

Statistics Poland [2014], *Dochody i warunki życia ludności Polski (raport z badania EU-SILC 2012)*, Warsaw, Statistics Poland.

Statistics Poland [2020a], *Budżety gospodarstw domowych w 2019 r.*, Warsaw, Statistics Poland.

Statistics Poland [2020b], *Zasięg ubóstwa ekonomicznego w Polsce w 2019 r. (informacje sygnalne)*, Warsaw, Statistics Poland.

Weresa, M.A., Kowalski, A.M. (eds.), [2018], *Poland. Competitiveness Report 2018. The Role of Cities in Creating Competitive Advantages*, Warsaw, SGH Publishing House.

Competitiveness of Polish Foreign Trade and Balance of Payments: A Bilateral Perspective

Mariusz-Jan Radło

4.1. Introduction

This chapter aims to present a diagnosis of the competitiveness of Polish foreign trade in a bilateral context. The analysis is complemented with an assessment of the balance of payments. This approach is due to the fact that, in addition to international trade performance, the competitiveness of an economy is often combined by various researchers with its ability to maintain a long-term balance in this regard [Fagerberg, 1988; Aiginger, Landesmann, 2002].

For the above reasons, this chapter starts with an overview and identification of the main trends in trade in services and goods. The following part looks in detail at the share of individual markets in Polish exports by industry, the share of different industries in exports to the main markets, as well as the balance of trade in goods representing different industries in individual markets. Next, an analysis of competitiveness in trade in services is carried out taking into account similar variables. To this end, the share of individual markets in Poland's exports by type of service, the share of different types of services in exports to the principal markets, as well as the balance of trade in different services in individual markets are examined. The final part presents an analysis of the Polish balance of payments in the long term as well as a discussion of short-term trends in the development of the current account. The study focuses on analyzing trends over the past five years for which full statistics are available, usually covering the period from 2015 to 2019. Where possible, an analysis of 2020 data is also performed. As regards the case of balance of payments, a longer period is presented in order to highlight the changes that have taken place in the development of its components due to the emergence and perpetuation of the phenomenon of surplus in the current account recorded in recent years.

The study used data from the National Bank of Poland relating to trade in services and balance of payments, as well as bilateral trade data from the OECD database.

4.2. Main Trends in Polish Trade in Goods and Services

According to the data presented in Table 4.1, the value of foreign trade increased steadily between 2015 and 2019. At the same time, Poland regularly achieved a surplus of exports over imports in trade in services. The situation was slightly different for trade in goods, where there were small deficits in the trade balance in 2017 and 2018.

Exports of goods during the period under study increased from PLN 717.2 bn to PLN 1,001.1 bn, while the value of goods imports grew from PLN 713.8 bn to PLN 996.0 bn. It should be noted that between 2015 and 2019 Poland recorded a surplus three times and twice a deficit in trade in goods. However, the value of both surpluses and deficits was negligible in relation to the value of trade in goods, and their absolute value never exceeded 1.5% of the total value of the sum of exports and imports in a given year.

Table 4.1. Polish foreign trade in goods and services in 2015–2019

	2015	2016	2017	2018	2019
Balance on goods (PLN bn)	3.4	8.9	−1.5	−26.5	5.2
Balance on goods (% of the sum of exports and imports)	0.24	0.58	−0.09	−1.41	0.26
Exports (PLN bn)	717.2	774.3	860.1	925.3	1,001.1
Imports (PLN bn)	713.8	765.5	861.6	951.8	996.0
Balance on services (PLN bn)	45.5	60.0	75.9	90.6	101.6
Balance on services (% of the sum of exports and imports)	15.85	18.51	21.21	22.58	23.33
Exports (PLN bn)	166.3	192.1	216.9	245.9	268.5
Imports (PLN bn)	120.8	132.1	141.0	155.3	166.9
Total trade balance	48.9	68.9	74.4	64.1	106.8
Total trade balance (% of the sum of exports and imports)	2.85	3.70	3.58	2.81	4.39
Exports (PLN bn)	883.5	966.4	1,077.0	1,171.2	1,269.6
Imports (PLN bn)	834.6	897.5	1,002.6	1,107.1	1,162.8

Source: Compiled by the author from NBP data (balance of payments – annual data).

The situation was completely different in the case of service trade. The value of the surplus in trade in services in 2015–2019 was high and increased steadily from 15.85% to 23.33% of the total value of exports and imports of services. At the same time, the value of service exports increased from PLN 166.3 bn to PLN 268.5 bn, while the value of service imports increased from PLN 120.8 bn to PLN 166.9 bn. The growth of service exports was significantly faster during the period considered than gains

in exports of goods; as a result, the share of services in total exports increased from 18.82% to 21.15%. At the same time, it was mainly the surplus in trade in services that contributed to the surplus recorded by Poland in the balance of trade in services and goods over the whole period.

It should also be noted that in the first half of 2020 the negative economic impact of the COVID-19 pandemic was evident in trade in both goods and services. However, the second half of 2020 was characterized by completely different trends, as a result of which Polish exports of goods and services grew rapidly during that period. According to the data presented in Figure 4.1, in March and April 2020, trade with foreign countries decreased for both services and goods. In May, the trend reversed. Since then, there has been a surplus of exports over imports for both goods and services. In addition to the August decrease in the whole of the second half of 2020, there were rapid increases in exports of goods and services and a rapidly increasing surplus in the trade balance.

Figure 4.1. Polish exports and imports of goods and services between 1 January 2019 and 31 December 2020 (PLN m)

Source: Ibid.

At the present stage, it is hard to tell what the sources of the trends in Polish exports described above are. One hypothesis often raised in this context is that the increase in Polish exports in the second half of 2020 may be a result of pandemic-induced shifts in global value chains, for which their regionalization is a new trend. This hypothesis could explain the rapid increase in exports to European markets, resulting, e.g., from the substitution of imports from more distant Asian markets with imports from Poland or other Central and Eastern European countries. Similar hypotheses were posed by Legrain [2020], Schell [2020] or Niblett [2020], pointing out that a pandemic could

end the current phase of globalization, which is characterized by high dependence of many "Western" companies on China-centric global value chains [see also Radło, 2020]. Falsification of this hypothesis goes beyond the scope of this study, but if such shifts were to take place, they could have a significant impact on the competitiveness of Polish exports also in the bilateral dimension. Another hypothesis explaining the above trends concerns changes in the pattern of demand in export markets, which consist in shifting expenditure from the consumption of services (tourist, food services, etc.) to the purchase of durable goods (white and brown goods, etc.), in the production of which many companies in Poland are specialized.

4.3. Competitive Advantages in Bilateral Trade in Goods

While the previous part of this chapter presents the general trends in trade in goods in the period 2015–2019 and the preliminary directions of development of individual variables observed in 2020, this chapter is devoted to the analysis of trade in goods on a bilateral basis. It will be carried out on the basis of 2019 data and will cover, successively, the share of individual markets in Polish exports by industry, the share of different industries in exports to main markets, as well as the balance sheet in trade in different goods in different markets.

Table 4.2 shows the share of individual markets in exports from Poland by commodity group in 2019. The total share of all the following 24 countries in Polish exports is 88.6%. However, the top 5 export markets account for more than half (50.1%) value of Polish exports of goods. These markets include Germany (27.5%), the Czech Republic (6.2%), the United Kingdom (6.0%), France (5.8%), and Italy (4.6%).

Table 4.2. Share of individual markets in exports from Poland by industry in 2019 (%)

Description	Total	1–3	5–8	10–12	13–15	16–18	19–22	23	24–25	26–28	29–30	31–32
World	100	100	100	100	100	100	100	100	100	100	100	100
Germany	27.5	32.8	19.4	22.5	42.5	30.0	25.6	25.3	27.5	24.8	26.2	35.1
Czech Republic	6.2	3.5	34.0	4.7	6.0	5.7	7.1	7.2	9.6	4.2	5.9	7.0
United Kingdom	6.0	5.9	0.5	9.3	2.8	6.4	4.4	6.4	5.0	7.1	5.7	6.7
France	5.8	3.5	0.3	5.7	3.1	5.2	5.4	6.4	4.3	7.4	6.7	5.9
Italy	4.6	2.9	0.5	5.9	3.1	4.3	4.0	3.7	4.5	4.4	6.7	2.1
Netherlands	4.4	5.7	0.2	6.4	2.9	3.5	4.9	2.5	3.2	5.7	2.5	4.7
Russia	3.1	1.7	0.7	1.7	2.9	3.9	5.4	2.6	2.4	4.1	2.3	1.7

Description	Total	1–3	5–8	10–12	13–15	16–18	19–22	23	24–25	26–28	29–30	31–32
USA	2.9	0.2	0.1	2.0	0.8	0.9	1.3	2.9	1.6	4.8	4.6	3.9
Hungary	2.8	1.3	2.6	2.8	3.6	2.3	2.7	2.3	4.0	2.5	2.9	2.2
Sweden	2.8	1.2	0.3	2.0	1.6	3.7	2.0	4.4	2.6	3.8	2.9	3.1
Slovakia	2.6	1.6	11.8	2.3	3.2	2.5	2.5	4.0	3.3	1.4	3.2	2.9
Spain	2.6	1.0	0.1	2.8	1.5	1.7	2.9	2.0	1.6	2.7	3.8	2.0
Belgium	2.4	1.5	0.3	2.6	1.0	2.4	2.5	2.2	2.1	2.4	2.9	2.6
Austria	2.1	1.4	16.6	1.7	2.2	1.9	2.2	1.7	2.5	2.4	1.7	2.1
Romania	2.1	2.7	0.6	2.6	5.1	2.7	2.9	1.8	2.1	1.5	1.2	1.9
Ukraine	2.1	2.7	3.1	1.7	3.8	2.5	3.2	1.6	2.0	1.8	1.4	0.8
Denmark	1.6	2.2	0.2	2.1	1.3	2.4	1.7	3.7	1.7	1.7	0.7	2.0
Lithuania	1.5	2.1	1.0	1.9	1.7	2.6	2.1	1.9	1.8	0.9	1.2	0.9
Norway	1.2	1.2	0.2	0.5	0.6	0.9	0.9	2.1	1.8	0.8	2.2	1.0
China	1.1	1.3	2.9	0.6	0.2	0.4	0.9	1.4	3.0	1.3	0.6	1.0
Switzerland	0.9	0.3	1.1	0.5	0.6	1.0	0.6	0.8	1.5	1.2	0.7	1.5
Finland	0.8	1.0	0.1	0.7	0.9	0.7	0.8	1.0	1.0	0.9	0.6	0.5
Turkey	0.8	0.4	0.1	0.3	0.4	1.2	1.0	0.5	1.0	0.7	1.3	0.2
Belarus	0.7	3.6	0.8	0.4	0.6	1.0	1.0	0.8	0.6	0.7	0.6	0.3

Notes: 1–3: agriculture, forestry and fishing 5–8: mining and quarrying; 10–12: food products, beverages and tobacco; 13–15: textiles, wearing apparel, leather and related products; 16–18: wood, paper products and printing; 19–22: chemicals, rubber, plastics and fuel products; 23: other non-metallic mineral products; 24–25: basic metals and fabricated metal products, except machinery and equipment; 26–28: machinery and equipment; 29–30: transport equipment; 31–32: furniture, other manufacturing.

Source: Compilation by the author based on OECD.Stat: BTDIxE Bilateral Trade in Goods by Industry and End-use, ISIC Rev.4.

The situation varies slightly across industries. The largest export markets for agriculture, forestry and fishing are: Germany (32.8%), the United Kingdom (5.9%), the Netherlands (5.7%), Belarus (3.6%), and the Czech Republic (3.5%). In the mining and quarrying industry, the most goods are exported to the Czech Republic (34%), Germany (19.4%), Austria (16.6%), Slovakia (11.8%) and Ukraine (3.1%). 1The main export markets for food products, beverages and tobacco are Germany (27.1%), the United Kingdom (6.1%), the Czech Republic (6%), France (6%), and Italy (4.7%). The textiles, wearing apparel, leather and related products industry exports its goods mainly to Germany (42.5%), the Czech Republic (6%), Romania (5.1%), Ukraine (3.8%), and Hungary (3.6%). The largest export markets for wood, paper products and printing are Germany (30%), the United Kingdom (6.4%), the Czech Republic (5.7%), France (5.2%), and Italy (4.3%). For the manufacturers of chemicals, rubber, plastics and fuel products, the main export markets are: Germany (25.6%), the Czech Republic (7.1%), France (5.4%), Russia (5.4%) and the Netherlands (4.9%).

Manufacturers of other non-metallic mineral products export the most to markets such as Germany (27.5%), the Czech Republic (9.6%), the United Kingdom (5%), Italy (4.5%), and France (4.3%). Producers of basic metals and fabricated metal products, except machinery and equipment, export the most to Germany (27.5%), the Czech Republic (9.6%), the United Kingdom (5%), Italy (4.5%), and France (4.3%). The machinery and equipment industry exports its products to Germany (24.8%), France (7.4%), the United Kingdom (7.1%), the Netherlands (5.7%), and the USA (4.8%). Manufacturers of transport equipment export the most to Germany (26.2%), France (6.7%), Italy (6.7%), the Czech Republic (5.9%), and the United Kingdom (5.7%). For their part, furniture and other manufactured products are exported to Germany (35.1%), the Czech Republic (7%), the United Kingdom (6.7%), France (5.9%), and the Netherlands (4.7%).

Table 4.3. Share of individual industries in exports from Poland to particular markets in 2019 (%)

Description	Total	1–3	5–8	10–12	13–15	16–18	19–22	23	24–25	26–28	29–30	31–32
World	100	1.8	0.4	11.9	5.4	3.9	15.3	2.0	10.1	22.7	17.7	6.7
Germany	100	2.2	0.3	9.8	8.3	4.2	14.2	1.9	10.1	20.5	16.9	8.5
Czech Republic	100	1.0	2.2	9.0	5.3	3.6	17.7	2.4	15.7	15.4	17.0	7.6
United Kingdom	100	1.8	0.0	18.4	2.5	4.1	11.1	2.2	8.3	26.5	16.6	7.4
France	100	1.1	0.0	11.7	2.9	3.4	14.2	2.2	7.5	29.1	20.3	6.8
Italy	100	1.2	0.0	15.3	3.6	3.6	13.3	1.6	9.7	21.7	25.5	3.1
Netherlands	100	2.4	0.0	17.5	3.5	3.1	17.0	1.1	7.4	29.7	10.2	7.2
Russia	100	1.0	0.1	6.6	5.0	4.9	26.2	1.7	7.7	29.6	12.9	3.5
USA	100	0.1	0.0	8.2	1.5	1.2	6.6	2.0	5.6	37.6	27.7	9.0
Hungary	100	0.8	0.4	12.1	7.0	3.2	15.0	1.7	14.5	20.8	18.6	5.3
Sweden	100	0.8	0.0	8.7	3.0	5.2	11.3	3.2	9.6	31.3	18.5	7.4
Slovakia	100	1.1	1.8	10.6	6.7	3.8	14.8	3.1	12.6	12.0	21.7	7.3
Spain	100	0.7	0.0	12.9	3.2	2.6	17.1	1.6	6.3	24.1	25.8	5.1
Belgium	100	1.1	0.0	13.1	2.4	3.9	16.4	1.9	8.8	23.0	21.5	7.3
Austria	100	1.2	3.1	9.2	5.4	3.4	15.8	1.6	11.7	25.2	14.1	6.6
Romania	100	2.3	0.1	14.7	12.9	4.9	20.7	1.7	9.8	16.0	10.2	5.9
Ukraine	100	2.4	0.6	9.8	9.8	4.6	23.5	1.6	9.6	19.3	11.9	2.7
Denmark	100	2.6	0.1	15.3	4.3	5.8	15.8	4.7	10.6	24.0	7.6	8.3
Lithuania	100	2.6	0.3	14.9	6.1	6.8	20.8	2.5	11.9	14.2	14.0	4.0
Norway	100	1.9	0.1	5.2	2.7	3.0	11.6	3.7	15.8	15.7	33.7	5.9
China	100	2.3	1.1	6.3	0.9	1.5	12.4	2.6	28.1	27.6	10.2	6.3

Description	Total	1–3	5–8	10–12	13–15	16–18	19–22	23	24–25	26–28	29–30	31–32
Switzerland	100	0.6	0.5	6.3	3.7	4.4	9.8	1.9	17.1	29.6	14.3	11.0
Finland	100	2.2	0.1	9.9	6.1	3.1	15.5	2.5	13.0	23.8	13.9	3.7
Turkey	100	0.8	0.0	4.8	2.6	5.8	18.4	1.4	12.0	20.1	28.1	1.6
Belarus	100	9.3	0.5	6.9	4.7	5.7	20.6	2.2	9.0	22.1	15.8	2.3

Notes: 1–3: agriculture, forestry and fishing 5–8: mining and quarrying; 10–12: food products, beverages and tobacco; 13–15: textiles, wearing apparel, leather and related products; 16–18: wood, paper products and printing; 19–22: chemicals, rubber, plastics and fuel products; 23: other non-metallic mineral products; 24–25: basic metals and fabricated metal products, except machinery and equipment; 26–28: machinery and equipment; 29–30: transport equipment; 31–32: furniture, other manufacturing.

Source: Ibid.

Table 4.3 describes the share of individual industries in exports from Poland to particular markets. An analysis of the data presented below shows that more than a half (51.5%) of Polish exports to the German market is attributable to three industries: machinery and equipment (20.5%), transport equipment (16.9%), and chemicals, rubber, plastics and fuel products (14.2%). Also in the case of goods supplied to the Czech market, more than a half (50.4%) of exports are represented by three industries: chemicals, rubber, plastics and fuel products (17.7%), transport equipment (17%), and basic metals and fabricated metal products, except machinery and equipment (15.7%). Higher industry concentration occurs in exports to the United Kingdom, where three industries account for 61.5% of exports to that market. These are: machinery and equipment (26.5%), food products, beverages and tobacco (18.4%), and transport equipment. In the case of goods supplied to the French market, the concentration is even higher, with three major industries accounting for as much as 63.6% of exports. These are: machinery and equipment (29.1%), transport equipment (20.3%), and chemicals, rubber, plastics and fuel products (14.2%). In the case of Italy, industry concentration of exports is lower than for the French market, but higher than for the UK market, at 62.5%, the main goods supplied to being transport equipment (25.5%), machinery and equipment (21.7%), and food products, beverages and tobacco (15.3%).

The above considerations can be complemented with an overview of the balance of Polish trade by industry and country. Relevant data are presented in Table 4.4. Their analysis shows that the highest surpluses in trade in goods were recorded with countries such as: Germany (USD 16,489 m), United Kingdom (USD 9,693 m), Czech Republic (USD 7,149 m), France (USD 5,696 m) and Romania (USD 2,955 m). It is also worth noting that industries in which Poland recorded the highest surpluses in total trade in goods represented the largest proportion of trade with those countries, including: food

products, beverages and tobacco (USD 13,835 m), transport equipment (USD 9,286 m), furniture and other manufacturing (USD 9,206 m), wood, paper products and printing (USD 2,410 m), and other non-metallic mineral products (USD 1,827 m). On the other hand, the highest deficits were recorded in trade with countries such as: China (–USD 27,713 m), Russia (–USD 8,150 m), Turkey (–USD 2,198 m), Italy (–USD 620 m) and the USA (–USD 589 m). This was also largely determined by the structure of industry trade, as the countries concerned were also characterized by a relatively large share of industries in which Poland recorded the highest deficits in total trade in goods. These were, in order: mining and quarrying (–USD 14,585 m), chemicals, rubber, plastics and fuel products (–USD 5,853 m), textiles, wearing apparel, leather and related products (–USD 3,688 m), machinery and equipment (–USD 2,668 m), and agriculture, forestry and fishing (–USD 2,507 m).

Table 4.4. Balance of Polish trade by industry and country in 2019 (PLN m)

Description	Total	1–3	5–8	10–12	13–15	16–18	19–22	23	24–25	26–28	29–30	31–32
World	5,211	–2,507	–14,585	13,835	–3,688	2,410	–5,853	1,827	–193	–2,668	9,286	9,206
Germany	16,489	832	27	2,780	3,071	622	–1,389	437	555	3,317	1,468	4,545
Czech Republic	7,149	–24	273	889	599	295	1,303	139	1,252	971	465	853
United Kingdom	9,693	178	–22	2,195	121	531	257	249	983	2,948	1,325	985
France	5,696	–9	–8	1,026	163	224	–761	196	276	2,609	1,211	705
Italy	–620	–89	–8	1,032	–357	162	–908	28	1,040	–479	1,001	–56
Netherlands	1,769	–464	–11	734	26	155	–309	67	352	587	–0	650
Russia	–8,150	40	–8,009	344	371	211	–1,641	49	–588	2,227	854	261
USA	–589	–36	–432	174	55	–69	–682	30	–22	787	–435	290
Hungary	2,938	–68	23	545	407	73	–168	91	563	586	596	284
Sweden	2,570	–95	–14	452	102	129	161	208	–111	1,379	358	399
Slovakia	2,057	75	95	491	355	49	223	143	–152	–158	538	356
Spain	845	–579	–7	212	35	57	96	40	–226	691	295	238
Belgium	274	22	–5	–27	129	69	–1,457	39	–137	851	714	345
Austria	1,340	23	149	213	187	–271	130	37	–243	515	263	215
Romania	2,955	90	6	666	549	158	773	77	264	242	–52	193
Ukraine	2,391	–114	–470	–57	449	51	983	7	–58	891	544	22
Denmark	1,248	–488	0	162	30	180	82	150	213	414	250	251
Lithuania	1,821	–66	–27	324	183	184	–38	50	398	411	438	68
Norway	361	–941	–317	–47	76	81	227	105	–150	369	828	166
China	–27,713	–23	–17	–204	–4,770	–188	–1,707	–539	–1,435	–15,934	–781	–2,104

Description	Total	1–3	5–8	10–12	13–15	16–18	19–22	23	24–25	26–28	29–30	31–32
Switzerland	639	8	10	64	42	45	–269	–30	218	118	255	162
Finland	133	38	–10	148	102	–529	–48	40	–141	172	175	65
Turkey	–2,198	–81	–26	–15	–736	96	–31	–23	–261	–313	–828	–61
Belarus	593	162	–8	87	62	–85	–229	–17	45	375	216	–38

Notes: 1–3: agriculture, forestry and fishing 5–8: mining and quarrying; 10–12: food products, beverages and tobacco; 13–15: textiles, wearing apparel, leather and related products; 16–18: wood, paper products and printing; 19–22: chemicals, rubber, plastics and fuel products; 23: other non-metallic mineral products; 24–25: basic metals and fabricated metal products, except machinery and equipment; 26–28: machinery and equipment; 29–30: transport equipment; 31–32: furniture, other manufacturing.

Source: Ibid.

4.4. Competitive Advantages in Bilateral Trade in Services

This sub-chapter presents the results of an analysis of trade in services in a bilateral context, on the basis of 2019 data. The study considers the share of individual markets in Poland's exports by type of service, the share of different types of services in exports to the principal markets, as well as the balance of trade in different services in individual markets.

The basic data on the structure of exports of services are shown in Tables 4.5 and 4.6. The former presents the share of individual markets in exports from Poland in 2019 by industry. The total share of the 13 countries listed there in Polish services exports is 77.9%. Among them, the top 5 export markets account for 53.1% of the value of Polish exports of services. The markets are Germany (23.9%), the United Kingdom (7.8%), Switzerland (7.7%), the USA (7%), and the Netherlands (6.7%). Table 4.6 shows the share of individual types of services in exports from Poland to particular markets. An analysis of the data in the table shows that 89.9% of the total exports of services is represented by 5 types of services: transport services (27.2%) – mainly other business services (24.3%), foreign travel (19.6%), telecommunication, computer and information services (12.3%), and processing (6.5%).

Table 4.5. Share of individual markets in exports from Poland by service type in 2019 (%)

Country name	S	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK
World total	100	100	100	100	100	100	100	100	100	100	100	100
Germany	23.9	21.7	26.2	30.4	28.2	39.5	16.0	7.7	4.7	14.5	16.4	58.2
United Kingdom	7.8	4.3	4.5	5.1	2.3	2.2	5.5	31.7	6.8	17.0	11.3	10.2
Switzerland	7.7	32.7	3.0	5.2	0.3	0.6	3.3	0.8	1.1	9.6	11.1	1.1

cont. Table 4.5

Country name	S	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK
USA	7.0	1.2	4.3	3.3	2.8	2.0	1.7	3.8	36.6	17.2	11.1	6.2
Netherlands	6.7	10.4	5.9	9.3	1.3	5.7	2.0	1.6	5.5	6.1	8.5	2.4
Ukraine	5.1	0.0	0.2	0.0	24.5	1.5	0.7	1.8	1.1	0.7	0.3	0.4
France	3.9	3.7	6.2	5.5	1.3	3.7	14.1	3.2	1.8	3.3	4.3	1.4
Sweden	3.6	1.7	3.3	6.2	0.9	7.9	0.3	1.2	1.8	4.9	2.7	1.5
Czech Republic	2.8	0.6	3.2	2.7	6.5	1.3	5.0	3.4	1.8	0.9	1.7	2.0
Ireland	2.7	0.4	1.8	1.8	0.5	0.1	8.5	9.5	6.5	4.4	4.9	1.0
Denmark	2.4	4.9	2.4	3.3	0.4	3.3	0.7	0.4	0.3	3.0	2.0	2.7
Italy	2.2	1.8	3.4	3.6	1.3	0.7	2.4	1.1	0.4	1.4	1.9	1.5
Belgium	2.1	3.7	1.3	1.7	0.5	7.5	2.9	5.2	0.3	1.5	2.9	0.7

Notes: S – total services; SA – processing; SB – repairs; SC – transport services; SD – foreign travel; SE – construction services; SF – insurance services; SG – financial services; SH – charges for the use of intellectual property; SI – telecommunication, computer and information services; SJ – other business services; SK – cultural and recreational services
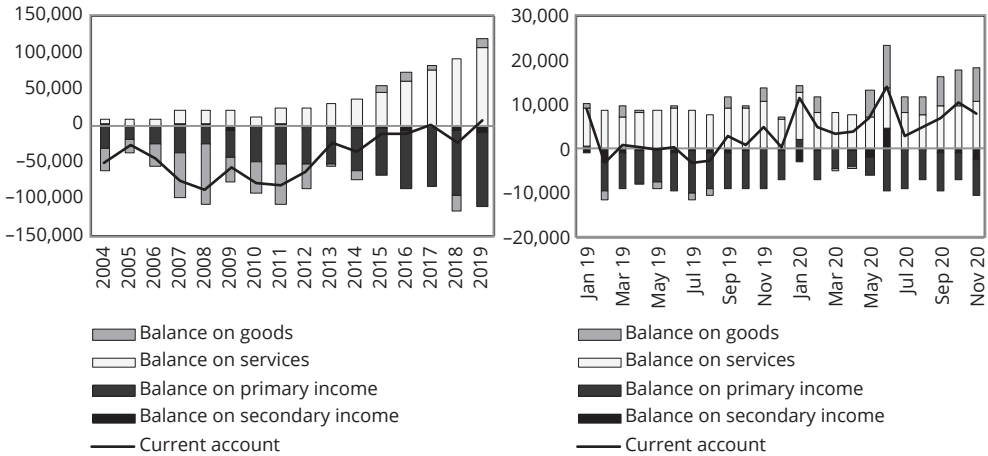
Source: Compiled by the author from NBP data (international trade in services).

Table 4.6. Share of individual types of services in exports from Poland to particular markets in 2019 (%)

Country name	S	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK
World total	100	6.5	2.8	27.2	19.6	2.9	0.7	1.4	0.9	12.3	24.3	1.4
Germany	100	5.9	3.1	34.6	23.1	4.8	0.4	0.5	0.2	7.5	16.7	3.3
United Kingdom	100	3.6	1.6	17.7	5.7	0.8	0.5	5.8	0.8	26.7	35.0	1.8
Switzerland	100	27.7	1.1	18.6	0.9	0.2	0.3	0.2	0.1	15.4	35.2	0.2
USA	100	1.1	1.7	12.8	7.8	0.8	0.2	0.8	4.8	30.3	38.5	1.2
Netherlands	100	9.9	2.5	37.5	3.9	2.5	0.2	0.3	0.8	11.2	30.7	0.5
Ukraine	100	0.0	0.1	0.0	94.9	0.9	0.1	0.5	0.2	1.7	1.4	0.1
France	100	6.2	4.5	38.3	6.4	2.7	2.4	1.2	0.4	10.4	27.0	0.5
Sweden	100	3.1	2.6	46.8	5.1	6.3	0.1	0.5	0.5	16.8	17.8	0.5
Czech Republic	100	1.3	3.2	25.9	45.1	1.3	1.2	1.7	0.6	4.0	14.8	0.9
Ireland	100	1.0	1.9	18.7	3.9	0.1	2.1	5.0	2.2	20.1	44.5	0.5
Denmark	100	13.4	2.8	38.2	3.7	4.1	0.2	0.3	0.1	15.6	20.0	1.5
Italy	100	5.3	4.4	45.5	11.9	0.9	0.7	0.8	0.2	7.9	21.4	0.9
Belgium	100	11.7	1.8	22.7	5.0	10.5	0.9	3.6	0.1	9.1	34.1	0.4

Notes: S – total services; SA – processing; SB – repairs; SC – transport services; SD – foreign travel; SE – construction services; SF – insurance services; SG – financial services; SH – charges for the use of intellectual property; SI – telecommunication, computer and information services; SJ – other business services; SK – cultural and recreational services

Source: Ibid.

The key markets for transport services are Germany (30.4%), the Netherlands (9.3%), Sweden (6.2%), France (5.5%), and Switzerland (5.2%). They represent 53.3% of the export value of transport services. The provision of other business services abroad to

5 key markets accounts for 58.4% of the export value of those services. In this case, the key markets are Germany (16.4%), the United Kingdom (11.3%), Switzerland (11.1%), the USA (11.1%), and the Netherlands (8.5%). The export concentration lev1el for transport services is slightly higher, with 56.6% of exports going to 5 main markets. The key markets in this case are: Germany (30.4%), the Netherlands (9.3%), Sweden (6.2%), France (5.5%), and Switzerland (5.2%). Telecommunication, computer and information services are exported to countries such as: the USA (17.2%), the United Kingdom (17%), Germany (14.5%), Switzerland (9.6%), and the Netherlands (6.1%). Geographical concentration is relatively high in this case, with the above 5 markets representing 64.4% of exports of those services. An even higher geographical concentration of exports characterizes processing services. The 5 largest markets account for 74% of exports of such services. Their principal destinations are Switzerland (32.7%), Germany (21.7%), the Netherlands (10.4%), Denmark (4.9%), and the United Kingdom (4.3%).

Competitive advantages in trade in services can be additionally inferred from the data presented in Table 4.7 concerning the balance of Polish trade in services by country and type of service, as well as the revealed comparative advantages in Polish trade in services by country and commodity group. Their analysis shows that the largest trade surpluses are recorded in trade with countries such as Germany (PLN 31 bn), Switzerland (PLN 13.5 bn), Ukraine (PLN 11.7 bn), the USA (PLN 9.3 bn), and the Netherlands (PLN 8.8 bn). The total value of the service trade surplus in those markets amounts to PLN 74.3 bn. An analysis of the balance of trade in services by type of service indicates that the largest surpluses in this area are recorded for services such as transport services (PLN 38.2 bn), other business services (PLN 21.2 bn), foreign travel (PLN 17.2 bn), processing (PLN 15.7 billion), and telecommunication, computer and information services (PLN 14.3 bn). Of the types of services listed in the table, a negative balance in trade is recorded only for insurance services (–PLN 2.4 bn) and charges for the use of intellectual property (–PLN 11.9 bn).

Table 4.7. Balance of Polish trade in services by country and service type in 2019 (PLN m)

Country name	S	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK
World total	101.6	15.7	3.1	38.2	17.2	5.3	–2.4	0.3	–11.9	14.3	21.2	1.2
Germany	31.0	3.3	0.8	15.9	6.8	2.3	–0.3	–0.2	–2.0	1.4	1.4	1.5
United Kingdom	7.1	0.7	0.1	1.8	–0.4	0.1	–0.3	0.3	–1.8	3.3	3.2	0.0
Switzerland	13.5	5.7	–0.4	2.7	–0.1	0.0	–0.2	0.0	–1.6	2.3	5.0	0.0
USA	9.3	0.2	0.0	0.6	0.6	0.2	–0.6	–0.1	–0.6	4.0	5.2	–0.1
Netherlands	8.8	1.7	0.2	4.5	0.0	0.3	0.0	–0.1	–1.1	0.4	2.9	0.0
Ukraine	11.7	–0.3	0.0	–0.1	12.6	–0.1	0.0	0.1	0.0	–0.1	–0.2	–0.1

cont. Table 4.7

Country name	S	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK
France	1.8	0.6	0.3	2.9	−0.3	0.3	0.0	0.0	−1.0	−0.1	−0.7	−0.1
Sweden	5.5	0.3	0.2	3.4	−0.1	0.6	0.0	0.0	−0.1	0.8	0.4	0.0
Czech Republic	−0.4	0.0	0.1	1.0	−0.4	−0.1	−0.2	0.1	−0.3	−0.1	−0.5	0.0
Ireland	−1.3	0.1	−0.1	1.0	−0.1	0.0	−0.2	0.3	−1.0	−0.5	−0.7	0.0
Denmark	2.5	0.9	0.1	0.6	0.0	0.2	0.0	0.0	−0.3	0.7	0.3	0.1
Italy	−0.4	0.2	0.0	1.6	−1.7	−0.1	−0.1	0.0	−0.3	0.2	−0.2	0.0
Belgium	1.6	0.6	0.0	0.2	−0.1	0.6	0.0	−0.3	−0.1	0.3	0.7	0.0

Notes: S – total services; SA – processing; SB – repairs; SC – transport services; SD – foreign travel; SE – construction services; SF – insurance services; SG – financial services; SH – charges for the use of intellectual property; SI – telecommunication, computer and information services; SJ – other business services; SK – cultural and recreational services

Source: Ibid.

4.5. Balance of Payments and Its Components

Figure 4.2 presents long and short-term trends in the evolution of the current account and its components. Their analysis shows that the balance on current account increased significantly between 2004 and 2019 and was positive in both 2017 and 2019, while the previous period saw permanent deficits. The improvement in the current account balance was mainly due to a steadily increasing surplus in trade in services and the elimination of the deficit in trade in goods. Both of these trends have been described earlier. The balance of payments was negatively affected over the whole period by the balance on primary income, which has deepened further in recent years. The impact of the balance on secondary income was minimally negative. The high negative balance on primary income was mainly due to the transfer of income received by foreign investors due to their capital involvement in the Polish economy. On the other hand, transfers from the EU budget and income from earnings had a positive effect on the balance of income, although they were unable to outweigh the items that had a negative impact on the balance of income [NBP, 2015]. An analysis of short-term trends in the evolution of the current account over the period 1 January 2019–30 November 2020 indicates that the current account surplus persisted in the first half of 2020, resulting from an increase in the surplus in trade in services and goods, as well as a decrease in the primary income deficit. In the second half of the year, these trends consolidated, with a large increase in the surplus in trade in goods being noteworthy.

The short-term trends in the current account described above are at least partly attributable to the response of the zloty exchange rate to the crisis triggered by the COVID-19 pandemic. An analysis of the data presented in Figure 4.3 shows substantial

weakening of the zloty exchange rate against the euro, which had a positive effect on the balance of trade in goods and services.

Figure 4.2. **Current account and its components in 2004–2019 and between 1 January 2019 and 30 November 2020 (PLN m)**

Source: Ibid.

Figure 4.3. **EUR/PLN exchange rate between 1 January 2019 and 31 December 2020 (closing)**

Source: Compiled by the author from Stooq data.

Figures 4.4 and 4.5 present data on long-term trends affecting the value of the capital and financial account. An analysis of the data shows that the balance of this account demonstrates a long-term growth and it has a positive value despite the fact that 2016 saw its significant decrease. On the other hand, an analysis of data on long-term trends in the financial account indicates that while 2004–2014 saw permanent

deficits, four of the five years of the 2015–2019 period witnessed financial account surpluses. These observations are reflected in the data presented in Figure 4.5.

Figure 4.4. Capital account and its components in 2010–2019 (EUR bn)
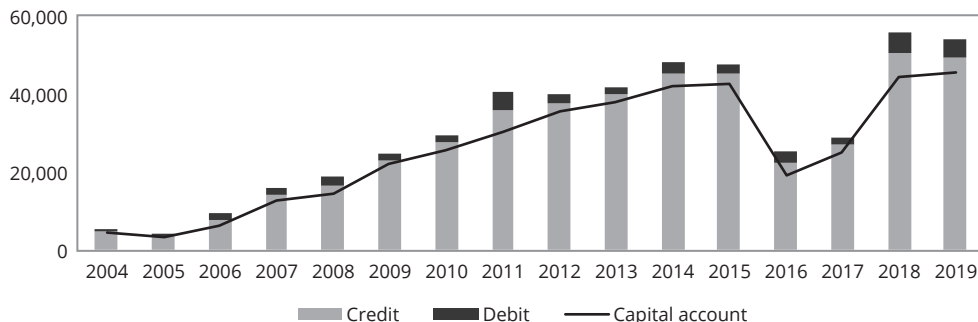
Source: Compiled by the author from NBP data.

Figure 4.5. Financial account according to BPM6 in 2004–2019 (PLN m)
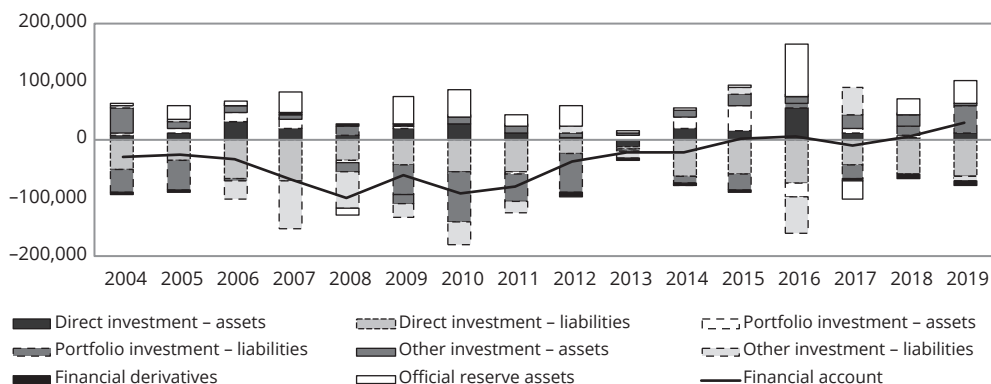
Source: Ibid.

4.6. Summary and Conclusions

To sum up the above analyses, it should be noted that trade performance both in goods and in services, as well as the evolution of the balance of payments, show a relatively high level of competitiveness of the Polish economy in international trade. It clearly manifests itself in the bilateral trade surpluses which the Polish economy is experiencing in trade with highly developed countries. They usually involve more processed goods. Deficits in Polish trade in goods, on the other hand, are reported in trade with countries at a similar or slightly lower level of development, including

mainly China, Russia and Turkey. An important trend indicative of an improvement in the competitiveness of Polish trade is the steady increase in exports of goods and services, which is characterized by an increase in the surplus in trade in services and an equilibrium in the balance of trade in goods. A new phenomenon is the emergence of a large surplus in trade in goods in the second half of 2020, which may result from shifts in global value chains. However, this is only a hypothesis that requires further research. These factors have a positive impact on the balance of payments, in which Poland has recorded very high surpluses in the current, capital and financial accounts in recent years. Also noteworthy is the impact of the evolution of the dollar against the euro, which has a stabilizing effect on the competitiveness of Polish exports in the short term due to its declines during periods of increasing economic crises, such as the one caused by the COVID-19 pandemic. The impact of the latter variable on foreign trade is currently difficult to assess due to the lack of available data for 2020. The trends observed in the latter part of 2020 mentioned above indicate that Polish exports have paradoxically proved resilient to the effects of the pandemic.

Bibliography

Aiginger, K., Landesmann, M. [2002], *Competitive Economic Performance: USA versus EU*, WIIW Research Report No. 291, The Vienna Institute for International Economic Studies, Vienna.

Fagerberg, J. [1998], *A technology gap approach to why growth rates differ*, "Research Policy", 16 (2–4), pp. 87–99.

Legrain, P. [2020], *Will the Coronavirus Kill Globalization? The Pandemic is Legitimizing Nationalists and Turning their Xenophobia into Policy*, "Foreign Policy", 2 (Spring), pp. 23–25.

NBP [2015], *Statystyka bilansu płatniczego. Uwagi metodyczne*, National Bank of Poland, Warsaw.

Niblett, R. [2020], *The End of Globalization as We Know It*, "Foreign Policy", 2 (Spring), p. 10.

Radło, M.J. [2020], *Zamiast wstępu: czy Inicjatywa Pasa i Szlaku zmieni warunki globalizacji?* in: *Inicjatywa Pasa i Szlaku. Chińska ekspansja, nowe łańcuchy wartości i rosnąca rywalizacja*, M.J. Radło (ed.), SGH Publishing House, Warsaw, pp. 7–19.

Schell, O. [2020], *The Ugly End of Chimerica. The Coronavirus Pandemic Has Turned a Conscious Uncoupling into a Messy Breakup*, "Foreign Policy", 2 (Spring), pp. 26–29.

The Relationship between Domestic and Bilateral Foreign Direct Investment and the Competitiveness of the Polish Economy

Tomasz Marcin Napiórkowski

5.1. Introduction

A number of both exogenous [Solow, 1956; Ramsey, 1928; Koompans, 1963; Cass, 1965; Diamond, 1965] and endogenous [Romer, 1986; Lucas, 1988; Rebelo, 1990; Romer, 1990; Aghion-Howitt, 1992] theories of economic growth consider investment as a key driver of growth. The former involve investment in physical capital and the latter, above all, investment in human capital. The impact of foreign direct investment (FDI) on the host country's economic development is well documented in the scientific literature [e.g., Lipsey, 2002; Napiórkowski, 2017a; Sunde, 2017] and industry literature – such as US FDI in Poland [KPMG, American Chamber of Commerce in Poland, 2010, 2020]. In order to achieve the objective of a long-term economic development driven by activity on the international stage (including trade or investment), it is necessary to boost productivity, which is reflected in the growing international competitiveness of the economy concerned.

The aim of the study presented in this chapter is to identify the link between domestic investment and bilateral foreign direct investment and the competitiveness of the Polish economy. Using econometric modelling, two research hypotheses will be tested:

- H1: there is a statistically significant impact of domestic investment on the international competitiveness of the Polish economy;
- H2: there is a statistically significant impact of bilateral foreign direct investment on the international competitiveness of the Polish economy.

For the purpose of a comparative analysis, data for Poland will be compared with data in the other countries that joined the European Union in 2004[1], and in Bulgaria and Romania[2].

A lack of conformity as to how "international competitiveness" is defined should be noted at this point[3] [Capobianco-Uriarte, 2019]. In the context of foreign trade, it may be understood as "a measure of a country's advantage or disadvantage in selling its products in international markets" [OECD, 2014]. Zhang [2015] sees competitiveness as "a country's ability to compete internationally through expanding export capacity and upgrading export sophistication" [Zhang, 2015, p. 499]. Definitions of competitiveness tend to focus on the outcome in the form of relatively higher foreign sales representing competitiveness rather than on its factors, which also need to be identified, defined and analyzed [Misala, 2011]. In World Economic Forum publications, competitiveness means "the set of institutions, policies and factors that determine the level of productivity of a country" [WEF, 2020]. An analogous definition is used by Schwab [2019, p. 2] in a report on competitiveness in the context of Revolution 4.0 ("the attributes and qualities of an economy that allow for a more efficient use of factors of production"). Purwanto et al. [2017, p. 2878] perceive competitiveness as "the extent to which firms in a particular region can compete with those elsewhere. Critical factors for competitiveness are those that determine the level of productivity in a region in relation to other regions". Based on the above, it can be considered that a country's competitiveness should be reflected in relative productivity.

After the discussion of the impact of FDI on the international competitiveness of host economies, the empirical aspect of the presented study and its results will be presented.

5.2. The Relationship between Foreign Direct Investment and International Competitiveness of Host Economies

FDI can affect competitiveness (and productivity) directly through technology transfer [Svedin, Stage, 2016] and knowledge transfer [Temiz, Gökmen, 2014]. The strength of this impact is moderated by the host country's ability to absorb new

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[1]   The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Slovakia, and Slovenia. Due to lack of data, Cyprus was omitted from the study.

[2]   Analysis using only those countries that joined the European Union in 2004 did not give a sufficient number of observations. It was therefore decided to take into account two successive member states (in terms of the time accession). Poland was included in the panel study with Romania and Bulgaria, e.g., by Nicolini and Resmini [2010].

[3]   A detailed overview of the definitions of international competitiveness is presented, e.g., by Misala [2011].

technology and knowledge[4] [Wang, 2010; Lichtenthaler, 2016], which is determined primarily by the difference in the level of technology between the source and the recipient of transfer [Lall, Narula, 2004; Nicolini, Resmini, 2010; Munteanu, 2015] and the level of the recipient's human capital [Zhao, Zhang, 2010; Tang, Zhang, 2016]. FDI can also affect the productivity of the host country by increasing domestic investment. This is due, e.g. to higher wages offered by companies with foreign capital [Javorcik, 2015]. Increased savings *(ceteris paribus)* are transformed by the financial system into loans to enterprises. Such investment can be used for physical or human capital and direct technology purchases. A similar system of indirect impact can be seen in the case of FDI's impact on the competitiveness of the host country [Napiórkowski, 2017b].

In his research on these issues, Claro [2009] concluded that the liberalization of capital markets, including the liberalization of FDI, would lead to the extinction of domestic sectors with low productivity. Such measures shift comparative advantage to a sector with a high labor intensity. The same conclusions were reached by Zhao and Zhang [2010], who also noted that in labor-intensive industries the direct impact of FDI is more noticeable, whereas in capital-based industries primarily spillover effects are observed. Zhang [2015] demonstrated through econometric modelling that FDI is a significant factor in the competitiveness of China's exports. Like other researchers, he also noticed that their impact is reinforced by China's ability to assimilate knowledge and its predisposition to learn and draw conclusions from business activity internationally. While the literature on FDI has been dominated in recent years by research from China, the impact of FDI on competitiveness can be seen in many other economies. For example, a study by Javocik et al. [2017] showed that FDI activity in Turkey translates into the production of more advanced products, which in turn affects the country's competitiveness. On the other hand, the positive impact of FDI on Poland's international competitiveness was confirmed by a study conducted by Pilarska [2007].

While some conclusions may be specific to the entity under study (e.g. China), an attempt may be made to extrapolate them to reach more general conclusions. For example, a study by Claro [2009] shows that FDI, which brings productivity gains, changes the comparative advantage of the host country in favor of sectors that use the growth factor which is relatively abundant in the host country. This may be due to the low relative costs of this resource, which in turn translates into low (relative to the foreign market) prices, while maintaining high returns.

Differences in definitions, competitiveness measures and analysis levels translate into divergences in determinants of competitiveness [Żmuda, 2017; Liu, 2017; Blandinières

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[4]   "The ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends" [Apriliyanti, Alon, 2017, p. 896].

et al., 2018]. In a 2015 study, Zhang took into account physical capital, human capital, infrastructure, and FDI. In their econometric analysis, Javocik et al. [2017] adopted (in addition to variables related to FDI) such control variables as, e.g., company size, productivity measured as value added per employee, R&D activity and wages. In examining the determinants of the comparative advantage of OPEC countries and selected non-OPEC countries, Elsalih et al. [2020] concluded that the standardized disclosed relative advantage was influenced by oil prices, their average daily production and natural resources.

As can be seen, thinking about competitiveness in terms of improving relative productivity makes it possible to introduce FDI as a determining factor. While there are many measures of international competitiveness in the literature [Misala, 2011; Starzyńska, 2012], the most commonly used indicator is Revealed Comparative Advantage (RCA), which was used as a dependent variable also in this study.

5.3. Assumptions and Methodology of the Empirical Study

Thinking about competitiveness in terms of greater productivity allows international competitiveness to be explored by applying growth theory in conjunction with Heckscher-Ohlin's theory of relative factor endowments and productivity as proposed by Ricardo, following Amoroso et al. [2011].

Econometric modelling using panel data was used to test the research hypotheses. The panel ($n = 100$) consists of 10 cross-sections (i = Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Romania, Slovakia, and Slovenia) and 10 periods (t = 2008, 2009, …, 2017). The parameters of the model were estimated with the ordinary least squares method with the use of fixed or random effects. The choice between random and fixed effects was dictated by the results of the Hausman test [Longhi, Nandi, 2015]. In order to avoid problems of autocorrelation or heterogeneity of the variance of residuals, the option of robust standard errors was used. Despite Field's comments [2013] on the unreliability of normal distribution tests (i.e. the tendency to reject the null hypothesis with an increase in the number of observations), the normality of the distribution of residuals was checked with Jarque – Ber and Shapiro – Wilk tests. The Levin-Lin-Chu test for the presence of a unit root was performed to supplement these observations.

While RCA [Balassa, 1965] is usually used in analyzing individual industries [Nachum et al., 2000; Napiórkowski, 2014; Elsalih et al., 2020], it has been modified in this study. This procedure allowed the relative advantages to be calculated at the national level. The RCA for country i was expressed as the ratio of exports and

imports of country i to the ratio of global exports and imports (equation 5.1). The higher the value of this indicator, the greater the advantage of exports over imports of country i and over the same ration for the world. In other words, the international competitiveness of economy i increases.

$$RCA_{it} = \left(\frac{X_{it}}{M_{it}} \right) \bigg/ \left(\frac{X_{wt}}{M_{wt}} \right) \tag{5.1}$$

Following Amoroso et al. [2011], who examined the relative competitiveness of Mexico, each variable (X_i) was relativized to its value for Poland (X_{PL}): $\ln(X_i) - \ln(X_{PL})$. This allowed for a direct comparison of the values of analyzed variables between economy i and Poland.

The dependent variable in the model is represented by the relative RCA: $\ln(RCA_i) - \ln(RCA_{PL})$. The higher its positive value, the greater the advantage of country i over Poland in the area of international competitiveness. Between 2004 and 2017, Poland's RCA grew by an average of 0.0083 points annually (R-sq = 60.91%; Figure 5.1). The economies that are the reference for Poland can be divided into three groups. The first one consists of countries where the analyzed relative RCA was generally constantly negative (Bulgaria, Latvia, Romania), which means that Poland has achieved greater international competitiveness compared with these economies. Estonia and Lithuania, falling within the second group at the beginning of the period considered, had an advantage over Poland in terms of RCA, but over time they lost it. The third group consists of countries that have (almost constantly) maintained higher international competitiveness than Poland. These are the Czech Republic, Hungary, Malta, Slovakia, and Slovenia.

Figure 5.1. Poland's RCA in 2004–2017
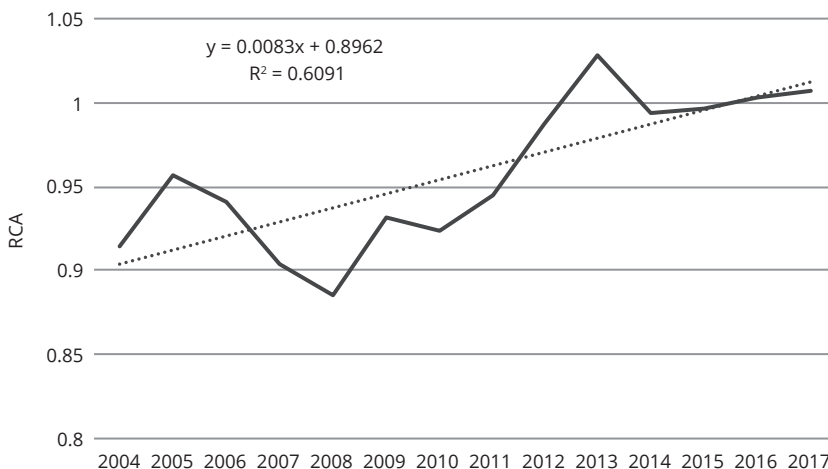
Source: Compiled by the author from World Bank data [2020a].

In the context of independent variables, FDI activity is represented as FDI stock in the host country (*IFDI_S*), FDI stock of that country abroad (*OFDI_S*) and their net FDI value (*BFDI_S = IFDI_S − OFDI_S*), i.e. bilateral FDI. According to theories of economic growth, it is possible to present domestic investment as an accumulation of physical or human capital. Physical capital (*K*) per worker (*L*) was multiplied by its utilization intensity (i.e. the proportion of physical capital relative to the gross value added,). Similarly, the value of human capital (*H*) was multiplied by the ratio of the value of annual earnings in country i (w_i) to the average value of the earnings for the whole panel ($\bar{w}$). Labor productivity was calculated by dividing the gross value added by the workforce stock. These transformations correspond to those used by Amoroso et al. (2011)[5]. Independent variables related to physical and human capital represent the Heckscher-Ohlin hypothesis, and the explanatory variable of relative labor productivity fits into the Ricardo theorem.

Two models were estimated for this study. The first takes into account the country's external and internal FDI stock separately (equation 5.2) and the second takes into account their net effect (equation 5.3).

$$
\begin{aligned}
\left[\ln\left(RCA_i\right) - \ln\left(RCA_{PL}\right)\right]_{it} &= \\
= \beta_0 + \beta_{IFDI\_S} &\left[\ln\left(IFDI\_S_i\right) - \ln\left(IFDI\_S_{PL}\right)\right]_{it} + \\
+ \beta_{OFDI\_S} &\left[\ln\left(OFDI\_S_i\right) - \ln\left(OFDI\_S_{PL}\right)\right]_{it} + \\
+ \beta_K \left\{\left[\ln\left(\frac{K_i}{L_i}\right) - \ln\left(\frac{K_{PL}}{L_{PL}}\right)\right]\frac{K_i}{GVA_i}\right\}_{it} &+ \beta_H \left\{\left[\ln\left(H_i\right) - \ln\left(H_{PL}\right)\right]\frac{w_i}{\bar{w}}\right\}_{it} + \\
+ \beta_{LP} \left[\ln\left(\frac{GVA_i}{L_i}\right) - \ln\left(\frac{GVA_{PL}}{L_{PL}}\right)\right]_{it} &+ \gamma_i + \delta_t + \varepsilon_{it}
\end{aligned} \tag{5.2}
$$

$$
\begin{aligned}
\left[\ln\left(RCA_i\right) - \ln\left(RCA_{PL}\right)\right]_{it} &= \\
= \beta_0 + \beta_{BFDI\_S} &\left[\ln\left(BFDI\_S_i\right) - \ln\left(BFDI\_S_{PL}\right)\right]_{it} + \\
+ \beta_K \left\{\left[\ln\left(\frac{K_i}{L_i}\right) - \ln\left(\frac{K_{PL}}{L_{PL}}\right)\right]\frac{K_i}{GVA_i}\right\}_{it} &+ \beta_H \left\{\left[\ln\left(H_i\right) - \ln\left(H_{PL}\right)\right]\frac{w_i}{\bar{w}}\right\}_{it} + \\
+ \beta_{LP} \left[\ln\left(\frac{GVA_i}{L_i}\right) - \ln\left(\frac{GVA_{PL}}{L_{PL}}\right)\right]_{it} &+ \gamma_i + \delta_t + \varepsilon_{it}
\end{aligned} \tag{5.3}
$$

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[5]   Labor force data were obtained from the World Bank [2020a], physical and human capital data from the University of Groningen [2019] and Feenstra et al. [2015], earnings data from Eurostat [2020], and FDI data from the UNCTAD database [2020].

The results of Hausman's test ($p_{Hausman} = 0.001$) for the first model showed the need to apply fixed effects (Table 5.1). While model residuals do not have a normal distribution ($p_{Jarque–Ber} = 0.000$ and $p_{Shapiro–Wilk} = 0.000$), they were also found to have no unit root ($p_{Levin–Lin–Chu} = 0.000$). Based on the *p*-value for statistics *F* (0.003), the null hypothesis of a lack of differences between estimated coefficients and their value equal to zero can be rejected. The second model has the same features. Jarque–Ber test results for this model do not allow for the rejection of the null hypothesis at a level of statistical significance of $\alpha = 1\%$. The second model also explains more of the variance of the dependent variable.

Table 5.1. Descriptive statistics of estimated models

Model	1	2
Test	*p*-value	*p*-value
Hausman	0.001	0.002
Levin–Lin–Chu	0.000	0.000
Shapiro–Wilk	0.000	0.002
Jarque–Bera	0.000	0.029
prob(F)	0.003	0.002
R-sq		
Within	0.173	0.166
Between	0.128	0.182
Within	0.108	0.150

Source: Compilation by the author based on data from the World Bank [2020a], University of Groningen [2019], Feenstra et al. [2015], Eurostat [2020], UNCTAD [2020].

Keeping in mind that FDI impacts the accumulation of both physical [Lo et al., 2016] and human capital (through knowledge transfer) [see, e.g., Wang, Wu, 2016], and thereby labor productivity, it is necessary to discuss the issue of multicollinearity. The existence of linear relationships between independent variables makes it impossible to interpret the values of estimated coefficients according to the *ceteris paribus* principle. The correlation analysis (Table 5.2) pointed to the existence of a few statistically significant correlations between independent variables. The strength of the correlations is generally low ($0.2 \leq r < 0.4$). Exceptions are FDI stocks abroad, which display medium ($r = 0.543$) or strong ($r = 0.635$) correlation with FDI stock in the host country and labor force productivity, respectively.

As Wooldridge points out [2014], the obvious preferred option is the lack of multicollinearity. For many studies (especially macroeconomic studies), the application of lack of collinearity as a hard requirement would require a rejection or, paradoxically,

acceptance of fallacy of many studies.[6] In addition, it should be remembered that collinearity is not a requirement of the ordinary least squares method [Pindyck, Rubinfeld, 1998].

Table 5.2. **Results of the multicollinearity analysis using the Pearson linear correlation coefficient**

	$\ln(IFDI\_S_i)-\ln(IFDI\_S_{PL})$	$\ln(OFDI\_S_i)-\ln(OFDI\_S_{PL})$	$\ln(BFDI\_S_i)-\ln(BFDI\_S_{PL})$	$\left[\ln\left(\frac{K_i}{L_i}\right)-\ln\left(\frac{K_{PL}}{L_{PL}}\right)\right]\frac{K_i}{GVA_i}$	$[\ln(H_i)-\ln(H_{PL})]\frac{w_i}{\overline{w}}$	$\ln\left(\frac{GVA_i}{L_i}\right)-\ln\left(\frac{GVA_{PL}}{L_{PL}}\right)$
$\ln(IFDI\_S_i)-\ln(IFDI\_S_{PL})$	1	0.543*	–	–0.070	–0.113	0.087
$\ln(OFDI\_S_i)-\ln(OFDI\_S_{PL})$	0.543*	1	–	0.167	–0.025	0.635*
$\ln(BFDI\_S_i)-\ln(BFDI\_S_{PL})$	–	–	1	–0.109	–0.100	–0.111
$\left[\ln\left(\frac{K_i}{L_i}\right)-\ln\left(\frac{K_{PL}}{L_{PL}}\right)\right]\frac{K_i}{GVA_i}$	–0.070	0.167	–0.109	1	0.371*	0.398*
$[\ln(H_i)-\ln(H_{PL})]\frac{w_i}{\overline{w}}$	–0.113	–0.025	–0.100	0.371*	1	0.185
$\ln\left(\frac{GVA_i}{L_i}\right)-\ln\left(\frac{GVA_{PL}}{L_{PL}}\right)$	0.087	0.635*	–0.111	0.398*	0.185	1

* Correlation significant at 0.01 level (2-tailed).

Source: Ibid.

5.4. Results of the Empirical Study

In both models, only the relative physical and human capital endowment proved to be a statistically significant determinant of relative RCA (Table 5.2). This means that the differences in FDI activity between the economies studied and Poland do not statistically significantly affect the differences in relative international competitiveness. A similar conclusion concerns differences in labor productivity.

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6   For example, by rejecting an explanatory variable strongly correlated with other independent variables but belonging to a required theory or population [Wooldridge, 2014].

Table 5.3. Estimation of the value of parameters of econometric models

Model	1	2
$\ln(RCA_i) - \ln(RCA_{PL})$	coefficient	coefficient
$\ln(IFDI\_S_i) - \ln(IFDI\_S_{PL})$	−0.031	−
$\ln(OFDI\_S_i) - \ln(OFDI\_S_{PL})$	−0.004	−
$\ln(BFDI\_S_i) - \ln(BFDI\_S_{PL})$	−	−0.002
$\left[\ln\left(\dfrac{K_i}{L_i}\right) - \ln\left(\dfrac{K_{PL}}{L_{PL}}\right)\right]\dfrac{K_i}{GVA_i}$	206.623**	224.844**
$\left[\ln(H_i) - \ln(H_{PL})\right]\dfrac{w_i}{w}$	1.380*	1.193*
$\ln\left(\dfrac{GVA_i}{L_i}\right) - \ln\left(\dfrac{GVA_{PL}}{L_{PL}}\right)$	−0.027	−0.036
β_0	−0.181	−0.138

* Significance at 5%. ** Significance at 10%.
Source: Ibid.

The modelling results therefore show that the differences in FDI activity between the selected economies and Poland are insufficient to translate into a difference in international competitiveness between these countries. Econometric modelling also confirmed the hypothesis of the effect of relative endowment according to the Heckscher-Ohlin theory, while rejecting Ricardo's theorem of differences in productivity. Of the two research hypotheses put forward at the outset, only the hypothesis of a statistically significant impact of domestic investment on Poland's international competitiveness (H1) has been confirmed.

5.5. Conclusions

The subject of this study was to determine the impact of domestic and foreign investment on the international competitiveness of the Polish economy. Econometric modelling according to the method presented by Amoroso et al. was used for this purpose [2011].

The study showed that while differences in physical and human capital endowments determine differences in international competitiveness, this relationship could not be confirmed for FDI. In other words, to increase their relative international competitiveness

over the economies under investigation, countries should put in place solutions facilitating and enabling investment in physical and human capital.

The study was limited by a fairly short analysis period. This was due to the choice of working with a balanced panel on the longest possible time-series. The absence of a normal distribution of residuals (especially in the first model) can also be considered as a limitation. In view of the arguments put forward in the text and the supplementation of the Jarque–Ber and Shapiro–Wilk tests with the Levin–Lin–Chu test for the presence of the unit root, it must be concluded that this limitation should not significantly affect the conclusions drawn. The observed low R-squared values are expected with these model types [Amoroso et al., 2011].

A possible extension of the study is to test the presented research hypotheses using other measures of international competitiveness, such as the Global Competitiveness Index [World Bank, 2020b]. However, this would require the use of a new set of explanatory variables.

Bibliography

Aghion, P., Howitt, P. [1992], *A Model of Growth through Creative Destruction*, "Econometrica", 2, pp. 323–351.

Amoroso, N., Chiquiar, D., Ramos-Francia, M. [2011], *Technology and Endowments as Determinants of Comparative Advantage: Evidence from Mexico*, "The North American Journal of Economics and Finance", 2, pp. 164–196.

Apriliyanti, I.D., Alon, I. [2017], *Bibliometric Analysis of Absorptive Capacity*, "International Business Review", 5, pp. 896–907.

Balassa, B. [1965], *Trade Liberalization and 'Revealed' Comparative Advantage*, "The Manchester School", 2, pp. 99–123.

Blandinières, F. et al. [2018]. *Measuring Competitiveness*, European Commission.

Capobianco-Uriarte, M. de las Mercedes, Casado-Belmonte, M. del Pilar, Marín-Carrillo, G.M., Terán-Yépez, E. [2019], *A Bibliometric Analysis of International Competitiveness (1983–2017)*, "Sustainability", 11, pp. 1–23.

Cass, D. [1965], *Optimum Growth in an Aggregative Model of Capital Accumulation*, "The Review of Economic Studies", 3, pp. 233–240.

Claro, S. [2009], *FDI Liberalization as a Source of Comparative Advantage in China*, "Review of Development Economics", 4, pp. 740–753.

Diamond, P.A. [1965], *National Debt in Neoclassical Growth Model*, "The American Economic Review", 5(1), pp. 1126–1150.

Elsalih, O., Sertoglu, K., Besim, M. [2020], *Determinants of Comparative Advantage of Crude Oil Production: Evidence from OPEC and non-OPEC Countries*, "International Journal of Finance and Economics", pp. 1–12.

Eurostat [2020], *Annual Net Earnings of a Full-time Single Worker Without Children Earning an Average Wage*, https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=earn_nt_netft&lang=en (accessed: 10.05.2020).

Feenstra, R.C., Inklaar, R., Timmer, R.M. [2015], *The Next Generation of the Penn World Table*, "American Economic Review", 10, pp. 3150–3182.

Field, A. [2013], *Discovering Statistics Using IBM SPSS Statistics*, London, SAGE Publications.

Javorcik, B.S. [2015], *Does FDI Bring Good Jobs to Host Countries?*, "World Bank Research Observer", 1, pp. 74–94.

Javorcik, B.S., Turco, A.L., Maggioni, D. [2017], *New and Improved: Does FDI Boost Production Complexity in Host Countries?*, "The Economic Journal", 614, pp. 2507–2537.

Koopmas, T.C. [1963], *On the concept of optimal economic growth*, Cowles Foundation Discussion Paper no. 163, Yale University, Cowles Foundation for Research in Economics.

KPMG, American Chamber of Commerce in Poland [2010], *20 Years of American Investment in Poland*.

KPMG, American Chamber of Commerce in Poland [2020], *30 Years of American Investments in Poland*.

Lall, S., Narula, R. [2004], *Foreign Direct Investment and Its Role in Economic Development: Do We Need a New Agenda?*, "The European Journal of Development Research", 3, pp. 447–464.

Lichtenthaler, U. [2016], *Determinants of Absorptive Capacity: the Value of Technology and Market Orientation for External Knowledge Acquisition*, "Journal of Business & Industrial Marketing", 5, pp. 600–610.

Lipsey, R.E. [2002], *Home and Host Country Effects of FDI*, NBER Working Paper no. 9293, Cambridge, National Bureau of Economic Research.

Liu, Ch. [2017], *International Competitiveness and the Fourth Industrial Revolution*, "Entrepreneurial Business and Economics Review", 4, pp. 111–133.

Lo, D., Hong, F., Li, G. [2016], *Assessing the Role of Inward Foreign Direct Investment in Chinese Economic Development, 1990–2007: Towards a Synthesis of Alternative Views*, "Structural Changes and Economic Dynamics", 37, pp. 107–120.

Longhi, S., Nandi, A. [2015], *A Practical Guide to Using Panel Data*, London, SAGE Publishing.

Lucas, R.E. [1988], *On Mechanics of Economic Development*, "Journal of Monetary Economics", 1, pp. 3–42.

Misala, J. [2011], *Międzynarodowa konkurencyjność gospodarki narodowej*, Warsaw, Polskie Wydawnictwo Ekonomiczne.

Munteanu, A.C. [2015], *Knowledge Spillovers of FDI*, "Procedia Economics and Finance", 32, pp. 1093–1099.

Nachum, L., Dunning, J.H., Jones, G.G. [2002], *UK FDI and Comparative Advantage of the UK*, "The World Economy", 5, pp. 701–720.

Napiórkowski, T.M. [2014], *International Competitiveness of Countries with Performing Innovation Systems. Case Study: the USA*, in: *Innovation, Human Capital and Trade Competitiveness*, M.A. Weresa (ed.), Springer, Cham, pp. 295–318.

Napiórkowski, T.M. [2017a], *The Role of Foreign Direct Investment in Economic Growth. The Production Function Perspective*, "Optimum. Studia Ekonomiczne", 89, pp. 221–236.

Napiórkowski, T.M. [2017b], *The Impact of Foreign Direct Investment on Poland's Economic Competitiveness*, in: *Poland Competitiveness Report 2017. Internationalization and Poland's Competitive Position*, M.A. Weresa (ed.), SGH Publishing House, Warsaw, pp. 81–97.

Nicolini, M., Resmini, L. [2010], *FDI Spillovers in New EU Member States. Which Firms Create Them and Which Firms Really Benefit?*, "Economics of Transition", 3, pp. 487–511.

OECD [2014], *Competitiveness [In International Trade]*, https://stats.oecd.org/glossary/detail.asp?ID=399 (accessed: 21.09.2020).

Pilarska, C. [2007], *Rola bezpośrednich inwestycji zagranicznych w podnoszeniu konkurencyjności polskiej gospodarki*, "Zeszyty Naukowe Akademii Ekonomicznej w Krakowie", 738, pp. 5–27.

Pindyck, R.S., Rubinfeld, D.L. [1998], *Econometric Models and Econometric Forecasts*, McGraw-Hill, Singapore.

Purwanto, A.J. et al. [2017], *Impact of Transport Infrastructure on International Competitiveness of Europe*, "Transportation Research Procedia", 25, pp. 2877–2888.

Ramsey, F.P. [1928], *A Mathematical Theory of Saving*, "The Economic Journal", 152, pp. 543–599.

Rebelo, S. [1990], *Long Run Policy Analysis and Long Run Growth*, NBER Working Paper No. 3325, National Bureau of Economic Research, Cambridge.

Romer, P.M. [1986], *Increasing Returns and Long-Run Growth*, "The Journal of Political Economy", 5, pp. 1002–1037.

Romer, P.M. [1990], *Endogenous Technological Change*, "Journal of Political Economy", 5[2], pp. S71 – S102.

Schwab, K. [2019], *The Global Competitiveness Report 2019,* World Economic Forum, Geneva.

Solow, R. [1956], *A Contribution to the Theory of Economic Growth*, "The Quarterly Journal of Economics", 1, pp. 65–94.

Starzyńska, D. [2012], *Bezpośrednie inwestycje zagraniczne a konkurencyjność przedsiębiorstw przemysłowych w Polsce*, Wydawnictwo Uniwersytetu Łódzkiego, Łódź.

Sunde, T. [2017], *Foreign Direct Investment, Exports and Economic Growth: ADRL and Causality Analysis for South Africa*, "Research in International Business and Finance", 41, pp. 434–444.

Svedin, D., Stage, J. [2016], *Impacts of Foreign Direct Investment on efficiency in Swedish manufacturing*, "SpringerPlus", 5(614).

Tang, Y., Zhang, K.H. [2016], *Absorptive Capacity and Benefits from FDI: Evidence from Chinese Manufactured Exports*, "International Review of Economics and Finance", 42, pp. 423–429.

Temiz, D., Gökmen, A. [2014], *FDI Inflow as an International Business Operation by MNCs and Economic Growth: An Empirical Study on Turkey*, "International Business Review", 1, pp. 145–154.

UNCTAD [2020], *Foreign Direct Investment: Inward and Outward Flows and Stock, Annual Table Summary*, https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx (accessed: 21.09.2020).

University of Groningen [2019], *Penn World Table Version 9.1*, https://www.rug.nl/ggdc/productivity/pwt/ (accessed: 20.03.2020).

Wang, C.C., Wu, A. [2016], *Geographical FDI Knowledge spillover and innovation of indigenous firms in China*, "International Business Review", 4, pp. 895–906.

Wang., Y. [2010], *FDI and Productivity Growth: the Role of Inter-Industry Linkages*, "Canadian Journal of Economics", 4, pp. 1243–1272.

WEF [2020], *Methodology. The 12 Pillars of Competitiveness*, https://reports.weforum.org/global-competitiveness-report-2014-2015/methodology/ (accessed: 20.09.2020).

Wooldridge, J.M. [2014], *Introduction to Econometrics*, Cengage Learning, Hampshire.

World Bank [2020a], *World Development Indicators*, https://databank.worldbank.org/source/world-development-indicators (accessed: 1.06.2020).

World Bank [2020b], *Global Competitiveness Index*, https://tcdata360.worldbank.org/indicators/gci?country=BRA&indicator=632&viz=line_chart&years=2007,2017 (accessed: 1.06.2020).

Zhang, K.H. [2015], *What Drives Export Competitiveness? The Role of FDI in Chinese Manufacturing*, "Contemporary Economic Policy", 10, pp. 499–512.

Zhao, Z., Zhang, K.H. [2010], *FDI and Industrial Productivity in China: Evidence from Panel Data in 2001–06*, "Review of Development Economics", 3, pp. 656–665.

Żmuda, M. [2017], *Towards a Taxonomy of International Competitiveness*, "Journal of Management and Business Administration. Central Europe", 3, pp. 97–116.

Part II

Key Factors of Competitiveness of the Polish Economy in 2010–2020

Innovativeness of Poland's Economy Compared with Its Main Trade Partners

Marzenna Anna Weresa, Arkadiusz Michał Kowalski

6.1. Introduction

The innovativeness of an economy is closely linked to its competitiveness, as indicated both by theoretical concepts [e.g., Porter, 2008; Castellacci, 2008; Misala, 2014; Kowalski, Weresa, 2020] and by the results of many empirical studies [e.g., Weresa, 2012, 2015; Tercic, 2017; Schwab, 2019; IMD, 2020].

The purpose of this chapter is to determine the innovation performance of the Polish economy compared to its key trading partners and to define the changes that have taken place in this regard in the period 2012–2019. The EU average, calculated taking into account the 27 member states of the European Union (EU-27), was used as a benchmark and a comparison was made with countries whose bilateral relations with Poland are analyzed in Part III of this monograph. It is a fairly heterogeneous group, as it includes world innovation leaders (South Korea, the United States, Germany), selected large emerging economies (China, India) differing in the level of innovation and Poland's eastern neighbors relatively weaker in terms of innovation performance (Russia, Ukraine). This macroeconomic comparative perspective is complemented by a detailed mesoeconomic analysis presenting the position of the different Polish regions of in terms of their technological development against the innovation performance of the entire Polish economy.

In the study, we aim at providing answers to the following research questions:

- How did the innovativeness of the Polish economy evolve in relation to Poland's main trading partners between 2012 and 2019?
- In which areas is there an innovation gap that could constitute competitive advantages for Poland over major economic partners?
- To what extent is Poland's innovativeness determined by differences in technological development of the different regions of the country?

6.2. Position of Poland in Innovation Rankings

Since 2012, Poland's position in country-specific innovation performance rankings has not changed much. The Summary Innovation Index (SII), which includes 27 different sub-in indicators, classifies Poland among the so-called moderate innovators. According to the 2020 edition of the European Innovation Scoreboard, Poland ranks 24th in the EU for the SII [European Commission, 2020] and in 2019 the index value represented only 59% of the EU-27 average, having increased by 8 pp from 2012. Despite this increase, Poland's position in the EU ranking has changed only slightly since 2012.

Poland's position on the global innovation map can be determined and compared with that of its major economic partners by analyzing the Global Innovation Index (GII), which is developed every year by three institutions: Cornell University, INSEAD and the World Intellectual Property Organization (WIPO). According to 2020 data, Poland ranked 38th among the 131 countries analyzed [Cornell University, INSEAD,WIPO, 2020, p. 16], thus climbing by as many as 6 places compared to 2012, even though the GII index was slightly lower in 2019 than in 2012 [INSEAD, WIPO, 2012, p. 8]. Among the group of countries under analysis, Poland lags far behind innovation leaders, but is ahead of Ukraine, Russia, and India (Figure 6.1).

Figure 6.1. Global Innovation Index (GII) – a comparison of Poland and selected economies in 2019

Country	GII
USA	60.56
Germany	56.55
Korea	56.11
China	53.28
Poland	39.95
Ukraine	36.32
Russia	35.63
India	35.59
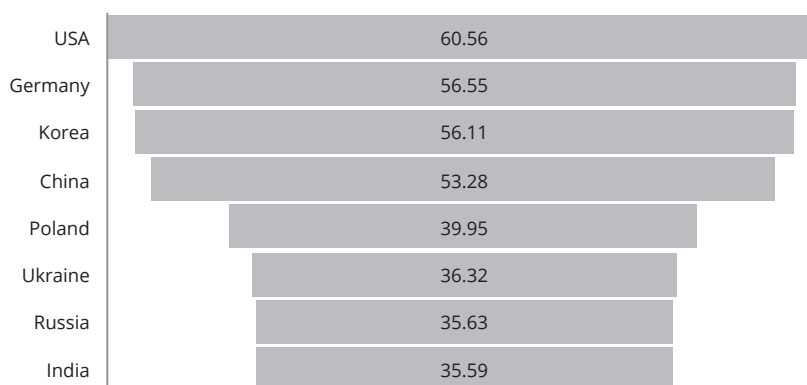
Source: Compilation by the authors based on Cornell University, INSEAD, WIPO [2020, p. 16].

Poland's position compared with the group of analyzed countries changed between 2012 and 2019. In fact, the innovation gap between Poland and the USA, Germany, South Korea and China increased. Ukraine and India, less advanced in terms of

innovation than Poland, slightly caught up with Poland, while Russia's innovation position deteriorated (Table 6.1).

Table 6.1. Changes in the Global Innovation Index (GII) of selected countries compared with Poland, 2012–2019

	GII for Poland = 100	
	2012	2019
USA	142.8	151.6
Germany	139.1	141.6
South Korea	133.4	140.5
China	112.4	133.4
Poland	100.0	100.0
Ukraine	89.4	90.9
Russia	93.8	89.2
India	88.4	89.1

Source: Compilation and calculations by the authors based on Cornell University, INSEAD, WIPO [2020, p. 16] and INSEAD, WIPO [2012, p. 8].

6.3. Innovativeness of the Polish Economy: Input and Output Indicators

Innovativeness is shaped by factors relating to both the demand for innovation and the supply of new solutions. Both groups of these variables are related to the technological capacity of the economy and the efficiency of institutions affecting research and entrepreneurship. Innovation requires investment, the main measure of which is R&D expenditure. It can be compared between countries by referring its value to GDP or the number of researchers.

Poland spends a relatively small percentage of GDP on research and development (1.2% in 2018) compared to innovation leaders such as South Korea (4.8% in 2018), Germany (3.1%) and the United States (2.8%), as well as little more than Russia (1%), but twice as much as India or Ukraine (0.5%). Similar disparities also occur in the average R&D expenditure per researcher. Moreover, at 2005 constant prices (based on purchasing power parity, PPP), these outlays decreased from USD 93,000 in 2012 to USD 90,000 in 2018. In this category, Poland is overtaken both by emerging economies (China and India) and by the already mentioned innovation leaders (Figure 6.2).

Figure 6.2. R&D expenditure versus GDP (right axis, %) and per researcher (left axis, USD '000s at PPP, 2005 constant prices)

R&D expenditure per researcher (in USD '000s PPP, 2005 constant prices); left axis – 2012

R&D expenditure per researcher (in USD '000s PPP, 2005 constant prices); left axis – 2018

R&D expenditure as % of GDP; right axis 2018
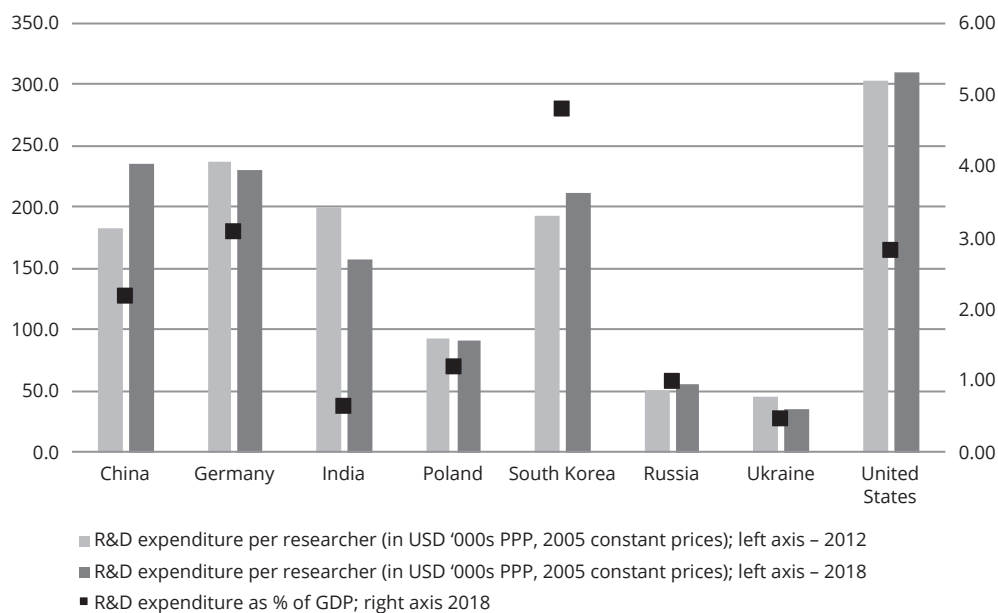
Source: Compilation by the authors based on data from UIS.Stat, http://data.uis.unesco.org/# (accessed: 15.09.2020).

Figure 6.3. Number of researchers (FTE equivalent) per million inhabitants – Poland compared to selected countries in 2012 and 2018

2018   2012
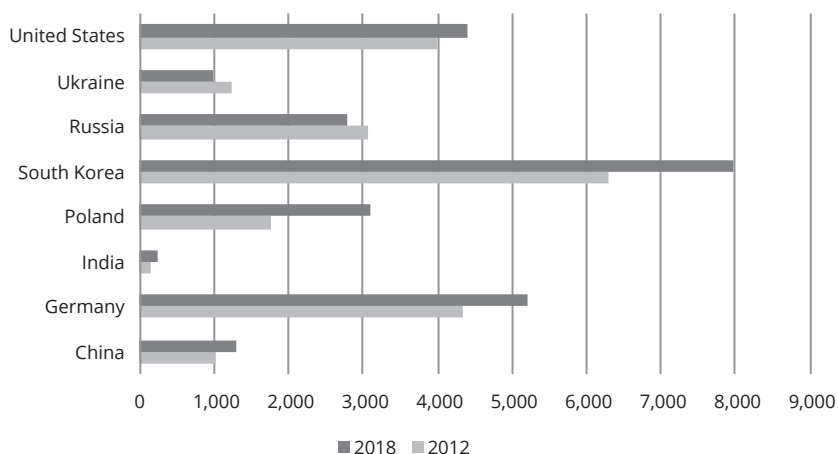
Source: Compilation by the authors based on UIS.Stat database, http://data.uis.unesco.org/# (accessed: 15.09.2020).

A positive trend in Poland is the gradually increasing participation of the business sector in research financing – in 2018, funds from companies accounted for 53% of

total R&D expenditure [Statistics Poland, 2020, p. 28]. It is also worth highlighting the almost double increase in the number of researchers in 2012–2018 per million population. Nevertheless, Poland's human resources relative to population are relatively modest in this respect compared to innovation leaders (United States, Germany, South Korea), but much more substantial than in the emerging economies analyzed in this study (India, China) (Figure 6.3). It is also worth noting that two of the countries analyzed, Russia and Ukraine, saw a decrease in the number of researchers per million inhabitants between 2012 and 2018, which means a deterioration of their innovation potential and, consequently, in the longer run, a change in the structure of their bilateral economic links with Poland.

Innovation outputs or performance can be synthetically characterized by comparing two key indicators: the share of innovative companies in industry and the percentage of product and process innovations introduced (Table 6.2).

Table 6.2. Innovation in manufacturing: Poland compared to selected countries in 2018 (or the last year for which statistics are available; %)

	Innovative manufacturing firms	Product and process innovations implemented in manufacturing
China	32.3	19.9
Germany	49.6	19.3
India	18.5	5.7
Poland	17.4	7.5
South Korea	19.4	5.1
Russia	11.9	2.6
Ukraine	13.6	6.2
United States	29.4	12.9

Source: Compilation by the authors based on data from UIS.Stat database, http://data.uis.unesco.org/# (accessed: 15.09.2021).

Germany, China and the United States stand out in terms of the value of the first indicator among the analyzed countries. In Germany, almost half of manufacturing companies are innovative firms, while in China and the United States the proportion of such entities ranged around 30% in 2018. Poland with a rate of 17% ranks close to South Korea (19%) and India (18%). The economies with the lowest proportion of innovative firms are Ukraine and Russia.

Similar conclusions can be drawn from the analysis of the second indicator of innovation position – the percentage of product and process innovations implemented in the economy. Poland's position is rather moderate in this respect (the percentage of product and process innovations is 7.5%), slightly above the performance reported

by Ukraine (6.2%), India (5.7%) and South Korea (5.1%), but less than half of China's (19.9%) and Germany's (19.3%).

Among the reasons for the relatively low innovativeness of the Polish economy, an insufficient scope of cooperation in its various dimensions is often mentioned: between science and business, between large and small enterprises, between national researchers and their foreign partners, etc. Unfortunately, the lack of statistics on this subject in the case of the countries analyzed in the study does not allow them to be compared with Poland, but in order to characterize Poland's innovative position in terms of cooperation between different individuals and entities, the country's achievements in this regard can be compared with the EU average. Four different indicators reflecting cooperation in different forms for Poland and the EU are compiled in Figure 6.4, which shows how significant the distance between Poland and the EU average was in 2019. Increasing cooperation in research and innovation activities is undoubtedly one of the conditions for Poland to embark on process of catching up with innovation leaders.

Figure 6.4. Cooperation in scientific and innovation activities – Poland against the EU average in 2019
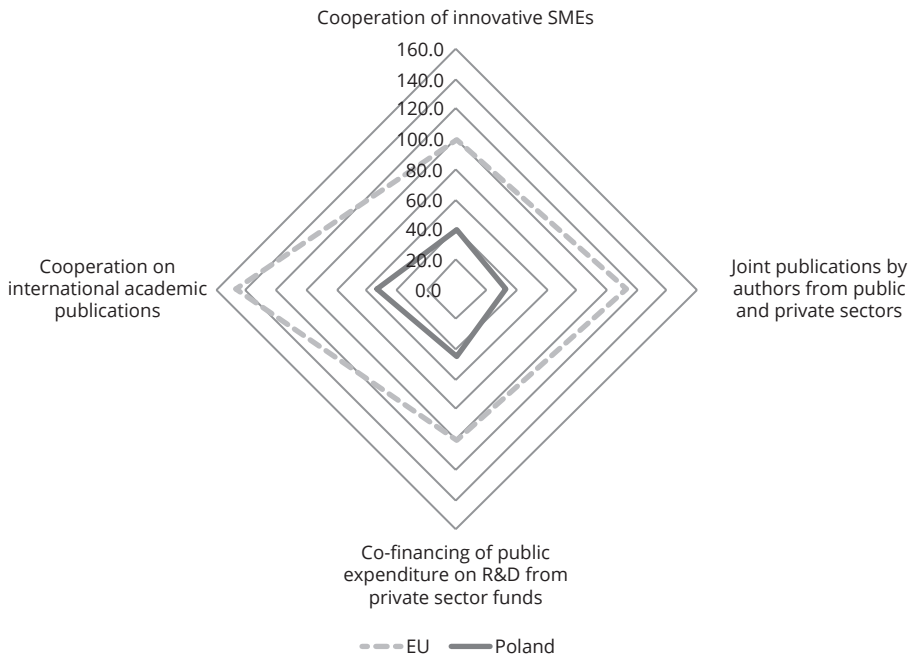
Based on the above analysis of selected indicators representing the level of expenditure on innovation and the outputs obtained, it can be concluded that Poland

is a country lagging behind in innovation and unfortunately fails to catch up with the leaders in this field. The process of closing or opening the innovation gap with other countries can be presented synthetically in the form of changes in the Innovation Efficiency Index, which shows how resources needed for technology development translate into the innovation position attained.[1] The evolution of the value of this indicator in the analyzed group of countries in 2019 compared to 2012 is shown in Figure 6.5.

The evolution of the value of this indicator in the group of countries analyzed in 2019 compared to 2012 is shown in Figure 6.5.

Figure 6.5. Innovation Performance Index – Poland versus selected economic partners in 2012 and 2019
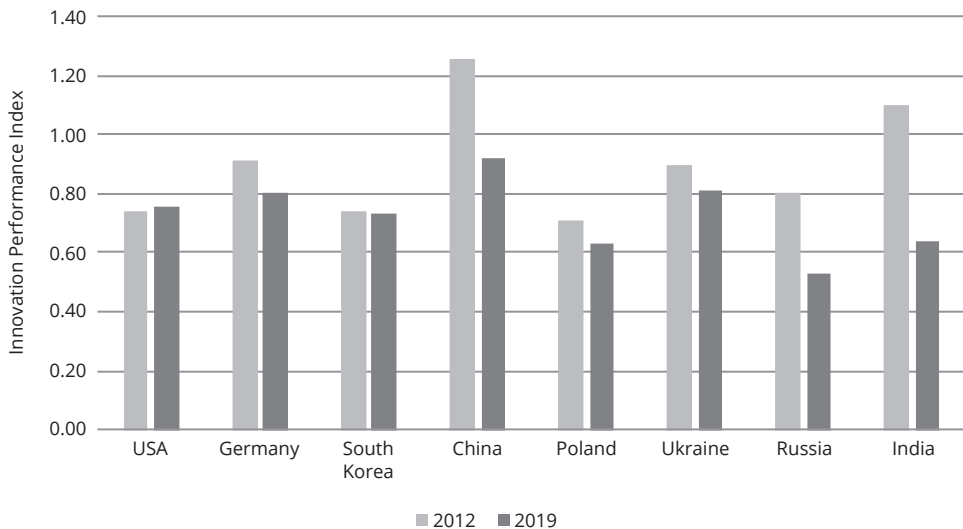
Source: Compilation by the authors based on INSEAD, WIPO [2012] and Cornell University, INSEAD, WIPO [2020].

In Poland, as in most of the countries analyzed in this study, innovation efficiency decreased between 2012 and 2019. The United States was the only country in this group to see an increase in this indicator. India, China and Russia recorded the strongest declines in innovation efficiency in 2019 compared to 2012 (Figure 6.5). Low and declining innovation efficiency of Poland is the result primarily of numerous institutional barriers to innovation and entrepreneurship, such as significant business start-up difficulties, insufficient investment in innovation, high employment costs and too little labor market flexibility, as well as an underdeveloped information and

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[1]   The Innovation Efficiency Index is defined as the ratio of the output sub-index over the input sub-index [INSEAD, WIPO, 2012, p. 429].

communication (ICT) services market, resulting in an overly slow transition towards a digital economy [Cornell University, INSEAD, WIPO, 2020, p. 309]. Statistics Poland research confirms this diagnosis – the latest data shows that the key factors limiting the innovativeness of enterprises in Poland are too high costs of innovative activities, lack of capability to finance innovation, insufficient resources of staff with adequate skills and uncertain demand for new solutions [Statistics Poland, 2020, p. 99]. These problems, in particular financial issues and the demand barrier, could become even more onerous during the COVID-19 pandemic due to the economic slowdown faced both at home and by Poland's economic partners.

6.4. Regional Dimension

One of the reasons for Poland's low innovativeness is the large disparity in the technological development of individual regions [Dzienis et al., 2019]. Therefore, it is worth examining this issue in more detail. The proximity paradigm, which attempts to explain how and to what extent distance is involved in shaping the relationship between the different actors of innovation systems, seems particularly important in the context of analyzing the significance of space to the innovative activities of enterprises. Geographical proximity and related dimensions, such as cognitive, organizational, social and institutional proximity, play a significant role in the development of innovation [Boschma, 2005], which is indicative of the growing importance of the regional level for innovation activities. It is at the regional level that there is most interaction and cooperation between the actors involved in innovation systems, as the short spatial distances between them facilitate direct people-to-people contacts, enabling the exchange of knowledge, in particular hidden knowledge, and information. Empirical research confirms that the externalities of knowledge diffusion are geographically limited, which means that companies located closer to the sources of knowledge are more innovative than companies operating in other areas [Audretsch, Feldman, 1996]. Siegel et al. [2003] demonstrated that the cost of knowledge transfer is a function of geographic time distance and therefore R&D and innovation clusters are sources of local externalities. It follows that the spatial dimension is now a key factor in determining companies' decisions on the location of research, development and innovation [Karlsson, Andersson, 2009, p. 274].

Regional innovation systems in Poland are relatively less advanced than those in most EU countries, also compared to many regions located in the new member states. Science, technology and innovation do not have a critical impact on their development, as evidenced by the ratio of internal expenditure on R&D to GDP presented in Table

6.3. In addition to the changes in the value of this indicator between 2010 and 2017, the table also shows the disparities between Polish NUTS 2 regions, measured by standard deviation (SD) and coefficient of variation (CV), expressed by the following formula:

$$CV(Y) = \frac{SD(Y)}{\overline{Y}} = \frac{\sqrt{\frac{1}{N-1}\sum_i (Y_i - \overline{Y})^2}}{\overline{Y}},$$

where *CV (Y)* is the coefficient of variation of the examined characteristic *Y*, *SD*(*Y*) is the standard deviation, $\overline{Y}$ is the arithmetic mean, and *N* is the number of observations.

Table 6.3. Internal expenditure on R&D in relation to GDP in Polish regions, 2010–2017 (%)

NUTS 2 region	2010	2012	2014	2016	2017	Change in pp (2010–2017)
Poland	0.72	0.88	0.94	0.96	1.03	0.31
Małopolskie	1.00	1.31	1.38	2.16	1.85	0.85
Mazowieckie	1.36	1.37	1.70	1.66	1.78	0.42
Pomorskie	0.60	1.07	1.05	1.14	1.08	0.48
Podkarpackie	0.92	1.01	1.38	1.05	1.03	0.11
Dolnośląskie	0.51	0.69	0.74	0.69	0.91	0.40
Lubelskie	0.64	1.01	1.03	0.88	0.88	0.24
Łódzkie	0.63	0.77	0.67	0.62	0.72	0.09
Śląskie	0.46	0.63	0.57	0.53	0.63	0.17
Wielkopolskie	0.58	0.88	0.64	0.59	0.63	0.05
Podlaskie	0.32	0.38	0.60	0.44	0.60	0.28
Warmińsko-Mazurskie	0.44	0.48	0.27	0.33	0.51	0.07
Kujawsko-Pomorskie	0.31	0.42	0.34	0.35	0.50	0.19
Opolskie	0.12	0.19	0.34	0.36	0.46	0.34
Zachodniopomorskie	0.31	0.37	0.28	0.27	0.45	0.14
Lubuskie	0.14	0.20	0.18	0.20	0.38	0.24
Świętokrzyskie	0.45	0.30	0.34	0.31	0.31	–0.14
Standard deviation (SD)	0.32	0.37	0.45	0.53	0.45	–
Coefficient of variation (CV)	0.57	0.54	0.63	0.73	0.56	–

Source: Statistics Poland, *Bank Danych Lokalnych*, K10: Science and technology, G184: Research and development, P3531: Internal expenditure on R&D activity, last updated 29.04.2020 (accessed: 15.09.2020).

According to the data presented in Table 6.3, the regional innovation potential in Poland is not homogeneous. In 2017, internal R&D expenditure exceeded 1% of GDP in five NUTS 2 regions – Małopolskie, Mazowieckie, Pomorskie, Podkarpackie and

Dolnośląskie, and in eleven of the four provinces the R&D to GDP ratio was below 0.5% (the lowest figure was recorded in the Świętokrzyskie voivodeship). The share of R&D expenditure in GDP is one of the indicators most commonly used in innovation capacity analyses, understood as the potential of the economy or other entity (region, cluster, enterprise) to create and commercialize new ideas. This represents the input approach to innovation. When analyzing this factor, the output of the expenditure and investment incurred is important, i.e. the innovation position, which represents the output approach indicating the effect of innovation activity, i.e. the combination (in a specific economic and institutional environment) of society's creativity with its financial resources [Weresa, 2012, p. 32]. One of the indicators used in the analysis of the innovation position is the percentage of innovative enterprises in the total number of enterprises (Table 6.4).

Table 6.4. Average share of innovative enterprises in the total number of enterprises between 2010 and 2018 (%)

	2010	2012	2014	2016	2018	Change in pp (2010–2017)
Poland	14.9	14.4	14.5	16.1	21.8	6.9
Mazowieckie	16.4	16.1	17.1	19.7	27.3	10.9
Pomorskie	14.3	10.9	12.3	18.1	25.6	11.3
Lubelskie	14.6	13.6	19.4	22.9	24.9	10.3
Podlaskie	12.7	15.0	14.7	11.5	23.4	10.7
Dolnośląskie	14.9	16.8	16.3	13.4	22.8	7.9
Małopolskie	14.5	15.2	13.5	17.3	22.2	7.7
Opolskie	16.5	14.0	17.6	12.4	21.2	4.7
Kujawsko-Pomorskie	13.6	14.2	12.4	14.2	21.0	7.4
Śląskie	16.4	14	15.7	15.6	20.6	4.2
Zachodniopomorskie	13.3	14.9	14.1	11.9	20.2	6.9
Podkarpackie	17.2	14.8	14.6	18	19.7	2.5
Wielkopolskie	14.3	11.8	11.3	15.3	19.0	4.7
Lubuskie	13.4	14.3	10.5	13.2	18.1	4.7
Łódzkie	11.9	12.6	13.5	13.0	15.9	4.0
Warmińsko-Mazurskie	13.6	11.9	10.9	9.1	14.9	1.3
Świętokrzyskie	14.0	13.3	11.1	10.4	14.3	0.3
Standard deviation (SD)	1.49	1.59	2.64	3.68	3.72	
Coefficient of variation (CV)	0.10	0.11	0.19	0.25	0.18	

Source: Statistics Poland, *Bank Danych Lokalnych*, K10: Science and technology, G432: Innovation activity, P3531: Innovation activity – indicators, last updated 5.08.2020 (accessed: 15.09.2020).

An analysis of the share of innovative enterprises in the total number of enterprises indicates the dominant innovative position of the Mazowieckie voivodeship. It is worth noting, however, that there are very large intra-regional disparities in Mazowieckie, with the leading position of the Warsaw Metropolitan Area (WMA), which can become the most innovative region in Poland in view of the planned division of the voivodeship. An analysis of standard deviation (SD) and the coefficient of volatility indicates an increasing dispersion of intra-regional R&D expenditure relative to GDP among Polish NUTS 2 regions.

Observation of the geographical polarization of innovation activities in the global economy, in particular in R&D, is the starting point for analyzing the importance of clusters in terms of innovativeness of the economy. This is related, *inter alia*, to locally determined processes of knowledge spillovers, technology transfer, information flow and the development of a skilled workforce. At the same time, the importance of the innovation environment is increasing, as innovation capacity becomes one of the most important localization factors. Table 6.5 shows the share of industrial and service enterprises cooperating in innovation activity under a cluster initiative by region in Poland.

In terms of territorial distribution, the largest percentage of industrial enterprises cooperating under a cluster initiative occurred in the Lubelskie (8.1%), Podkarpackie (7.6%), Podlaskie (5.7%), Warmińsko-Mazurskie (4.0%) and Świętokrzyskie (3.8%) voivodeships. It is worth noting that these voivodeship, which form an area called Eastern Poland, are characterized by a low level of economic development, with an underdeveloped and insufficient transport infrastructure. As a result, in recent years they have received additional support under the EU structural funds, mainly from the Operational Programme Development of Eastern Poland 2007–2013 and the Operational Programme Development of Eastern Poland 2014–2020. Support for networking and cooperation, including through cluster initiatives, was among the priorities for implementing these strategies. This way, the availability of EU public support has contributed to achieving a high level of cooperation and clustering of innovative enterprises in Eastern Poland despite a generally low level of development and innovation in the macroregion. One example is the best-known Polish cluster – the Aviation Valley, with most of the entities involved being located in the Podkarpackie voivodeship [Weresa et al., 2017]. This shows that even in regions with low levels of development, attractive location conditions can exist for cluster development. These locations can act as "growth hubs", a source of development incentives spreading to surrounding areas [Kowalski, 2011].

Table 6.5. Industrial and service enterprises cooperating in innovation activity under
a cluster initiative by region (%)

	Share of enterprises cooperating with other enterprises or institutions		Share of enterprises cooperating under a cluster initiative	
	industrial sector	service sector	industrial sector	service sector
Poland	9.5	8.4	3.5	2.5
Zachodniopomorskie	8.8	6.8	3.6	3.0
Wielkopolskie	7.3	6.2	2.0	4.0
Warmińsko-Mazurskie	6.3	10.2	4.0	4.1
Świętokrzyskie	7.4	4.9	3.8	1.0
Śląskie	11.8	4.0	3.0	1.2
Pomorskie	9.2	7.6	3.3	2.7
Podlaskie	6.8	12.6	4.7	2.1
Podkarpackie	14.2	6.9	7.6	–
Opolskie	8.9	13.3	1.1	3.1
Mazowieckie	12.3	5.0	3.2	1.5
Małopolskie	10.2	9.6	3.4	3.6
Łódzkie	6.4	7.3	3.2	2.3
Lubuskie	7.1	7.9	3.0	6.6
Lubelskie	8.8	4.0	8.1	3.3
Kujawsko-Pomorskie	9.6	8.3	3.4	2.2
Dolnośląskie	8.5	3.1	3.6	1.7

Source: Compiled from Statistics Poland [2020] databases.

Summing up the analysis of the regional dimension of innovation in Poland, several key conclusions can be drawn:

- there is a strong polarization of R&D and innovation activities in Polish regions, and the innovation gap between voivodeships increases;
- the uneven development of regional innovation systems and the divergence in innovation performance at regional level pose an innovation policy challenge as they can negatively impact innovation at national level;
- geographical proximity fosters interaction between innovation system actors, which creates the possibility of applying innovation policy instruments at regional level to stimulate cooperation, including within clusters.

6.5. Summary and Conclusions

The analysis carried out in this chapter shows that the innovativeness of the Polish economy compared to its important trading partners remains relatively low. One of the reasons for this is the strong regional polarization of R&D and innovation activity in Poland, as a result of which the innovation gap between the various regions is widening. This translates into an increase in the distance that separates Poland from innovation leaders such as the USA, Germany, South Korea. In recent years, China has been slowly getting closer to this innovation leaders group, being also well ahead of Poland in the innovation rankings. Moreover, some countries less advanced in this respect than Poland, such as Ukraine and India, are starting to reduce their distance from the Polish economy. Among the group of economies analyzed in this chapter, only Russia weakened its innovation position in 2012–2019 compared to Poland.

The question arises as to how these conditions can affect Poland's bilateral relations with these countries. As far as trade is concerned, according to the theoretical approach, the technological and innovation gap is affecting the pattern of trade, especially for industrial goods, by forcing innovation-lagging countries to remain in the position of imitators. The innovation gap also has an impact on the motives for foreign direct investment. The search for strategic resources entails an influx of direct investment to innovator countries, while innovatively weaker partners are usually the recipients of such investment motivated by market access or cheap labor, thereby aggravating specialization in the production of labor-intensive goods with a low content of value added. It seems that Poland may find it increasingly difficult to compete in international markets with countries with relatively cheap labor and increasing innovation, especially China. The key to development success in these countries is to fill the technological gap by absorbing external technologies and strengthening their capacity to exploit and improve them [Kowalski, 2020]. The wide gap between Poland and world leaders in innovation will not be conducive to specialization in foreign markets, based on unique products and services. It seems most reasonable to look for a market niche in which Poland could build or strengthen its competitive advantages over the countries with which it trades. This purpose is served by a broader analysis of Poland's bilateral links with important economic partners, which is the subject of the discussion presented in Part III of this monograph.

Bibliography

Audretsch, D.B., Feldman, M.P. [1996], *R&D Spillovers and the Geography of Innovation and Production*, "The American Economic Review", 86(3), pp. 630–640.

Boschma, R.A. [2005], *Proximity and Innovation: A Critical Assessment*, "Regional Studies", 39(1), pp. 61–74.

Castellacci, F. [2008], *Innovation and the Competitiveness of Industries: Comparing the Mainstream and the Evolutionary Approaches*, "Technological Forecasting & Social

Change", 75, pp. 984–1006.

Cornell University, INSEAD, WIPO [2020], *The Global Innovation Index 2020: Who Will Finance Innovation?,* Ithaca – Fontainebleau – Geneva.

Dzienis, A., Kowalski, A.M., Lachowicz, M., Mackiewicz, M., Napiórkowski, T.M., Weresa, M.A. [2019], *A Study on Structural Reform in Poland 2013–2018*, European Commission, Brussels.

European Commission [2020], *European Innovation Scoreboard 2020*, Publications Office of the European Union, Luxembourg.

Ghodsi, M. [2020], *Is Austria's Economy Locked-in in the CESEE Region? Austria's Competitiveness at the Micro-Level*, "EMPIRICA", 47(3), DOI: 10.1007/s10663-019-09451-8, pp. 669–693.

IMD [2020], *World Competitiveness Yearbook*, IMD Competitiveness Center, Lausanne.

INSEAD, WIPO [2012], *The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth*, Geneva.

Karlsson, C., Andersson, M. [2009], *The Location of Industry R&D and the Location of University R&D: How Are They Related?*, in: *New Directions in Regional Economic Development*, Ch. Karlsson, A.E. Andersson, P.C. Cheshire, R.R. Stough (eds.), Springer, Berlin–Heidelberg, pp. 267–290.

Kowalski, A.M. [2011], *Innovativeness of Poland's Manufacturing Sector*, in: *Poland: Competitiveness Report 2011. Focus on Manufacturing*, M.A. Weresa (ed.), SGH Publishing House, Warsaw, pp. 321–347.

Kowalski, A.M. [2020], *Dynamics and Factors of Innovation Gap Between the European Union and China*, "Journal of the Knowledge Economy", pp. 1–16. DOI: 10.1007/s13132-020-00699-1.

Kowalski, A.M., Weresa, M.A. (eds.) [2020], *Poland. Competitiveness Report 2020. International Competitiveness in the Context of Development of the Service Sector*, SGH Publishing House, Warsaw.

Misala, J. [2014], *Theoretical Grounds of the Development of Long-Term Competitive Advantages in International Trade*, in: *Innovation, Human Capital and Trade Competitiveness. How Are They Connected and Why Do They matter?*, M.A. Weresa, (ed.), Springer, Cham–Heidelberg –New York–London pp. 3–52.

Schwab, K. (ed.). [2019], *The Global Competitiveness Report 2019*, World Economic Forum, Geneva.

Siegel, D.S., Westhead, P., Wright, M. [2003], *Assessing the Impact of University Science Parks on Research Productivity: Exploratory Firm-Level Evidence from the United Kingdom*, "International Journal of Industrial Organization", 21(9), pp. 1357–1369.

Statistics Poland [2020], *Działalność innowacyjna przedsiębiorstw w latach 2016–2018*, Urząd Statystyczny w Szczecinie, Warszawa – Szczecin.

Terzic, L. [2017], *The Role of Innovation in Fostering Competitiveness and Economic Growth: Evidence from Developing Economies*, "Comparative Economic Research – Central and Eastern Europe", 20(4), pp. 65–81.

Weresa, M.A. [2012], *Does the Model of National Innovation System Determine Competitiveness of Economies?*, "Zeszyty Naukowe Uniwersytetu Ekonomicznego w Poznaniu", 246, pp. 129–139.

Weresa, M.A. [2012], *Systemy innowacyjne w gospodarce światowej*, Wydawnictwo Naukowe PWN, Warsaw.

Weresa, M.A. [2015], *Innovation and Sustainable Competitiveness: Evidence from Poland*, "International Journal Transitions and Innovation Systems", 4 (3/4), pp. 150–163.

Weresa, M.A., Kowalski, A.M., Sieńko-Kułakowska, E.B. [2017]. *Rozwój klastrów i metody ewaluacji*, SGH Publishing House, Warsaw.

Chapter 7

Dimensions of Culture and Innovation Linkages. An International Comparison

Lidia Danik, Małgorzata Stefania Lewandowska

7.1. Introduction

National culture has a multi-dimensional impact on the level of innovation of countries, as confirmed by numerous studies [Shane, 1992, 1993; Efrat, 2014; Nam et al., 2014; Della Piana et al., 2015; Strychalska-Rudzewicz, 2015; Jang et al., 2016; Cox, Khan, 2017]. A number of authors also point out that it affects both cooperation within organizations and with external partners, in particular foreign ones [Gächter et al., 2010; Irwin, Berigan, 2013; Danik, 2017]. However, there are few studies showing how the different dimensions of culture affect innovation linkages.

For this reason, the purpose of this chapter is, in its theoretical layer, to identify potential links between the different dimensions of culture and innovation linkages. This purpose is to be served by defining the concept of culture, discussing its dimensions according to Hofstede's current classification [VSM, 2013] and analyzing the findings of previous scientific studies.

The purpose of the study presented, in its empirical layer, is to verify the relationship between the different characteristics of national cultures (power distance, individualism, masculinity, uncertainty avoidance, short-term orientation, indulgence) with innovation linkages.

The analysis presented in this chapter includes data from European Union member states, EU-associated countries, as well as, due to the subject matter of the report as a whole, China, India, South Korea, Russia, Ukraine, and the United States of America. In the case of the last dimension of national culture – indulgence – data for Belarus was also taken into account.

The research delimited this way will demonstrate the dimensions of culture which foster innovation linkages, which of them should be assessed as neutral in this case and which are definitely not conducive to innovation linkages. The results of the analysis

will also make it possible to identify similarities and differences between countries in terms of the relationships in question, as well as to define Poland's position in this respect.

7.2. Culture and Its Dimensions – Definition of Terms

The term *culture* has been evolving for centuries. In ancient times, it originally referred to the cultivation of land. Later, it started to be used also in a metaphorical sense – Cicero [Cicero, 1961, p. 557] referred to culture in the context of "cultivation" of the soul. In the mid-20th century, interest in culture and its impact on all aspects of human activity increased, resulting not only in research into this phenomenon, but also in a broad discussion on its definition. Culture can be defined as something that resides in the human mind, but also as institutions and artifacts, a system of behaviors, a set of meanings, a phenomenon occurring regardless of its carriers, which are people, or, finally, as a purely subjective construct [Minkov, 2013, pp. 13–17]. In this study, it will be understood as "all that is created by man, which is acquired by many through learning and passed on to other people, as well as to future generations through non-genetic information" [Szacka, 2008, s. 79].

Culture determines the attitudes, values, competencies, priorities and behaviors of social groups at different levels, and therefore the following are distinguished: the universal level of culture (characteristic of the whole human civilization), supra-culture (supranational level: economic or political system, economic development level, religious or ethnic community), macro-culture (shaped by national identity, origin, country of permanent residence), meso-culture (typical of a specific industry, professional group), microculture (found in an organization, corporation, family) and individual culture (determined by the personality of the individual). Different levels of culture determine each other and the relationships between them are bi-directional [Srnka, 2004].

As many studies [Minkov, 2013] confirm, cultural differences between individual nations can be observed. The so-called dimensions of culture [Hofstede, 2011] are used to measure them, i.e. certain aspects of this phenomenon that can be measured and numerically expressed. Although the concept of using numerical measures to compare entire nations is controversial [cf. Danik, 2017, p. 81] and the dimensions themselves reflect the specificities of individual cultures only in a simplified way, it is so far the only tool that allows cross-national comparisons to be made.

One of the most popular classifications of cultural dimensions, which has largely determined further research into national and organizational culture, was developed

by Geert Hofstede based on his research from between 1967 and 1973 among IBM employees in the company's subsidiaries in 40 countries. Originally, the Hofstede model described four dimensions of culture (power distance, individualism, masculinity and uncertainty avoidance), but thanks to further research, a fifth one (long-term orientation) was added in 1991, as well as a sixth dimension of culture (indulgence vs. restriction) in 2010 [Hofstede et al., 2010; Minkov, Hofstede, 2012.

Power distance, measured by the power distance index (PDI) is defined as the extent to which less powerful members of institutions (such as the family, school, local community) or organizations accept and expect that power is distributed unequally. In countries with a high power distance index, workers are afraid to oppose their superiors. Superiors often have autocratic or paternalistic characteristics, and this is accepted. Those in the lower strata of the hierarchy consider their dependence on them desirable. Enterprises have a hierarchy associated with clear status symbols, and superiors enjoy special privileges. In countries with a high power distance, the division of society into classes is accepted, and there is unequal access to resources and education, etc. [Hofstede et al., 2010, pp. 61–66].

Individualism, measured by the IDV index, is characteristic of societies that have loose ties between people. Individuals care only for their own well-being and for their immediate family members. The opposite of individualistic cultures are collectivist cultures, where people have strong relationships with the group which they belong to from birth. They protect it and are loyal to it. As research shows, collectivism is usually correlated with a high power distance, though not in all countries. Members of collectivist societies often give up not only their personal gain, but also their own opinion in favor of the group's well-being and the opinion expressed by the group. In collectivist countries, employees often (though not everywhere to the same extent) feel strongly bound to their employer. In this case, it is natural to treat members of one's own group better than those who are considered alien, also in business situations. Therefore, establishing a professional relationship requires getting to know the partner first, making friends with them and thus including them in one's own group. This dimension of culture also translates into the way employees expect to be motivated for work – making pay dependent on individual or group performance [Hofstede et al., 2010, pp. 92–124].

Masculinity, measured by the MAS index, characterizes communities in which the roles played by men and women are clearly diverse. The former are expected to be assertive, tough, focused on financial success, and the latter – modest, gentle, caring about the quality of life. Career is a matter of duty for men and of free choice of women. In feminine societies, gender roles overlap – both men and women are expected to have the characteristics described above as female. In conflict situations,

representatives of masculine societies are more likely to choose to fight, while those from feminine cultures are more likely to negotiate and compromise. In masculine societies, workers are relatively more likely to be rewarded for their performance, while in the feminine cultures the worker's needs are also taken into account. Developed countries with a masculine culture traditionally achieve an advantage in the manufacturing and chemical industries, where rapid and efficient action is required. Countries with a feminine culture have traditionally been at the forefront in services, as well as in the production of custom-made goods for consumers and in highly-specialized agriculture and biochemistry [Hofstede et al., 2010, s. 135–170].

Uncertainty avoidance, measured by the Uncertainty Avoidance Index (UAI), means the degree to which representatives of a particular culture feel at risk in new and uncertain situations. The accompanying stress can be reduced by laws, regulations and customs. Avoiding uncertainty does not mean avoiding risk (which is measurable, linked to a particular situation, while uncertainty remains inherently subjective, associated with ambiguity and inability to predict what may happen). In countries with a high degree of uncertainty avoidance, there is a tendency for greater control of workers and the application of many formalized and informal rules relating to their rights and obligations. While standards and principles in societies avoiding uncertainty satisfy the emotional need to reduce stress, in societies with a low degree of uncertainty avoidance, it is considered that formalized rules should only be imposed when necessary [Hofstede et al., 2010, pp. 202–216].

Long-term orientation, measured by the LTO index, means attaching special importance to actions and virtues associated with ensuring future prosperity, in particular, perseverance and thrift. In contrast, in the case of short-term orientation, particular attention is paid to tradition, saving face, and fulfilling social obligations, thereby fostering virtues related to the past and present. With regard to business, long-term orientation translates into resource saving, perseverance in achieving success (even those to come in the distant future), attaching importance to learning, integrity, adaptability, responsibility, self-discipline, market position and business ties [Hofstede et al., 2010, pp. 235–276].

Indulgence, measured by IVR index, stands for the tendency to allow relatively free gratification of basic and natural human needs related to enjoying life and having fun. It contrasts with restraint, which reflects the conviction that enjoying life needs to be curbed and regulated by strict social norms. Indulgence is associated, among other things, with an optimistic attitude to life, frequent feelings of happiness, demonstration of positive emotions in both private and professional life [Hofstede et al., 2010, pp. 277–298].

7.3. Dimensions of Culture and Innovation Linkages

High hierarchy, centralized power, considerable control, formalized communication, rigid rules and procedures are characteristics of a culture with a high power distance that can negatively affect the level of innovation [Jones, Davis, 2000], as they restrict creativity. This approach may hinder cooperation due to its high ceremoniousness and lack of flexibility, not only limiting efficient communication, but also contributing to conflicts.

On the other hand, a lower power distance is associated with greater decentralization, which fosters innovation through less information overload on top-level management, free exchange of thoughts between subordinates and superiors, involving low risk, and the ability to respond quickly to emerging problems [Shane, 1992; Allred, Swan, 2004]. This means greater openness not only to innovative solutions, but also to efficient cooperation with external partners in this field. This allows the hypothesis (H1) to be posed that **a low level of power distance fosters innovation linkages**.

The characteristics of individualistic societies considered to be conducive to innovation are a high degree of personal and professional freedom, autonomy and independence [Jones, Davis, 2000]. In this case, expressing one's opinion is considered to be a manifestation of honesty, a clash of opinions can be salutary, and a negative feedback is accepted in a constructive way. [Hofstede et al., 2010, s. 106–107].

The collectivist approach strengthens cooperation between the different departments of a company (e.g. Marketing and R&D) [Allred, Swan, 2004]. On the other hand, attachment to previous solutions characteristic of collectivist cultures fosters gradual change rather than disruptive innovations [Morris et al., 1994]. Moreover, collectivist cultures avoid direct confrontation as a driver of innovation.

While collectivism strengthens intra-group cooperation, which entails preferential treatment for members of one's own [Yamagishi, Yamagishi, 1994], representatives of such cultures are wary of individuals considered to be alien [Irwin, Berigan, 2013], and this may hinder cooperation with external partners. What is more, innovative solutions require a high level of autonomy for the individuals who create them, so individualistic culture can be expected to serve innovation linkages more than collectivist culture. Therefore, the second hypothesis (H2) is as follows: **a high level of individualism fosters innovation linkages**.

The characteristics of masculine cultures determining the development of innovation are: a task-oriented approach, an emphasis on achievement and rewards, and the acceptance of competition and conflict [Jones, Davis, 2000]. Nevertheless, these characteristics seem particularly important in the innovation initiation phase, whereas

the implementation phase of innovation requires cooperation, trust, good communication, a conciliatory approach to conflict [Allred, Swan, 2004], which is why at this stage the relationship between masculinity and innovation may be negative [Nakata, Sivakumar, 1996]. As the "masculine" approach is more geared towards achieving one's own rather than common objectives, as being based more on competition than cooperation, it is presumably not conducive to cooperation in innovation, as claimed by the third hypothesis (H3) that a **low level of masculinity fosters innovation linkages**.

Uncertainty avoidance can in itself hamper innovation, as it raises fears of new situations, as well as the need to reach consensus and apply formalized rules and procedures [Jones, Davis, 2000]. It is worth noting, however, that in countries with strong uncertainty avoidance, entrepreneurial attitudes are relatively more common. As analyses by Hofstede et al. [2010, p. 213] showed, the propensity for self-employment may mean that people in countries with high levels of uncertainty are less satisfied with life than those from cultures with a higher tolerance for the unknown. Entrepreneurial attitudes, on the other hand, are inextricably linked to the introduction of innovations [Schumpeter, 1942]. Moreover, their implementation in practice requires attention to detail, which is more common in countries with strong uncertainty avoidance. It can therefore be expected that countries with this characteristic will be at the forefront of implementation of innovative solutions. Of course, there are many types of innovations. It cannot be ruled out that weak uncertainty avoidance is conducive to basic innovations, deepening the overall knowledge of the world (as opposed to applied innovations that provide an understanding of a particular problem or application – cf. Liu, Rosell [2013]), while strong uncertainty avoidance fosters the implementation of innovative solutions [Hofstede et al., 2010, p. 213]. While the relationship between innovation and uncertainty avoidance is, as shown, complex and depends on the type of innovation, the relationship between uncertainty avoidance and the propensity to cooperate in innovation seems negative. As representatives of cultures that avoid uncertainty are reluctant to cooperate with other individuals [Hofstede, 2008], it should be assumed that their attitude does not serve innovation linkages, as claimed by the fourth hypothesis (H4) which provides that a **low level of uncertainty avoidance fosters innovation linkages**.

Long-term orientation and the associated emphasis on hard work and perseverance contribute to the development of innovation [Jones, Davis, 2000],which generally requires the abandonment of immediate profits in favor of investment in technologies with an uncertain return, which often takes place at an indeterminate time [Steensma et al., 2000]. As Nakata [1996] notes, work ethics and the desire to save face have a special relationship with innovation. The former, characteristic of long-term orientation, promotes dedication to the company and its new solutions. On the other

hand, preserving face, characteristic of short-term orientation, is not served by criticism, rude behavior, questioning someone's abilities, admission of mistakes. Excessive care about face-saving does not support innovation.

Representatives of long-term orientation cultures will be willing to invest in relationships with external partners if this allows them to succeed in the future. This will also make it easier for them to resolve conflicts resulting from the natural frictions associated with the creative process. This gives rise to the fifth hypothesis (H5), which assumes that **long-term orientation fosters innovation linkages.**

As the dimension of culture known as indulgence has been identified relatively recently, there is little research to suggest its link with the level of innovation and innovation linkages. Nevertheless, it has been observed that in cultures characterized by low uncertainty avoidance and high indulgence, there is greater openness to new technologies [Syed, Malik, 2014]. Societies that accept the joy of life may be more willing to invest in innovations because they allow them to better satisfy their needs [Cox, Khan, 2017]. A high level of indulgence is associated with freedom of expression and positive emotions [Hofstede, 2011], which can foster people-to-people relationships, including those necessary for innovation. Hence, the last hypothesis (H6) that **a high level of indulgence fosters innovation linkages**.

7.4. Results of the Authors' Own Research on the Relationship between Dimensions of Culture and Innovation Linkages

This part of the study presents the results of the authors' own research aimed at highlighting the relationship between the dimensions of culture discussed above and innovation linkages. The research sample covered 28 European Union member states, EU-associated countries as well as China, India, South Korea, Russia, and the United States of America.

Hofstede's research methodology, as well as the way in which his research results were interpreted, have been criticized on a number of occasions [McSweeney, 2002; Tung, 2008; Sasaki, Yoshikawa, 2014; Taras et al., 2014; Danik, 2017], however, they are still considered to have a significant explanatory value, also in terms of various aspects of international business. Moreover, numerous replications, including analyses using both Hofstede's classification and the more modern GLOBE index [e.g.,. Dikova, Rao Sahib, 2013], indicate their continued topicality. It is emphasized that the pragmatic approach by Hofstede and his team made it possible to create a valuable framework

on which further research can be based, taking into account, of course, the limitations arising from the application of this concept [Venkateswaran, Ojha, 2019].

Data on the dimensions of culture has been drawn from Hofstede's website, where the results of the Values Survey Module [VSM, 2013] are published.

Hofstede's original study of the dimensions of culture focused on forty countries [Hofstede, 1980]. Its subsequent edition [Hofstede, 1984] involved representatives of another ten countries. The latest surveys cover all six dimensions of culture. Based on an extensive questionnaire developed with the participation of more than 100,000 respondents, six synthetic indexes were created representing the predefined dimensions of culture.

The different dimensions of culture are assessed on a scale of 0 to 100 (with minor exceptions for several countries) and describe: power distance (synthetic PDI: low – 0, high –100, except Malaysia and Slovakia – 104); individualism (synthetic IDV: low, indicating collectivism – 0, high – 100); masculinity (synthetic MAS: low, indicating femininity – 0, high – 100, except Slovakia – 110); uncertainty avoidance (synthetic UAI: low – 0, high – 100, with the exception of Guatemala – 101, Portugal – 104, and Greece – 112); long-term orientation (synthetic LTO: low, meaning short-term orientation – 0, high – 100); indulgence (synthetic IVR: low, meaning restraint – 0, high – 100).

Data for Iceland and Ukraine were only available for two dimensions: short-term orientation and indulgence, while data for Cyprus and Belarus only related to the Indulgence category.

Poland achieved the following scores on the synthetic indexes in the various dimensions of culture: for power distance (PDI) – 68, individualism (IDV) – 60, masculinity (MAS) – 64, uncertainty avoidance (UAI) – 94, long-term orientation (LTO) – 38, and indulgence (IVR) – 29.

Table 7.1. Dimensions of culture – scores for selected countries

Country	Power distance	Individualism	Masculinity	Uncertainty avoidance	Long-term orientation	Indulgence
China	80	20	66	30	87	24
India	77	48	56	40	51	26
South Korea	60	18	39	85	100	29
Germany	35	67	66	65	83	40
Poland	**68**	**60**	**64**	**93**	**38**	**29**
Russia	93	39	36	95	81	20
Ukraine	nd	nd	nd	nd	86	14
USA	40	91	62	46	26	68

Source: Compilation by the authors based on Hofstede data [VSM, 2013].

The similarities and differences in results relating to the different dimensions of culture for Poland, compared to China, India, South Korea, Germany, Russia, Ukraine, and the USA, are presented in Table 7.1.

Data on innovation linkages has been taken from the latest Global Innovation Index [Global Innovation Index, 2020]. The study, initiated in 2011 by a consortium of research organizations, allows the innovation level to be compared between economies around the world. The index is calculated as an average of the innovation input sub-index and the resulting innovation output sub-index. It also takes into account the ratio of the input subindex score over the output sub-index score (innovation efficiency ratio).

The first sub-index consists of five pillars: institutions, human capital and research, infrastructure, market sophistication and business sophistication. The second sub-index – outputs – involves two types of outputs: knowledge and technology outputs and creative outputs. Within the first group of innovation inputs, described as the business sophistication pillar, the innovation linkages sub-pillar stands out. It is a synthetic index composed of elements such as business/university collaboration, the prevalence of clusters, R&D expenditure financed from abroad, the number of deals on joint ventures and strategic alliances, the number of patent family applications.

The individual sub-indexes have been created on the basis of data from the *Executive Opinion Survey 2018* developed by the World Economic Forum [WEF, 2018] and information published by UNESCO [UNESCO, 2019], Thomson Reuters [TR, 2018] and the World Intellectual Property Organization [WIPO, 2018].

In terms of the Global Innovation Index, Poland ranked 38th in 2020 among 131 countries, and in the different dimensions of innovation linkages it scored as follows: 37.2 points (87th in the global ranking) for university/industry research collaboration; 46,8 points (67th) for the state of cluster development; 0.1 points (47th) for R&D financing from abroad; 0.0 points (65th) for JV-strategic alliance deals; and 0.3 points (34th) for the number of patent family applications.

With the overall Innovation Linkages index, covering all the five above-mentioned sub-indexes, at 19.6 points, Poland ranks very low, 72nd among the analyzed 131 economies of the world.

The synthetic Innovation Linkages index for the United States is 60.6 points; for South Korea – 58.8 points; Germany – 53.7 points; India – 26.6 points; China – 24.5 points; Ukraine – 18.8; and Russia – 17.6 points.

This synthetic Innovation Linkages index, calculated for Poland and other countries analyzed, will be used in further analyses.

The results of the compilation of synthetic indexes relating to the six dimensions of culture and the synthetic Innovation Linkages index are presented in Figures 7.1

to 7.6 and Table 7.1. Detailed data covering all the country-specific synthetic indexes analyzed are provided in Table 7.2.

Table 7.2. Innovation linkages and dimensions of culture – results for all surveyed countries

Country	Innovation linkages	Power distance	Individualism	Masculinity	Uncertainty avoidance	Short-term orientation	Indulgence
Number of countries	$N = 38$	$N = 34$	$N = 34$	$N = 34$	$N = 34$	$N = 36$	$N = 38$
Sweden	76.2	31	71	5	29	53	78
Finland	68.5	33	63	26	59	38	57
Iceland	67.2	–	–	–	–	28	67
Switzerland	66.2	34	68	70	58	74	66
Luxembourg	63.3	40	60	50	70	64	56
Netherlands	62.6	38	80	14	53	67	68
USA	60.6	40	91	62	46	26	68
South Korea	58.8	60	18	39	85	100	29
Denmark	57.8	18	74	16	23	35	70
Malta	55.2	56	59	47	96	47	66
Austria	55.1	11	55	79	70	60	63
Germany	53.7	35	67	66	65	83	40
United Kingdom	51.0	35	89	66	35	51	69
Belgium	50.5	65	75	54	94	82	57
Cyprus	44.4	–	–	–	–	–	70
Ireland	43.2	28	70	68	35	24	65
Norway	43.1	31	69	8	50	35	55
Czech Republic	42.1	57	58	57	74	70	29
France	42.0	68	71	43	86	63	48
Italy	37.4	50	76	70	75	61	30
Slovenia	31.7	71	27	19	88	49	48
Estonia	29.9	40	60	30	60	82	16
Latvia	27.8	42	60	19	65	82	16
Lithuania	27.1	44	70	9	63	69	13
Bulgaria	26.9	70	30	40	85	69	16
India	26.6	77	48	56	40	51	26
Portugal	25.5	63	27	31	104	28	33
China	24.5	80	20	66	30	87	24
Hungary	24.5	46	80	88	82	58	31

Country	Innovation linkages	Power distance	Individualism	Masculinity	Uncertainty avoidance	Short-term orientation	Indulgence
Spain	24.5	57	51	42	86	48	44
Serbia	22.6	86	25	43	92	52	28
Poland	**19.6**	**68**	**60**	**64**	**93**	**38**	**29**
Slovakia	19.0	104	52	110	51	77	28
Ukraine	18.8	–	–	–	–	86	14
Greece	18.8	60	35	57	112	45	50
Russia	17.6	93	39	36	95	81	20
Croatia	16.6	73	33	40	80	58	33
Romania	15.6	90	30	42	90	52	20
Belarus	6.2	–	–	–	–	–	15

Source: Compiled by the authors based on Hofstede [VSM, 2013] and Global Innovation Index [2020] data.

The level of coefficient R^2 is taken as the measure of the quality of model fit to real data. It shows what part of dependent variable Y (in this case innovation linkages) can be explained by regression, i.e. linear dependence on variable X (successive dimensions of culture). This index takes values from 0 to 1, where 0 means no fit and 1 means complete fit.

An analysis of the first dependence, performed for the dimension of culture representing power distance and innovation linkages for data from 28 EU member states, EU-associated countries and selected economies of the world (in total $N = 34$), shows that it is moderate, as coefficient R^2 equals 0.49. A clear relationship between low power distance and high innovation linkages is observed in the majority of the old EU countries. Included in this group are non-EU countries: Switzerland, the USA and South Korea.

On the other hand, low innovation linkages, which are accompanied by a high power distance, are characteristic of new EU member states, including Poland. This group of non-EU states includes also China, India and Russia.

Based on the above results, it can be assumed that the first hypothesis (H1), which provides for the existence of a positive relationship between low power distance and high intensity of innovation linkages, was verified positively in the group of selected world economies studied (Figure 7.1).

In the analysis of the intensity of innovation linkages and the level of individualism, the results for the group of countries analyzed ($N = 34$) are not conclusive. The low level of coefficient R^2 (0.27) shows that model fit to data is poor. The hypothesis (H2)

of a positive relationship between a high level of individualism and high intensity of innovation linkages is true only for old EU member states and the USA, while a very high level of innovation linkages is found in South Korea, which stands out among the analyzed countries with its highest level of collectivism. On the other hand, a high level of collectivism in the case of China or Russia does not translate in any way into intensity of innovation linkages.

Figure 7.1. Power distance and innovation linkages
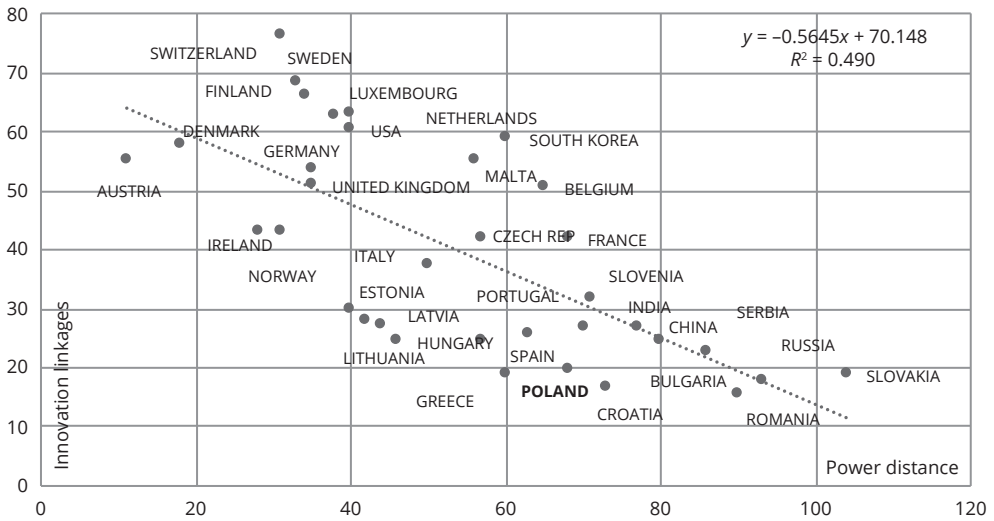
Source: Compilation by the authors based on Hofstede [VSM, 2013] and Global Innovation Index [2020] data.

As most new EU member states, Poland belongs to a group of countries in which the level of individualism is relatively high, with a relatively low level of innovation linkages. Although Figure 7.2 shows some trends characteristic of this variable, the results for the whole group of countries studied are so varied that the second hypothesis should be rejected in their case (H2).

The next dimension of culture with potential relationship with the intensity of innovation linkages is masculinity.

The results relating to EU member states, associated countries and selected countries of the world ($N = 34$) are again not unambiguous. Coefficient R^2 for the whole analyzed sample is 0.02, and therefore the third hypothesis (H3) is rejected. At the same time, there is a tendency showing that in the old EU member states, where the level of masculinity in culture is low, and even – in the case of such countries as Sweden, Norway, the Netherlands, Denmark, Finland – extremely low, a high level of innovation linkages is observed. On the other hand, a similarly low level of masculinity

in culture is found in Slovenia, Lithuania, Latvia, with a simultaneous low intensity of innovation linkages.

Figure 7.2. Individualism and innovation linkages
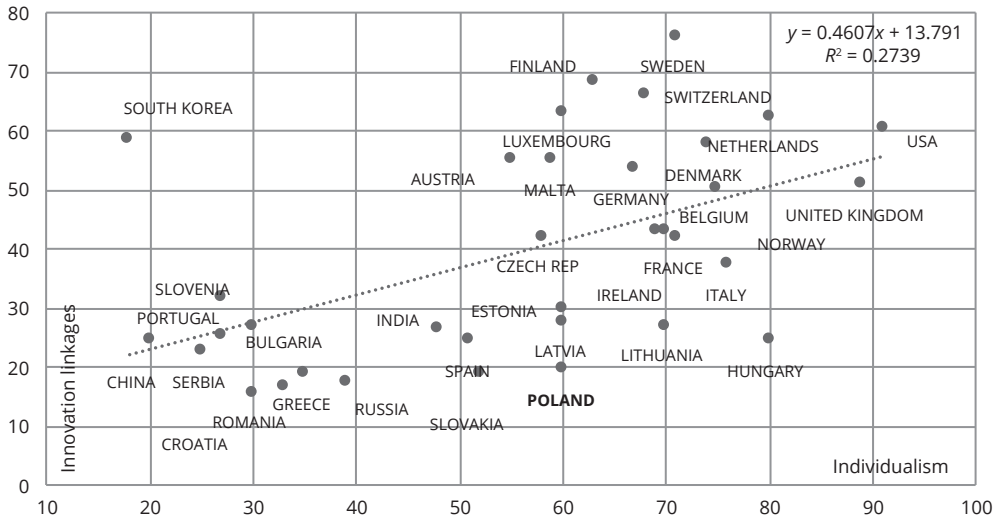
Source: Ibid.

On the other hand, such countries as Austria, Germany, or the United Kingdom, where the masculinity index is high, report an equally high contribution of innovation linkages.

Poland, whose culture is characterized by a fairly high masculinity index, is positioned in Figure 7.3 among such countries as India, China, Greece, and Hungary.

The fourth of the analyzed dimensions of culture, which can have a potential relationship with the intensity of innovation linkages, is uncertainty avoidance. In this case, the level of coefficient R^2 is again so low (0.18) that the fourth hypothesis (H4), relating to the whole sample of countries surveyed, is rejected.

The results for the group of economies analyzed ($N = 34$) are once again not conclusive. Countries such as Sweden, the Netherlands, the United Kingdom and Finland can be identified where low levels of uncertainty avoidance are accompanied by a high level of innovation linkages.

At the same time, China, India and Slovakia have equally low levels of uncertainty avoidance, but this does not translate into a high intensity of innovation linkages.

On the other hand, in the case of South Korea, where the level of uncertainty avoidance is relatively high, there is also a high level of innovation linkages.

Figure 7.3. Masculinity and innovation linkages
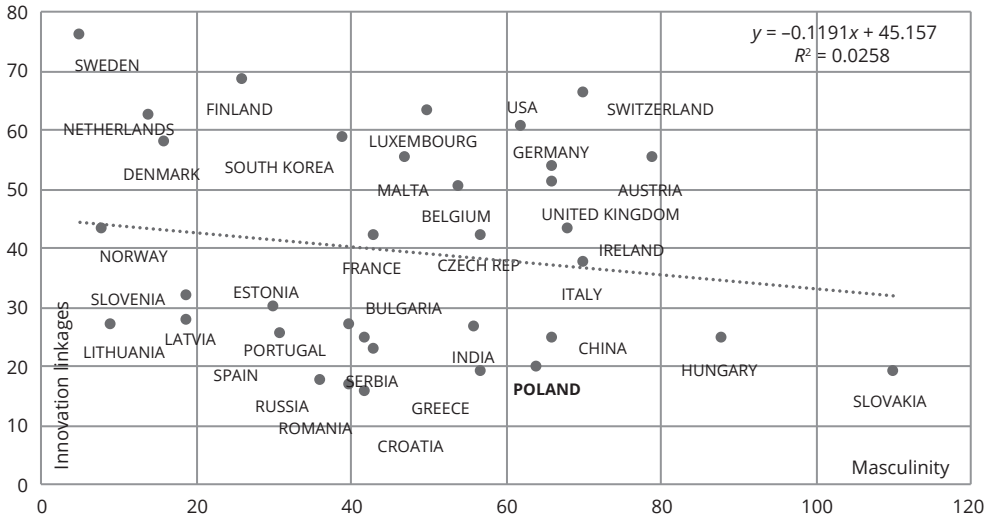
Source: Ibid.

Poland, characterized by a high level of uncertainty avoidance and a low level of innovation linkages, forms a group together with Bulgaria, Portugal, Romania, Russia, and Greece (Figure 7.4).

Figure 7.4. Uncertainty avoidance and innovation linkages
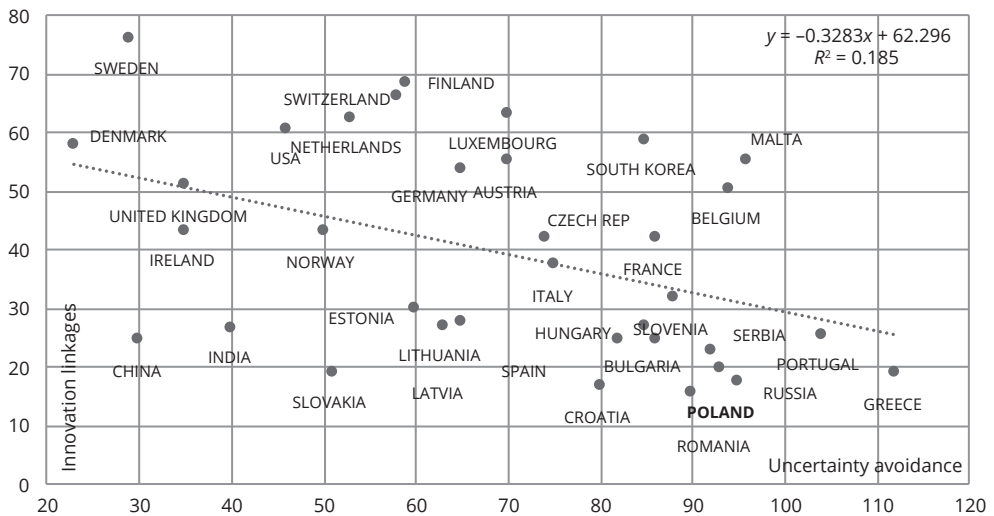
Source: Ibid.

The fifth dimension of culture analyzed, which may show potential relationships with the intensity of innovation linkages, is long-term orientation.

In the case of this index calculated for $N = 36$ countries, coefficient R^2 is again so low (0.01) that the fifth hypothesis (H5) posed at the beginning must be rejected.

Countries with exceptionally strong short-term orientation and intensive innovation linkages include the USA, Iceland, Ireland, Denmark, and Finland. At the same time, an equally clear short-term orientation characterizes Poland, but this does not translate into the intensity of innovation linkages.

Germany, Belgium, and South Korea, on the other hand, are countries with a strong long-term orientation and at the same time a high level of innovation linkages. Similar long-term orientation characterizes Slovakia, Russia, Ukraine, Estonia, and China, but this does not translate into intensity of innovation linkages (Figure 7.5).

Figure 7.5. Long-term orientation and innovation linkages
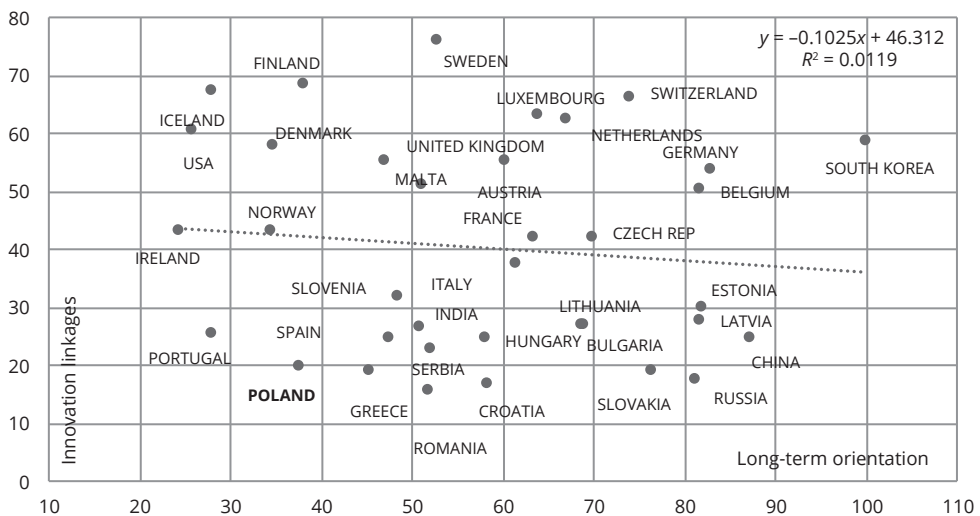
Source: Ibid.

The last, sixth, dimension of culture in question, is the level of indulgence. In this case, the value of coefficient R^2, set for $N = 38$ economies of the world, is relatively high (0.62), the highest of all coefficients in the study, which allows the sixth hypothesis (H6) to be accepted.

The data presented in Figure 7.6 clearly show that the higher the level of indulgence and the lower the level of restraint, the more the level of innovation linkages increases. Switzerland, Sweden, Iceland, and the USA are among the leaders in this respect.

Figure 7.6. Indulgence and innovation linkages
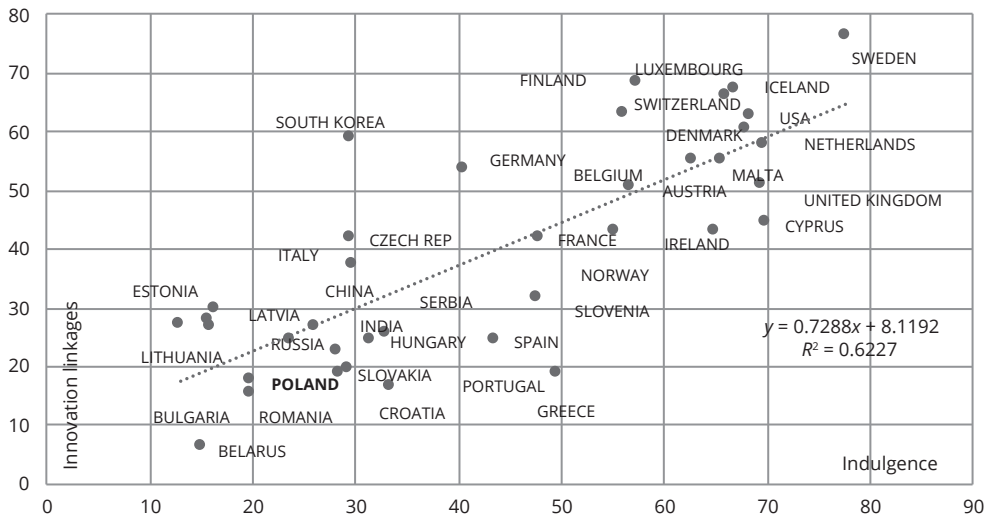
Source: Ibid.

Poland, which is characterized by relatively high level of restraint, ranks close the other "new" EU countries, as well as China, India and Russia.

One exception is South Korea, where, despite a high level of restraint, innovation linkages remain at a high level.

7.4. Summary and Conclusions

In most of the EU member states and in the USA, a low power distance is combined with intensive innovation linkages. In South Korea, on the other hand, there is a reverse relationship – a high power distance with intensive linkages.

It is interesting to compare individualism and innovation linkages. While most countries in the old EU and the USA show a clear relationship between a high level of individualism and innovation linkages, in the case of South Korea this relationship is again the opposite: a high level of collectivism is combined there with intensive innovation linkages. This may be due to the predominance in the country of so-called horizontal collectivism, the characteristics of which are empathy, sociability and cooperation, putting it in opposition to vertical collectivism, focused on the internal cohesion of the group and its high submissiveness [Grabowski, 2010].

A feature conducive to cooperation in innovation is indulgence, which is associated with openness to novelties, as well as enjoying contacts with other people. At the

same time, it seems that the dimensions of culture such as masculinity, uncertainty avoidance and long-term orientation are not significantly linked to the intensity of innovation linkages.

It is also worth mentioning that, although most of the hypotheses have been rejected in the case of the group of countries analyzed, countries can be identified for which most of them have been confirmed. Most hypotheses (except long-term orientation) proved to be true for Sweden, Finland, Denmark, and Norway, i.e. Nordic countries. On the other hand, the countries for which four of the six hypotheses have been confirmed include the Netherlands, Ireland, the United Kingdom and the USA, i.e., with the exception of the Netherlands, Anglo-Saxon countries. Given that these are also countries with a high level of innovation, it can be assumed that both high levels of innovation and innovation linkages are fostered by the following dimensions of culture: low power distance, high individualism, short-term orientation, cultural femininity, low level of uncertainty avoidance, and high level of indulgence.

Culture in Poland, for its part, is characterized by a high power distance, a relatively low level of individualism, short-term orientation, a high level of masculinity, a high level of uncertainty avoidance, and a low level of indulgence. As Polish culture is exactly the opposite (except for short-term orientation) of those diagnosed among innovation level and innovation linkage leaders, are we doomed to fail as a country? Of course not, because it should be kept in mind that culture is a multi-dimensional phenomenon. While it is difficult to change the culture of a nation in a short period of time, such transformations are already becoming possible at the level of enterprises, and, after all, it is enterprises and their employees, not countries, that establish the innovation linkages described in this study. Promoting entrepreneurial attitudes among employees, reducing hierarchical settings, ensuring autonomy for employees in acting and decision-making, and creating relations (both among employees and with external partners) based on trust and caring for others are factors that will certainly foster innovation linkages [Efrat, 2014]. It is also important to ensure that employees are not afraid to express their views and that the organizational culture is open to critical thinking, because too much trust placed in partners supporting the innovation process can prove harmful [Bidault, 2010].

Employee motivation tools should result from labor productivity and reward internal determination and commitment to work, especially in the long term [Chrupała-Pniak et al., 2017]. Companies' recruitment policies should also be aimed at employing individuals with a personality conducive to cooperation in innovation.

Government policies also play an important role in promoting cooperation in innovation, a prominent example of which is South Korea. As noted earlier, the culture of the country is not conducive to innovation linkages due to the high level of

collectivism and restraint, combined with relatively frequent uncertainty avoidance and high power distance. Nevertheless, thanks to the policies in recent decades promoting close cooperation between government, industry and the academic community and support for huge conglomerates known as *chaebols*, the country has established a leading role in innovation [Dayton, 2020].

In Poland, innovation policy should serve to build the absorptive capacity and innovation performance of enterprises and facilitate access to external services and financing of innovation. Its purpose should be to eliminate barriers to making and implementing innovations, reduce risks and uncertainties of innovative processes [Łokaj, Broszkiewicz, 2018]. It is also important, as advocated in the Dublin Declaration, to disseminate the idea of Open Innovation 2.0 as the basis for the European Union's actions. It also requires the creation of an ecosystem conducive to innovations implemented through both open and closed processes. In this case, support for innovation processes by government agencies, co-financing of cooperation with universities and increasing the role of consumers, users and citizens as potential co-creators of innovative solutions play a major role in this case, which will contribute to strengthening the impact of innovation diffusion on enterprises linked to external partners [Lewandowska, 2018].

We are aware of the numerous limitations of this study. These include the often questioned topicality of Hofstede's data. It should also be borne in mind that they concern cultural differences that divide individual nations, do not take into account cultural differences at the enterprise level, and are collected at the level of individuals. Data on innovation linkages, although aggregated at national level, mainly characterize companies, which are an essential reference point for them.

As for the directions of further research, it would certainly be interesting to investigate in depth the results presented and to take into account other external elements affecting innovation linkages, including the government innovation policies mentioned above. It would also be worth looking at the relationship between cooperation in innovation and the dimensions of cultures identified by researchers other than Hofstede, as well as the relationship between organizational culture and cooperation in innovation at the level of enterprises rather than entire economies.

Bibliography

Ahmed, P. [1998], *Culture and Climate for Innovation*, "European Journal of Innovation Management", 1, pp. 30–43.

Allred, B.B., Swan, K.S. [2004], *Global Versus Multidomestic: Culture's Consequences on Innovation*, "MIR: Management International Review", 44(1), pp. 81–105.

Bidault, F. [2010], *Why Too Much Trust Is Death to Innovation*, "MIT Sloan Management Review", 51(4), pp. 33–38.

Chrupała-Pniak, M., Grabowski, D., Sulimowska-Formowicz, M. [2017], *Trust in Effective International Business Cooperation: Mediating Effect of Work Engagement,* Entrepreneurial Business and Economics Review, 5(2), pp. 27–50, DOI: 10.15678/EBER.2017.050202.

Cicero, M.T. [1961], *Księgi akademickie. O najwyższym dobru i złu. Paradoksy stoików. Rozmowy tuskulańskie*, Państwowe Wydawnictwo Naukowe, Warsaw.

Cox, P., Khan, R. [2017], *Country Culture and National Innovation*, "Archives of Business Research", 5(2), pp. 85–101.

Danik L. [2017], *Wpływ kultury na jakość relacji w międzynarodowej współpracy przedsiębiorstw*, SGH Publishing House, Warsaw.

Dayton, L. (2020), *How South Korea Made Itself a Global Innovation Leader*, "Nature", 581(7809), pp. 54–56.

Della Piana, B., Vecchi, A., Vivacqua, E. [2015], *Innovation, Institutions and Cultures: Exploring the European Context*, "Management Revue", 26(1), pp. 5–24.

Dikova, D., Rao Sahib, P. [2013], *Is Cultural Distance a Bane or a Boon for Cross-Border Acquisition Performance?*, "Journal of World Business", 48(1), pp. 77–86.

Efrat, K. [2014], *The Direct and Indirect Impact of Culture on Innovation*, "Technovation", 34(1), pp. 12–20.

Gächter, S., Herrmann, B., Thöni, C. [2010], *Culture and Cooperation*, "Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences", 365(1553), pp. 2651–2661.

Global Innovation Index [2020], https://www.wipo.int/global_innovation_index/en/2020 (accessed: 20.09.2020).

Grabowski D. [2010], *Kulturowe czynniki efektywności gospodarczej i innowacyjności: kultura, efektywność a innowacyjność*, "Chowanna", 2, pp. 77–97.

Hofstede G. [1980], *Culture's Consequences: International Differences in Work-Related Values*, Sage, Beverly Hills.

Hofstede G. [1984], *Culture's Consequences: International Differences in Work-Related Values* (Abridged ed.), Sage, Beverly Hills.

Hofstede, G. [2011], *Dimensionalizing Cultures: The Hofstede Model in Context*, "Online Readings in Psychology and Culture", 2(1).

Hofstede, G., Hofstede, G.J., Minkov M. [2010], *Cultures and Organizations. Software of the Mind Intercultural Cooperation and Its Importance for Survival*, McGraw-Hill, New York–London.

Hofstede, G.J., Jonker, C.M., Verwaart, T. [2008], *Modeling Culture in Trade: Uncertainty Avoidance*, Spring Simulation Multiconference (SpringSim), New York – London.

IMF [2018], *World Economic Outlook Databases: October 2018*, https://www.imf.org/external/pubs/ft/weo/2018/02/weodata/index.aspx (accessed: 20.09.2020).

Irwin, K., Berigan, N. [2013], *Trust, Culture, and Cooperation: A Social Dilemma Analysis of Pro-Environmental Behaviors,* "The Sociological Quarterly", 54(3), pp. 424–449.

Jang, Y., Ko, Y., Kim, S.Y. [2016], *Cultural Correlates of National Innovative Capacity: A Cross-National Analysis of National Culture and Innovation Rates*, "Journal of Open Innovation: Technology, Market, and Complexity", 2(1), pp. 1–16.

Jones, G.K., Davis, H.J. [2000], *National Culture and Innovation: Implications for Locating Global R&D Operations*, "MIR: Management International Review", 40(1), pp. 11–39.

Lewandowska, M.S. [2018], *Koncepcja otwartych innowacji. Perspektywa polskich przedsiębiorstw przemysłowych*, SGH Publishing House, Warsaw.

Liu, R., Rosell, C. [2013], *Import Competition, Multi-Product Firms, and Basic Innovation*, "Journal of International Economics", 91(2), pp. 220–234.

Łokaj, S., Broszkiewicz, A. [2018], *Analiza nakładów na działalność badawczo rozwojową w Polsce na tle Unii Europejskiej i perspektywy do roku 2023*, PMG Consulting, Kraków.

McSweeney, B. [2002], *Hofstede's Model of National Cultural Differences and their Consequences: A Triumph of Faith – A Failure of Analysis*, "Human Relations", 55(1), pp. 89–118.

Minkov, M. [2013], *Cross-Cultural Analysis. The Science and Art of Comparing the World's Modern Societies and Their Cultures*, Sage, Thousand Oaks.

Minkov, M., Hofstede, G. [2012], *Hofstede's Fifth Dimension*, "Journal of Cross-Cultural Psychology", 43(1), pp. 3–14.

Morris, M.H., Davis, D.L., Allen, J.W. [1994], *Fostering Corporate Entrepreneurship: Cross-Cultural Comparisons of the Importance of Individualism versus Collectivism*, "Journal of International Business Studies", 25(1), pp. 65–89.

Nakata, C., Sivakumar, K. [1996], *National Culture and New Product Development: An Integrative Review*, "Journal of Marketing", 60(1), pp. 61–72.

Nam, D., Parboteeah, K.P., Cullen, J.B., Johnson, J.L. [2014], *Cross-National Differences in Firms Undertaking Innovation Initiatives: An Application of Institutional Anomie Theory*, "Journal of International Management", 20(2), pp. 91–106.

OECD [2019], *Main Science and Technology Indicators. MSTI database (2008–18)*, http://data.uis.unesco.org; https://ec.europa.eu/eurostat/data/database; https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB (accessed: 20.09.2020).

Sasaki, I., Yoshikawa, K. [2014], *Going Beyond National Cultures – Dynamic Interaction Between Intra-National, Regional, and Organizational Realities*, "Journal of World Business", 49(3), pp. 455–464.

Schumpeter, J.A. [1942], *Capitalism, Socialism, and Democracy*, Harper & Brothers, New York–London.

Shane, S. [1992], *Why Do Some Societies Invent More Than Others?*, "Journal of Business Venturing", 7(1), pp. 29–46.

Shane, S. [1993], *Cultural Influences on National Rates of Innovation*, "Journal of Business Venturing", 8(1), pp. 59–73.

Srnka, K.J. [2004]. *Culture's Role in Marketers' Ethical Decision Making: An Integrated Theoretical Framework*, "Academy of Marketing Science Review", pp. 1–32.

Steensma, H.K., Marino, L., Weaver, K.M., Dickson, P.H. [2000], *The Influence of National Culture on the Formation of Technology Alliances by Entrepreneurial Firms*, "Academy of Management Journal", 43(5), pp. 951–973.

Strychalska-Rudzewicz, A. [2015], *Cultural Dimensions and Innovation*, "Socio-Economic Problems and the State", 13(2), pp. 59–67.

Syed H., Malik, A.N. [2014], *Comparative Study of Effect of Culture on Technology Adoption in Pakistan and USA*, "The Business & Management Review", 5.

Szacka, B. [2008], *Wprowadzenie do socjologii*, Oficyna Naukowa, Warsaw.

Taras, V. et al. [2014], *Opposite Ends of the Same Stick? Multi-Method Test of the Dimensionality of Individualism and Collectivism*, "Journal of Cross-Cultural Psychology", 45(2), pp. 213–245.

TR [2018], *Thomson One Banker Private Equity, SDC Platinum database*, http://banker.thomsonib.com (accessed: 20.09.2020).

Tung, R.L. [2008], *The Cross-Cultural Research Imperative: The Need to Balance Cross-National and Intra-National Diversity*, "Journal of International Business Studies", 39(1), pp. 41–46.

Venkateswaran, R.T., Ojha, A.K. [2019], *Abandon Hofstede-Based Research? Not Yet! A Perspective from the Philosophy of the Social Sciences*, "Asia Pacific Business Review", 25(3), pp. 413–434.

VSM [2013], *The VSM 2013*, https://geerthofstede.com/research-and-vsm/dimension-data-matrix/ (accessed: 7.09.2020).

WEF [2018], *The Global Competitiveness Report 2017–2018*, https://www.weforum.org/reports/the-global-competitiveness-report-2017–2018 (accessed: 07.09.2020).

WIPO [2018]. *Intellectual Property Statistics*, http://www.wipo.int//ipstats/ (accessed: 20.09.2020).

Yamagishi, T., Yamagishi, M. [1994], *Trust and Commitment in the United States and Japan*, "Motivation and Emotion", 18(2), pp. 129–166.

Skills Imbalances and Their Labor Policy Implications in Poland

Anna Maria Dzienis

8.1. Introduction

As the Internet of Things, Data and Services (Internet of Everything) is considered to be a source of the next wave of innovation [Kagermann, 2015], a question on the role of workforce skills in this process and its impact on the economy arises. A closer examination of national human resources in the context of labor market participation, educational trends and skills imbalances may cast more light on this general problem. Indeed, several documents concerning the development of skills have recently been published by major institutions such as the OECD, the World Bank, or the European Commission and the topic continues to attract wide interest. However, although both GDP and proficiency scores have advanced considerably in Poland over the past two and a half decades [OECD, 2016], no national, consistent and unified system for the monitoring and projection of skills has yet been put in place.

This paper is meant to draw attention to the pressing issue of skills development in Poland. It gives an insight into the Polish labor market performance and human capital formation with an accent on challenges that the digital age brings. First, characteristics of the Polish labor market are presented and then the situation regarding skill capacities is described. Finally, based on OECD.Stat Skills for Jobs data, hierarchical clustering is applied to divide 26 European countries into groups based on similarities in skill imbalances.

8.2. Overview of the *Future Skills* concept

"*Future Skills* are defined as competences that allow individuals to be (successfully) self-organised capable of acting in highly emergent organisational and practical contexts" [Ehlers, 2020; p. 107].

OECD [2016] calls skills the global currency of 21st century economies. However, this currency happens to depreciate since the economic and labor market-related reality keeps changing. Hence, the report, which introduces the results from the survey of Adult Skills (PIAAC, the Programme for the International Assessment of Adult Competencies), underlines the importance of governments in designing skills development schemes [OECD, 2016]. On the other hand, the Future of Jobs Report [2016] by the World Economic Forum stresses that upskilling and reskilling of workforce should be also a part of businesses activities. Moreover, the authors of the report conduct a survey on the impact of disruptive changes on skills needs and they find that the demand for skills in industry overall in 2020 is expected to be the highest for (in descending order): complex problem solving skills, social skills, process skills, systems skills, cognitive abilities, resource management skills, technical skills, content skills and physical abilities [WEF, 2016].

Likewise, OECD [2017] argues that ICT skills alone are not enough to succeed in the digitally enabled work environment and that a proper combination of these capacities with management and communication skills offers workers extra rewards. Also, it confirms that more digitally advanced industries demonstrate higher concentration of workers with both cognitive skills (e.g. literacy, numeracy and problem solving), and non-cognitive and social skills (e.g. communication and creativity) [OECD, 2017]. One of the recent OECD's reports adds that skill-shaping policies should ensure providing workers who are resilient and mobile [OECD, 2019a].

In an industry-focused analysis, Schallock et al. 2018 evaluate the challenges that the Fourth Industrial Revolution poses for human resources. The paper states that the role of people in the Fourth Revolution can be even more important than it used to be previously. The authors' subject of research is production staff and their deliverable is the design of a learning factory for Industry 4.0, which involves dealing with the following skills: technical skills, transformation skills and social skills [Schallock et al., 2018].

Future skills of manufacturing workforce are also a key research interest for Penesis et al. [2017]. The authors agree that the set of skills fundamental for the era of digital transformation should contain such elements as substance knowledge in a field and some other of transversal skills, e.g. critical thinking, effective communication and readiness for continued life-long learning. They mention that such phenomena as aging society and skill shortages are growing concerns for industry pointing to the fact that the digitally fast-changing environment deepens the generational skill gap [Penesis et al., 2017].

Summing up, studies reveal that due to the technological advancement there can be observed a stronger demand for more advanced, non-routine skills in the economy.

Under these circumstances, OECD [2019b] straightforwardly points to the need for transition from a front-loaded education system to a life-long learning based human resources development scheme [OECD, 2019b].

8.3. Insight into Poland's Labor Market Performance

After 2013, Poland saw significant changes in the labor market situation. The registered unemployment rate decreased from 13.4% in 2013 to 5.2% in 2019, and the employment rate of persons aged 15–64 in the Labor Force Survey (LFS) grew accordingly from 60% to 68.2%. The rate for older persons (55–64 years old) improved by almost 9 pp and reached the value of 49.5% in 2019 [Statistics Poland, 2020].

Nevertheless, according to the Eurostat statistics, in 2019 the activity rate in Poland was still below the EU-28 average of 74% and the country was ranked sixth-bottom out of the all EU member countries with the rate of 70.6%. The improvement of the rate for the population aged 55–64 was stronger than for the overall population (15–64 years old), while for those aged 15–24 the rate increased from 33.3% in 2013 to 35.2% in 2019 [Eurostat, 2020]. Between 2013 and 2018, average paid employment in the enterprise sector rose by approx. 13%, with the highest growth for administration and support service activities (32%), professional, scientific and technical activities (28%) and manufacturing (16%) [Statistics Poland LDB, 2019].

From 2013, the growing number of vacancies could be observed. In 2018, there were 25% vacancies more than the year before and two and a half times more unoccupied positions than in 2013. The job vacancy rate surged from 0.40% in 2013 to 1.18% in 2018, but declined slightly to 0.95% in 2019 [Statistics Poland, 2020]. In 2019, the three below-mentioned NACE sections reported the highest number of vacancies: manufacturing, construction, and trade; repair of motor vehicles. The highest job vacancy rate could be seen for construction, information and communication, and arts, entertainment and recreation sections.

On the other hand, an analysis of deficit occupations in Poland, monitored by the Ministry of Family, Labor and Social Policy and the Occupational Barometer reveals a certain shift between 2013 and 2018. In 2013 the following professions were in shortage: financial specialists, administrative and clerical support workers, secretaries and assistants, sales representatives, salespersons and cashiers, online salespersons. However, there were no longer such occupations in deficit in 2018, when the scarcity of construction workers, installation assemblers, joiners and carpenters, motor vehicle mechanics and repairers, tailors and clothing manufacturers, nursing and midwife

professionals constituted a major obstacle to employers [Weresa et al., 2019]. This trend continued in 2019 [barometrzawodow.pl, 2020].

Data on employment distribution published by ILOSTAT reveals the following changes: between 2013 and 2019, the highest growth was recorded for professionals and technicians and associate professionals (2 pp for each group), while the deepest decrease of 3.4 pp was seen for elementary occupations. The negative trend can be also found for clerical support workers, and service and sales workers (Table 8.1).

Table 8.1. Employment distribution 2013–2024, ILOSTAT modelled estimates (as a % of total employment)

Occupation/Year	2013	2019	2024
Managers	6.4	6.3	6.2
Professionals	18.6	20.7	23.6
Technicians and associate professionals	11.2	13.5	13.3
Clerical support workers	6.7	6.1	5.7
Service and sales workers	14.0	13.5	14.4
Craft and related trades workers	15.0	15.1	14.0
Plant and machine operators and assemblers	10.4	10.4	10.7
Elementary occupations and skilled agricultural, forestry and fishery workers	17.7	14.3	12.2

Source: Compiled by the author based on data from ILOSTAT, https://ilostat.ilo.org/topics/employment/, accessed 28.09.2020.

The Polish labor market saw a marked improvement in conditions, which manifests itself in a visibly lower unemployment rate and higher activity rate of population. Furthermore, this development was complemented by the labor productivity growth per person employed (4.8% y-o-y in 2019), which grew faster than in the EU-28 [Eurostat, 2020]. Such a dynamic situation puts the country in a demanding setting. Raising the population activity rate further and mitigating skill shortages are among the most critical problems for Poland.

8.4. Skills Supply Characteristics in Poland

According to the Eurostat statistics on population aged 15 to 64 by educational attainment level, in 2019 Poland was found to have 13.3% of population with less than primary, primary and lower secondary education level (levels 0–2), showing an improvement of almost 5 pp compared to 2010. In 2019, the EU-28 average stood at 25% [Eurostat, 2020].

As far as the share of population with upper secondary and post-secondary non-tertiary education (levels 3–4) among the 15–64 old population is concerned, in 2019 Poland was placed 5th among the EU member countries with the rate of 58.5% (62.6% in 2010), after the Czech Republic (66%), Slovakia (62%), Croatia (60%) and Romania (59%), while the EU-28 average stood at 45.6% [Eurostat, 2020].

Finally, the percentage of population with tertiary education (levels 5–8) in the group in question was at 28% in 2019, demonstrating a constant growth from 2010 amounting to 9 pp. Nevertheless, the rate was below the EU-28 average of 29.5% and far below the EU leaders such as Ireland, Luxembourg and the UK, where the rate of high educational attainment reached 41% in 2019 [Eurostat, 2020].

Moreover, as Eurostat`s data on students enrolled in tertiary education by field of education indicates, between 2013 and 2018, the share of students of health and welfare increased the most, by 3 pp (1 pp in the EU-28), followed by those enrolled in the field of information and communication technologies, which grew by 1.6 pp (1 pp in the EU-28). At the same time, the highest decrease in the share was observed for students of business, administration and law (–2.6 pp), and education (–2.4 pp) (Table 8.2.).

Table 8.2. **Students enrolled in tertiary education by field of education, 2013–2018 (according to data availability), categories according to ISCED-F2013*, as a percentage of all tertiary education students**

Field of education (ISCED-F2013)	EU-28		Poland	
	2013	2018	2013	2018
Education	7.4	7.3	12.0	9.5
Arts and humanities	12.1	12.1	8.8	9.5
Social sciences, journalism and information	9.4	9.9	11.1	10.9
Business, administration and law	21.8	21.8	24.6	22.0
Natural sciences, mathematics and statistics	ND	8.1	4.2	4.0
Information and Communication Technologies	3.8	4.9	4.0	5.6
Engineering, manufacturing and construction	ND	15.0	17.2	16.5
Agriculture, forestry, fisheries and veterinary	1.8	1.9	1.7	2.0
Health and welfare	12.6	13.6	9.2	12.2
Services	ND	3.6	7.2	7.3

* International Standard Classification of Education, UNESCO

Source: Compiled by the author based on data from Eurostat https://ec.europa.eu/eurostat/web/products-datasets/product?code=educ_uoe_enrt03, accessed 28.09.2020.

When compared to other EU member countries, Poland was among the top 5 states with the highest number of students in services, education, and engineering, manufacturing and construction in 2018. In terms of the shares by education field in

the total number of tertiary education students, Poland was close to leaders when it comes to ICT. On the other hand, the fields of natural sciences and health were chosen by a significantly lower percentage of students compared to the best performers in the EU (Figure 8.1).

Figure 8.1. **Shares of students enrolled in tertiary education by field of education (ISCED-F2013) in Poland and in the EU-28 in 2018, as a percentage of all tertiary education students**
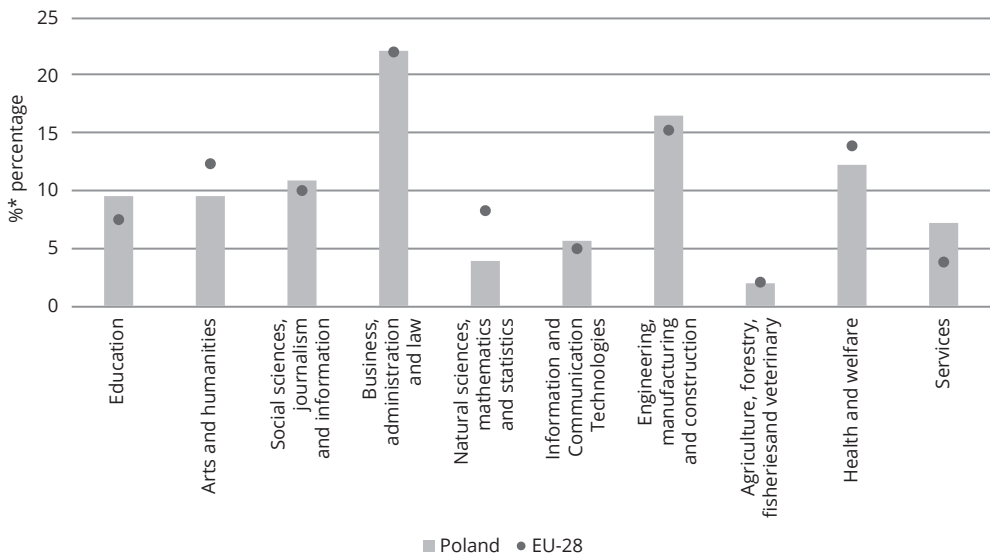
Source: Compiled by the author from Eurostat data https://ec.europa.eu/eurostat/web/products-datasets/product?code= educ_uoe_enrt03, accessed 28.09.2020.

Another societal aspect that needs to be mentioned in the context of future needs of the labor market is the level of digital skills among population. For Poland, the rate of individuals aged 16–74 who have basic or above basic overall digital skills is low at 44% in 2019, 5th place from the bottom among the EU-28 nations, before Bulgaria (29%), Romania (31%), Italy (42%) and Latvia (43%). In 2019, the EU-28 average was 58%, and the Netherlands (79%) was a leader in digital skills in the group [Eurostat, 2020].

Moreover, as OECD [2016] reports, Poland's scores are not significantly different from the average in terms of performance in literacy, and considerably below the average for numeracy and problem solving in technology-rich environments. When the problem-solving proficiency by educational attainment is analyzed, it can be found that on average, among the surveyed countries, 41% of people with lower education level reported no experience with ICT or did not pass the ICT core test. For Poland, the rate stood at 71%, roughly on a par with Korea (76%) and Slovakia (74%), the least

performer. As far as skills at work are concerned, ICT use at work differs significantly between people with tertiary and upper secondary education in Poland and in some other countries in Eastern Europe (e.g. Lithuania, Slovakia and Slovenia). OECD perceives this as a "wasted opportunity", since the use of digital skills at work should rather complement one's education and push a worker towards upskilling [OECD, 2016]. Similarly, according to the PIAAC findings, years of education correspond with information-processing skills and experience most strongly in Poland, the Czech Republic and Lithuania [PIAAC OECD, 2016].

The educational level of Poland's population has increased and the share of students of the information and communication technologies category sees growth too. However, when such characteristics as the level of digital skills and experience with ICT are considered, the image of a workforce with poor skills utilization appears.

8.5. Analysis of Skills Imbalances

After the analysis of Poland`s labor market characteristics and skills supply potential, skills imbalances present in the country are described. This section aims at identifying Poland`s peers in terms of skills imbalances by means of cluster analysis.

Hierarchical cluster analysis is a simple method for determining homogenous groups of objects called clusters. Observations are grouped into divisive clusters within which objects show many features in common, but they differ significantly when compared to cases from other clusters [Mooi, Sarstedt, 2011]. Hence, features characteristic of observations from a particular cluster may, e.g., facilitate a comparative analysis of objects and identification of best practices to tackle the problems that cluster-mates share.

Data used for the purpose of cluster analysis was derived from the OECD.Stat Skills for Jobs database. As the organization reports, skills for jobs indicators provide internationally comparable skill imbalances indexes that facilitate understanding of the shortages and surpluses of skills. More precisely, skills are defined by the organization as developed capacities that facilitate learning or performance, including basic skills. The value of the indicator is positive when skill shortages are present and negative otherwise. The smaller the absolute value, the lesser the imbalance. The index scale ranges between –1 and +1 (OECD.Stats Skills for Jobs, Skill needs). The dataset concerning skill needs at the national level covers 44 countries, this analysis, however, will focus on countries belonging to the European Union with some exceptions: – Croatia and Malta – for which no data is available. The Skills for Jobs data consists of seven major skillsets comprising several sub-skills (Table 8.3).

Table 8.3. The OECD Skills for Jobs, Skill needs data (variables)

Basic Skills (Content) (BSC)	Basic Skills (Process) (BSP)	Social Skills (SS)	Complex Problem Solving Skills (CPSS)	Technical Skills (TS)	System Skills (SYS)	Resource Management Skills (RMS)
▪ Reading Comprehension ▪ Active Listening ▪ Writing ▪ Speaking ▪ Mathematics Skills ▪ Science	▪ Critical Thinking ▪ Active Learning ▪ Learning Strategies ▪ Monitoring	▪ Social Perceptiveness ▪ Coordination ▪ Persuasion ▪ Negotiation ▪ Instructing ▪ Service Orientation	▪ Complex Problem Solving	▪ Operations Analysis ▪ Technology Design ▪ Equipment Selection ▪ Installation ▪ Programming ▪ Operation Monitoring ▪ Operation and Control ▪ Equipment Maintenance ▪ Troubleshooting ▪ Repairing ▪ Quality Control Analysis	▪ Judgment and Decision Making ▪ Systems Analysis ▪ Systems Evaluation	▪ Time Management ▪ Management of Financial Resources ▪ Management of Material Resources ▪ Management of Personnel Resources

Source: Compiled by the author based on data from OECD.Stat, Skills for Jobs, Skills needs, https://stats.oecd.org/#, accessed: 19.08.2020.

Since the following variables: BSC, BSP and SYS for the 26 analyzed countries turned out to be highly correlated, the hierarchical clustering is done for the four remaining variables: SS, CPSS, TS and RMS. Based on the rescaled distance (coefficient value difference) between the matched observations, a solution with five clusters of European countries can be found (Figure 8.2).

Figure 8.2. Hierarchical cluster analysis results – dendrogram (Ward linkage, n=26)
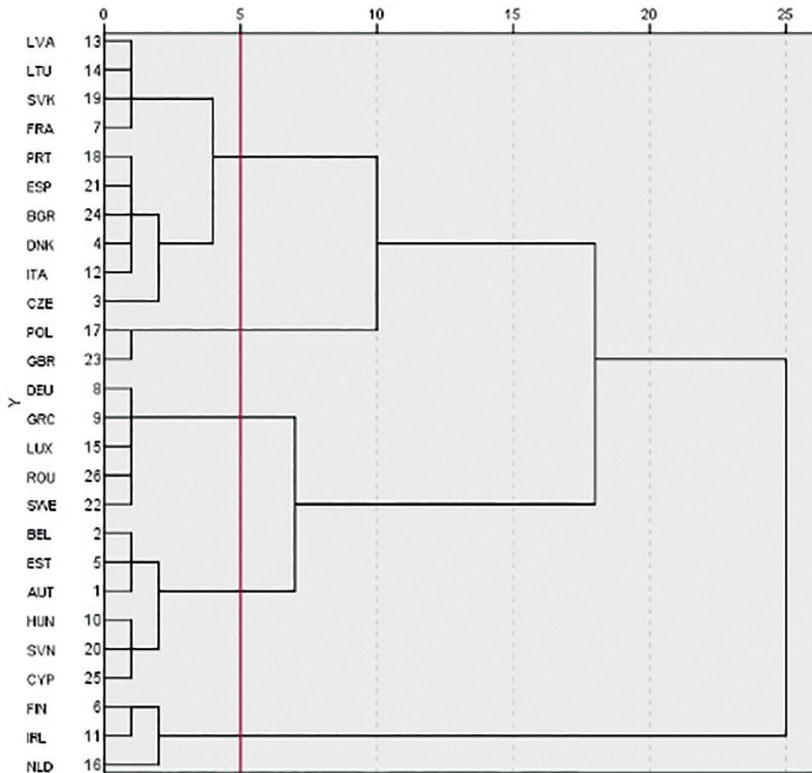
Source: Author's computation based on data from OECD.Stats, Skills for Jobs, Skills needs, accessed: 19.08.2020.

Five clusters established by the hierarchical cluster analysis:
1) Six countries: Austria, Belgium, Cyprus, Estonia, Hungary, Slovenia;
2) Ten countries: Bulgaria, Czech Republic, Denmark, France, Italy, Latvia, Lithuania, Portugal, Slovakia, Spain;
3) Three countries: Finland, Ireland, the Netherlands;
4) Five countries: Germany, Greece, Luxembourg, Romania, Sweden;
5) Two countries: Poland and the Great Britain.

Table 8.4. Summary of Indicators in Clusters (mean values)

Mean	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Social Skills (SS)	.08	.10	.29	.14	-.04
Complex Problem Solving Skills (CPSS)	.02	.09	.36	.17	.07
Technical Skills (TS)	-.13	-.02	-.02	-.08	.08
Resource Management Skills (RMS)	-.05	.09	.17	.08	-.04

Source: Author's computation.

According to the descriptive statistics (Table 8.4), social skills were the most balanced in Cluster 5 and in Cluster 1, however, with the only surplus across clusters in the 5th one. The highest deficit for these skills was revealed for Cluster 3. Complex problem-solving skills were also the most balanced for Clusters 1 and 5. On the other hand, the highest need for these skills was present in Cluster 3, followed by the 4th group. Interestingly, technical skills turned out to be in surplus in all clusters, with the highest value for the 1st group. Finally, resource management skills demand was unfilled in Cluster 3 and then in the 4th and 2nd clusters. The groups with oversupply of these skills were Clusters 5 and 1.

These results stress that Poland lacks technical and complex problem-solving skills in particular. The country's structure of skill imbalances resembles that of the UK, pointing to the potential direction of search for tested solutions to mitigate the shortages and surpluses of skills, including governmental policies, local and national skills development strategies, etc.

8.6. Overview of Skills Development Strategies in the UK

As early as 2003, the government-commissioned report by Michael E. Porter and Christian H.M. Ketels "UK Competitiveness: Moving to the Next Stage" highlighted the need to redefine the basis of a country`s competitive advantage, and stressed that competing on low costs and an efficient business environment had dried up as a source of the UK's competitiveness [Porter and Ketels, 2003, p. 46].

Indeed, more recently discourse on the United Kingdom skills development strategy has concentrated on the demand side levers. Weakness of this side of skills advancement is stressed due to the fact that the UK is characterized by the potentially low demand for skills relative to their supply and the relatively low level of skills and limited extent of skill shortages [Mayhew and Keep, 2014, p. 12]. Moreover, the UK

labor market shows strong demand for low skills, qualification mismatch and under-utilization of skills [Mayhew and Keep, 2014, p. 11].

Among the key concepts regarding the approach to the shaping of skills, Sung et al. [2009] and Ashton and Sung [2011] are being recalled. The authors contrast "a company's product market strategy" and "a company's competitive strategy". The former one sets the markets the company wants to compete in, while the latter determines the way it will achieve "competitive advantage in the markets in which it is operating" [Green, 2012, p. 62]. The demand can be stimulated by the government policies and programs by influencing "competitiveness strategies" (improving skills utilization) and "product-market strategies" (shaping skills levels in the labor force). The motivation behind the discussion on skills development is moving the UK economy to "higher value-added product and service markets, the levels of skills that they require" [Green, 2012, p. 62]. To do so and to foster innovation and products development, strategies to encourage demand for higher levels of skills at the local level are needed. Unfortunately, such programs are rather limited in number and the key target of existing policies is improving the supply of skills [Green, 2012, p. 66].

Further, as skills are considered to be an engine for productivity and "source of competitive advantage" public investment moved from higher education towards vocational training [UKCES, 2014, p. V]. This shift was propelled by findings that, across various sectors, skills gaps are usually identified in lower skilled staff, leading to a conclusion that an ongoing training is needed. However, since the offered training is not always consistent with employers` demand, "greater employer involvement in designing and commissioning training is required" [UKCES, 2014, p. V]. It is believed that the mismatch between skills supply and demand can be mitigated by involving employers into the provision of skills and training. "Encouraging employers to take ownership for the provision of training is crucial in raising productivity and moving the economy towards a high value, high skill path to growth" [UKCES, 2014, p. 31].

Moreover, there is also more interest in how work is organized, how people are managed. Upgrading in the workplace is considered as an important factor in the process of increasing productivity. The UK government still identifies innovation as driven by "science, technological advances, patents, intellectual capital and technology transfer systems and processes" (science-centric model of innovation) [Mayhew and Keep, 2014, p. 7], whereas a comprehensible strategy that takes into account "growth, skills, innovation, employment relations and the labor market" (the demand side) is crucial [Mayhew and Keep, 2014, p. 28].

It is stressed that a "better balance between improving demand and utilization of skills, with the supply of skills" increases the chances for sustainable economic growth in the long term. An important tool for balancing the market would be an industrial

partnership. "Such industrial partnerships would have responsibility for developing industry-led responses to market failures that encompass the supply, utilization and demand for skills" [Mayhew and Keep, 2014, p. 29]. Recently England made an effort to make apprenticeships more aligned with the demand-side of skills development. It is based on the shift from frameworks to occupational standards, and employers play a significant role in the design of those standards [Green and Hogarth, 2016, p. 7].

This is in line with recommendations for business and government provided by the EDGE Foundation: supply a clearer career path into digital technology, better lifelong learning, and empower local networks [EDGE Foundation, 2018]. In particular England is working on "new models for adults to upskill and retrain". These programs are focused on people in work, "in low paid sectors or industries at risk of automation" and involve National Retraining Scheme, an adult apprenticeship program (financed via an employer levy) and Flexible Learning Fund [OECD, 2019c].

8.7. Conclusions

The level of education among the population in Poland has increased, nevertheless, the degree of digital skills in the country definitely needs upgrading. This means that there is a need for an actual discussion on practical teaching methods, not only at the early stage of education, but also aimed at training and lifelong learning schemes. A digitally enhanced environment brings new opportunities in this matter, however it still needs to be recognized not only by local authorities or policy makers, but also by companies [North, Maier and Haas, 2018].

The fourth industrial revolution creates new forms of work and requires higher flexibility and more efficient utilization of skills, which combined with the demographic change makes the matter serious and demanding action. This paper underlines that in Poland skill development strategy should be given more concern and points to the potential sources of inspiration for dealing with this issue. For example, in the approach to skills development strategy the UK has shifted the focus from education to skills. The shift towards the demand side of the equation, to the so-called employers' ownership makes the chances for matching the skills and their more efficient utilization more realistic. Will these measures increase productivity and push the country toward the high value-added path remains an unanswered question. Nevertheless, Poland should learn from its peers, and thinking of sustainable growth must incorporate factors that enhance the quality of work.

Bibliography

Ashton D., Sung J. (2011), *Skills in Focus – Product Market Strategies and Skills Utilisation*, The Scottish Funding Council and Skills Development Scotland.

Ehlers, U-D. [2020], Future Skills – Future Learning and Future Higher Education, Springer, https://nextskills.org/wp-content/uploads/2020/03/Future-Skills-The-Future-of-learning-and-higher-education.pdf, DOI: 10.1007/978-3-658-29297-3.

Green, A. [2012], *Skills for Competitiveness Country Report for United Kingdom*, OECD Local Employment and Economic Development (LEED) Programme on Skills for Competitiveness, May 2012, https://www.oecd.org/cfe/leed/skills%20for%20competitiveness%20uk%20report.pdf.

Green, A. Hogarth, T. [2016], The UK skills system: how aligned are public policy and employer views of training provision?, Future of Skills & Lifelong Learning, Evidence Review, Foresight, Government Office for Science, August 2016, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/571695/ER8_The_UK_skills_system_how_aligned_are_public_policy_and_employer_views_of_training_provision.pdf.

Kagermann, H. [2015], Change Through Digitization – Value Creation in the Age of Industry 4.0, Springer Fachmedien, Wiesbaden 2015.

Mayhew, K., Keep, E. [2014], Industrial strategy and the future of skills policy. The high road to sustainable growth, February 2014, CIPD, https://www.cipd.co.uk/Images/industrial-strategy-and-the-future-of-skills-policy_2014_tcm18–10247.pdf.

Mooi, E., Sarstedt, M. [2011], A Concise Guide to Market Research, DOI 10.1007/978-3-642-12541-6_9, # Springer-Verlag Berlin Heidelberg 2011.

North, K., Maier, R., Haas, O. [2018], Knowledge Management in Digital Change: New Findings and Practical Cases, Springer International Publishing, Springer 2018.

Occupational Barometer 2020, Kraków 2019, Regional Labour Office in Krakow within the framework of the national Occupational Barometer survey commissioned by the Minister of Family, Labour and Social Policy, https://barometrzawodow.pl/userfiles/Barometr/2020/english_version/occupational_barometer_poland_2020.pdf.

OECD [2017], OECD Science, Technology and Industry Scoreboard 2017: The digital transformation, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264268821-en.

OECD [2016], Skills Matter: Further Results from the Survey of Adult Skills, OECD Skills Studies, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264258051-en.

OECD [2019a], OECD Skills Outlook 2019: Thriving in a Digital World, OECD Publishing, Paris, https://doi.org/10.1787/df80bc12-en.

OECD [2019b], OECD Skills Strategy 2019: Skills to Shape a Better Future, OECD Publishing, Paris, https://doi.org/10.1787/9789264313835-en.

OECD [2019c], OECD Skills Strategy 2019, Skills to Shape a Better Future, England, May 2019, https://www.oecd.org/unitedkingdom/Skills-Strategy-England-EN.pdf.

Penesis, I., Barnes Katersky, R., Kilpatrick, S., Symes, M. & León de la Barra, B.A. [2017], Reskilling the manufacturing workforce and developing capabilities for the future, "Australasian Journal of Engineering Education", 22:1, 14–22, DOI: 10.1080/22054952.2017.1338228.

Porter, M.E., Ketels, Ch.H.M. [2003], UK Competitiveness: Moving to the Next Stage, DTI Economic Paper No. 3, Institute of Strategy and Competitiveness, Harvard Business School, April 2003.

Schallock, B., Rybski, Ch., Jochem, R., Kohl, H. [2018], Learning Factory for Industry 4.0 to provide future skills beyond technical training, Procedia Manufacturing 23 [2018] pp. 27–32.

Sung J., Ashton D., Raddon A. [2009}, *Product Market Strategies and Workforce Skills*, The Scottish Government, Edinburgh.

The EDGE Foundation [2018], Skills Shortages in the UK Economy, EDGE Bulletin 2, July 2018, https://www.edge.co.uk/sites/default/files/publications/skills_shortage_bulletin_2_final.pdf.

UKCES UK Commission for Employment and Skills. [2014], The Labour Market Story: The State of UK Skills, Briefing Paper, July 2014, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/344440/The_Labour_Market_Story-_The_State_of_UK_Skills.pdf.

Weresa, M., Dzienis, A., Kowalski, A., Lachowicz, M., Mackiewicz, M., Napiórkowski, T. [2019], The availability of suitable labour supply and skills, in: M.A. Weresa (ed.) A study on structural reform in Poland 2013–2018, European Commission, Brussels, https://publications.europa.eu/en/publication-detail/-/publication/2a32fbb5-28fa-11e9-8d04-01aa75ed71a1/language-en/format-PDF/source-88031586.

World Bank [2016], The Future of Jobs. Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution, World Economic Forum, Geneva, http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf.

Data:

Eurostat, Activity rate by age, https://ec.europa.eu/eurostat/web/products-datasets/product?code=tepsr_wc160, accessed 28.09.2020.

Eurostat, Individuals who have basic or above basic overall digital skills by sex, https://ec.europa.eu/eurostat/web/products-datasets/product?code=tepsr_sp410, accessed 28.09.2020.

Eurostat, Population by educational attainment level, sex and age (%) – main indicators, http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=edat_lfse_03&lang=en accessed 28.09.2020.

Eurostat, Real labour productivity per person employed – annual data, https://ec.europa.eu/eurostat/web/products-datasets/product?code=tipsna70, accessed 28.09.2020.

Eurostat, Students enrolled in tertiary education by education level, programme orientation, sex and field of education, https://ec.europa.eu/eurostat/web/products-datasets/product?code=educ_uoe_enrt03, accessed 28.09.2020.

ILOSTAT modelled estimates, Employment statistics, https://ilostat.ilo.org/topics/employment/distribution 2013–2024, accessed: 28.09.2020.

OECD PIAAC: https://www.oecd.org/skills/piaac/.

OECD.Stat, Skills for Jobs, Skill needs, https://stats.oecd.org/#, accessed: 19.08.2020.

Statistics Poland LDB, Average paid employment in enterprise sector, https://bdl.stat.gov.pl/BDL/start.

Statistics Poland, Poland macroeconomic indicators, https://stat.gov.pl/en/.

Statistics Poland, The demand for labour in 2019, https://stat.gov.pl/en/topics/labour-market/demand-for-labor/the-demand-for-labour-in-2019,1,14.html.

Economic Policy and Institutions

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9.1. Introduction

The purpose of this chapter is to analyze the main directions of economic policy in Poland, with a particular focus on foreign trade and foreign direct investment (FDI). This chapter also tackles the assessment of the design and direction of evolution of the Polish economy's institutional architecture. We draw on the assumption that institutions are among the key determinants of economic growth and international competitiveness of the economy, which shape a country's institutional comparative advantage. The timeframe of the analysis spans the period 2010–2020, but we devote most attention here to the last five years, i.e. the period of rule by the Law and Justice (PiS) party. In this context, we also indicate the potential effects of actions taken by PiS since March 2020 in connection with the outbreak of the coronavirus pandemic, which had a very strong impact on the conditions for business activities in Poland, as well as the transformations of the country's institutional order itself.

9.2. Directions of Macroeconomic Policy

An analysis of the directions of Poland's macroeconomic policy in the last decade can be broken down into two periods, with power takeover by PiS in autumn 2015 as the watershed. The first years of the decade were marked by a restrictive fiscal policy aimed to reduce the general government (GG) deficit. During the global economic downturn it increased from 1.9% in 2007 to 7.5% of GDP in 2009. Consequently, as Poland had exceeded the budgetary criteria prescribed in the EU Stability and Growth Pact (SGP), the European Commission placed Poland under the Excessive Deficit Procedure (EDP) in May 2009 and forced the government to take action to permanently reduce public finance imbalances.

Between 2010 and 2015, the restrictive fiscal policy was pursued on both the revenue and expenditure sides. The most important measures to increase government

revenue included: increase in VAT rates, including the main rate, from 22% to 23%, increase in the pension contribution by 2 pp (to 8%) from February 2012, several increases of excise duty on tobacco and alcoholic beverages, freezing income tax thresholds at 2008 level or the process of tightening the tax system initiated in 2015 (including the introduction of reverse VAT charge, the launch of the receipt lottery, the imposition of an obligation for companies to prepare a standard audit file for tax (SAF-T) or the start of digitalization of tax administrations), which was continued as one of few economic policies retained even after PiS took power. After 2015, the road transport monitoring system was launched and the monitoring system of financial transactions of firms (STIR) was implemented, as well as the obligation – for certain transactions – to use the split payment mechanism under which VAT payments are transferred to special escrow accounts.

However, a much larger proportion of the savings implemented under restrictive fiscal policy concerned the expenditure side, as evidenced by 4.1 pp of GDP compared with 0.1 pp of GDP on the revenue side in 2010–2014 [Council of Ministers, 2015]. The most important measures taken in this regard are changes to the pension system – reducing its capital component (the so-called second pillar) and raising the retirement age. The first reorganization of the transfer of pension savings to private pension funds (OFE) was carried out in 2011, when the value of the funds transferred by the Social Insurance Institution (ZUS) to OFE was temporarily reduced from 7.3% to 2.3% of the contribution base. In 2013, this proportion was raised to 2.8%. However, a key change to the system was introduced at the beginning of February 2014, when 51.5% of the assets accumulated in OFE were transferred to ZUS. The transferred sovereign bonds were redeemed, which reduced GG debt by 9 pp, i.e. to 49.5% of GDP at the end of Q1 2014. Thanks to the adoption of the new act, general government expenditure was PLN 18.6 billion (1% of GDP) lower in 2015 compared to the scenario of no policy change. This was attributable to a lower deficit of the Social Security Fund and lower debt servicing costs [Ministry of Labor, 2014]. A second major change in the pension system was the implementation of a mechanism to gradually raise the retirement age to 67 from January 2013 and to make it equal for women (60 years before the reform) and for men (65 years). Total budget savings in this respect in 2012–2015 amounted to approx. PLN 6 billion [Ministry of Labor, 2012].

Seeking to reduce the nominal and structural deficit, the PO-PSL government decided to implement institutional changes. Since 2010, a number of expenditure rules have been adopted to legally limit the increase in public spending at both central and local level. The most important of these was the 2014 stabilizing spending rule, which replaced the inefficient discipline rule. This new rule is based on a complex mathematical formula for setting an upper limit on public spending that can be included in budgets

for the following year. This limit depends on the historical and projected real GDP growth rate, the NBP inflation target, and the GG deficit and debt. The rule covered nearly 90% of GG expenditure and was first used to draw up the 2015 budget plan.

Thanks to the actions described above, the government managed to permanently reduce the GG deficit from 7.6% of GDP in 2010 to 3.2% in 2014. As a result, the European Commission decided in June 2015 to abrogate the excessive deficit procedure for Poland. The introduction of long-term changes (pension reform, spending rule, central liquidity management) also reduced the structural deficit from 6.0% in 2011 to 2.9% of GDP in 2014 [European Commission, 2014].

Consequently, having won the election in October 2015, PiS found itself in a very comfortable position in terms of freedom in pursuing its economic policy. This translated into the abandonment of a restrictive fiscal policy stance in favor of increasing social transfers and decreasing taxes. This was possible also due to a very good economic situation, windfall from NBP profit and LTE auctions, as well as historically low interest rates which minimized debt servicing costs.

Thus, as early as December 2015, the new parliament adopted amendments to the Budget Act and announced the introduction of one of the most expensive social programs in Poland's history, namely the "Family 500+" child support benefit scheme. Under the act, which entered into force on 1 April 2016, the government started paying parents a monthly benefit of PLN 500 for the second and each subsequent child, and, for those with a monthly income below PLN 800 per family member, also for their first child. The program benefitted parents of 3.8 million children [Council of Ministers, 2017], at a monthly cost to the government of PLN 1.9 bn, i.e. 1.2% of GDP annually. In 2019, as part of the campaign preceding the parliamentary elections, PiS extended this program so to encompass all children, including the first child of parents with a monthly income above PLN 800 per family member. This move increased the annual costs of the scheme by nearly PLN 20 bn – to a total of 2.2% of GDP.

The second most important economic policy change implemented by PiS was the reversal of the 2013 pension reform by restoring, as of October 2017, the retirement age for women and men to 60 and 65, respectively. The reversal of the 2012 reform increased pension expenditure, reduced social security contributions and lowered tax revenue. Based on the government's calculations, in the first full year with the new law in force, the general government deficit was over PLN 9 bn higher in comparison to the scenario of a further gradual rise of the retirement age [Council of Ministers, 2016b]. An additional effect of lowering the retirement age was a decline in the economic activity among people over 50 years old. In Q4 2017 alone, 313,000 people retired [PAP, 2018], and an additional several tens of thousands did so at the beginning of 2018.

Apart from the above-mentioned measures, PiS has also made a number of other smaller-scale changes to fiscal policy. One of the most important is the introduction of a zero-tax threshold. Since 2017, individuals with a taxable income up to PLN 6,600 annually have been exempt from personal income tax (PIT), while people with income exceeding the second tax threshold (PLN 85,500) are entitled to a lower tax credit than before the change. In the following year, the zero-tax threshold was raised to PLN 8,000, which increased the general government deficit by slightly above PLN 1 billion in 2018. In addition, public administration salaries were allowed to increase, and sectoral wage increases involved uniformed services, especially military personnel and teachers, as well as resident doctors and paramedics. Delivering on the promises made in the run up to the 2019 parliamentary elections, disbursement of an additional pension benefit of PLN 1,100 (totaling PLN 7.6 bn in 2019) was implemented, in addition to the introduction of additional benefits for parents with at least four children (PLN 0.8 bn in 2019) and increased transfers to people with disabilities (PLN 0.5 bn in 2019), as well as abolishing PIT for persons under 26, decreasing the lowest PIT rate from 18% to 17%, and doubling tax-deductible expenses, which resulted in a total depletion of tax revenue by more than PLN 10 bn [Council of Ministers, 2019].

The total costs of all reforms launched by PiS within the general government exceeded PLN 70 bn annually in 2020 (3.5% of GDP). Despite such an increase in discretionary public spending, the general government deficit was decreasing steadily to the historical low of 0.2% of GDP in 2018. Two interdependent factors contributed: good economic situation, including especially a fast growth of consumption, and significant reduction of the VAT gap (the difference between tax due and that actually collected), which dropped from 24.4% in 2015 to 9.9% in 2018 and stabilized at a similar level in 2019 according to preliminary estimates [European Commission, 2020]. Only then did the first effects of fiscal policy relaxation become visible – the GG deficit increased to 0.7% of GDP. However, it is the recession initiated in 2020, as a result of the pandemic, that will prove a real test for the scale of fiscal accommodation and the sustainability of the VAT gap reduction.

Preliminary data for 2020 shows that the PiS government missed out on the good times and failed to provide a sufficiently large financial cushion in the event of a crisis. The need for an aid program ("anti-crisis shield") to protect jobs and businesses from the effects of epidemic restrictions and the collapse of global supply chains raised the GG deficit to almost 10% of GDP. Moreover, the pandemic-induced recession significantly increased the VAT gap, which is projected to increase by half in 2020, to as much as 14.6%. This means that it will be difficult for the government to bring the public deficit below the EU's Maastricht criterion (3% of GDP) even after the economy rebounds, which will eventually lead to an increase in GG debt over the 60% of GDP threshold.

The change in the direction of Polish macroeconomic policy over the second half of the last decade is also visible in the area of international economic relations. On the one hand, there were almost no amendments to foreign trade regulations introduced in recent years, as Poland is a member of the European Union and its customs and trade policy is determined by EU directives. On the other hand, the institutional conditions for the inflow of foreign direct investment (FDI) have undergone a far-reaching transformation.

The PO-PSL government continued its policy of high openness to FDI influx to Poland, initiated in the 1990s. They postponed to 2020 the shutdown of special economic zones in which investing was linked to tax preferences, launched the euro adoption process (interrupted later on by the fiscal crisis in peripheral euro area countries), and supported, through administrative and political measures, the location of large greenfield investment projects in Poland. As a result, in 2015 Poland was rated by foreign entrepreneurs as the most attractive destination for investment in the whole of Central and Eastern Europe [AHK, 2015], with significant advantages over direct competitors.

Changes in the economic policy of PiS involved the establishment of a distinct investment surrounding on three levels: communication, institutional setting and direct regulation. After 2015, the narrative of the government changed dramatically, as it began to place the strongest emphasis on the protection of companies with Polish capital, especially state-owned, became reluctant to continue the privatization process, especially through foreign investment, and even began to mobilize private and public capital to buy back Polish companies from foreign investors. These activities even earned their own name – "repolonization" of the economy. Changes in the overall institutional setup, which are discussed more broadly in the next sub-chapter, also proved very important for investors. The reluctance to invest capital in Poland was driven by: a breach of a tripartite system of power separation by an attempt to subordinate the judiciary to the ruling party, an increased variability of the legal system, especially in the taxation area, and a diminished social and political stability reflecting worldview polarization in the country.

Among the new regulations directly affecting FDI inflow to Poland, the most important are changes in the tax system aimed at reducing tax avoidance, including a new tax imposed on special purpose entities registered in tax havens, a new tax on unrealized capital gains of a company losing Polish tax residency (exit tax), an anti-tax avoidance clause that allows the tax administration to immediately impose tax in a situation of reasonable suspicion of tax optimization, the introduction of withholding tax or the need for multinationals to report tax schemes. As a result, according to an OECD study, in 2019 Poland recorded the highest FDI regulatory restrictiveness index among EU

member states, and, with a score of 7.2 it ranked above the average (6.0), ahead of such countries as Turkey, Chile, or Japan. Moreover, in fear of excessive acquisitions of Polish companies by foreign capital during the pandemic, the government imposed the requirement for investors incorporated outside the OECD to obtain approval for such transactions from the Polish competition and market authority (UOKiK). Among EU countries, only Italy decided to take such a step in 2020 [Cichy et al., 2020].

The change in the government's attitude towards foreign investors was also evident in the opinion of entrepreneurs themselves, who gradually lowered the rating of Poland's investment attractiveness. According to the AHK ranking, Poland was downgraded from the first place in 2015 to third place in 2019 among the best countries to invest in the Central and Eastern Europe region [AHK, 2015, 2019].

9.3. Institutional Architecture of the Polish Economy and Its Evolution Directions

In this sub-chapter, we try to determine the nature and most essential characteristics of the institutional order that emerged in Poland as a result of systemic transformation and subsequent membership of our country in the European Union. This order, or the institutional architecture of the Polish economy, will also be interchangeably referred to here as the model of capitalism [Rapacki et al., 2019]. The concept of institution itself, in accordance with North's canonical definition [2005], will be understood as the rules of the game in a particular society, i.e. a set of norms, constraints and accepted ways of conduct that form a broad economic policy framework and determine the structure and strength of incentives affecting the behavior and decisions of economic agents [Gardawski, Rapacki, 2019].

In our analysis, we refer to the results of empirical studies conducted as part of an interdisciplinary research project carried out in 2015–2019 with the participation of the authors[1]. The full results of these studies are presented in separate works [Rapacki, 2019 and Rapacki et al., 2019]. The aim of the research was to obtain a new, enhanced picture of empirical post-communist capitalism that emerged in Poland and 10 other new EU member states in Central and Eastern Europe (CEE-11), allowing its nature and the key constitutive features to be better understood [Rapacki, Czerniak, 2020].

The research covered six areas constituting the structural pillars of the institutional architecture of the economy, i.e., 1) product market competition, 2) labor market and industrial relations, 3) financial intermediation system, 4) social protection system, 5) knowledge system, and 6) housing market. The institutional characteristics of each of these areas were reflected in a customized set of indicators, some of which represented the "input" side of its institutional architecture (institutional determinants of economic activity) while the remainder – its "output" side, i.e. the economic performance in the institutional area concerned.

The analyses were carried out taking into account two time points: the initial year of the study, close to the enlargement of the European Union to Central and Eastern Europe (2005 in most cases), and the final year, i.e. the last year for which data were available at the time of the calculation (mainly 2014). In the research, we used our own, proprietary analytical tools (coefficients and hexagons of similarity), as well as advanced statistical methods (subspace clustering) to quantify the results obtained.

In the first stage of research, related to the use of coefficients and hexagons of similarity, it turned out that the institutional architecture of the Polish economy was relatively closest to the Mediterranean model of capitalism represented in the analysis by Spain or Italy. The average coefficient of Poland's similarity to these countries was 67.4% in the initial survey year (2005) and 65.9% in the final year (2014). The Mediterranean model was the closest point of reference for Poland in the case of four of the six institutional areas included in the exercise (small deviations from this pattern occurred only in the area of labor market and industrial relations, and social security). A slightly lower similarity characterized the institutional order established in Poland to the Continental model represented by Germany (similarity coefficients of 52.1% in 2005 and 56.9% in 2014, respectively). Moreover, on the similarity map, Poland was closest to Germany in two institutional areas – labor market and industrial relations, and social security system [Rapacki, 2019].

On the other hand, the most important research finding in the second phase of the project, which applied the subspace clustering method, was that Poland, as well as most of the other CEE-11 countries, form their own distinct cluster, clearly distinct in terms of its institutional characteristics from the other clusters identified in the study involving Western European member states of the European Union [Rapacki, Czerniak, 2019].

9.3.1. The Essence and Most Salient Features of Patchwork Capitalism in Poland

Our research results show that the new institutional order that emerged in Poland and in the CEE countries as a result of the systemic transformation and accession to the European Union, constitutes a distinct research category, which in many respects essentially differs from both the "ideal-typical" patterns found in the classifications by Amable [2003] or Hall and Soskice [2001] and the empirically identified clusters embodying Western European varieties of capitalism. These results also provide a strong premise for the conclusion that a new model of capitalism has developed in Poland (as well as in most CEE-11 countries), different from the co-existing models in the developed countries of Western Europe [Rapacki, Czerniak, 2020; Rapacki, 2019; Rapacki et al., 2019].

The model in question exhibits multiple peculiarities inherent to its very design and mode of operation. They substantiate the terminological proposal to brand it as **patchwork capitalism**, a term that the authors believe best reflects its nature and key constitutive features.

Among these peculiarities, heterogeneity and institutional ambiguity of the emerging capitalism in Poland and other CEE countries are particularly prominent. As our research shows, this ambiguity occurs at three different levels of the institutional architecture of the economy, namely [Rapacki, Czerniak, 2019; Rapacki et el., 2019]: (1) at national level (polycentric patterns of similarity to several different models of Western European capitalism at the same time)[2], (2) at the level of the institutional areas examined (both within each of them, and between them), (3) at the level of institutional indicators, including in particular variables representing the "input" and "output" sides of the institutional architecture (separately calculated values of input and output variables in Poland and the other CEE-11 countries often indicate a close institutional proximity of these countries to completely different models of capitalism)[3].

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[2] For example, in 2014, the coefficients of similarity between the institutional architecture in the Czech Republic and Estonia and the Mediterranean model (represented by Spain/Italy) and the Continental model (represented by Germany) were almost identical. In Poland, on the other hand, the difference between the values of these two coefficients did not exceed 10 pp. [see Rapacki et al., 2019].

[3] Our research shows that while Poland and majority of CEE-11 countries most closely resembled the Mediterranean model of capitalism (Spain/Italy) in terms of performance (output variables), those countries – assessed for input variables (institutional infrastructure) – were much more similar to the Continental model (Germany). This means that the value of the aggregate similarity coefficient in Poland and CEE-11 countries for these two benchmarks was more strongly influenced by the output variables than the input ones, and that it was the former that made the emerging model of capitalism in Poland (and CEE-11 countries) more gravitated towards the Mediterranean pattern.

Our research also shows that Poland (as well as other CEE-11 countries) features a clear deficit of institutional complementarities. It is manifested, e.g., in numerous cases of mismatch between the institutional arrangements adopted within and between individual areas. A particularly important dimension of this deficit and, at the same time, a co-determinant of the specificities of capitalism that has evolved in Poland and other former socialist countries is the continuing and even growing mismatch between formal and informal institutions and a much greater role of the latter compared to the benchmark Western European models of capitalism. This is due, among others, to the fact that top-down and/or imported formal institutions are not rooted in the existing historically conditioned "symbolic universe" or, to put it differently, the "imaginarium" of Polish society, as Andrzej Leder [2013] calls this.

The foregoing research findings allow a definition of patchwork capitalism to be developed. This concept refers to a specific type of institutional architecture which combines, quite loosely linked, building blocks originating from various institutional orders, in particular components transplanted or copied from several coexisting contemporary models of Western European capitalism. Such a combination causes a far-reaching incoherence of this architecture and its ambiguity. They are particularly manifested in a clear deficit of institutional complementarities between the different components of the whole construct. They also become a source of strong internal frictions, increasing idle capacity of the entire system and progressing entropy [Rapacki, Gardawski, 2019].

At the same time, the definition of patchwork capitalism should also highlight an important factor of path dependency. It further highlights the internal inconsistency of the institutional architecture or the model of capitalism concerned and makes it even more heterogeneous and ambiguous.

The factor of dependence on a previous development path in Poland and, more broadly, in post-socialist countries, can be considered with regard to two interdependent parts the historical heritage of these countries, i.e., (1) path dependence embedded in their proto-capitalist past (before World War II) and (2) the legacy carried forward from the centrally planned economy. As a result, the institutional architecture of the Polish economy (and of each CEE-11 country) can be described as a structure composed of three temporal layers: (1) the proto-capitalist heritage, (2) the legacy of real socialism, and (3) elements transplanted from various models of contemporary Western European capitalism[4], with the dominant role of the last-mentioned layer [Rapacki, Gardawski, 2019].

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[4]   An analogy can be found here with the concept of prominent Mexican writer, 1990 Nobel Prize in Literature winner Octavio Paz, laid out in his book *The Labyrinth of Solitude* [Paz, 1961]. According to Paz, the key to understanding the identity of modern Mexico is in the distant past, dating back to the Spanish

An important distinguishing feature of patchwork capitalism in Poland is the lack of a clear-cut warp of institutional architecture that emerged in the country after 1989. Due to the absence of this warp, the laws of movement governing the various components of the architecture differ, as do the mechanisms for coordinating actions and decisions taken by economic actors in different institutional areas.

In the 1980s, the process of interrupting the continuity of formal institutions in the economy began and proceeded at differentiated pace in Poland and other CEE-11 countries. In the 1990s, this "institutional vacuum" became the site of specific experiments involving the implementation of institutional arrangements suggested by the European Union, countries undertaking a "civilizing mission" behind the recently fallen Iron Curtain (with Germany in the first place), international organizations (International Monetary Fund, World Bank or International Labour Organization), and imposed by the main player – large transnational corporations – transferring various, substantially different organizational cultures (initially disregarding local circumstances). These interactions began to gradually trigger response from old and new vested interest groups [Hausner, 2007]. In addition, informal institutions inherited from the past, deeply rooted practices, value patterns and socially-dominant conceptual schemes relating to economic and political culture, which had not manifested themselves distinctly in the first shock period of systemic transformation, became an active change factor [Rapacki, Gardawski, 2019]. Consequently, formal institutions evolved as a result of the influence of autonomous interests and took a fragmented form. In such a socio-economic space, those institutions did not form complementary relationships, but created specific mosaics devoid of a **warp** that would hold them together, composed by sewing piece to piece and taking a patchwork form. Insightful observers of the emerging new institutional order in Poland [Hausner, Mazur, 2015; Jasiecki, 2013] wrote about "molecular development" or "developmental drift" or even about creating an institutional network through "darning" [Gardawski, Rapacki, 2019].

The phenomena and tendencies outlined above resulted, among other things, from the fundamental weaknesses of the economic policy pursued in Poland and the systemic transformation strategy adopted, i.e., the lack of vision of the target model of capitalism that best suits the conditions and development aspirations of Poland. The goal of systemic transformation in Poland – both at its onset and all along the way – used to be defined in highly abstract terms as creating a liberal market economy (capitalism), without prejudging its specific design.

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conquest of the Aztec empire by Cortez (more than 500 years ago). This key is in the ability to properly recognize and take into account in the research into today's identity of that country and its inhabitants the factor of overlapping reminiscences in the individual and collective consciousness of the three successive development phases (or, time layers) in its history: the pre-Columbian past, the colonial era, and the modern phase that began after the 1917 Mexican Revolution.

The model of capitalism and the trajectory of institutional change in Poland (and many other CEE-11 countries, including the Visegrad Group states) were also strongly influenced by external factors, including in particular the global strategies of transnational corporations (TNCs) and the international division of labor patterns imposed by them. To a large extent, as a result of TNCs' decisions on the structure of foreign direct investment flowing into Poland, both by type and by sector, as well as – just as importantly – TNCs' impact on political and legislative decisions regarding the establishment or reform of formal institutions in the country, a specific pattern of comparative institutional advantage of the Polish economy has emerged and gradually consolidated. It was based mainly on low labor costs and a relatively large stock of a well-educated and skilled workforce. As a result, the international competitiveness of the Polish economy was based on low prices of exported products and specialization in the production of mainly uncomplicated goods, embodying a relatively low value added and low-tech inputs; at the same time. Polish producers were also subcontractors of more technologically advanced products in the global networks of transnational corporations.[5] In the vocabulary of "comparative capitalism", the international competitiveness model represented by Poland is labelled as "dependent market economy" [Nölke and Vliegenthart, 2009], or "FDI based, second-rank market economy" [Myant and Drahokoupil, 2011]. These labels imply, among other things, the imitative nature of Poland's economic and technological development and the country's peripheral position in the European Union and, more broadly, in the international division of labor. Some representatives of the social sciences, taking additionally into account the population and economic potential of Poland and its political role (at least until 2015) in the Central and Eastern Europe region, describe it as a "semi-peripheral country" in this context [see, e.g., Sowa, 2015; Matyja, 2018; Bendyk, 2020][6].

9.3.2. Directions of Change in Poland's Institutional Architecture in 2015–2020

The institutional architecture of the Polish economy outlined in the previous section reflects its status at the end of 2014. Here, we are trying to identify the main directions of change in this architecture and, more broadly, in Poland's social and economic system in 2015–2020, resulting from measures taken by Law and Justice during

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[5] One of the main determinants of this pattern is the low innovativeness of the Polish economy that has persisted for years. Its many symptoms include a small contribution, of a mere 8%, of high-tech products in the export of manufactured goods, or a huge deficit in the international exchange of licenses (the ratio of expenditure on license imports to revenues from license exports being 10:1) [Czerniak, Rapacki, 2019].

[6] This term, as well as the division into the "core" and "peripheries", comes from the world-system theory developed by Immanuel Wallerstein [1974].

the party's first five years in power. In the context of the parliamentary and presidential elections won in 2019–2020, the direction of those actions is most likely to be continued. We also consider it highly possible that the scenario of institutional transformations initiated in November 2015 will be continued after 2020, aimed at destroying or, at best, deforming the very basis of the legal order existing so far in Poland, which may lead to further deterioration of Poland's image abroad, weakening its international position and increasing its marginalization in the European Union. The outbreak of the coronavirus pandemic is a new change factor within the institutional order in Poland, which emerged at the beginning of 2020. It can be interpreted as a strong negative external shock which triggered a recession in the Polish economy (as well as in the whole European Union and globally) and simultaneously became a catalyst for fundamental institutional changes, and perhaps even a turning point on the existing trajectories of institutional development in Poland, in Europe and in the world at large.[7]

In most general terms, three main change tendencies can be seen in the institutional evolution process in Poland in 2015–2020. Firstly, PiS rule resulted in substantial modifications of institutional (formal and informal) coordination mechanisms in the Polish economy to the advantage of non-market methods, including in particular administrative modes of coordination. In terms of the Hall and Soskice typology of varieties of capitalism, this implies Poland's clear shift toward the ideal type of a coordinated market economy [Hall, Soskice, 2001].

Secondly, the last five years saw intensified symptoms of the government failure, in particular as provider of public goods and merit goods. This proved especially acute in the education system and healthcare. Reforms of formal institutions (as regards education, the word "deforms" would be more appropriate), combined with insufficient supply and deteriorating quality of education and medical services, led to forced, spontaneous privatization of these categories of services, resulting from an unplanned change of informal institutions as well. The privatization of both those areas consisted in a growing scale of additional health insurance and migration of Poles to private healthcare as well as increasingly common transfer of children from state schools to private and non-public primary and secondary schools[8].

Thirdly, as a consequence of the introduction in 2015–2020 by the ruling coalition of numerous poorly coordinated changes to formal institutions, which often also entailed the transformation (or emergence of new) informal institutions, there was

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[7]   For a more comprehensive discussion on this subject, see Próchniak et al. [2020].

[8]   These developments were fostered by extensive government transfer schemes such as the "500+" child support benefit, the 13th and 14th pensions, etc. This context prompts the reflection that they have become a substitute for deeper, comprehensive reforms of education and healthcare systems aimed at fundamentally improving the quality and accessibility of these categories of services, as well as boosting the resilience of these systems to potential adverse external shocks and crises (e.g., coronavirus pandemic).

a further hybridization of the institutional architecture of the Polish economy and the intensification of its patchwork nature. As Rafał Matyja writes in his recent book, PiS (or, more specifically, its leader) has admittedly created an alternative to the existing political practice of the Third Republic of Poland and begun the process of demolishing the old order, but failed to propose a new vision of or to build a different institutional order [Matyja, 2018].

At a slightly lower level of generalization, i.e. the individual areas forming structural pillars of the institutional architecture of the Polish economy, the following changes are particularly worth attention:

a) product market competition:
- increased extent of government regulation and interference with business,
- reduced scope of competition,
- growing concentration in selected markets (e.g. fuel production and distribution),

b) labor market and industrial relations:
- shrinking scope of social dialogue,
- increase of tax wedge (labor taxation)
- unprecedented minimum wage hikes,

c) financial intermediation:
- re-nationalization of some banks,
- politicized monetary policy decisions,

d) social security system:
- increased scale of income redistribution,
- dismantling the three-pillar pension system,
- lowering the retirement age,

e) education and knowledge system:
- "deform" of the education system at primary and secondary levels,
- centralization of decision-making in higher education and restriction of university autonomy,
- distortion of stimuli to improve the quality of academic research (parameterization of the evaluation of universities and achievements of individual scholars by the Ministry of Education and Science),

f) housing market:
- progressing entropy of construction law and spatial development regulations[9],
- introduction of a hybrid form of housing tenure (i.e., tenancy with owner-occupancy option).

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[9] This resulted from the adoption of special housing legislation which generates corruption and relativizes provisions of general law, thus aggravating the regulatory chaos in housing construction.

The five years of the PiS rule were also marked by the introduction of fundamental changes to institutions forming the broadly-defined social and political system in Poland. The most important changes of this kind included:

- demolishing the foundations of the liberal democracy system based on checks and balances and the separation of the executive, legislative and judiciary powers;
- increasing centralization of power and intensifying attempts to weaken local self-government;
- restricting the freedom of actions of the "third sector", i.e., non-governmental organizations;
- actual dismantling of the civil service;
- limiting the freedom of the media;
- deepening of existing divisions in society, disappearance of the sense of community;
- a further decline in the level of trust and willingness to cooperate in society;
- weakening of incentives for productive entrepreneurship and investment.

9.4. Possible Consequences of the COVID-19 Pandemic

The outbreak of the coronavirus pandemic means an unprecedented – both in terms of its scale, complexity and multidimensionality of possible effects – adverse external shock which may accelerate the process of reaching the turning point on the existing trajectories of economic and institutional development not only for Poland and individual countries, but also for the whole global order [Acemoglu, Robinson, 2014].

Possible economic and institutional implications of the pandemic fall between the expectation of profound changes in production and consumption patterns and an ideological revaluation of lifestyles linked to the multidimensional crisis, which will affect, albeit in different ways, the countries of both rich and poor capitalism or, at most, the strengthening of hitherto trends affecting the socio-economic systems of the end of the 20th century (the Fourth Industrial Revolution, globalization, growing inequalities, climate crisis) [Próchniak et al., 2020].

The development of the epidemic has revealed the failure of market mechanisms, the diversity of presumably long-term social impacts and the huge scale of interventions of nation states whose authorities balance between limiting the loss of human potential and the loss of economic potential.

In the face of the epidemic hazard, freedom is seen to be "swapped" for security – resulting in the rise of authoritarianism and a growing role of the government; this tendency is accompanied, on the "supply" side (also in Poland), by an increase in social demand for restrictions, regulations, orders and bans enhancing health

security [Próchniak et al., 2020]. Those phenomena stem from a stronger preference for survival over freedom in many CEE countries, including Poland [Inglehart, Welzel, 2010; Lissowska, 2020], and may persist after the pandemic is over.

9.5. Summary and Conclusions

In summary, it is worth pointing out that the cumulative impact of the developmental challenges outlined above, combined with an insufficient response of economic policy, may lead to a decline in the international competitiveness of the Polish economy. In particular, it is worth indicating the possibility of long-term consequences arising from the implementation of the scenario outlined, such as:

1) perpetuation of the imitative and peripheral pattern of development of the Polish economy;
2) growing role of informal institutions at the expense of formal ones;
3) unfolding process of anomie in society;
4) strengthening incentives for unproductive and destructive entrepreneurship;
5) further rise in the idle capacity of the institutional system or entropy resulting from its becoming even more "patchy", and the progressing erosion of the comparative institutional advantage of Poland.

All these factors may be conducive to a permanent decline in the potential rate of economic growth. The symptoms of this unfavorable tendency have already appeared in Poland – in the last few years there has been a reduction in the potential growth rate of Polish economy from over 5% to about 2.5% i.e., by half. What is more, according to long-term projections of the European Commission, OECD, and the authors' own forecasts [Matkowski, Próchniak, Rapacki, 2016], this rate may decelerate even further after 2020 – below 2% per annum.

Bibliography

Acemoglu, D., Robinson, J. [2012], *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*, Crown, New York.

AHK [2015], *Ankieta koniunkturalna 2015,* Warsaw.

AHK [2019], *Ankieta koniunkturalna 2019,* Warsaw.

Bendyk, E. [2020], *W Polsce, czyli wszędzie. Rzecz o upadku i przyszłości świata,* Warsaw, Wydawnictwo Polityka.

Cichy, H., Czerniak, A., Pawłuszko, W., Smoleńska, A. [2020], *Instrumenty kontroli inwestycji zagranicznych. Regulacje polskie na tle innych krajów Unii*, Polityka Insight, Warsaw.

Council of Ministers [2015], *Wieloletni plan finansowy państwa na lata 2015–2018*, Council of Ministers, Warsaw, pp. 343–353.

Council of Ministers [2016], *Stanowisko Rady Ministrów wobec prezydenckiego projektu ustawy o zmianie ustawy o emeryturach i rentach z Funduszu Ubezpieczeń Społecznych oraz niektórych innych ustaw*, Council of Ministers, Warsaw.

Council of Ministers [2017], *Wieloletni plan finansowy państwa na lata 2017–2020*, Council of Ministers, Warsaw.

Council of Ministers [2019], *Wieloletni plan finansowy państwa na lata 2019–2022*, Council of Ministers, Warsaw.

Czerniak, A., Rapacki, R. [2019], *Directions and Key Challenges of Economic Policy in Poland in the Context of the Fourth Industrial Revolution*, in: *Poland. Competitiveness Report 2019. International Competitiveness in the Context of Development of Industry 4.0*, A. Kowalski, M. Weresa (eds.), SGH Publishing House, Warsaw, pp. 165–180.

European Commission [2014], *European Economic Forecast. Autumn 2014*, "European Economy", 7.

European Commission [2020], *Study and Reports on the VAT Gap in the EU-28 Member States 2020. Final Report,* Publications Office of the EU, Brussels.

Gardawski, J., Rapacki, R. [2019], *Badania porównawcze nad kapitalizmem – ramy koncepcyjne i podstawy teoretyczne*, in: *Kapitalizm patchworkowy w Polsce i krajach Europy Środkowo-Wschodniej*, R. Rapacki (ed.), M. Próchniak, A. Czerniak, J. Gardawski, B. Horbaczewska, A. Karbowski, P. Maszczyk, R. Towalski, Polskie Wydawnictwo Ekonomiczne, Warsaw, pp. 15–57.

Hausner, J. [2007], *Pętle rozwoju. O polityce gospodarczej lat 2001–2005*, Scholar, Warsaw.

Hausner, J., Mazur, S. [2015], *Państwo i my. Osiem grzechów głównych Rzeczpospolitej,* Fundacja GAP, Kraków.

Inglehart, R., Welzel, Ch. [2010], *Changing Mass Priorities: The Link between Modernization and Democracy*, "Perspectives on Politics", 8(2), pp. 551–567.

Jasiecki, K. [2013], *Kapitalizm po polsku. Między modernizacją a peryferiami Unii Europejskiej*, Wydawnictwo IFiS PAN, Warsaw.

Leder, A. [2013], *Prześniona rewolucja. Ćwiczenie z logiki historycznej*, Wydawnictwo Krytyki Politycznej, Warsaw.

Lissowska, M. [2020], *Beliefs and Preferences of a Society as a Background for Shaping Institutional Structures*, Warsaw School of Economics, Warsaw.

Matkowski, Z., Próchniak, M., Rapacki, R. [2016], *Real Income Convergence between Central Eastern and Western Europe: Past, Present, and Prospects*, "Ekonomista", 6, pp. 853–892.

Matyja, R. [2018], *Wyjście awaryjne. O zmianie wyobraźni politycznej*, Karakter, Kraków.

MF [2020], *Szacunkowe dane o wykonaniu budżetu państwa za styczeń – grudzień 2019 r.*, Ministry of Finance, Warsaw.

Ministry of Labor [2012], *Uzasadnienie do projektu ustawy o zmianie ustawy o emeryturach i rentach z Funduszu Ubezpieczeń Społecznych oraz niektórych innych ustaw*, Ministry of Labor and Social Policy, Warsaw.

Ministry of Labor [2014], *K 1/14 – pismo Ministra Pracy i Polityki Społecznej z 4 kwietnia 2014 r. – skutki finansowe dot. wniosku Prezydenta RP (uzupełnienie/załącznik)*, Ministry of Labor and Social Policy, Warsaw.

Myant, M., Drahokoupil, J. [2011], *Transition Economies: Political Economy in Russia, Eastern Europe and Central Asia*, John Wiley & Sons, Hoboken – New York.

Myck, M. [2016], *Estimating Labour Supply Response to the Introduction of the Family 500+ Programme*, CenEA Working Paper Series no. 01/16.

NBP [2019], *Szybki Monitoring NBP. Analiza sytuacji sektora przedsiębiorstw*, Economic Analysis Department, Warsaw.

Nölke, A., Vliegenthart, A. [2009], *Enlarging the Varieties of Capitalism: The Emergence of Dependent Market Economies in East Central Europe*, "World Politics", 61(4), pp. 670–702.

PAP [2018], *ZUS zdecydował o wypłacie emerytur dla 313 tys. osób*, Warsaw.

Paz, O. [1961], *The Labyrinth of Solitude*, Grove Press, New York.

Próchniak M., Gardawski J., Lissowska M., Maszczyk P., Rapacki R., Sulejewicz A., Towalski R. [2020], *Ścieżki rozwojowe krajów i regionów Europy Środkowo-Wschodniej*, in: *Raport SGH i Forum Ekonomicznego 2020*, M. Strojny, P. Wachowiak (eds.), Warsaw School of Economics, Warsaw, pp. 15–59.

Rapacki R. (ed.), Próchniak M., Czerniak, A., Gardawski, J., Horbaczewska, B., Karbowski, A., Maszczyk, P., Towalski, R. [2019], *Kapitalizm patchworkowy w Polsce i krajach Europy Środkowo-Wschodniej*, Polskie Wydawnictwo Ekonomiczne, Warsaw.

Rapacki, R. (ed., in collaboration with A. Czerniak) [2019], *Diversity of Patchwork Capitalism in Central and Eastern Europe*, Routledge, Abingdon – Oxon – New York.

Rapacki, R., Czerniak, A. [2019], *The Empirical Results of Subspace Clustering – A Summary*, in: *Diversity of Patchwork Capitalism in Central and Eastern Europe*, R. Rapacki (ed.), Routledge, Abingdon – Oxon – New York, pp. 185–203.

Rapacki, R., Czerniak, A. [2020], *Powstanie i ewolucja kapitalizmu patchworkowego w Polsce i krajach Europy Środkowo-Wschodniej*, "Biuletyn Polskiego Towarzystwa Ekonomicznego, 2, s. 23–32.

Rapacki, R., Gardawski, J. [2019], *Istota i najważniejsze cechy kapitalizmu patchworkowego w Polsce i krajach Europy Środkowo-Wschodniej*, in: *Kapitalizm patchworkowy w Polsce i krajach Europy Środkowo-Wschodniej,* R. Rapacki (ed.), Polskie Wydawnictwo Ekonomiczne, Warsaw, pp. 343–353.

Sowa, J. [2015], *Inna Rzeczpospolita jest możliwa! Widma przeszłości, wizje przyszłości*, Wydawnictwo AB, Warsaw.

Wallerstein, I.M. [1974], *The Modern World-System*, Academic Press, New York.

Poland's Bilateral Relations with Its Main Partners in the Second Decade of the 21st Century

Poland-United States Bilateral Relations: Political and Economic Aspects

Artur Franciszek Tomeczek

10.1. Introduction

Poland is one of the key allies of the United States in Central and Eastern Europe (CEE). It has been over 100 years since the United States was one of the first countries to officially acknowledge Poland's newly regained independence on January 22, 1919. Following the Revolution of 1989 and the end of the Cold War, Poland was quick to assimilate with the Western world. Poland became a member of the Organisation for Economic Co-operation and Development (OECD) in 1996, the North Atlantic Treaty Organization (NATO) in 1999, and the European Union (EU) in 2004. For the past decades, both Poland and the United States have shared a commitment to their close relationship [www 1; www 2].

The aim of this chapter is to explore the Poland-U.S. bilateral relations with regard to political and economic aspects, with a focus on the 2009–2020 period. The chapter comprises two main parts. The first one concerns political aspects (political leadership, national security, and immigration policy) and the second one concerns economic aspects (free trade agreements, investments, and bilateral trade). The chapter combines qualitative and quantitative approaches. The main research methods employed are literature review (including government websites) and comparative analysis. While this study is conducted during the COVID-19 pandemic, the focus is primarily on the ongoing political and economic issues beyond the overbearing impact of the current pandemic-related collapse.

10.2. Political Aspects

Around two decades ago, Brzeziński [1997; 2001] wrote how the global order would not be determined by the United States alone; instead, the world would fall within the spheres of influence that the United States would share with Europe, China, and Russia. "*America is not only the first, as well as the only, truly global superpower, but it is also likely to be the very last*" [Brzeziński, 1997, p. 209]. Indeed, the Eurasian power equilibrium has come to the forefront of political and economic sciences.

Political leaders

2020 is a crucial year for both countries internally and in their bilateral relations. The President of the United States (POTUS) is the most powerful person in the world, and the 2020 U.S. presidential election will have huge implications globally. This presidential race has been and will continue to be highly divisive – somehow even more than the previous one. Poland also held its presidential election this year, which might be a pivotal point for the region.

The United States is famous for its bipartisan system. The two dominant forces are the Democratic Party and the Republican Party. The former currently holds the majority in the U.S. House (lower house), while the latter holds the majority in the U.S. Senate (upper house). For over a decade, the two biggest political parties in Poland have been Law and Justice (*Prawo i Sprawiedliwość* – PiS) and Civic Platform (*Platforma Obywatelska* – PO). In the 2019 parliamentary elections, PO ran as the biggest party of the Civic Coalition (*Koalicja Obywatelska* – KO) electoral alliance. PiS currently holds the majority in the Sejm (lower house), while the PO-led opposition holds the majority in the Senate (upper house). Table 10.1 shows a brief overview of the current political climate in Poland and the United States, while Table 10.2 shows the history of political leadership in both countries since 2009. The foreign policies of both governments should be more compatible if they represent similar values. The president serves a four-year term in the United States and a five-year term in Poland. The office of the President of Poland holds substantially less power than its counterpart in the United States.

The 2016 presidential election in the United States was one of the utmost importance for global economic and political order. It was also one of the most divisive and controversial campaigns in recent history. Since the incumbent POTUS Barack Obama had reached the two-term limit, both major parties had to organize primaries. Both primaries had seen heated debates and ruthless competition. The Republican party

chose Donald Trump as its nominee while the runner-up was Ted Cruz. The Democratic party chose Hilary Clinton as its nominee while the runner-up was Bernie Sanders. The latter primary was much closer and the nomination generated some disappointment among the progressive wing of the Democratic party.

The election results were as divisive as the preceding campaigns. Donald Trump won the electoral college 304–227 and became the 45th POTUS. However, Hilary Clinton actually won the popular vote 65,853,514 to 62,984,828 (48.18% to 46.09%), with 7,830,934 votes going to 3rd party candidates. Most notably, President Trump decisively lost California (4,483,814 to 8,753,792), but won relatively close decisions in the crucially important swing states like Florida (4,617,886 to 4,504,975), Pennsylvania (2,970,733 to 2,926,441), Michigan (2,279,543 to 2,268,839), and Wisconsin (1,405,284 to 1,382,536) [FEC, 2017]. The 2016 result had once again sparked a debate about the merits of the U.S. Electoral College, which resurfaced during the 2020 campaigns.

The 2020 U.S. presidential election will pit POTUS Donald Trump against the Democratic nominee, former Vice President Joe Biden. As of March 2020, much like in 2016, there were two main camps in the Democratic primary: the moderate wing led by Joe Biden and the progressive wing led by Bernie Sanders. Biden campaign runs on issues similar to the 2016 Clinton platform, which could be described as the extension of the mainstream Democratic party policies. The moderates want iterative changes, that supporters might consider an extension of Obama-era policies, and critics could describe as the preservation of the status quo. The progressives led by Sanders rally around the welfare state system, which many observers misinterpret as socialism, with the most attention being given to the introduction of a single-payer healthcare system. In August 2020, Joe Biden officially became the presidential nominee during the Democratic National Convention, with Kamala Harris as his running mate.

The 2020 presidential election in Poland was initially scheduled to take place on May 10th. However, due to the COVID-19 pandemic, the election was deferred (see: [www 24]). In the run-up to the postponed election, the biggest opposition party PO, taking an unusual move, switched its candidate from Małgorzata Kidawa-Błońska to Rafał Trzaskowski. The first round of the presidential election finally took place on the 28th of June. Two leading candidates were the incumbent president Andrzej Duda (43.5%) and Rafał Trzaskowski (30.46%), both advancing to the deciding vote since no one got more than half of the votes. The second round took place on the 12th of July, with Andrzej Duda winning the election with 51.03% of the popular vote [www 25]. The results were much closer than the March or April polls suggested. The campaign itself proved to be quite contentious, at times even cutthroat. Issues raised included social policies, religion, immigration, and LGBT+ rights. At one point both leading candidates hosted two different simultaneous presidential debates [www 26;

www 27], where they were the only participant, due to unwillingness to compromise on the venue and moderators.

Table 10.1. Dominant political parties in Poland and the United States, 2020

Party	Country	Social	Economic	Chair
Democratic	United States	liberal	center-left	Tom Perez
Republican	United States	conservative	right	Ronna McDaniel
PiS	Poland	conservative	left	Jarosław Kaczyński
PO	Poland	moderate	center-right	Borys Budka

Source: Compiled by the author from [www 10], [www 11], [www 12], [www 13].

Table 10.2. Selected leaders of the government in Poland and the United States, 2009–2020

President of Poland	POTUS
Andrzej Duda (PiS) 2015–	Donald Trump (R) 2017–
Bronisław Komorowski (PO) 2010–2015	Barack Obama (D) 2009–2017
Lech Kaczyński (PiS) 2005–2010	George W. Bush (R) 2001–2009
Prime Minister of Poland	Speaker of the U.S. House
Mateusz Morawiecki (PiS) 2017–	Nancy Pelosi (D) 2019–
Beata Szydło (PiS) 2015–2017	Paul Ryan (R) 2015–2019
Ewa Kopacz (PO) 2014–2015	John Boehner (R) 2011–2015
Donald Tusk (PO) 2007–2014	Nancy Pelosi (D) 2007–2011
Marshal of the Senate of Poland	U.S. Senate Majority Leader
Tomasz Grodzki (PO) 2019–	Mitch McConnell (R) 2015–
Stanisław Karczewski (PiS) 2015–2019	Harry Reid (D) 2007–2015
Bogdan Borusewicz (PO) 2005–2015	

Source: Compiled by the author from [www 5], [www 6], [www 7], [www 8], [www 9], [www 23].

National security and military

Poland's eastern border is the border of both NATO and the EU. Its location makes Poland a strategically important ally for the United States. On the other hand, the United States has the most powerful military in the world. Further cooperation between both countries seems like an obvious strategic move.

Between 2019 and 2026 Poland is expected to spend PLN 185 billion (around USD 46 billion) on the modernization of its military, with plans to allocate 2.1% GDP on military spending in 2020, and at least 2.5% GDP in 2030. In 2018 Poland purchased

the U.S. Patriot surface-to-air missile system, which is expected to become operational in 2023. The system cost Poland USD 4.75 billion and was supplemented by an offset deal worth PLN 725 million (around USD 190 million). The entire transaction is the lynchpin of Poland's air defense modernization program WISŁA. In 2020 Poland purchased 32 U.S. F-35 multirole combat aircraft for USD 4.6 billion, as part of the Polish Air Force modernization program HARPIA. Other numerous military initiatives in Poland include the cybersecurity program CYBER.MIL, assault helicopters program KRUK, short-range air defense program NAREW, and an increase in U.S. military contingent in Poland [www 15; www 16; www 17; www 18]. According to Cieślak [2020], the modernization of Poland's air defense systems is a continuous undertaking in which the immediate priority should be the upgrade of the short-range surface-to-air missile systems. The 2003 deal to purchase F-16 was motivated in big part by the large offset package [Seguin, 2008], however, for the F-35 deal, Poland opted out of the offset package to lower the price by around USD 1.1 billion [www 20].

Poland is rapidly modernizing its military, and the United States play a key role in this process. When it comes to cutting-edge military technology, it really is difficult to provide a viable alternative to the partnership with the United States. When it comes to the highly publicized and expensive purchases of multirole fighter aircraft, Poland has turned to the U.S. twice now (F-16 and F-35). Potential European alternatives included the French Rafale, the Swedish JAS 39 Gripen, and the international Typhoon, however, all of them are older than the F-35. Poland is spending a relatively large part of its budget on the military when compared with other large EU countries, fulfilling the 2% of GDP NATO guideline.

One of the turning points in Poland-U.S. relations was the 2003 military invasion of Iraq. Poland famously was one of the primary members of the U.S.-led coalition during Operation Iraqi Freedom which started the Iraq War [Czornik, 2012; Milczarek, 2008; Osica, 2004], also known as "the three trillion dollar war" [Stiglitz & Bilmes, 2008]. Crucially, Poland and the United Kingdom took the United States' side even with strong opposition from their key European allies – Germany and France [Czornik, 2012; Lubecki, 2005; Taras, 2004].

There is no denying that when it comes to national security and military, the Poland-U.S. relation has been asymmetric [Kupiecki, 2016; Zaborowski & Longhurst, 2003]. One of the principal reasons for Poland to join NATO was to provide it with an additional layer of protection from any potential military conflict with Russia [Osica, 2002]. According to Lesiński [2016], NATO alone cannot guarantee the safety of Poland if the United States itself does not have a vested interest in the region. NATO's lackluster response to the 2014 Russia-Ukraine conflict [Rotfeld, 2018] provides additional substance to this argument; while Ukraine is not an official NATO member it still has

close ties with the organization and there have been firm declarations of membership in the future [www 21]. The reignited tensions with Russia prompted NATO and the United States to relocate military personnel to the region, which lessened U.S. military presence in the Pacific [Bednarz, 2015].

Crucially, closer cooperation with the United States is one of the primary elements of the 2020 National Security Strategy of the Republic of Poland [www 28].

Immigration policy and migration flows

In recent years, immigration policy was a topic of heated debates in both Poland and the United States. This includes both inward migrations from developing countries and the decades-long issue of Poland's inclusion in the Visa Waiver Program (VWP). In recent years, the governments of both countries have taken a hardline on immigration. POTUS Trump has famously campaigned on the promise of building a wall on the U.S.-Mexico border. In Europe, Poland was one of the strongest opponents of refugee relocation during the EU migration crisis.

Polish government made constant efforts to ease the travel requirements to the United States for Polish citizens. After Poland supported the 2003 Iraq War, the country could be considered the closest U.S. ally in the region. However, in 2008, it was Czechia, Slovakia, and Hungary, among others, who joined the VWP [www 22]. It was the first extension of the program in almost a decade and the second biggest one in its history. The fact that three CCE countries and three of Poland's neighbors (including Lithuania) managed to leapfrog Poland in access to this program could be considered a diplomatic faux pas for both sides. Finally, in August 2019, the H.R.4218 bill was introduced by Representative Mike Quigley and later that year Poland was included in the VWP [www 3; www 4].

According to the data of the Department of Homeland Security [DHS, 2020], for the fiscal year 2019, 4,700 persons born in Poland were granted a lawful permanent resident status in the United States; by comparison, the same figure for persons born in Germany was 4,848, Czechia 714, and Slovakia 422. The numbers for Poland are very strong considering the population of these countries. Historically, the Polish diaspora is the most numerous in the United States, even more so than in Germany or other European countries. The official data shows that currently in the United States live around 8.97 million persons declaring Polish ancestry [Census Bureau, 2019]. The United States is the fourth most common destination of Poland's emigration for permanent residence, after Germany, the United Kingdom, and the Netherlands; as well as the fourth most common source of immigration to Poland for permanent residence, after the United Kingdom, Germany, and Ukraine [Statistics Poland, 2019b]. In 2018,

765 persons officially emigrated from Poland to the United States, while 697 persons immigrated to Poland from the United States; in recent years, the numbers are much lower than in the past (Figure 10.1).

Figure 10.1. Poland-U.S. official permanent residence migration flows (1991–2014, 2016–2018)
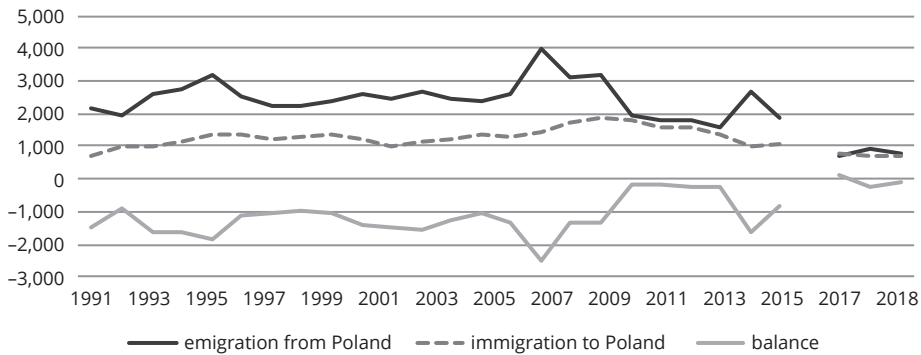
Source: Statistics Poland [2019b].

According to the data of the Polish Office for Foreigners (*Urząd do Spraw Cudzoziemców*, UDSC), 2,472 U.S. citizens currently have permanent or temporary residence in Poland, of whom 903 got their permits in Masovian Voivodeship and 512 in Lesser Poland Voivodeship [UDSC, 2020]. By comparison, the official number of Poland's legal residents with Ukrainian citizenship is around 230 thousand, Belarusian citizenship is over 27 thousand, and German citizenship is almost 21 thousand.

The inclusion of Poland in the VVP should undoubtedly be considered a success of the Polish government. The immigration policy of both countries has been, ideologically, quite similar in recent years. Still, most of Poland's neighbors have been members of this program for at least a decade. The permanent Poland-U.S. migration is relatively high, but when considering every type of residence, flows between Poland and its European neighbors are dwarfing its significance.

10.3. Economic Challenges and Cooperation

The Great Recession has sent ripples throughout the world economy that can still be felt to this day. The response to the global financial crisis has been quite different in Western Europe and the United States. In hindsight, the fiscal stimulus under the Obama administration (American Recovery and Reinvestment Act of 2009) had proved to be effective and the U.S. has recorded much higher growth rates than Eurozone

countries. Kołodko [2014] once wrote, "*The face of the world in the 21st century will be mostly determined not so much by the outcome of the direct economic rivalry between Asia and Euro-America but rather by how these two megasystems of values, institutions and policies interpenetrate, and how they mutually filter into and enrich each other*" [p. 402]. Historically, Poland has been largely dependent on Europe for both trade and capital [Weresa, 2001], as well as a destination for its outward investment [Radlo, 2012]. For the past decade, many of the largest European economies have shown signs of economic stagnation [Tomeczek, 2020], even before the pandemic decimated most industries. With the world economy still in shambles in late 2020 and the tense U.S.-China economic relations putting pressure on almost every aspect of international trade, Poland has to carefully steady the course between the United States, Asia, and its European allies.

The 1994 North American Free Trade Agreement (NAFTA) was a groundbreaking achievement and one of the prime examples of the growing globalization movement. Under Barack Obama, the United States pushed for the establishment of two extensive free trade agreements (FTAs): the Transatlantic Trade and Investment Partnership (TTIP) and the Trans-Pacific Partnership (TPP). The former between the U.S. and the EU, and the latter between the U.S. and 11 other countries, most notably Japan.

Under Donald Trump's presidency, there has been a major policy reversal regarding FTAs and international policy in general. The U.S. pulled from the negotiations on both massive multinational FTAs, in favor of future individual bilateral FTAs. The new administration also pushed for the renegotiation of the NAFTA agreement, to be known as the United States-Mexico-Canada Agreement (USMCA). There are now 20 FTAs between the U.S. and other countries, including Australia, Canada and Mexico (NAFTA/USMCA), Israel, Singapore, and South Korea [see: www 19]. Bilateral FTA between Poland and the United States would be impossible because of Poland's EU membership, and since TTIP negotiations were cut short, it seems unlikely that any EU-U.S. FTA will be finalized soon. It remains to be seen if the next administration would return to the multilateral-stance taken by Barrack Obama or continue the current strict bilateral policies.

As the U.S. has seemingly withdrawn as the driving force of multinational FTAs such as TTIP and TPP, the role has been assumed by China. Right now, the most likely successor to the TPP is the Regional Comprehensive Economic Partnership (RCEP), which would cover almost the entirety of the Asia-Pacific region, including the Association of Southeast Asian Nations (ASEAN). RCEP would also mean that China, Japan, and South Korea will finally have an FTA between them and that the U.S. will not be a member of the biggest FTA in the world.

10.4. U.S. Investment in Poland

Many U.S. based multinational enterprises are investing in Poland and CEE in general. Poland remains an attractive investment location, even if its profile has somewhat changed in the last decade. The average income in Poland has increased substantially over the years [Statistics Poland, 2019a], however, the hourly labor cost in Poland still is relatively low for European standards at EUR 10.1, compared to EUR 35.9 in France, EUR 34.6 in Germany, and EUR 27.4 in the United Kingdom [Eurostat, 2020]. As the years have gone by, the economic development of Poland has caused it to become more competitive for high-tech industries and less competitive for labor-intensive industries when compared with Eastern European countries. Surely, a developed nation cannot base its comparative advantage primarily on cheap labor.

Figure 10.2. Stock and flow of FDI between Poland and the United States, 2013–2018 (USD millions)
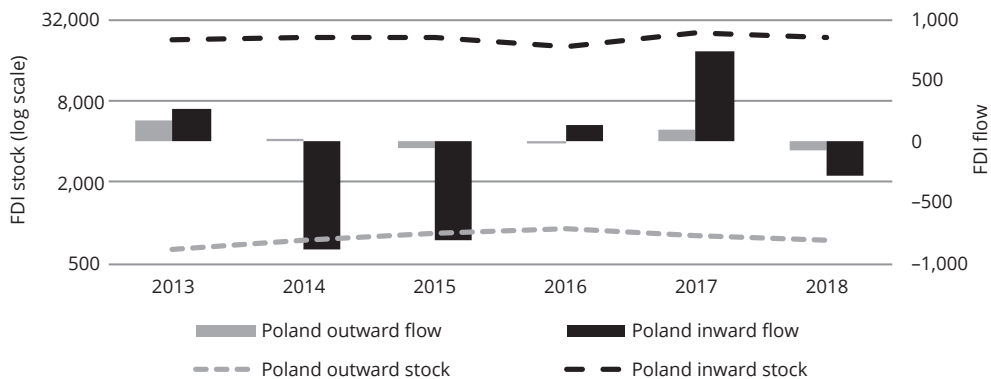
Source: OECD [2020].

Figure 10.2 shows the value of foreign direct investment between the U.S. and Poland in the 2013–2018 period. FDI stock is the more important statistic since companies might periodically withdraw their funds which causes flows to be much more volatile. In 2013, the stock of the U.S. FDI in Poland was valued at USD 23.2 billion and in 2018 it was USD 23.6 billion. The highest value was recorded in 2017 at USD 25.6 billion. In 2013 stock of Polish investment in the U.S. was valued at USD 626 million and in 2018 it was USD 747 million. It was the highest at 894 million in 2016. The stock of U.S. FDI in Poland is consistently much higher than vice versa, which comes as no surprise. The flow of U.S. FDI into Poland was highly negative in 2014 (-USD 886 million) and 2015 (-USD 809 million); it was the highest in 2017 at USD 731.5 million. For

Poland in 2013–2018, the average yearly outflow of FDI to the U.S. was valued at USD 23.4 million, while the value of the average yearly inflow of FDI from the U.S. was a negative USD 142.7 million.

According to a report by KPMG Poland [2018], the top 20 U.S. multinationals according to the revenue generated by their investments in Poland are (in descending order, 2016 data) Philip Morris International, F&P Holdings, Cargill, Whirlpool Corporation, International Paper, Ford Motor, Lear, Citigroup, IBM, Commercial Metals Company, Autoliv, Johnson Controls, Discovery, Mondelez International, PepsiCo, General Electric, Goodyear Tire and Rubber Company, Tech Data, Havi, and R.R. Donnelley. Additionally, over half of U.S. companies in Poland are located in Masovian Voivodeship. Poland has a very high comparative advantage in manufactured tobacco and a relatively low, for CEE standards, comparative advantage in car manufacturing (see: next section of this chapter).

American tech giant Microsoft has recently made a splash with its record-breaking billion-dollar digital transformation investment plan, including a new cloud datacenter region situated in the "Polish Digital Valley" [www 29; www 30]. The following is the operating revenue for the Polish divisions of some U.S. tech companies: IBM (USD 553 million, 2018), Dell (USD 481 million, 2017), Tech Data (USD 363 million, 2017), Microsoft (USD 115 million, 2018), Google (USD 101 million, 2018), Facebook (USD 14 million, 2018) [BvD, 2020]. With its strong push into CEE, Microsoft Poland is sure to increase its revenue stream while simultaneously boosting Poland's future competitiveness. Technology transfers that accompany inward FDI are highly beneficial to the recipient economy [Kowalewski, 2008]. Still, the digital divide in Poland remains relatively high [Weresa & Kowalski, 2019], which has to be taken into consideration in the case of Big Tech investment.

10.5. Bilateral Trade

Ultimately, at the core of bilateral economic relations between countries lies international trade. Due to mirror data differences, both countries reported a bilateral trade deficit for 2018. In the case of Poland, it was a deficit of USD 332 million and in the case of the United States, the deficit was much higher at USD 2,954 million [World Bank, 2020]. In this chapter, unless explicitly stated, Poland will be used as the reporter country and the United States as the partner country. For a description of data mirroring issues, see: [www 14].

Figure 10.3 shows the value of bilateral trade between Poland and the United States for the past two decades. Since 1998, Poland has recorded a persistent trade

deficit with the United States. The deficit was the highest in 2008 (USD 2.1 billion), 2010 (USD 1.6 billion), and 2007 (USD 1.4 billion). The deficit has grown much smaller in recent years. In 2017 (USD 318 million) it was the lowest since 1994 (USD 171) and since the value of exports was much higher in 2017 than in 1994 the situation in bilateral trade improved significantly. Poland's export-import ratio in bilateral trade with the U.S. was at 95.6 in 2018, which is a considerable jump compared to 53.8 in 2008 and 43.1 in 1998. In 2018, Poland's exports to the U.S. were valued at USD 7.3 billion and the value Poland's imports was USD 7.6 billion – which is a significant amount for Poland, but much less so for the U.S. In 2018 at HS2 level, Poland exported to the United States primarily: mechanical machinery (HS 84, USD 2.5 billion), electrical machinery (HS 85, USD 812 million), optical and precision instruments (HS 90, USD 673 million), furniture (HS 94, USD 527 million), and aircraft/spacecraft (HS 88, USD 337 million). Poland imported from the U.S. primarily: mechanical machinery (HS 84, USD 1.5 billion), aircraft/spacecraft (HS 88, USD 1.1 billion), mineral fuels (HS 27, USD 669 million), optical and precision instruments (HS 90, USD 666 million), and electrical machinery (HS 85, USD 588 million). The value of Poland's energy imports from the U.S. has jumped substantially, with petroleum oils (HS 2709) increasing from USD 76 million in 2017 to USD 430 million in 2018, and coal (HS 2701) increasing from USD 122 million in 2017 to USD 211 million in 2018 [ITC, 2020]. The data reveals a high value of intra-industry trade between Poland and the United States. The increase in energy imports is related to Poland's long-term strategy of alleviating the dependence on energy imports from Russia.

Figure 10.3. Bilateral trade between Poland and the United States, 1998–2018 (USD thousands)
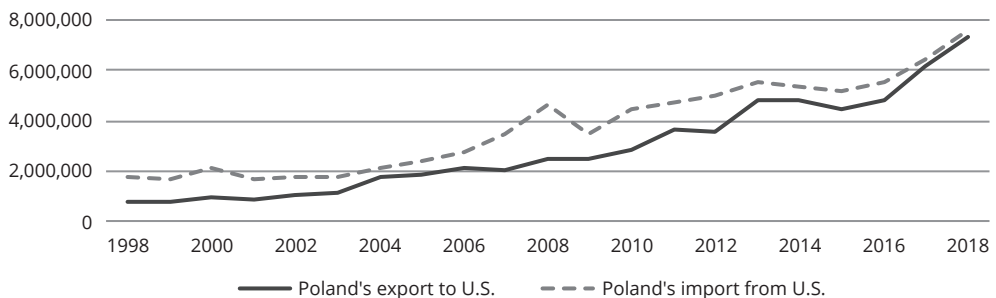

Source: World Bank [2020].

In 2018, as expected, the revealed comparative advantage index (RCA) was very different for both countries. For Poland, the value of RCA was the highest for coke of coal (SITC 325) at 17.869, dried fish (SITC 035) at 10.180, manufactured tobacco

(SITC 122) at 7.802, wood manufacture (SITC 635) at 6.169, and raw furskins (SITC 212) at 6.138. For the United States, the value of RCA is the highest for works of art (SITC 896) at 5.088, arms and ammunition (SITC 891) at 4.658, unmilled maize (SITC 044) at 4.431, cotton (SITC 263) at 4.351, and oilseeds (SITC 223) at 3.541 [UNCTAD, 2020]. Fundamentally, countries do not have to exclusively follow their comparative advantages, but it gives a useful indication of their capabilities.

Figure 10.4. RCA of the automotive industry (SITC 781) for selected countries, 1995–2018
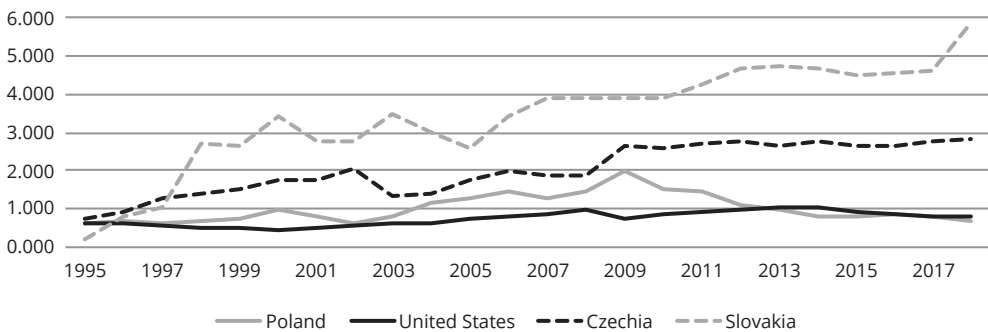
Source: UNCTAD [2020].

Figure 10.4 shows the evolution of comparative advantage in motor vehicle manufacturing for Poland, the United States, Czechia, and Slovakia. Since 2009, Poland's comparative advantage (0.698) has declined to the point where it is now lower than in the United States (0.770). Comparative advantage in other CEE countries like Slovakia (5.862) and Czechia (2.805) is now much higher than in Poland.

Table 10.3 shows the most important trade partners of Poland and the U.S. for 2018. It should come as no surprise that the United States' economy is more important for the economy of Poland than vice versa. As predicted by a basic gravity model of international trade, both countries trade primarily with their neighbors, big economies, and several usual outliers (like the Netherlands). For Poland, the importance of Germany is overwhelming, as it accounts for 28.2% of total exports and 22.4% of total imports. Other important countries for Polish imports are China (11.6%) and Russia (7.3%). The U.S. is the eighth most important partner for export and import – in both cases, it accounts for 2.8% of Poland's trade. For the United States, its most important export destinations are Canada (18%) and Mexico (15.9%). Poland places at a distant 43rd with 0.3% of total U.S. exports. When it comes to importing, the U.S., unsurprisingly, imports the most from China (21.6%), Mexico (13.4%), and Canada (12.5%). Poland takes 37th place, with 0.3% of total U.S. imports.

Table 10.3. Most important trade partners of Poland and the United States, 2018

Rank	Partner	Export share (%)	Rank	Partner	Import share (%)
Poland (reporter)					
1	Germany	28.2	1	Germany	22.4
2	Czech Republic	6.4	2	China	11.6
3	United Kingdom	6.2	3	Russia	7.3
4	France	5.6	4	Italy	5.0
5	Italy	4.6	5	France	3.7
6	Netherlands	4.5	6	Netherlands	3.6
7	Russia	3.1	7	Czech Republic	3.4
8	United States	2.8	8	United States	2.8
9	Sweden	2.8	9	Belgium	2.5
10	Hungary	2.7	10	United Kingdom	2.4
United States (reporter)					
1	Canada	18.0	1	China	21.6
2	Mexico	15.9	2	Mexico	13.4
3	China	7.2	3	Canada	12.5
4	Japan	4.5	4	Japan	5.6
5	United Kingdom	4.0	5	Germany	4.9
6	Germany	3.4	6	South Korea	2.9
7	South Korea	3.4	7	United Kingdom	2.4
8	Netherlands	2.9	8	Ireland	2.2
9	Brazil	2.4	9	India	2.2
10	France	2.3	10	Italy	2.2
43	Poland	0.3	37	Poland	0.3

Source: World Bank [2020].

10.6. Conclusions

From a purely economic perspective, the United States is a key partner of Poland. Still, in bilateral trade, Poland is of marginal importance to the U.S. – but the same can be said of most countries around the world. Poland has a substantial comparative advantage (RCA) for coke of coal, dried fish, manufactured tobacco, wood manufacture, and raw furskins; its comparative advantage in car manufacturing is relatively low compared to leading CEE countries. With that being said, the value of Poland-U.S. bilateral trade has increased over the last decades. Furthermore, American corporations and capital play an increasingly important role in Poland. The digital transformation is

in full force, accelerated by the COVID-19 pandemic, and the recent push by Microsoft into Poland is a promising sign for the future of the strong tech sector in this country and its competitiveness.

The Poland-U.S. bilateral relations extend beyond a simple economic analysis. Politically, the United States is one of the closest allies of Poland. Both countries share membership in key international organizations and a vested interest in the future of CEE. Constant declarations of commitment to furthering this relationship from both sides leave little doubt about the future direction of Poland's international policy. Undoubtedly, Poland is staking much of its national security on the military aid of the United States. In the last two decades, the alliance between the two countries has grown stronger. However, there remains a degree of inequality in both capabilities and commitments.

Bibliography

Bednarz, Ł. [2015], *Chińska Republika Ludowa wobec napięć i kryzysu w relacjach USA – Rosja*, "*Krakowskie Studia Międzynarodowe*", *12*(2), 81–94.

Brzeziński, Z. [1997], *The grand chessboard*, Basic Books.

Brzeziński, Z. [2001], *The geostrategic triad: Living with China, Europe, and Russia*, CSIS Press.

BvD [2020], *Orbis*, https://orbis.bvdinfo.com/ (accessed: 25.09.2020)

Census Bureau. [2019], *2019: ACS 1-Year Estimates Selected Population Profiles*, https://data.census.gov/cedsci/ (accessed: 6.10.2020)

Cieślak, E. [2020], *The development of Poland's air defense system: the operational context*, "Safety & Defense", *6*(1), 1–10. https://doi.org/10.37105/sd.44

Czornik, K. [2012], *Bliski Wschód w polityce zagranicznej Stanów Zjednoczonych w latach 1945– 2012*, Uniwersytet Śląski w Katowicach.

DHS [2020], *2019 Yearbook of Immigration Statistics*, https://www.dhs.gov/immigration-statistics/yearbook/2019/table3 (accessed: 6.11.2020).

Eurostat [2020], *Database*, https://ec.europa.eu/eurostat/data/database (accessed: 24.02.2020).

FEC [2017], *Federal elections 2016. Election results for the U.S. President, the U.S. Senate and the U.S. House of Representatives*, Federal Election Commission.

ITC [2020], *Trade Map*, https://www.trademap.org/ (accessed: 10.02. 2020).

Kołodko, G. [2014], *Whither the world: The political economy of the future*, Palgrave Macmillan.

Kowalewski, O. [2008], *Does foreign direct investment impact economic growth in transition economies?*, in: O. Kowalewski, M.A. Weresa (eds.), *The role of foreign direct investment in the economy*, Rainer Hampp Verlag, pp. 77–92.

KPMG Poland [2018], *American investments in Poland*, KPMG Poland.

Kupiecki, R. [2016], *The Poland-United States security relations in the light of asymmetry theory*, "Przegląd Strategiczny", 6(9), 31–48. https://doi.org/10.14746/ps.2016.1.3

Lesiński, P. [2016], *Myśl realistyczna a bezpieczeństwo Polski w kontekście współczesnych relacji z Federacją Rosyjską i Stanami Zjednoczonymi*, "Annales Universitatis Mariae Curie-Skłodowska", *63*(1), 99–117. https://doi.org/10.17951/g.2016.63.1.99

Lubecki, J. [2005], *Poland in Iraq. The politics of the decision*, "The Polish Review", *50*(1), pp. 69–92.

Milczarek, D. [2008], *Stosunki transatlantyckie w sferze polityki zagranicznej i bezpieczeństwa: Kontynuacja czy przełom? Polski punkt widzenia,* "Studia Europejskie", *2*, pp. 31–57.

OECD [2020], *OECD.Stat*, https://stats.oecd.org/ (accessed: 19.02. 2020).

Osica, O. [2002], *In search of a new role: Poland in Euro-Atlantic relations,* "Defence Studies", *2*(2), 21–39, https://doi.org/10.1080/14702430208405023

Osica, O. [2004], *Poland: A new European Atlanticist at a crossroads?,* "European Security", *13*(4), 301–322. https://doi.org/10.1080/09662830490499984

Radło, M.J. [2012], *Emerging multinationals and outward FDI development: The case of Poland*, "Eastern European Economics", *50*(2), 59–84. https://doi.org/10.2753/eee0012-8775500204

Rotfeld, A.D. [2018], *Relacje Polska – Rosja – Ukraina a zmieniający się ład międzynarodowy*, "Sprawy Międzynarodowe", *71*(1), 17–30. https://doi.org/10.35757/SM.2018.71.1.02

Seguin, B.R. [2008], *Why did Poland choose the F-16?*, "Connections", *7*(1), 1–15. https://doi.org/10.11610/connections.07.1.01

Statistics Poland [2019b], *Główne kierunki emigracji i imigracji na pobyt stały w latach 1966–2018*, https://stat.gov.pl/obszary-tematyczne/ludnosc/migracje-zagraniczne-ludnosci/ (accessed: 6.11.2020)

Statistics Poland [2019a], *Incomes and living conditions of the population of Poland– report from the EU-SILC survey of 2018*, Statistics Poland.

Stiglitz, J.E., Bilmes, L.J. [2008], *The three trillion dollar war: The true cost of the Iraq conflict*, W.W. Norton & Company.

Taras, R. [2004], *Poland's diplomatic misadventure in Iraq: With us or against us,* "Problems of Post-Communism", *51*(1), 3–17. https://doi.org/10.1080/10758216.2004.11052156

Tomeczek, A.F. [2020], *The secular stagnation hypothesis and the future of Europe's advanced economies,* "Politeja", *17*(3(66)), 53–66. https://doi.org/10.12797/Politeja.17.2020.66.03

UDSC [2020]. *Mapy i dane statystyczne imigrantów i służb migracyjnych Polski*, https://migracje.gov.pl/ (accessed: 6.11.2020)

UNCTAD [2020]. *UNCTADstat*, https://unctadstat.unctad.org/wds/ (Retrieved March 7, 2020).

Weresa, M.A. [2001], The impact of foreign direct investment on Poland's trade with the European Union. *Post-Communist Economies*, *13*(1), 71–83. https://doi.org/10.1080/14631370020031522

Weresa, M.A., Kowalski, A.M. [2019], *Competitive position of the Polish economy in the context of digital economy development,* in: A.M. Kowalski, M.A. Weresa (eds.), *Poland Competitiveness Report 2019*, SGH Publishing House, Warsaw, pp. 297–308.

World Bank [2020]. *World Integrated Trade Solution*, https://wits.worldbank.org/ (accessed: 7.02. 2020).

Zaborowski, M., Longhurst, K. [2003], *America's protégé in the east? The emergence of Poland as a regional leader*, "International Affairs", *79*(5), 1009–1028, https://doi.org/10.1046/j.1468-2346.2003.00351.x

[www 1] Official website of the President of the Republic of Poland, https://www.prezydent.pl/aktualnosci/wypowiedzi-prezydenta-rp/inne/art,921, list-prezydenta-z-okazji-100-lecia-relacji-dyplomatycznych-miedzy-rp-a-usa.html (accessed: 9.08.2020)

[www 10] Democratic National Committee, https://democrats.org/who-we-are/leadership-2-2/ (accessed: 9.08.2020)

[www 11] Republican National Committee, https://www.gop.com/leaders/national/ (accessed: 9.08.2020)

[www 12] Prawo i Sprawiedliwość, http://pis.org.pl/partia/wladze-ludzie (accessed: 9.08.2020)

[www 13] Platforma Obywatelska, https://platforma.org/ludzie (accessed: 9.08.2020)

[www 14] World Bank, https://wits.worldbank.org/wits/wits/witshelp/Content/Data_Retrieval/T/Intro/B2. Imports_Exports_and_Mirror.htm

[www 15] Polish Ministry of Defense, https://www.gov.pl/web/obrona-narodowa/system-patriot (accessed: 9.08.2020)

[www 16] Polish Ministry of Defense, https://www.gov.pl/web/obrona-narodowa/modernizacja-techniczna-szrp (accessed: 9.08.2020)

[www 17] Polish Ministry of Defense, https://www.gov.pl/web/obrona-narodowa/zwiekszenie-obecnosci-wojskowej-usa-w-polsce (accessed: 9.08.2020)

[www 18] U.S. Embassy & Consulate in Poland, https://pl.usembassy.gov/purchase_f35/ (accessed: 9.08.2020)

[www 19] Office of the United States Trade Representative, https://ustr.gov/trade-agreements/free-trade-agreements (accessed: 9.08.2020)

[www 2] U.S. Department of State, https://www.state.gov/u-s-relations-with-poland/ (accessed: 9.08.2020)

[www 20] Polish Ministry of Defense, https://www.gov.pl/web/obrona-narodowa/f-35-dla-polski (accessed: 9.08.2020)

[www 21] North Atlantic Treaty Organization, https://www.nato.int/cps/en/natolive/topics_37750.htm (accessed: 9.08.2020)

[www 22] Federal Register, https://www.federalregister.gov/documents/2008/11/17/E8-27062/additional-countries-designated-for-the-visa-waiver-program (accessed: 9.08.2020)

[www 23] Senate of the Republic of Poland, https://www.senat.gov.pl/gfx/senat/userfiles/_public/senatrp/noty2020/06.pdf (accessed: 9.08.2020)

[www 24] Polish Electoral Commission, https://pkw.gov.pl/uploaded_files/1589173994_uchwala-nr-129.pdf (accessed: 20.08.2020)

[www 25] Presidential Election in Poland, https://wybory.gov.pl/prezydent20200628/pl (accessed: 20.08.2020)

[www 26] Polska Times, https://polskatimes.pl/wybory-2020-debata-prezydencka-tvp-w-konskich-na-pytania-odpowiadal-prezydent-andrzej-duda/ar/c1–15063880 (accessed: 20.08.2020)

[www 27] Gazeta Wyborcza, https://wyborcza.pl/7,75398,26102575, debata-prezydencka-duda-w-konskich-trzaskowski-w-lesznie.html (accessed: 25.09. 2020)

[www 28] Official website of the President of the Republic of Poland, https://www.prezydent.pl/download/gfx/prezydent/pl/defaultaktualnosci/5378/1787/1/dokument_pl.pdf (accessed: 25.09.2020)

[www 29] Microsoft News Centre Europe, https://news.microsoft.com/europe/2020/05/05/microsoft-announces-a-1-billion-digital-transformation-plan-for-poland-including-access-to-local-cloud-services-with-first-datacenter-region/ (accessed: 25.09.2020)

[www 3] Congress.gov, https://www.congress.gov/bill/116th-congress/house-bill/4218/text (Accessed: 9.08.2020)

[www 30] Gazeta Wyborcza, https://wyborcza.pl/7,156282,25921203, microsoft-zainwestuje-w-polsce-miliard-dolarow-to-najwieksza.html (accessed: 25.09.2020)

[www 4] U.S. Department of State, https://travel.state.gov/content/travel/en/us-visas/tourism-visit/visa-waiver-program.html (Accessed: 9.08.2020)

[www 5] The White House, https://www.whitehouse.gov/about-the-white-house/presidents/ (accessed: 9.08.2020)

[www 6] Official website of the President of the Republic of Poland, https://www.prezydent.pl/prezydent/historia-prezydentury/iii-rzeczpospolita/ (accessed: 9.08.2020)

[www 7] Chancellery of the Prime Minister of Poland, https://www.premier.gov.pl/ludzie.html (accessed: 9.08.2020)

[www 8] United States House of Representatives, https://history.house.gov/People/Office/Speakers-List/ (accessed: 9.08.2020)

[www 9] United States Senate, https://www.senate.gov/artandhistory/history/common/briefing/Majority_Minority_Leaders.htm (accessed: 9.08.2020)

Poland's Bilateral Relations with Germany after 2010 – Dynamic Development and New Prospects for Cooperation

Katarzyna Kamińska

11.1. Introduction

The Federal Republic of Germany is one of Poland's closest and most important neighbors and trading partners with whom it has bound by strong economic ties for years. Germany's geographical proximity makes agreement and clear rules for cooperation between the two countries an obvious necessity. Poland has continuously shown keen interest in the Federal Republic of Germany and its policy. Its institutions are a benchmark for many Polish institutions, and since 1997 the country's model of social market economy has set the development path for the Republic of Poland [Kamińska, Kulińska-Sadłocha, 2019, p. 215]. Poland is Germany's second largest neighbor, after France, and its most important partner in Central and Eastern Europe.

Polish-German economic relations gained in intensity after Poland joined the European Union in 2004. It is also worth noting that in recent years there have been increasingly positive opinions on the German side about the changes in the Polish economy after 1989, which are called by the Germans an "economic miracle" or a "small economic miracle". There are also flattering opinions on the *Strategy for Responsible Development by 2020,* known as the "Morawiecki Plan". Appreciation for Poland's economic growth, Polish open market policy or the development of Polish infrastructure is also voiced by the German press and by German government institutions (such as the Embassy of the Federal Republic of Germany in Warsaw) [Deutsche Botschaft Warschau, 2020; Europa Forum, 2019; Handelsblatt, 2019].

Germany plays an important role in linking Poland to global value chains and is the largest foreign supplier of intermediate products and services for Polish exports, as well as the largest foreign exporter of Polish value added in the form of intermediates and services forming part of German exports of goods. The aim of the study is to present the development of bilateral economic relations between the two countries between

2010 and 2019, including trade and its directions, and to compare bilateral investment activities during the period analyzed. The method used for the study presented here is comparative analysis.

## 11.2. Main Directions and Dynamics of Trade between Poland and Germany in 2010–2019

The characteristic features of Polish-German trade are its complexity and high intensity. There are many different factors behind this, such as the health of the economies of both countries, the situation in the world economy and the direction of investment activities of both partners [Kamińska, 2021, p. 96]. Since 1990, Germany has been Poland's main trading partner and after 2004 this cooperation strengthened even further. Poland's accession to the European Union resulted in its gradual ascent to 8th place in the ranking of Germany's 239 most significant trading partners in 2019 [Statistisches Bundesamt, 2020b, p. 2]. For the Federal Republic of Germany, cooperation with Poland could be a source of increased geographical diversification of its value chains, as well as an important driver of further internationalization of the German economy. Germany is the largest foreign market for Polish goods and the largest foreign supplier of goods to Poland. Looking at the last thirty years, two stages of development of Polish-German trade can be distinguished [Czernicki, Czerwiński, Gurbiel, Popławski, 2019, p. 21–23]:

- 1989–2003, a period marked by dynamic growth in economic cooperation, which provided simple comparative advantages to both countries; it was also a time of transition of Poland towards a market economy, when German investors actively engaged in the privatization process in the Polish market;
- 2004 onwards, a period characterized by the deepening and intensification of advanced trade and capital links between Poland and Germany; the turning point in this process was Poland's accession to the European Union in 2004; another impetus for the development of this cooperation came with the financial and euro area crisis in 2007, a characteristic feature of which was the intensive development of intra-industry trade due to the location in Poland of German factories, especially in the automotive sector.

Poland – Germany trade between 2010 and 2018 (see Figure 11.1) breaks down into two periods: the first from 2010 to 2014, when there was a gradual increase in both Polish exports to Germany and imports from Germany to Poland. In 2010, the value of exports to Germany was USD 159.76 bn, while imports of goods from Germany

amounted to USD 178.06 bn; in 2014, the value of exports almost doubled to reach USD 309.50 bn, while the value of imports from Germany was USD 342.20 bn.

**Figure 11.1. Poland – Germany trade in 2010–2018 (USD billions)**
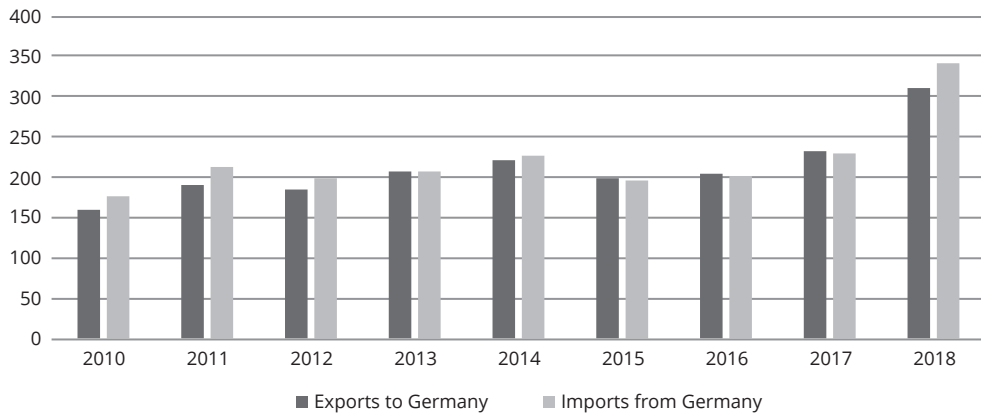
Source: Compiled from Statistics Poland, *Yearbook of Foreign Trade Statistics of Poland*, various issues from the years 2011–2020.

The second period is 2015–2018, characterized by an observable decrease in the value of both Polish exports to Germany and imports of products from that country since 2015. This may have been a response to the economic slowdown in Germany in 2014. Long-term trends in foreign trade between Poland and Germany are characterized by a strong correlation and dependence of Polish foreign trade on the economic situation of the Federal Republic of Germany and vice versa [Czernicki et al., 2019, p. 47]. In 2015, exports of goods to the country amounted to USD 200.34 bn and imports from the Federal Republic of Germany reached USD 197.68 bn. In the years that followed, these figures gradually increased, although in 2018 they again saw a slight decrease: exports to Germany were valued at USD 309.50 bn and imports from Germany at USD 342.50 bn. A characteristic feature of this exchange is also the persistent excess value of imports from Germany over exports to that country. In 2019, trade between the two countries reached record levels. At that time, exports amounted to EUR 235.8 bn and imports to nearly EUR 234 bn [Statistics Poland, 2020]. In Q1 2020, despite the outbreak of the pandemic, there was no decrease in trade (in goods). They increased by 3.1% compared to Q1 2019. It should be noted that this was an exception among Germany's other trading partners in Central and Eastern Europe (the Czech Republic saw a decrease of 4.1% and Russia of 14.2%) [Serwis Rzeczpospolitej Polski, 2020], which may testify to the stability of these trade relations.

As regards the share of exports to and imports from Germany in Polish trade, it can be seen that over the whole period under study it displayed minor changes, with total exports to Germany between 2010 and 2018 ranging from 26% to 27.6% and imports at 21% to 23% (see Figure 11.2).

Figure 11.2. Share of trade with Germany in Poland's trade, 2010–2018 (%)
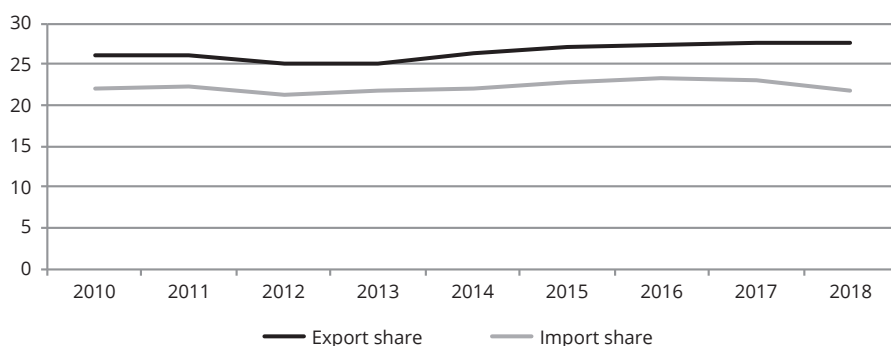
Source: Ibid.

By contrast, in 2019, Germany's share of exports decreased by 0.6 pp compared with 2018 to 27.6%, while imports decreased by 0.8 pp and represented 21.8% [Statistics Poland, 2020].

One of major features of Polish exports to Germany is its relatively permanent commodity structure. The categories representing the highest proportions of Polish goods exports in 2019 were: machinery and transport equipment (35.6%), miscellaneous manufactured articles (22.9%), manufactured goods classified chiefly by material (18.1%), followed by food and live animals (9.3%), as well as chemicals and related products (8.4%) [Statistics Poland, 2020].

On the other hand, Polish imports from Germany in 2019 were mainly dominated by commodity groups such as: machinery and transport equipment (38.8%), manufactured goods classified mainly by material (19.6%), chemicals and related products (16%), miscellaneous manufactured articles (12%), and food and live animals (7%) [Statistics Poland, 2020].

Due to the emergence of the coronavirus pandemic in 2020, questions arise about its impact on Polish-German trade. The above commodity-based analysis of Polish exports shows a significant concentration of this cooperation in the automotive and electromechanical industries. According to Handelsblatt [2019], citing data from the Institute of German Economy (IW), the pandemic worsened the situation in the German automotive industry, which at this point ceased to be the driving force behind the German economy. Before the temporary closure of factories in April 2020,

existing supply chains had been broken. This situation posed a major threat to Poland's economic situation, and Polish companies, which are part of the supply chains of German producers, faced the threat of falling orders [AHK, 2020a]. In addition, reports appeared in industry press about possible layoffs in the largest German automotive plants in Poland, which include Volkswagen factories located in Poznan, Września and Swarzędz. It was speculated that by the end of 2021. up to 450 people could lose their jobs there [Woźniak, 2020]. In June 2020, Germany adopted a stimulus package of EUR 130 bn for the national economy. It provided support to sectors of the economy particularly affected by the pandemic, such as the automotive industry, through financial incentives for the production and purchase of electric and hybrid vehicles and increased government investment in renewable energy and digitalization [Kucharczyk, 2020]. As a result of its stabilisation policy, the volume of orders in the German industry increased in October 2020 and revenues in the automotive industry in that month were higher than in February 2020 [Investing.com, 2020]. The fastest rate of order growth was recorded for non-euro area countries – especially from China and the US, which are large markets for German cars. In the near future, the situation in the German industry is expected to improve further (despite the slowdown caused by the lockdown), which will have a positive impact on Poland-Germany trade and the situation of Polish enterprises which are sub-suppliers to German factories.

11.3. German Direct Investment in Poland between 2010 and 2019

Poland's systemic transformation, which began in the 1990 s, attracted great interest from German investors who were actively involved in the privatization of the Polish economy. The attractiveness of Poland as destination for German FDI was most likely due to several reasons. Initially, these were certainly Poland's geographical proximity and economic potential, offering a large market with a favorable relationship between labor cost and workforce productivity, a booming economy, a large pool of potential consumers, a firm legal framework, and a high percentage of people speaking German and English [Kamińska, 2021, pp. 97–98]. In 2018, the results of the Investment Climate Survey conducted by the Polish-German Chamber of Commerce and Industry (AHK) ranked Poland second in Central and Eastern Europe, just behind the Czech Republic, in terms of offering the best investment conditions. The strengths of the Polish economy include four factors: workforce skills, quality of higher education, fight against corruption, and the quality and availability of local suppliers [IGCC, 2018]. Poland is currently seen by Germany as the most stable economy in Central Europe

[AHK, 2017, p. 6]. Measures taken by the Government of Poland, which is seeking to create a system of attractive incentives for investors and implement the guidelines of the *Strategy for Responsible Development by 2020*, one of the objectives of which is to attract foreign private investors for the production of modern, innovative medium and high-technology products remain important here [Council of Ministers, 2016, p. 122]. The attractiveness of the Polish market is further demonstrated by the fact that FDI located in Poland between 2004 and 2016 delivered a relatively high annual rate of return, at an of 8.2% at the time [Janowicz, 2018].

It is estimated that between the beginning of the systemic transformation process in late 1989/early 1990 and 2018, Poland has seen a cumulative inflow of German FDI of around EUR 35 bn, located in the high-value-added manufacturing industry (in particular, the automotive industry) and in the financial and insurance sector [Bittorf, 2020, p. 1; Kamińska, 2021, p. 98]. In 2018, Germans invested in Poland 16,6% of their foreign capital. The most popular regions they chose in 2017 were three Polish voivodeships: Mazowieckie (30.6% of all German investment), Wielkopolskie (23.0%), and Dolnośląskie (17.9%) [Statistics Poland, 2018, pp. 38–41]. The reason for choosing these particular regions for the location and development of investment may be due to their level of economic development, state of infrastructure, availability of resources, the knowledge sought, appropriate geographical proximity and fluent use of German by the inhabitants and their mentality similar to that of the investors [Kamińska, 2021, p. 102]. The latter two characteristics concern in particular the provinces of Western Poland.

The financial crisis of 2007–2009 and the euro area crisis had no negative impact on the size and pattern of Polish – German trade and the volume of German investment in Poland. After 2008, the dynamics of Polish – German economic cooperation was seen to be higher than that of Germany's trade with the Visegrad Group countries (V4). At that special time, German producers pointed out that the manufacturing plants they established in Poland were able to ensure a high price to product quality ratio, and that the product price was a very important factor for consumers during the crisis affecting their purchasing decisions. Thus, the situation caused an increase in the number of German automotive plants opened in Poland [Czernicki et al., 2019, p. 25].

The inflow of German FDI to Poland between 2010 and 2019 was characterized by a moderate upward trend throughout the period considered (see Figure 11.3).

In 2010, FDI inflow amounted to EUR 23.4 bn and by 2019 it reached EUR 37.2 bn, making Germany the second largest investor in Poland, after the Netherlands. According to the latest data published by NBP, investors from Germany are mainly present in the Polish market in manufacturing, trade and financial intermediary services [NBP, 2020,

p. 21]. Such a large scale of German investment activity in Poland be interpreted as a sign of the intensive involvement of German companies in cross-border and local supply chains. This certainly makes it easier to gain competitive advantages, including: control of the supply model, tax optimization, ensuring the appropriate quality and standards of production, harmonization of business processes, as well as distribution control [Czernicki et al., 2019, p. 52].

Figure 11.3. Inflow of German FDI to Poland in 2010–2019 (EUR millions)
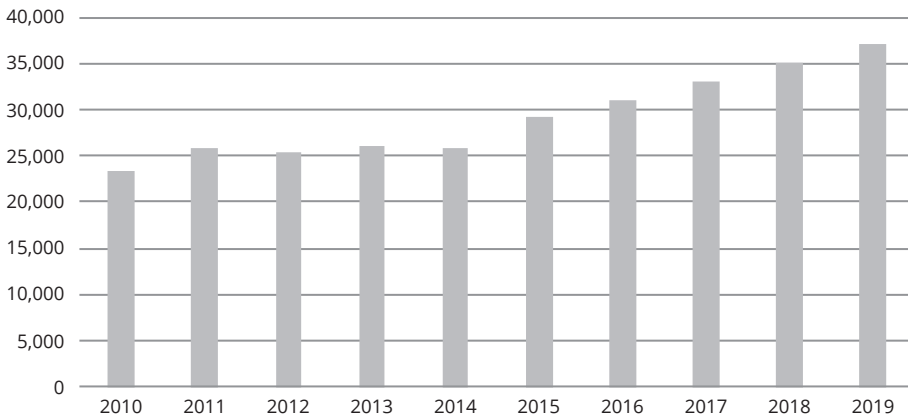
Source: Deutsche Bundesbank [2011, pp. 14 and 49; 2015, p. 41; 2019, p. 41; 2020, pp. 10–11].

In 2017, there were 4,917 German business operators registered in Poland. According to Statistic Poland, as much as 99.1% of this type of funds was invested in companies with a controlling foreign interest, and 88.0% in entities with ten or more employees. Most of the German capital was invested in trade, as well as in repair of motor vehicles (36.7%) and manufacturing (32.6%) [Statistics Poland, 2018, pp. 38–41; Kamińska, 2021, p. 99].

Analyzing the list of the largest foreign investors in Poland, prepared in 2019. by PAIiIZ, it can be seen that the medium-tech manufacturing sector (238 companies out of 468 entities) is of high interest to German investors, which confirms the overall long-standing trend for Germany to invest capital in Poland in medium-low and low-tech areas. On the other hand, German investment in the Polish high-tech industry is still lacking [Kamińska, 2021, p. 101].

11.4. Polish Direct Investment in Germany between 2010 and 2019

The Federal Republic of Germany is among the world's top ten FDI recipients. With reliable infrastructure, highly skilled staff, a positive social climate, a stable legal environment, and world-class R&D, Germany is consistently classified by consulting firms and the United Nations Conference on Trade and Development (UNCTAD) as one of the most attractive places to invest. In 2019, the majority of foreign investment (43%) in German Länder came from EU member states [GTAI, 2020]. The German market is also a particularly attractive region for Polish investors. It should be noted, however, that access to it is difficult. This is attributable, among other things, to high saturation of the German economy, as well as a significant degree of its oligopolization and a lower assessment of Polish products by German consumers compared to local ones [Czernicki et al., 2019, p. 76]. Consumer conservatism of Germans, who are unwilling to quickly accept new brands, also plays an important role here. Therefore, Polish producers entering the German market decide to sell their products under the brand name of the distribution network (private label) in the initial stages. Another tactic is to rename the product so that it is associated at the first moment with a country which is recognized for high quality and popularity of certain product groups. Examples include the fuel company Orlen S.A., which operates in the German market under the well-known Star brand, or the jewelry company Apart, selling its products under the Italian brand Artelioni. Only when the position of Polish producers in the German market stabilizes, some of them decide to sell products under their own brand [Łada, 2017]. In addition, other difficulties related to the expansion of Polish companies in the German market include formal requirements, quality requirements and, consequently, the price-quality ratio of the products offered. The key to success in that market is the timeliness of delivery, conformity with the order, and a responsible approach to commitments made. In order to establish a presence in the German market, Polish companies decide to set up a local subsidiary or acquire another company.

A comparative analysis of the investment activity of German investors in Poland and Polish ones in Germany shows a clear asymmetry in the relationship between the FDI inflows to both countries. Polish investment in Germany is significantly lower, as shown in the chart below (Figure 11.4).

The inflow of FDI from Poland to Germany during the period under analysis was characterized by significant fluctuations, which may indicate multi-directional, dynamic capital flows between the two countries. According to experts, the level of Polish companies' investment abroad was also due to the proper use of available development

opportunities in the face of the global economic crisis. The record performance was reported in 2011, when the inflow of Polish FDI into Germany exceeded EUR 2 bn. In the following years, its level decreased (the lowest was recorded in 2014 at EUR 1,071 bn), to significantly increase its value in the last two years and reach EUR 2 bn again in 2019.

Figure 11.4. Inflow of Polish FDI to Germany in 2010–2019 (EUR millions)
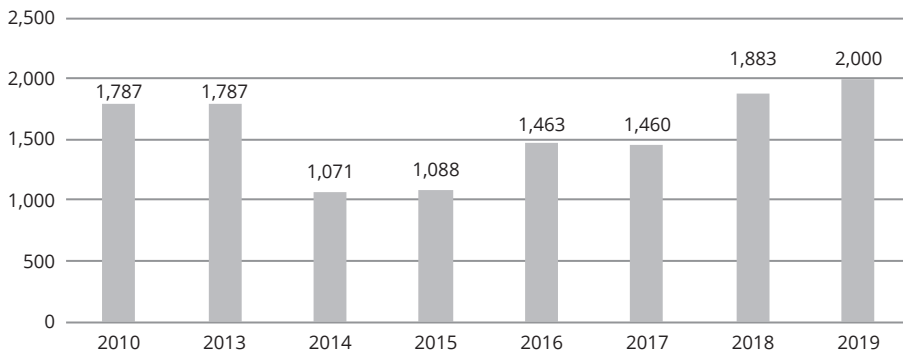
Source: Ibid.

One of the important problems encountered when attempting a quantitative analysis of Polish investment in Germany or its regional distribution is the rather difficult access to data. The Deutsche Bundesbank does not publish information on the regional distribution of Polish investment, invoking statistical secrecy. According to Germany Trade & Invest, a federal agency serving foreign investors, in 2017, the majority of Polish firms operated in Berlin. There were 580 entities with 1,350 employees. Ranking next in terms of investment were North Rhine – Westphalia – 250 firms with 2,340 employees, followed by Brandenburg (210 firms, 1,740 employees), Saxony (150 firms, 1,030 employees), and Bavaria (90 firms, 2,850 employees). The latter land has the highest number of personnel employed by Polish investors [GTAI, 2017, p. 10–12; Kamińska 2021, p. 103].

Between 2011 and 2016, Polish projects in Germany involved economic sectors such as textile industry (20%), software and IT services sector (18%), industrial machinery, equipment and tools sector (10%), business services sector (8%), consumer products sector (7%), metal sector (7%), and other industries (30%). In turn, projects implemented as part of economic activity concerned: sales, marketing and support (44%), retail (22%), business services (9%), head offices (7%) and other sectors (18%) [GTAI, 2017, p. 12; Kamińska, 2021, p. 104].

In this discussion, it is worth noting another issue related to the development of Polish – German economic relations, concerning short-term labor migrations of Poles to Germany. Unfortunately, this problem is not high on the international agenda on migration [Nowosielski, 2019, p. 77–100]. This is quite puzzling, because, as a community, Poles are a significant group in Germany (second only to Turks), which is quite well assimilated in German conditions, but is not present in public discourse. According to Statistisches Bundesamt data, in 2019 there were around 863,000 Poles living in Germany, with the highest proportion in North Rhine-Westphalia and Bavaria [Statistisches Bundesamt, 2020b]. The year 2011 should be considered a landmark date for the development of Poles' migration to Germany, when the Federal Republic of Germany officially opened up its labor market to immigrants from the new EU countries. In that year, the number of Polish migrants living in Germany was 468,481 [Nowosielski, 2019, p. 85]. Until then, Polish migrants had chosen other countries as potential destinations for their economic migrations, and in Germany they had taken up work as an alternative source of income, especially in the services sector. A fairly typical form of employment in Germany was the establishment of sole-proprietorships by Poles. Furthermore, due to the importance of certain professions for the German economy, the Federal Republic of Germany abolished restrictions on the employment of foreigners (including Poles) in certain professions involving technical education in the IT, electronic and mechanical engineering industries.

According to information published by the Polish Embassy in Berlin, in 2018 there were about 180,000 sole proprietorships set up by Polish citizens, of which nearly 50,000 were craft businesses. It is estimated that more than 40% of firms operate in the construction industry, and almost 15% in services: horticulture, markets, real estate, building maintenance. By contrast, 12% are a companies that operate in trade and vehicle repair, and more than 10% in elderly and disabled care, and in transport and food services [Olechowski, 2018; Kamińska, 2021, p. 104].

Polish companies investing in Germany are active in many industries. They include: fuels, chemicals, IT, assembly and construction, as well as trade and services. Germany attracts many Polish companies, which are increasingly investing and creating jobs in these sectors. The largest Polish investors in Germany are [Serwis Rzeczpospolitej Polskiej, 2020]:

- PKN Orlen S.A. – purchase of a filling station chain,
- Comarch S.A. – establishment of a competence center in Dresden;
- Sanplast Sp. z o.o. – partnering with Hoesch Design;
- CIECH S.A. – purchase of Sodawerk Staßfurt GmbH;
- Ergis Eurofilms S.A. – acquisition of MKF-Folien GmbH and Schimanski;
- Asseco Germany AG – acquisition of A+P AG, Matrix24 AG, update4u Software;

- KOPEX S.A. – purchase of Hansen Sicherheitstechnik AG;
- ZA Tarnów S.A. – acquisition of Unylon Polymers GmbH;
- Boryszew S.A. – purchase of YMOS GmbH, YMOS Ubrig GmbH and YMOS Prenzlau GmbH;
- Track Tec – acquisition of ThyssenKrupp GfT Gleistechnik.

A very interesting issue in this discussion are cases of acquisition of German companies by Polish investors. They involve medium-sized German companies with both recognized brands and a well-established position in foreign (including non-European) markets. One example is Polska ASM Group S.A., a company in the field of advanced marketing and sales support technologies. In 2018, it took over Vertikom, a German group which is three times larger than ASM in terms of turnover. The joint investment throughout the DACH region, where the company operated, was carried out by a special purpose vehicle in which 50.1% of the share capital is owned by ASM Group S.A. and the remaining 49.9% is held by a fund managed by the Polish Development Fund (PFR) [Deutsche Welle, 2020]. Mergers and acquisitions can be a way for Polish companies to increasingly enter the German market in order to bypass a number of trade barriers and the typical difficulties associated with developing a business there from scratch. Incentives for such practices also come from the Government of Poland and German partners. On 11 March 2020, the Ministry of Enterprise and Technology together Bank Gospodarstwa Krajowego held a special conference in Warsaw for the Polish business community and German partners entitled *Mergers and Acquisitions in Germany as an Opportunity for the Expansion of Polish Companies*. This seems to be the right direction for Polish companies to expand into the German market, although the current pandemic situation may slow down this process. In this regard, the actions taken by the governments of both countries to facilitate mergers and acquisitions involving German entities will be important. In addition, the e-commerce sector, energy transition activities or AI technologies and data science, funded by the Federal Government, could provide opportunities for Polish companies in the near future.

11.5. Conclusions

Polish-German bilateral relations in the first half of the 21st century have been developing dynamically. The analysis shows a significant asymmetry between German FDI in Poland and Polish FDI in Germany. It should be noted that Polish investment in Germany and its development is an important indication of significant changes in Poland – Germany economic relations. This is clearly testified by the growing potential of Polish companies. Due to acquisitions made by Polish companies, it is often

possible to save German companies from closure. Both countries are now strongly export-oriented and have a similar goal of developing foreign expansion. The COVID-19 pandemic can provide them with both many challenges and opportunities for cooperation, especially in the fight against the coronavirus pandemic. There seems to be a chance for Poland to recover from the COVID-19 crisis least affected by economic slowdown of all EU countries, as can be inferred from the European Commission forecasts. EU experts predict that Poland will see its GDP fall by 4.6% in 2020 and grow by 4.3% in 2021 [Bittorf, 2020, p. 3]. According to the latest calculations by Statistics Poland, the decrease in GDP in Poland in 2020 was lower than EU forecasts and amounted to 2.8% [Statistics Poland, 2021]. This means that the stability of Polish-German trade may be maintained, although much depends on the measures taken by the governments of both countries to protect exporters and jobs in key industries, especially in the automotive industry, which has suffered greatly during the current pandemic situation.

Bibliography

AHK [2017], *Investitionen in Polen. Ein unausgeschöpftes Potenzial. Erfahrungen deutscher Investoren*, Polsko-Niemiecka Izba Przemysłowo-Handlowa, Warsaw.

AHK [2020a], *Kłopoty niemieckiego przemysłu motoryzacyjnego*, https://ahk.pl/pl/media/ aktualnosci/news-details-pl/klopoty-niemieckiego-przemyslu-motoryzacyjnego (accessed: 24.09.2020).

AHK [2020b], *Poland in the Eyes of Foreign Investors*, https://ahk.pl/marktberatung/investing- -in-poland (accessed: 20.09.2020).

Bittorf, M. [2020], *Will Economic Relations Between Germany and Poland Thrive Post-Coronavirus?*, KfW Research No. 296.

Council of Ministers [2016], *Strategia na rzecz odpowiedzialnego rozwoju do roku 2020*, Council of Ministers, Warsaw.

Czernicki, Czerwiński, Gurbiel, Popławski [2019], *Nowa współzależność. Perspektywy rozwoju polsko-niemieckiej współpracy gospodarczej*, Klub Jagielloński, Warsaw.

Deutsche Botschaft Warschau [2020], *Deutsch-Polnische Wirtschaftsbeziehungen*, https:// polen.diplo.de/pl-de/02-themen/02–3-wirtschaft/03-dt-poln-wirtschaftsbeziehungen (accessed: 20.09.2020).

Deutsche Bundesbank [2011], *Foreign Direct Investment Stock Statistics. Special Statistical Publication 10*, Frankfurt am Main.

Deutsche Bundesbank [2015], *Foreign Direct Investment Stock Statistics. Special Statistical Publication 10*, Frankfurt am Main.

Deutsche Bundesbank [2019], *Foreign Direct Investment Stock Statistics. Special Statistical Publication 10*, Frankfurt am Main.

Deutsche Bundesbank [2020], *Direct Investment Statistics. Statistical Series*, Frankfurt am Main.

Deutsche Welle [2020], *Ekspansja na Zachód. Jak polskie firmy wchodzą na niemiecki rynek*, https://www.dw.com/pl/ekspansja-na-zach%C3%B3d-jak-polskie-firmy-wchodz%C4%85-na-niemiecki-rynek/a-54118253 (accessed: 23.09.2020).

Europa Forum [2019], *Das Polnische Wirtschaftswunder der Letzten 30 Jahre*, https://europa--forum.org/2019/05/das-polnische-wirtschaftswunder-der-letzten-30-jahre (accessed: 20.09.2020).

GTAI [2017], *Doing Business in Germany. Services for Polish Companies*, Germany Trade & Invest, Warsaw.

GTAI [2020], *FDI Reporting 2019*, Germany Trade & Invest, Warsaw.

Handelsblatt [2019], *Europa Driftet Ökonomisch Auseinander – und Osteuropa Fällt Positiv auf*, https://www.handelsblatt.com/politik/konjunktur/nachrichten/konjunktur-europa-driftet-oekonomisch-auseinander-und-osteuropa-faellt-positiv-auf/24898504.html, (accessed: 20.09.2020).

IGCC [2018], *Economic Survey 2018*.

Investing.com [2020], *Niemcy – nowe zamówienia w przemyśle*, https://pl.investing.com/economic-calendar/german-factory-orders-130 (accessed: 8.03.2021).

Janowicz, A. [2018], *Wpływ bezpośrednich inwestycji zagranicznych na wybrane wielkości makroekonomiczne w polskiej gospodarce w latach 2004–2016*, "Kwartalnik Naukowy Uczelni Vistula", 2(56), pp. 21–41.

Kamińska, K. [2021], *German-Polish Trade after 2004. German FDI in Poland. Polish FDI in Germany. A Comparative Analysis*, in: *Process of Moving Up the Global Value Chains. A Case of Polish-German Economic Cooperation*, T. Napiórkowski, M.J. Radło, J. Wandel (eds.), SGH Publishing House, Warsaw (in print).

Kamińska, K., Kulińska-Sadłocha, E. [2019], *Polityka wspierania eksportu w Polsce na tle rozwiązań niemieckich*, in: *Polityka gospodarcza Niemiec i Polski w kontekście europejskim: Aktualne tendencje i implikacje dla współpracy bilateralnej*, J. Wandel, K. Kamińska (eds.). SGH Publishing House, Warsaw, pp. 195–216.

Kucharczyk, M. [2020], *Niemcy: Tarcza antykryzysowa o wartości 130 mld euro. 50 mld na klimat*, https://www.euractiv.pl/section/energia-i-srodowisko/news/niemcy-klimat-energia-srodowisko-tarcza-antykryzysowa-angela-merkel/ (accessed: 8.03.2021).

Łada, A. [(2017], *Ein Stabilisierender Faktor. Zur Bedeutung der Wirtschaft in den Heutigen Deutsch-Polnischen Beziehungen*, Arbeitspapier FG EU/Europa Nr. 02, SWP Berlin.

NBP [2020], *Zagraniczne inwestycje bezpośrednie w Polsce i polskie inwestycje bezpośrednie za granicą w 2018 roku*, National Bank of Poland, Warsaw.

Nowosielski, M. [2019], *Dynamika migracji z Polski do Niemiec i charakterystyka polskiej zbiorowości*, "Studia BAS", 4(60), pp. 75–100.

Olechowski, J. [2018], *Jak Polacy inwestują, to w Niemczech*, https://www.newsweek.pl/biznes/inwestycje-polskich-firm-pkn-orlen-comarch-niemcy-gospodarka-handel-newsweekpl/vq0c11d (accessed: 17.11.2019).

Serwis Rzeczpospolitej Polskiej [2020], *Polska w Niemczech. Informator ekonomiczny*, https://www.gov.pl/web/niemcy/informator-ekonomiczny (accessed: 20.09.2020).

Statistics Poland [2018}, *Działalność gospodarcza podmiotów z kapitałem zagranicznym w 2017 r.*, Statistics Poland, Warsaw.

Statistics Poland [2020], *Informacje sygnalne. Obroty towarowe handlu zagranicznego ogółem*, Statistics Poland, Warsaw.

Statistics Poland [2021], *Informacje sygnalne. Produkt krajowy brutto w 2020 r. – szacunek wstępny*. Statistics Poland, Warsaw.

Statistics Poland, *Yearbook of Foreign Trade Statistics of Poland*, various issues from the years 2011–2020, Statistics Poland, Warsaw.

Statistisches Bundesamt [2020a], *Anzahl der Ausländer aus Polen in Deutschland von 2009 bis 2019*, https://de.statista.com/statistik/daten/studie/530499/umfrage/auslaender-aus--polen-in-deutschland/ (accessed: 9.11.2020).

Statistisches Bundesamt [2020b], *Foreign Trade. Ranking of Germany's Trading Partners in Foreign Trade*, https://www.destatis.de/EN/Themes/Economy/Foreign-Trade/Tables/order-rank-germany-trading-partners.pdf;jsessionid=EBA32234BAB208874F6E5F4EB-97BC7D0.internet8722?__blob=publicationFile (accessed: 20.09.2020).

Woźniak, A. [2020], *Jens Ocksen, prezes Volkswagen Poznań: To zupełnie inny kryzys*, https://moto.rp.pl/biznes/41619-jens-ocksen-prezes-volkswagen-poznan-to-zupelnie-inny-kryzys (accessed: 24.09.2020).

Polish-Ukrainian Economic Relations in 2010–2020 with a Particular Focus on Economic Migration

Krzysztof Falkowski

12.1. Introduction

Due to its geographical location, the size and potential of its economy, as well as its cultural proximity and importance in Poland's Eastern policy, Ukraine has been and remains an important economic partner of Poland. Mutual trade and investment relations of the two countries have been further strengthened in recent years by the large scale of migration of Ukrainians, mainly for economic reasons, to Poland. All this justifies the need to assess the level of development of economic relations between Poland and Ukraine in the second decade of the 21st century, with a particular focus on the importance of economic migration of Ukrainians to Poland in the context of these bilateral economic relations.

The study consists of four parts. First, an in-depth analysis of trade between Poland and Ukraine in the second decade of the 21st century is carried out, with a particular focus on its commodity structure. Part two overviews investment cooperation between the two countries, focusing on mutual direct investment. Next, part three discusses the scale and importance of Ukrainians' labor migration to Poland. The analysis covered the period 2010–2019 and the choice of its end, i.e. 2019, was dictated by the availability of the necessary data. The last, fourth part of the study focuses on presenting in a synthetic way the prospects for the development of bilateral economic relations between Poland and Ukraine in the context of the COVID-19 pandemic.

This paper argues that in the second half of the 21st century, Ukraine was by far more important economic partner to Poland in terms of trade than investment cooperation. A special role in the economic relations during the period concerned was played by the economic migration of Ukrainians to Poland, which should be viewed as a definitely positive development for both the Polish and Ukrainian economies.

12.2. Trade between Poland and Ukraine in 2010–2019

At the beginning of the second decade of the 21st century, following a temporary period of decline in the value of bilateral trade between Poland and Ukraine in 2008 and 2009 as a consequence of the 2008 global economic crisis, which hit the Ukrainian economy extremely hard (suffice it to say that the country's GDP fell by as much as 14.8% in 2009 compared to 2008), the trade started to grow significantly from year to year, reaching USD 7.9 billion in 2013 (Figure 12.1). Unfortunately, the political developments in eastern Ukraine in 2014, namely Russia's annexation of Crimea and the start of bloody battles with separatists, openly supported by the Russian side, have had an adverse impact on Poland's trade with Ukraine. This was evidenced by an 18.1% decrease in the value of bilateral trade in goods (compared to the previous year) to USD 6.5 billion in 2014 and decline in trade between Poland and Ukraine by as much as 23% (compared to the previous year) in 2015 to USD 5 bn, a record low of in the second decade of the 21st century. The changes witnessed in the following years, including the development of both economies and the relative stabilization of the political situation in Ukraine, clearly resulted in an increase in bilateral trade, mainly due to the dynamically increasing Polish exports to the Ukrainian market at that time..

Figure 12.1. Bilateral trade between Poland and Ukraine in 2010–2019
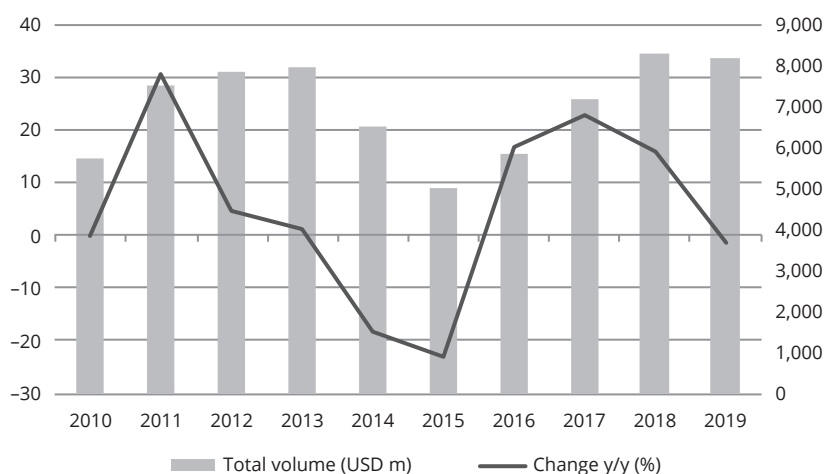

Source: Compilation by the author based on UN COMTRADE data.

Over the analyzed period (2010–2019), Ukraine was distinctly a more important partner for Poland in exports than in imports, the consequence of which was Poland's

positive balance of bilateral trade, ranging around USD 2 bn, with the clear exception of 2013, when it reached as much as USD 3.5 bn (Figure 12.2).

Figure 12.2. **Polish exports to Ukraine and imports from Ukraine and the balance of trade between the two countries in 2010–2019**
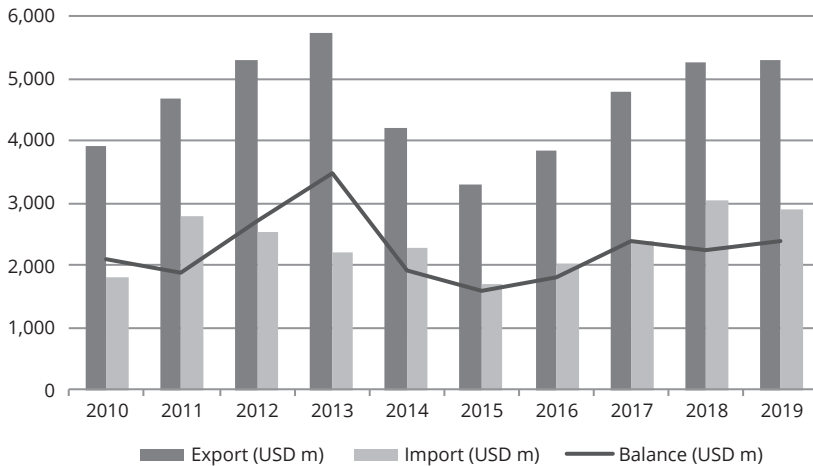
Source: Ibid.

Looking at the shares of Poland and Ukraine in exports, imports and total bilateral trade between 2010 and 2019 (Table 12.1), as well as their positions in total exports and imports (Table 12.2), it is very clear that Poland was by far a most important trading partner for Ukraine than Ukraine for Poland.

Between 2010 and 2019, Poland was among the five most important trading partners of Ukraine in terms of both exports and imports (with one exception in 2015, when Ukrainian exports ranked 6th). Poland's share of total Ukrainian imports, ranging from 5.68% in 2011 to as much as 9.77% in 2016, was significantly higher than Poland's share of total Ukrainian exports. The latter ranged between 3.5% in 2013 and a maximum of 6.41% in 2018.

On the other hand, in Polish exports, Ukraine's importance was greater than in total imports. While in former share ranged from 1.7% in 2015 to 2.94% in 2012, the latter was between 0.9% in 2015 and a mere 1.33% in 2011–2012. Not surprisingly, therefore, Ukraine usually ranked among Poland's top ten trading partners in total exports and only among the third ten countries participating in total Polish imports (with a few exceptions – see Table 12.2).

In bilateral trade relations, in addition to their size as measured by the value of trade, the structure of that trade, which reflects the specialization and commercial potential of the partners, is also extremely important.

Table 12.1. Poland's and Ukraine's shares of their exports, imports and total trade in 2010–2019 (%)

	Poland's share of Ukraine's imports	Poland's share of Ukraine's exports	Ukraine's share of Poland's exports	Ukraine's share of Poland's imports	Poland's share in Ukraine's total trade	Ukraine's share of Poland's total trade
2010	6.45	3.53	2.49	1.04	5.11	1.73
2011	5.68	4.08	2.49	1.33	4.95	1.88
2012	6.24	3.71	2.94	1.33	5.10	2.11
2013	7.42	3.50	2.80	1.08	5.65	1.94
2014	7.74	4.24	1.96	1.06	6.00	1.51
2015	8.81	4.46	1.70	0.90	6.61	1.30
2016	9.77	5.53	1.95	1.07	7.73	1.52
2017	9.68	5.51	2.16	1.10	7.73	1.63
2018	9.22	6.41	2.01	1.13	7.95	1.57
2019	–	–	2.10	1.18	–	1.64

Source: Ibid.

Table 12.2. Poland's' and Ukraine's positions in their total exports and imports in 2010–2019

	Poland's position in Ukraine's exports	Poland's position in Ukraine's imports	Ukraine's position in Poland's exports	Ukraine's position in Poland's imports
2010	5	4	12	21
2011	4	5	10	19
2012	4	5	8	19
2013	5	4	8	21
2014	5	5	14	21
2015	6	5	14	22
2016	3	5	13	22
2017	2	4	14	21
2018	2	5	15	20
2019	–	–	16	19

Source: Ibid.

Polish exports to Ukraine are strongly dominated by highly processed industrial goods with a high value added (Table 12.3). In 2019, the three commodity groups with the largest shares of Polish exports to Ukraine were: nuclear reactors, boilers, machinery and mechanical appliances and parts thereof (12.16%); vehicles other than railway or tramway, parts and accessories thereof (11.28%), and electrical machinery

and equipment and parts thereof, sound recorders and reproducers, television image and sound recorders and reproducers; parts and accessories thereof (7.69%). It is worth noting that the above three commodity groups of the highest importance in Polish exports to Ukraine accounted for a total of 31.13% of the value of these exports in 2019. If the share of another commodity group, i.e. plastics and articles thereof (6.97%) is added to this, a total result of as much as 38.1% is achieved. This indicates a high degree of concentration and thus a low diversification of the Polish export offer to the Ukrainian market. Also noteworthy is the marked increase in the share of high-tech, high-value-added goods in Polish exports to Ukraine between 2010 and 2019, involving, in particular, goods of the groups: vehicles other than railway or tramway rolling stock, and parts and accessories thereof (more than a two-fold increase, taking into account the relevant share in 2019 and 2010), and nuclear reactors, boilers, machinery and mechanical appliances and parts thereof (an increase of 33.3% over the same period).

Table 12.3. Commodity structure of Polish exports to Ukraine in selected years of the period 2010–2019 (in accordance with HS2 classification, %)*

Code	Commodity group	2010	2015	2019
84	nuclear reactors, boilers, machinery and mechanical appliances and parts thereof	9.12	9.32	12.16
87	vehicles other than railway or tramway rolling stock, parts and accessories thereof	5.33	4.84	11.28
85	electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers; parts and accessories thereof	9.70	8.94	7.69
39	plastics and articles thereof	8.35	8.78	6.97
33	essential oils and resinoids; perfumery, cosmetic or toilet preparations	4.57	2.94	3.04
73	articles of iron or steel	2.77	1.97	2.67
48	printed books, newspapers, pictures and other products of the printing industry; manuscripts, typescripts and plans	7.41	3.32	2.58
72	iron and steel	3.28	2.71	2.47
31	fertilizers	0.11	0.14	2.28

* 10 commodities of greatest significance. Arrangement in descending order of shares in 2019.
Source: Ibid.

On the other hand, the groups that lost most in significance among the above-mentioned ten most important categories of goods in Polish exports to Ukraine, taking into account the 2019 status, were: books, newspapers, pictures and other products of the printing industry, manuscripts and plans (a decrease by more than 65% between 2019 and 2010), and essential oils and resinoids; perfumery, cosmetic or toilet preparations (down by 33.5% over the same period), i.e. much less technologically advanced goods

with lower value added than the categories that gained in significance in Polish exports to Ukraine at the time. Such a change in the structure of Polish exports to Ukraine is found to be a positive development.

On the other hand, looking at the importance of Ukraine as a destination for Polish exports, taking into account the commodity structure of total exports, the country has by far the largest share of total Polish exports of raw hides and skins (other than furskins) and leather, arms and ammunition, parts and accessories thereof, as well as silk, cotton and various types of fabrics (Table 12.4). What deserves special attention is the fact that in 2019 as much as nearly 40% of all Polish exports of raw hides and skins (other than furskins) and leather, arms and ammunition, and parts and accessories thereof, as well as silk, went to the Ukrainian market. Between 2010 and 2019, there was also a marked increase in the importance of Ukraine as a recipient of Polish products from the above-mentioned commodity groups.

Table 12.4. Share of Polish exports to Ukraine in Poland's total exports by commodity group in selected years of the period 2010–2019 (in accordance with HS2 classification, %)*

Code	Commodity group	2010	2015	2019
41	raw hides and skins (other than furskins) and leather	7.64	39.65	39.65
93	arms and ammunition; parts and accessories thereof	1.25	38.65	38.65
50	silk	25.04	38.21	38.21
52	cotton	21.71	20.83	20.83
58	textiles; special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings; embroidery	10.32	18.63	18.63
75	nickel and articles thereof	2.84	16.55	16.55
31	fertilizers	0.68	16.31	16.31
37	photographic or cinematographic goods	9.49	15.33	15.33
55	man-made staple fibers	7.07	13.14	13.14
60	knitted or crocheted fabrics	14.85	12.22	12.22

* 10 commodities of greatest significance. Arrangement in descending order of shares in 2019.

Source: Ibid.

As with Polish exports to Ukraine, the commodity structure of Polish imports from Ukraine was very highly polarized during the period under analysis and had a low degree of diversification. Needless to say, for years it has traditionally been dominated mainly by two commodity groups, namely ore, slag and ash (which accounted for 15.96% of the value of Polish imports from Ukraine in 2019) and iron and steel (14.53%). It is also worth noting that in 2010 the share of the two commodity groups in Polish imports from Ukraine was significantly higher at 26.67% and 21.86%, respectively. This lends

itself to the conclusion that in fact Poland imports from Ukraine primarily mineral products and their derivatives and metallurgical products (Table 12.5).

Over the entire period considered (2010–2019), despite the fact that these goods still have a minor role in Polish imports from Ukraine, there was a very clear increase in the significance in this regard of goods from the following groups: animal or vegetable fats and oils and their cleavage products (an increase of more than 2.5 times); furniture, bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; lamps and lighting fittings, not elsewhere specified or included; illuminated signs, illuminated name-plates and the like; prefabricated buildings (an increase of more than 8 times).

Table 12.5. Commodity structure of Polish imports from Ukraine in selected years of the period 2010–2019 (in accordance with HS2 classification, %)*

Code	Commodity group	2010	2015	2019
26	ores, slag and ash	26.67	13.89	15.96
72	iron and steel	21.86	22.70	14.53
15	animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes	2.69	3.35	6.81
23	residues and waste from the food industries; prepared animal fodder	4.08	5.51	5.73
44	wood and articles of wood; wood charcoal	6.89	11.21	5.72
85	electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers; parts and accessories thereof	6.40	5.77	4.63
94	furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; lamps and lighting fittings, not elsewhere specified or included; illuminated signs, illuminated name-plates and the like; prefabricated buildings	0.55	1.53	4.52
73	articles of iron or steel	2.03	3.16	3.90
12	oil seeds and oleaginous fruit; miscellaneous grains, seeds and fruit; industrial or medicinal plants; straw and fodder	3.96	3.28	3.50
27	mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes	6.58	1.55	3.22

* 10 commodities of greatest significance. Arrangement in descending order of shares in 2019.

Source: Ibid.

If, on the other hand, one looks at the significance of Polish imports from Ukraine in total Polish imports, taking into account the commodity structure, it turns out that Ukraine is an extremely important supplier of plant materials for weaving (its share of Polish imports of this type of goods totaled as much as 78.72% in 2019), ores, slag and ash (with a share of 39.24% in 2019) and fur and artificial furs and articles (with a share of 25.28% in 2019) (Table 12.6). Over the 2010 s, the share of Polish imports from Ukraine in Poland's total imports, including mainly the above-mentioned furskins,

artificial skins and articles thereof (increase from a mere 1.58% in 2010 to as much as 25.28% in 2019), cereals (accordingly, from 0.87% in 2010 to 6.46% in 2019), and animal and vegetable fats and oils and their cleavage products (more than double increase in the analyzed period). Interestingly, at the same time, the share of Polish imports from Ukraine in total Polish imports fell very clearly for ores, slag and ash (from 60.56% in 2010 to 39.24% in 2019), and seed and oleaginous fruit (from 20.81% in 2010 to 13.61% in 2019).

Table 12.6. Share of Polish imports from Ukraine in Poland's total imports by commodity group in selected years of the period 2010–2019 (in accordance with HS2 classification, %)*

Code	Commodity group	2010	2015	2019
14	vegetable plaiting materials; vegetable products, not elsewhere specified or included	68.28	78.17	78.72
26	ores, slag and ash	60.56	24.89	39.24
43	furskins and artificial fur, manufactures thereof	1.58	6.26	25.28
15	animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes	7.46	7.41	18.83
12	oil seeds and oleaginous fruit; miscellaneous grains, seeds and fruit; industrial or medicinal plants; straw and fodder	20.81	12.00	13.61
44	wood and articles of wood; wood charcoal	9.33	14.09	12.90
23	residues and waste from the food industries; prepared animal fodder	5.63	5.89	7.40
10	cereals	0.87	8.23	6.46
25	salt; sulfur; earths and stone, plastering materials, lime and cement	5.39	4.54	5.07
72	iron and steel	6.09	5.75	4.62

* 10 commodities of greatest significance. Arrangement in descending order of shares in 2019.

Source: Ibid.

In conclusion, it should be stressed that during the period under consideration (2010–2019) there was, in general, a stable increase in the value of bilateral trade between Poland and Ukraine, determined by the stable growth of Polish exports. The commodity structure of that trade is considered favorable for the Polish economy. Polish exports were dominated by high value-added processed goods, while imports from Ukraine were mainly dominated by raw materials and their derivatives.

12.3. Investment Cooperation between Poland and Ukraine in 2010–2019

A regards investment cooperation, especially in foreign direct investment, which is an area of particular economic significance, Poland was, during the period under analysis (2010–2019), a much more important partner for Ukraine than Ukraine for Poland. With the exception of the period 2013–2015, Ukraine saw an annual inflow of net direct investment from Poland. Particularly record-breaking in this respect were the years 2017–2018, when the inflow of these investments amounted to USD 122.4 m and USD 139.3 m, respectively. The main reason for this was the significant reinvestment of earnings by Polish investors in Ukraine in 2016–2019 (Table 12.7). The period mentioned before, i.e., the years 2013–2015, is also noteworthy, when Polish net direct investments in Ukraine reached a negative value (the largest in 2013 at USD 322.1 m), which meant that the value of the Polish capital withdrawn from Ukraine was greater than the value of the capital flowing into Ukraine at that time in the form of foreign direct investment. This is attributable to the unfavorable economic situation in Ukraine and political factors, in particular concerns about a possible escalation of tensions in the country's relations with Russia following the annexation of Crimea and the outbreak of fighting in eastern Ukraine.

Table 12.7. Polish direct investment inflows to Ukraine in 2020–2019 (USD m)

Year	Equity	Reinvestment of earnings	Debt instruments	Total net FDI inflows
2010	115.5	21.4	–	108.5
2011	14.5	25.6	–	39.9
2012	42.6	11.2	–	45.1
2013	–151.6	5.2	–165.3	–322.1
2014	71.6	–95.7	–21.0	–45.1
2015	19.2	1.1	–44.4	–24.1
2016	–4.0	75.6	–14.3	57.3
2017	22.4	68.3	31.7	122.4
2018	26.2	109.7	3.4	139.3
2019	11.8	103.4	–15.4	99.8

Source: Compiled by the author from NBP data.

Despite the above-mentioned increase in the value of direct investment flows from Poland to Ukraine in recent years, their cumulative net value at the end of the year,

while higher compared to 2014–2016, was nevertheless significantly lower compared to that recorded at the beginning of the second decade of the 21ˢᵗ century. For example, while in 2019 it amounted to USD 352.6 m, it was as much as USD 1,310.1 bn in 2010, just over 3.7 times more (Table 12.8). Nevertheless, it should be made clear that over the whole period under analysis (2010-2019), the cumulative net value of Polish direct investment in Ukraine at the end of each year was positive, which cannot be said about Ukrainian direct investment in Poland.

Table 12.8. Year-end net value of Polish direct investment in Ukraine in 2020–2019 (USD m)

Year	Equity	Debt instruments	Total net FDI stocks
2010	–	–	1,310.1
2011	–	–	1,054.5
2012	–	–	1,090.9
2013	388.5	–70.8	317.7
2014	174.6	–91.7	82.9
2015	175.6	–157.2	18.4
2016	199.6	–184.5	15.1
2017	261.9	–139.4	122.5
2018	362.0	–142.5	219.5
2019	517.7	–165.1	352.6

Source: Ibid.

As regards Ukrainian total net foreign direct investment flowing into Poland over virtually the whole analyzed period (2010–2019, the flows showed a negative value (with one exception in 2013, which saw net flows of USD 56.2 m into Poland from Ukraine, mainly due to the significant positive value of the debt instruments) (Table 12.9). In practice, this meant that the value of Ukrainian capital withdrawn from Poland in a given year was higher than the value of capital flowing at that time into the Polish economy from Ukraine in the form of direct investment. This was mainly due to Ukrainian investors withdrawing their earnings from Poland.

In the case of the above-mentioned data relating to FDI flows from Ukraine to Poland, unsurprisingly, between 2010 and 2019, taking into account the cumulative net value of these investments at the end of the year, there was a steady trend towards a decrease in total cumulative net FDI inflows to Poland from USD 403.4 m in 2010 to USD 508.9 m in 2019 (Table 12.10). This was in fact due to the withdrawal from Poland of proceeds from the disposal of equity.

Table 12.9. Inflows of Ukrainian direct investment to Poland in 2010–2019 (EUR m)

Year	Equity	Reinvestment of earnings	Debt instruments	Total net FDI inflows
2010	0.2	–42.2	–	–9.6
2011	0.0	–56.6	–	–28.0
2012	1.5	–84.3	–	–73.5
2013	–19.6	–31.5	107.3	56.2
2014	0.0	–34.1	2.2	–31.9
2015	–51.7	–23.2	20.3	54.6
2016	–0.5	–20.6	–5.9	–27.0
2017	0.0	–20.3	12.6	–7.7
2018	–4.9	–19.6	7.9	–16.6
2019	–4.0	–160.6	4.2	–160.4

Source: Ibid.

Table 12.10. Year-end net value of Ukrainian direct investment in Poland in 2010–2019 (USD m)

Year	Equity	Debt instruments	Total net FDI stocks
2010	–	–	403.4
2011	–	–	306.2
2012	–	–	237.3
2013	–213.3	109.5	–103.8
2014	–230.6	106.0	–124.5
2015	–303.7	129.1	174.6
2016	–316.2	119.3	–196.9
2017	–462.5	124.5	–338.0
2018	–509.6	145.6	–364.0
2019	–671.6	162.7	–508.9

Source: Ibid.

In addition to the size of foreign direct investment, its structure in the host country is also extremely important. In the case of Polish direct investment in Ukraine, it was strongly concentrated in the banking and financial sector (approx. 46%) and in industry – mainly in manufacturing (approx. 33%), according to 2018 data [Embassy of Poland in Kyiv, 2020]. Trade and services accounted for a relatively large proportion of Polish investment (9.5%). On the other hand, Ukrainian FDI in Poland, the scale of which was incomparably smaller than that of Polish FDI in Ukraine, was mainly invested in industry (including the automotive and shipbuilding sectors) as well as trade and services.

T wrap up this part of the study, it is also worth mentioning the largest Polish investors in Ukraine and Ukrainian investors in Poland. Thus, the main Polish investors investing their capital in the form of FDI in Ukraine during the period under analysis (2010–2019) include (as of 2018): PKO BP and Getin Holding (banking), PZU S.A. (insurance), Barlinek (production of engineered wood flooring), Cersanit S.A. (production of ceramic tiles and comprehensive bathroom equipment), Polimex-Mostostal S.A. (engineering and construction services), Śnieżka (paint production), Can-Pack S.A. (production of metal packaging), Inter Groclin (automotive industry), Nowy Styl (furniture industry) and LPP S.A. (clothing industry) [PAiH, 2018].

On the other hand, the largest Ukrainian investors in Poland at that time (as at the end of 2018) were: CJSC ZAZ (automotive industry), Elfa (cosmetics industry), Industrial Union of Donbass (ISD) (production of iron, steel and ferroalloys), Invest A/S (financial and insurance activities), Milkiland N. V (wholesale trade in food, beverages and tobacco products), and PSA "Iskra" (manufacture of electrical lighting equipment) [PAiH, 2020].

12.4. Scale and Importance of Ukrainian Labor Migration to Poland in 2010–2019

The accession of Poland to the European Union in May 2004, with the following gradual rise in the economic emigration of Poles to EU countries, which began to open up their labor markets, combined with Poland's stable economic growth and much more attractive earning opportunities for people living across its eastern border than in their home countries, as well as geographical proximity and relatively small socio-cultural differences and language barriers, encouraged increasing numbers of Ukrainians to come to the Poland each year in search of work. This was by far the most important reason why Ukrainian citizens came to Poland – clearly more important than having a family in Poland or intending to study at Polish universities. Moreover, the vast majority of Ukrainians coming to Poland openly admitted that the main reasons for leaving their homeland were low wages (79.6% of respondents claimed so), political instability (19.7%), lack of jobs in their place of residence (16.9%), and pervasive corruption (14.7%) [EWL, 2018].

A particularly visible boom in this area was witnessed from 2013 (Figure 12.3). And so, while initially it was about 196,000 people, in just 6 years this number rose to a record level of more than 920,000. Thus, every 20th person working in Poland at the time was of Ukrainian origin. A separate, but very important, issue in this context is that a significant proportion of economic migrants from Ukraine were not officially

registered and did not pay social security contributions for their work. According to Statistics Poland data, e.g. in the third quarter of 2017, only nearly 140,000 Ukrainians were registered, although an estimated 810,000 Ukrainians worked in Poland at that time [Bankier.pl, 2020].

Figure 12.3. Estimated number of Ukrainians in the Polish labor market in 2004–2019 (in thousands)
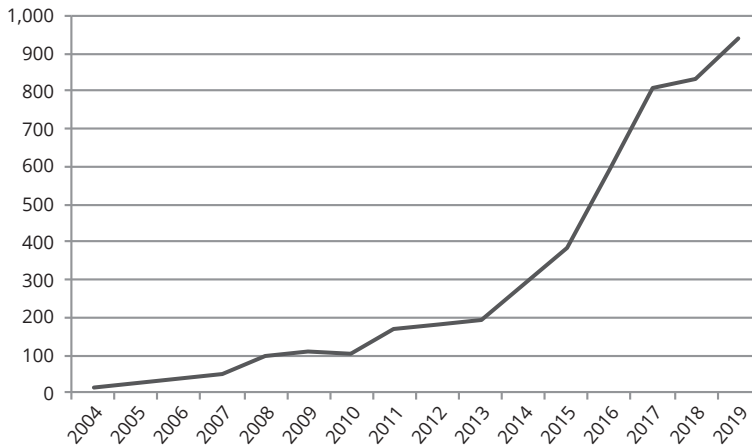
Source: Compiled by the author on the basis of MSZ, MRPiPS and Statistics Poland data.

In view of the above data on the scale of Ukrainians' arrivals to Poland in search of jobs, it is not surprising that they definitely dominated among foreign nationals employed in Poland (Figure 12.4).

The vast majority of Ukrainians working in Poland were employed in the most developed Polish regions (Mazowieckie, Wielkopolskie, Dolnośląskie or Śląskie voivodeships), as evidenced by the relevant Statistics Poland data as of 31 March 2019 (Figure 12.1). In contrast, the smaller numbers of Ukrainians were employed in relatively less developed Polish regions, i.e. Podlaskie, Świętokrzyskie or Warmińsko-Mazurskie voivodeships. This was mainly determined by a more difficult labor market situation there, linked to lower demand for employment of people from Ukraine, as well as lower wages in these regions.

When analyzing the phenomenon of economic migration of Ukrainians to Poland, it is also worth noting the structure of their employment in the period 2010–2019 (Figure 12.5), as it underwent a dramatic change. While in 2010 52% of Ukrainians worked in agriculture, mainly in seasonal fruit harvesting, 23% in construction, 21% in broad-based services, and only 4% in industry, at the end of the period considered, i.e. in 2019, as many as 60% of them found employment in the service sector, and only

12% in agriculture (with industry and construction accounting for 14% each). This specific structure of employment of Ukrainians in Poland, in a sense, confirmed the fact that the vast majority of job-seekers coming to Poland were young people (mainly aged 26–45, who accounted for 61.7% of all Ukrainians employed in Poland), with vocational (32.5%) and secondary education (32.2%) [EWL, 2018]. In particular, they took vacancies for which no specific skills or many weeks of training were needed, i.e. they carried out simple work which did not require special professional qualifications. Therefore, they were most often employed on construction sites, in hotels, food services, as drivers or couriers, and much less often in manufacturing, and if so, usually in machine and equipment operator positions.

Figure 12.4. **Number of immigrants from Ukraine against the estimated total effective number of economic immigrants in Poland in 2013–2019 (thousands)**
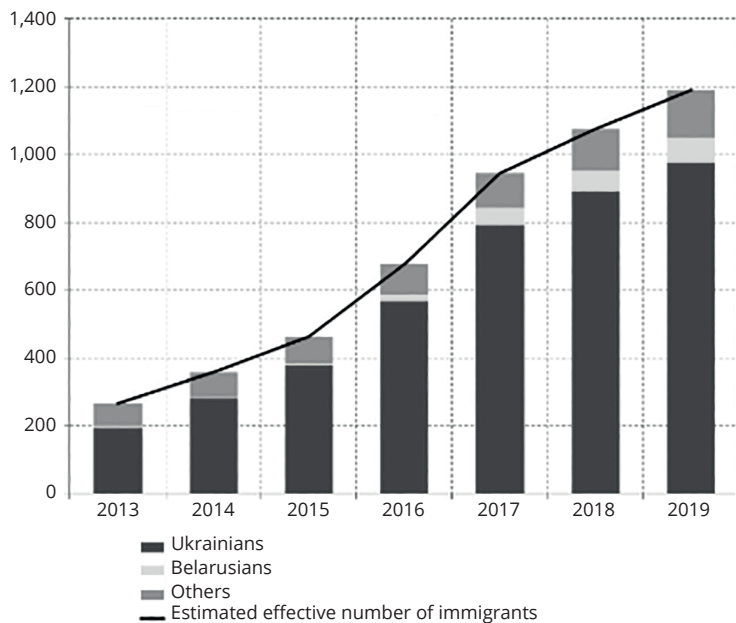

Note: Due to the temporary nature of work taken up by immigrants from Ukraine and Belarus in Poland, it is assumed that the average immigrant from these countries works in Poland about 7 months a year.

Source: Rozkrut [2020].

The influx of economic migrants from Ukraine significantly increased the labor force in Poland, having a positive effect on the development potential of the entire Polish economy. It undoubtedly stabilized Poland's working-age labor resources in the face of mass migrations of Poles abroad, an ageing Polish population and increased demand for labor due to dynamic economic growth. According to analyses by Citi

Handlowy bank economists, after 2014 the contribution of immigrants (the vast majority of whom were Ukrainians, as mentioned above) to GDP growth in Poland averaged 0.5 pp per year. The largest share was recorded in 2016–2017, at 0.7 pp (up from around 3% overall in 2016, y/y) and 0.9 pp (up from around 5% in 2017, y/y) (Figure 12.6).

**Map 12.1. Number of employees registered for social security in individual voivodeships in Poland who declared Ukrainian citizenship (as at 31 March 2019, thousands)**

452.8 k
Total in Poland
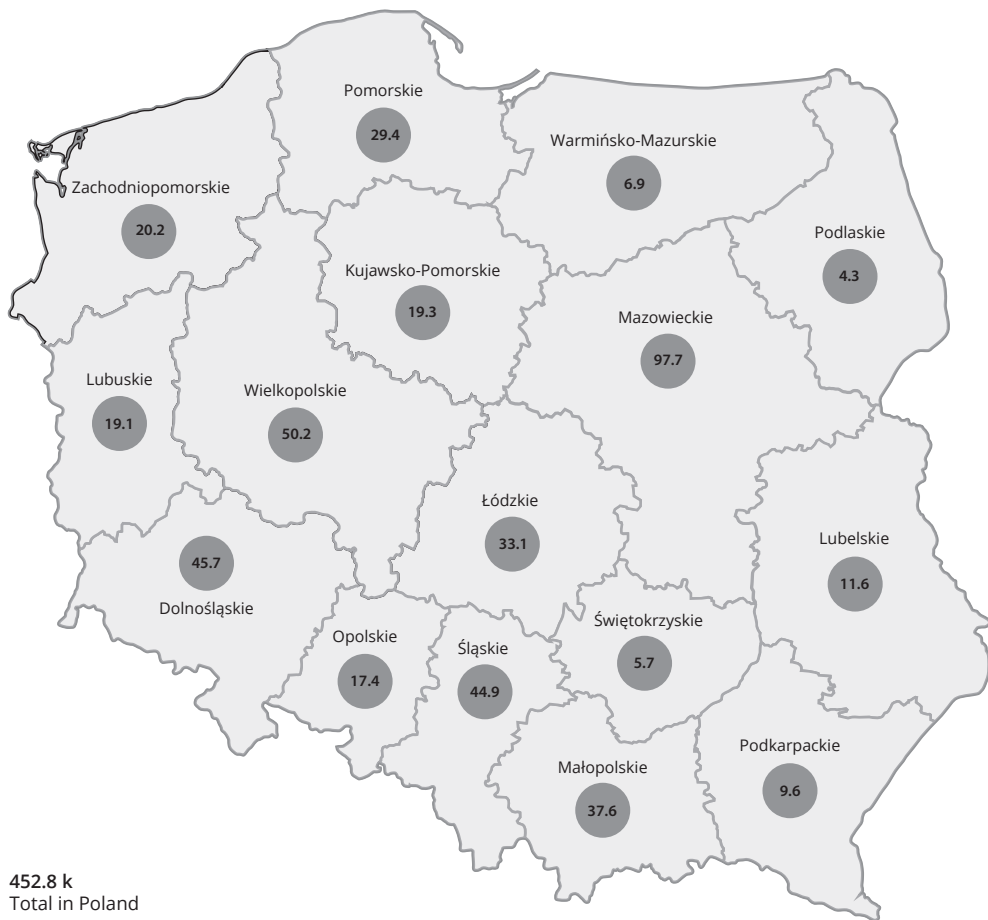
Source: Business Insider [2019].

The arrival to Poland and the opportunity to take up work and thus earn income, often much higher than in Ukraine, was also not without influence on the development of the Ukrainian economy. In fact, Ukrainian economic migrants transferred a significant
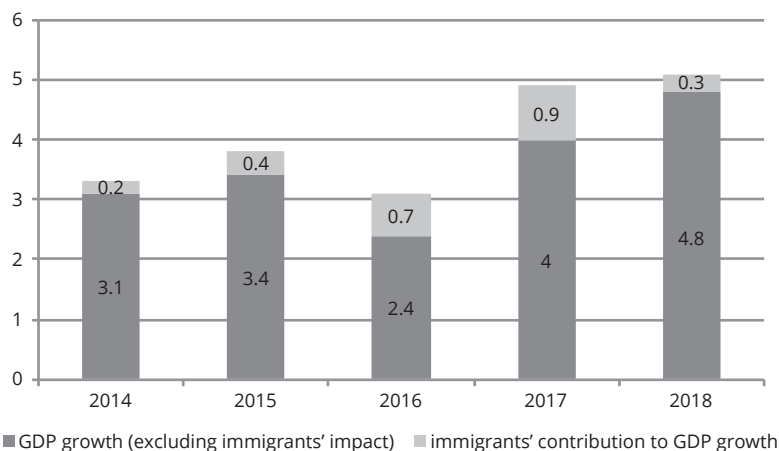
part of their earnings to their families and loved ones back in Ukraine. NBP estimates that this proportion at around 40%.

Figure 12.5. Employment structure of Ukrainians in Poland, 2010–2019 (%)
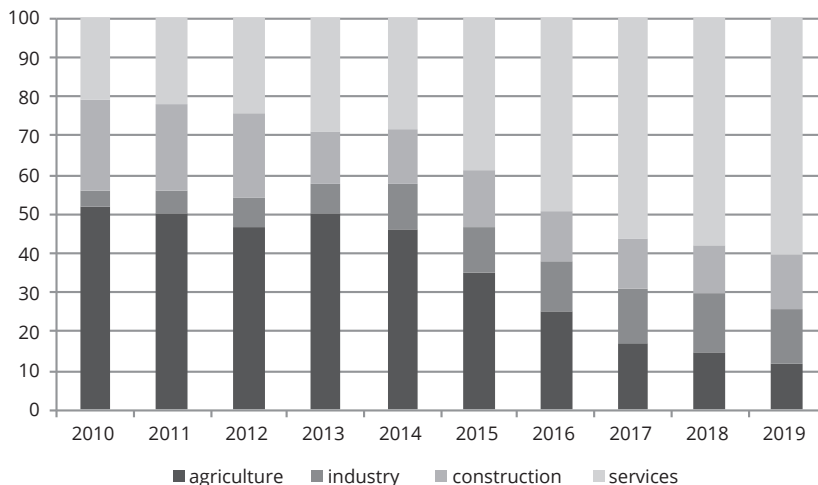
Source: Compiled by the author from MSZ, MRPiPS, and Statistics Poland data.

**Figure 12.6. Contribution of economic immigrants to Polish GDP in 2014–2018 (%)**

Source: Szymański [2019].

Just how large these amounts could be, is shown by data from the National Bank of Ukraine, according to which the value of money transfers from Ukrainians working in Poland in 2015–2019 was USD 1.3 bn; USD 2 bn; USD 3.1 bn; USD 3.65 bn, and USD 3.69 bn, respectively. Thus, it almost tripled in just 5 years (Figure 12.7). Moreover,

it is worth pointing out here that due to the increasing scale of economic migration of Ukrainians to Poland, the country has become the main source of these transfers to Ukraine. While Russia had been at the fore in this respect until 2015, the next year, also due to the deterioration of political and economic relations between Ukraine and Russia after the annexation of Crimea in 2014, Poland absolutely took the lead in this regard.

Figure 12.7. Volume of money transfers home by economic immigrants from Ukraine in 2015–2019 (USD bn)*
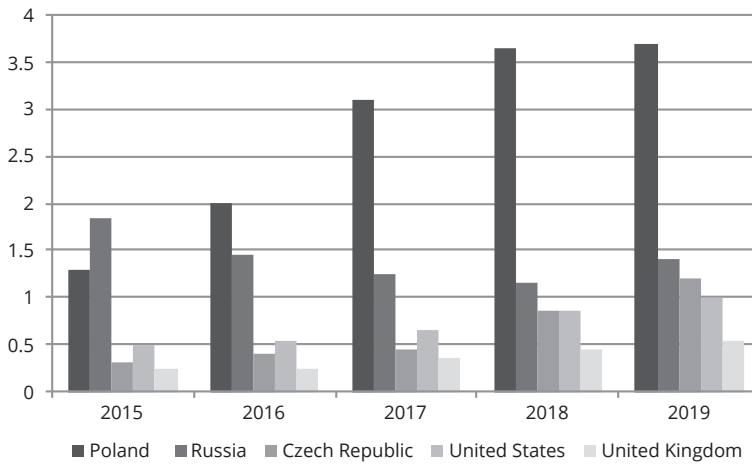
* 5 countries of greatest significance. Arrangement in descending order of money transfers in 2019.
Source: Unton [2020].

Of course, it must be borne in mind that any international money transfers in official statistics include transfers made through commercial banks or specialized financial companies holding relevant licenses. For this reason, the actual volume of money transfers from Poland to Ukraine is not really known to anyone, especially since Ukrainians often export their earnings abroad in person or through friends. According to a report by EWL, only about 39% of Ukrainian economic migrants working in Poland use money transfers or bank transfers at all [EWL, 2018]. In this context, it is not surprising that according to data from the National Bank of Ukraine, only USD 230 m went to Ukraine through official channels from Poland in 2019, which represented only about 6.5% of the estimated total value of money transfers from Poland to Ukraine (USD 3.69 bn) [NBU, 2020].

12.5. Prospects for the Development of Poland's Bilateral Economic Relations with Ukraine in the Context of the COVID-19 Pandemic

Both the unexpected outbreak and the sheer scale of the pandemic caused by the spread of the COVID-19 virus have significantly changed the economic reality practically all over the world, including Poland and Ukraine. Admittedly, today it is not possible to identify with certainty all possible consequences of the current pandemic in the context of the further development of Polish-Ukrainian economic relations, but it is very likely to have a strong negative impact on Polish-Ukrainian trade, as well as on investment relations between the two countries. In this context, it is worth noting the increasing possible competition against Poland from China, which is developing its economic relations with Ukraine very expansively. That said, in 2019 China, as the main partner in Ukrainian exports, increased the value of its imports from Ukraine compared to 2018 levels by as much as 63% (for Poland, it was only 1.2%). At the same time, China's importance in Ukrainian imports increased by 20.9% over the same period, while Poland's share increased by 12.6% in this respect [Embassy of Poland in Kyiv, 2020].

In view of the future of Polish FDI in Ukraine, the improvement of the investment climate in Poland's eastern neighbor seems to be of utmost importance (and not only in the context of the current pandemic). The strong barriers to Polish investment include: widespread corruption; non-transparency, inconsistency and variability of Ukrainian legislation; discretionary interpretation of legal provisions by the administration; or general weakness of the judiciary and difficulties in seeking justice in the courts. However, this does not change the fact that Ukraine, as a country geographically and culturally close to Poland, is and should be (despite the barriers mentioned) an important destination for the expansion of Polish capital. In this respect too, the increase in Chinese capital involvement has been clearly visible in recent years.

Referring, in turn, to the extremely important issue of economic immigration of Ukrainians to Poland, it should once again be stressed that a great deal will depend on the development of the pandemic situation both in the two countries and in the EU member states. However, beyond any doubt the freeze of the Polish economy, the lower demand for labor as a result of the decline in overall demand in the economy in consequence of the lockdown and restrictions on mobility in Poland, including for consumer purposes, have caused many Ukrainians to decide to leave Poland and return to Ukraine. According to official data of the Polish Border Guard, more than 235,000 Ukrainian citizens left Poland within just 2 months, i.e. between 15 March 2020, the

day of the border closure, and 15 May 2020. Of course, it must be realized that not all people in this group had worked in Poland and, by leaving the country, left the labor market, because there certainly were Ukrainians among them for whom Poland was a transit country only. However, according to a report by OTTO Work Force [2020] on a survey of 500 former employees from Ukraine, their return home at that time was mainly determined by two factors: job loss (39%) and uncertainty about what awaits them in the coming days and weeks (36%) (Figure 12.8).

Figure 12.8. Reasons for which employees from Ukraine have decided to leave Poland and return home (%)
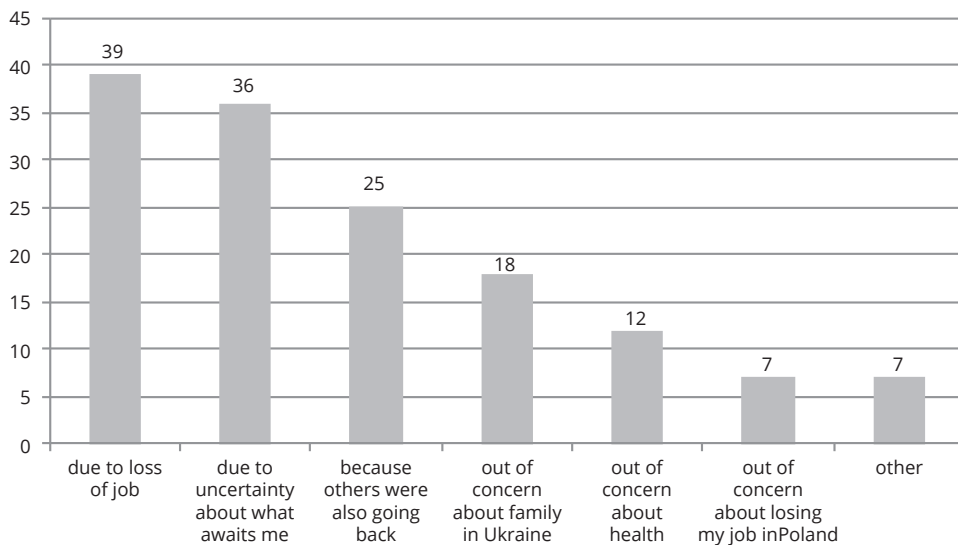
Importantly, according to OTTO Work Force data, as many as 70% of Ukrainians who returned from Poland to Ukraine declare to come back to Poland after the pandemic. Of course, it should be noted that Poland does not have to be the only destination for their economic migration. Labor markets in Germany and the Czech Republic, where demand for Ukrainian workers has been steadily increasing (Figure 12.9), were (before the pandemic) and will be (after the pandemic) increasingly in competition with Poland (Figure 12.9).

Germany may be a particularly attractive country for economic migration of Ukrainians, given not only the level of wages offered, but also the fact that the rules for foreigners taking up work in that country have been significantly relaxed. Recent changes in labor law, in accordance with the Skilled Migration Act, have abolished the obligation to prove that the employer is unable to find a German worker for a given

job position and thus facilitated the employment of foreigners, including Ukrainians. On the other hand, Germans are looking especially for young, educated people with foreign language skills, which, paradoxically, can be an opportunity for Poland and the Polish labor market. Of course, it is important to be aware in any case that Polish labor market will change under the influence of the COVID-19 pandemic for both potential Ukrainian workers and for Poles themselves. The economic downturn or even economic crisis in Poland will reorient the labor market towards the so-called employer market, which will undoubtedly slow down wage growth and lead to a reduction in fringe benefits (including social packages offered to workers), and this will consequently also reduce the attractiveness of the Polish labor market for economic migrants from Ukraine.

Figure 12.9. Countries other than Poland Ukrainians are planning to migrate to for economic reasons (%)
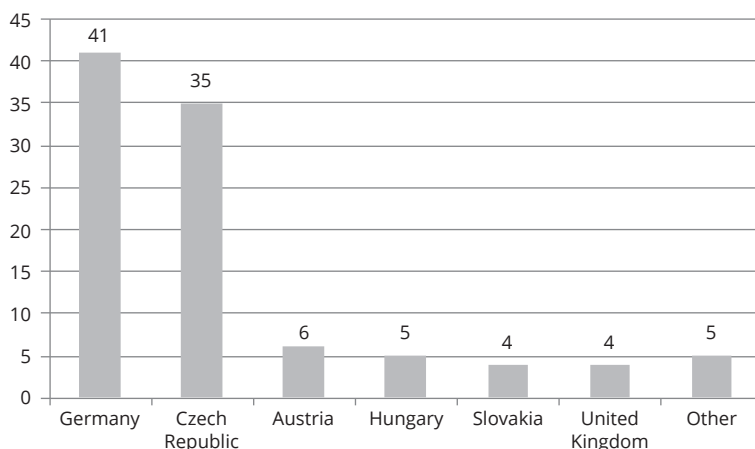
Source: Ibid.

12.6. Conclusions

Bilateral economic relations between Poland and Ukraine in the 2010 s were determined both by the internal macroeconomic situation in both countries and by externalities dominated by the 2008 economic crisis and by the political developments that took place in 2014 in eastern Ukraine, mainly those related to Russia's annexation of Crimea and the outbreak of bloody fighting with the separatists openly supported by the Russian side. Nevertheless, looking at the whole period under review, i.e. 2010–2019, the relations are found to have been intensive and evolving. A particular

part of this was the dynamic increase in the influx of economic migrants from Ukraine to Poland, witnessed after 2013.

With regard to the first of the three fundamental dimensions of economic relations between Poland and Ukraine, i.e. trade, it is important to emphasize the marked increase in the value of bilateral trade over the 2010 s, despite some disturbances related to the above-mentioned political developments in Ukraine, initiated in 2014. From Poland's point of view, the trade pattern with Ukraine is clearly advantageous. Polish exports were dominated during the period considered by high value-added processed goods, while imports from Ukraine mainly consisted of raw materials and their derivatives. It is also worth highlighting the fact that, throughout that period, Poland maintained a positive balance of trade in goods with Ukraine.

As was the case with trade, Poland was also a much more important partner for Ukraine during the period under analysis than Ukraine for Poland. This is confirmed not only by the net value of the net foreign direct investment flows, but also by the cumulative net value of these investments at the end of the year in the partner country. In both cases, the relevant data is in Poland's favor.

It should be emphasized, however, that the economic migration of Ukrainians to Poland played a particular role in Polish-Ukrainian economic relations in the 2010s. It was beneficial both for Poland – by filling the gap in Polish labor supply caused by economic migration of Poles to other counties, and by providing an additional factor strengthening the economic growth of the country, and for Ukraine – due to the increasing value of financial transfers sent to their home county by Ukrainians working in Poland.

What poses a new and undoubtedly extremely difficult challenge in terms the prospects for the further development of Polish-Ukrainian economic relations, in its every dimension, is the pandemic associated with the spread of the COVID-19 virus, which has heavily affected the economic reality in both countries, and whose social and economic consequences we are unable to predict at the moment. However, it remains to be hopeful that, despite the unfavorable epidemic situation, the long-standing and fruitful unneighborly cooperation so far will continue to develop, providing mutual benefits.

Bibliography

Embassy of Poland in Kyiv [2020], *Informator ekonomiczny – Ukraina 2020*, https://www.gov. pl/web/ukraina/informator-ekonomiczny (accessed: 15.10.2020).

Bankier.pl [2020], *Rekordowy spadek liczby Ukraińców w ZUS-ie*, https://www.bankier.pl/ wiadomosc/Rekordowy-spadek-liczby-Ukraincow-w-ZUS-ie-7820057.html (accessed: 17.10.2020).

Business Insider [2019], *Badanie NBP: potencjał dalszego wzrostu imigracji z Ukrainy jest ograniczony*, https://businessinsider.com.pl/finanse/makroekonomia/imigracja-zarobkowa- -z-ukrainy-do-polski-badanie-nbp-wklad-imigracji-do-wzrostu-pkb/rtl9pe3 (accessed: 17.10.2020).

EWL [2018], *Ukraińcy na polskim rynku pracy. Doświadczenia, wyzwania i perspektywy*, https:// www.ewlhr.eu/wp-content/uploads/2018/08/BADANIE-_EWL_RAPORT.pdf (accessed: 10.10.2020).

NBU [2020], https://bank.gov.ua/ua/doccatalog/document?id=19208357 (accessed: 12.10.2020).

OTTO Work Force [2020], *Sytuacja pracowników, którzy wrócili na Ukrainę w czasie COVID-19*, https://cloud.ottoworkforce.pl/index.php/s/XR6sDeZGT2kLKbM#pdfviewer (accessed: 10.10.2020).

PAIH [2018], *Ukraina Przewodnik po rynku*, https://www.google.com/url?sa=t&rct=j&q= &esrc=s&source=web&cd=&ved=2ahUKEwjGtbiViozuAhXskYsKHcW_Ck4QFjAAegQIA- xAC&url=https%3A%2F%2Fwww.paih.gov.pl%2Ffiles%2F%3Fid_plik%3D35341&usg= AOvVaw1z4-gjQ3SwISkcTuRNDt9h (accessed: 15.10.2020).

PAIH [2020], *List of Major Foreign Investors in Poland 2017/2018*, https://www.paih.gov.pl/ publications/foreign_investors_in_poland (accessed: 14.10.2020).

Rozkrut, M. [2020], *Źródła wzrostu polskiej gospodarki – główne wyzwania*, https://pracodawcyrp.pl/upload/files/2020/05/prezentacja-ey-na-rds-m.pdf (accessed: 17.10.2020).

Szymański, D. [2019], *Imigranci do tej pory znacząco podpompowali polski wzrost gospodarczy*, https://businessinsider.com.pl/finanse/makroekonomia/ukraincy-a-polski-wzrost-pkb- -analiza-citi/537xqgv (accessed: 15.10.2020).

Unton, A. [2020], *Polska przestaje być głównym wyborem dla Ukraińców. Widać to po przelewach*, https://www.money.pl/gospodarka/polska-przestaje-byc-glownym-wyborem-dla- ukraincow-widac-to-po-przelewach-6509788552038529a.html (accessed: 16.10.2020).

Japan's Presence in the Polish Economy after 2010: Foreign Direct Investment and Bilateral Trade

Anna Maria Dzienis

13.1. Introduction

After the Second World War, Japan went through a period of accelerated economic growth as a "trade nation". Subsequently, Japan's activity as a global creditor and supply networks constructor led to the country's transformation from a "trade nation" to an "investment nation." Nowadays, Japan's account balance is shaped by investment income rather than trade surplus. [METI, 2020, p. 32]. According to the Japan External Trade Organization (JETRO), at the end of 2019 Japan's outward FDI reached USD 249 billion, showing a rise of 57% from the end of the previous year [JETRO statistics]. In 2019, mostly due to Takeda's takeover of Dublin's Shire "Japan was again the largest overseas investor" [UNCTAD WIR, p. 4].

However, according to Japan's Ministry of Finance, at the end of 2019 Poland accounted for 0.06% of Japan's total direct investment position, 0.3% in Europe [MoF statistics]. As far as trade between the two partners is concerned, in 2018 Japan was Poland's 18th import and 40th export partner, while for Japan Poland was 54th import and 33rd export partner [WITS statistics].

After 2010, several factors have had direct or indirect impact on the Polish-Japanese economic relations, e.g. the global financial crisis, Brexit, the EU and Japan's Economic Partnership Agreement (EPA), and most recently the COVID-19 pandemic. Although economic links between Poland and Japan are not particularly robust, Japan's presence in Poland can easily be found. Trade and investment between the partners have evolved and Poland's image as an assembly line for Western European markets seems to have gone out of date.

In 2019, Poland and Japan celebrated the 100th anniversary of establishing their diplomatic relations and between 2010 and 2020 several high-level official visits related to economic cooperation took place. In June 2013 PM Shinzō Abe visited

Warsaw, where he met with the then Polish PM Donald Tusk and had a meeting with President Bronisław Komorowski. Moreover, the first ever summit of the V4 prime ministers with the PM of Japan was held during that visit. In February 2015, President Komorowski visited Japan. During the meeting with PM Abe, the politicians talked, among others, about raising the Polish-Japanese relations to the level of a strategic partnership. In January 2020 PM Mateusz Morawiecki came to Japan. Besides Japanese investments in Poland and new opportunities for increasing bilateral trade, topics such as infrastructural projects, especially those related to energy sector such as Poland's nuclear power plant project or clean coal technology development. New technologies and security cooperation were also discussed [prezydent.pl; gov.pl].

This chapter aims at identifying changes in the Polish-Japanese economic cooperation during the past decade. The analysis is focused on three areas: the presence of Japanese nationals in Poland, foreign direct investment and bilateral trade. In each case, the most adequate and, as far as possible, the most recent data has been employed.

The chapter is organized as follows. First, a concise literature review is given, with focus on economic motives of Japanese presence in Poland. The author then touches briefly on the topic of Japanese nationals in Poland. The next section examines the flow of Japanese foreign direct investment into Poland after 2010 and attempts to assess the number of companies with Japanese capital operating in Poland. To this end, an original database was created based on data merged from two sources: Orbis – Bureau van Dijk and the Polish National Court Register (KRS). The final section consists of an analysis of Polish-Japanese bilateral trade, with an insight into goods exchange by production stage and trade in value added (TiVA) indicators provided by the OECD.

13.2. Literature Review

Over time, the most significant push factors for the internationalization of Japanese multinational corporations (MNCs) were excess of capital, the desire to maximize profit, and pressure from trade partners to reduce the exports. As a consequence, foreign production investment began to partly take the place of trade in Japan [Dzienis, 2021]. Geographically, the first locations for Japanese FDI were the United States and Asian markets. Later, during the 1980s and 1990s, Japanese investors started to establish their companies also in the economically developed European countries. It can be observed that after 2000 the importance of the Asian region has been growing again, which is related to the economic rise of China and evolution of regional value chains.

Japanese FDI inflow to Poland increased in the 1990 s, when the country was in the course of economic transformation. The most significant activity of Japanese

MNCs could be observed in the second half of the 1990 s and especially in the years after Poland's accession to the European Union in 2004 [Mazur and Takemura 2018]. This situation continued until the 2010 s, and major Japanese investments were made in the manufacturing sector, in particular in the electronics and automotive industries [Matsuura 2017; Mazur and Takemura 2018; Horie, 2019]. The key motives of Japanese MNCs for choosing Central and Eastern European countries for their location include the following: a) exploring the opportunity to build a long-term position in the CEE market, b) using CEE countries as a gateway to other markets, c) taking advantage of low labor costs, d) access to skilled labor, e) taking advantage of government incentives to investors, f) gaining access to the domestic markets, h) taking advantage of raw material sources, i) the opportunity to make good short-term profits [Marinov et al. 2004, p. 33].

During the 2010s, Japanese FDI in Poland in terms of both flows and stocks decreased (NBP Statistics). However, after 2015, a certain recovery could be seen. This period was also marked by the increasing participation of Poland in the European, in particular automotive, supply chain. This was reflected in the growing value of exports of parts and components of transportation equipment [RIETI-TID 2018]. Although Mazur and Takemura [2018] point to the fact that the current presence of Japanese investment in Poland is relatively low, Poland seems to be an important investment location in the region, built into the Japanese investors' strategy for Western Europe markets. For example, in 2018 Mitsui High-tec announced the establishment of the company's first European advanced factory in Poland.

It is foreseen that with the EPA, which entered into force on February 1, 2019, the engagement of Japanese capital in the EU will grow. It is also believed that the countries of Central and Eastern Europe will become more involved [Matsuura, 2018]. Moreover, the analysis conducted by Przeździecka et. al [2020] shows that due to the EPA-related trade liberalization, Polish exports of certain products may increase and that the agreement may contribute to the remodeling of the Polish-Japanese relationship [Przeździecka et. al, 2020, p. 729].

13.3. Japanese People in Poland

On 1 January 2020, there were 942 foreigners with Japanese citizenship registered in Poland (based on the number of people who have valid documents confirming the right to stay in the territory of the Republic of Poland), constituting 0.2% of the total number of foreigners residing in Poland. By comparison, foreigners with Vietnamese citizenship accounted for 2.9%, Indian 2.4%, the US 0.6% and South Korean 0.4%.

Between 2010 and 2019, the number of Japanese citizens residing in Poland remained flat, reaching the maximum level in 2018 at 1032, and the minimum level in 2015 at 852. The majority of this group stayed as short-term residents (70%), while long-term residents constituted 25% of the total number of residents [Urząd do Spraw Cudzoziemców statistics, 2020]. According to Pałasz-Rutkowska [2019], the group of people aged 30 to 40 was the most numerous, and the most popular Polish cities among Japanese natives were Warsaw, Wałbrzych and Wrocław [Pałasz-Rutkowska 2019, p. 566].

As far as work permits are concerned, in the first half of 2020 the total number of applications for a work permit declined by 17.5% in comparison to the same period of the previous year. For Chinese nationals, the drop reached almost 36%, for the Japanese approx. 12%, while applications for a work permit from South Korean citizens grew by 70%. In 2019, 247 work permits were issued to Japanese nationals. The number decreased by 36% compared to 2010. In 2010, permits issued to Japanese citizens accounted for 1% of total permits issued in Poland, while in 2019 the share equaled 0.1%. The most popular type of work permit among Japanese nationals was C: *when a person is working for a non-Polish employer but is delegated for more than 30 days to a branch or facility located in Poland*. Type A – *when a person is employed in a company based in Poland* – in the group of Chinese and Korean nationals [Ministerstwo Rodziny, Pracy i Polityki Społecznej statistics, 2020; types of work permits according to polandunraveled.com]. Type A recorded the highest decrease while B – *when a person performs a function in a management board or acts as a general partner or a proxy* – the highest growth in the given time period [Ministerstwo Rodziny, Pracy i Polityki Społecznej statistics, 2020; types of work permits according to polandunraveled.com].

The most numerous group was that of managers (32%), professionals (55%), and technicians and associate professionals (8%). By occupation, these were mostly IT specialists, teachers and artists. In 2019, the highest number of work permits was issued to workers from the manufacturing (42.5%), professional, scientific and technical activities (18%) and wholesale trade (10%) industries. The sectoral structure changed, since in 2010 only 5% of work permits were granted to those involved in professional, scientific and technical activities, and the most popular industries were manufacturing (39%), wholesale trade (14%) and construction (11%). In regional distribution of work permits, three voivodeships prevailed: Mazowieckie (38%), Dolnośląskie (22%) and Małopolskie (13%). Śląskie represented 11% of granted work permits. In 2010, the third place was occupied by Kujawsko-Pomorskie 13%, where e.g. Sharp Manufacturing Poland was operating [Ministerstwo Rodziny, Pracy i Polityki Społecznej statistics, 2020].

Between 2010 and 2019, the share of tourists from Japan in the total number of foreign tourists in Poland was steady and remained at an average of 1% of the total

number of tourists; however, in 2019 the number of tourists from Japan was 34% larger than in 2010. After the global financial crisis the number saw the highest increase for 2013 and 2016, 20% and 27% y-o-y, respectively. At the same time, tourists from the US accounted for 5% of all tourists coming to Poland [Statistics Poland LDB, 2020]. According to the Japan National Tourism Organization (JNTO) almost 64 thousand Japanese tourists visited Poland in 2018, 26% more than in 2014 [JNTO statistics, 2020]. By comparison, in 2019, 39 thousand Polish tourists visited Japan – a mere 0.1% of the total number of tourists in Japan in 2019. The share was the same for 2010, although the number of Polish tourists grew by 276% throughout the decade [JNTO statistics visitor trends, 2020].

13.4. Business Relations with Japan: Foreign Direct Investment, Companies with Japanese Capital in Poland and Bilateral Trade

13.4.1. Foreign direct investment

The global financial crisis had a strong impact on the Japanese FDI outflow. According to the JETRO statistics, the FDI flow decreased by 43% in 2009 and by 56% in 2010 compared to 2008. Early signs of economic rebound could be observed in 2011, when the net flow of outward FDI exceeded USD 100 billion. While in 2012 the volume of this outflow was still below 2008, in 2013 it recovered fully [JETRO Statistics; Dzienis, 2021]. During that time Japan suffered the great earthquake and tsunami in Tōhoku region, followed by the Fukushima disaster. The situation triggered an unprecedented appreciation of the yen, which stimulated Japanese outward FDI afterwards. Europe and Asia were the most popular locations in 2011, while the US prevailed in the years from 2013 to 2015. However, the status of the Central and Eastern Europe region changed. In 2015, Japanese investment inflow to CEE countries decreased by 27%, and by 46% for Poland [Matsuura, 2017, p. 158] (see Figure 13.1). Fluctuations in the value of TV exports can serve as an example. Between 2004 and 2010, the value of exports surged six times to USD 7.4 billion, to then shrink by 30% to USD 5 billion in 2015 [Matsuura, 2017, p. 164]. Japanese companies identified with flat panel TV production (Toshiba, Funai, Sharp) retreated from Poland, which used to be one of the largest places of TV manufacturing in Europe, due to severe competition with e.g. South Korean producers. Afterwards, the number of Japanese manufacturing firms in Poland remained little changed [Horie, 2019; Matsuura, 2017; Dzienis, 2021].

Figure 13.1.   Foreign direct investment inflow from Japan to Poland (left scale) and Japanese FDI positions in Poland (right scale)*, 2010–2018, USD millions
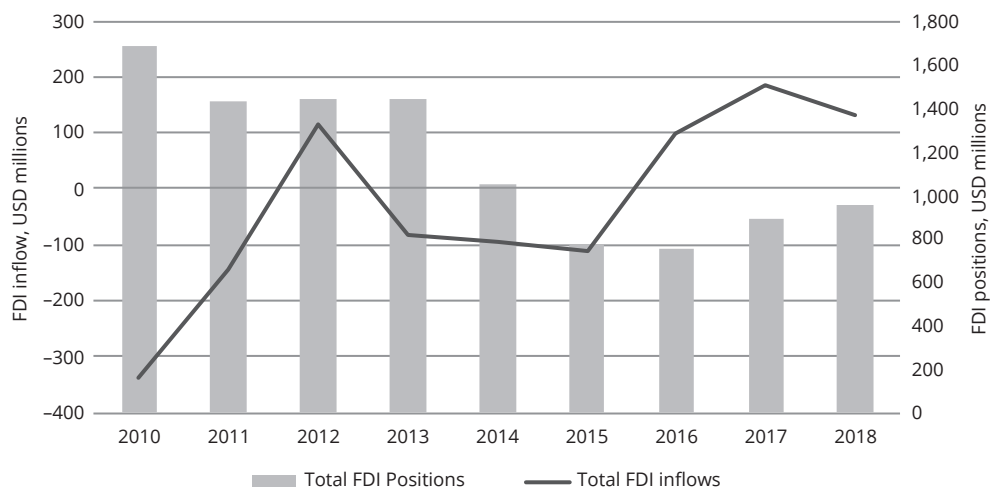
* total inflows for 2010–2012 and net inflows for 2013–2018.

Source: Compiled by the author based on data from National Bank of Poland Statistics, Foreign Direct Investment in Poland, https://www.nbp.pl/homen.aspx?f=/en/publikacje/ziben/ziben.html, accessed August 28, 2020.

Figure 13.2.   FDI inflows to Poland, Czech Republic and Hungary by immediate and ultimate counterpart, USD millions
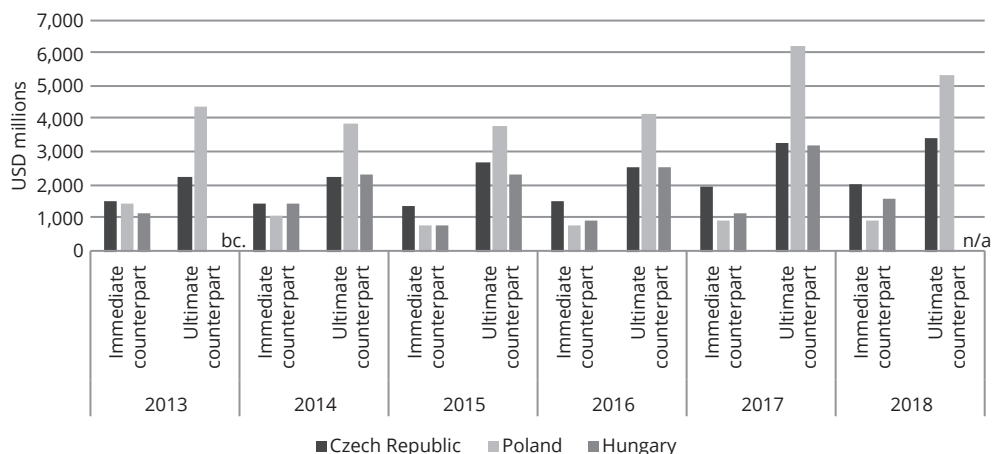
Source: Compiled by the author based on data from OECD FDI positions by partner country BMD4, https://stats.oecd.org/Index.aspx?DataSetCode=FDI_POS_CTRY#, accessed August 28, 2020.

Despite the fact that Japanese FDI inflow into the CEE region weakened during the 2010s, Poland benefitted from Japanese investment between 2013 and 2018 the

most when compared to the Czech Republic and Hungary (see Figure 13.2). The bulk of these capital flows passed through third countries, which can be analyzed thanks to the OECD's 4th edition of its Benchmark Definition of Foreign Direct Investment (BMD4) database, as it allows for tracing back the nationality of an ultimate investor, no matter of what nationality a direct investor was. According to OECD BMD4, Japan is the 10th largest contributor to the total FDI stock in Poland, when traced back to the ultimate investor [Dzienis, 2021].
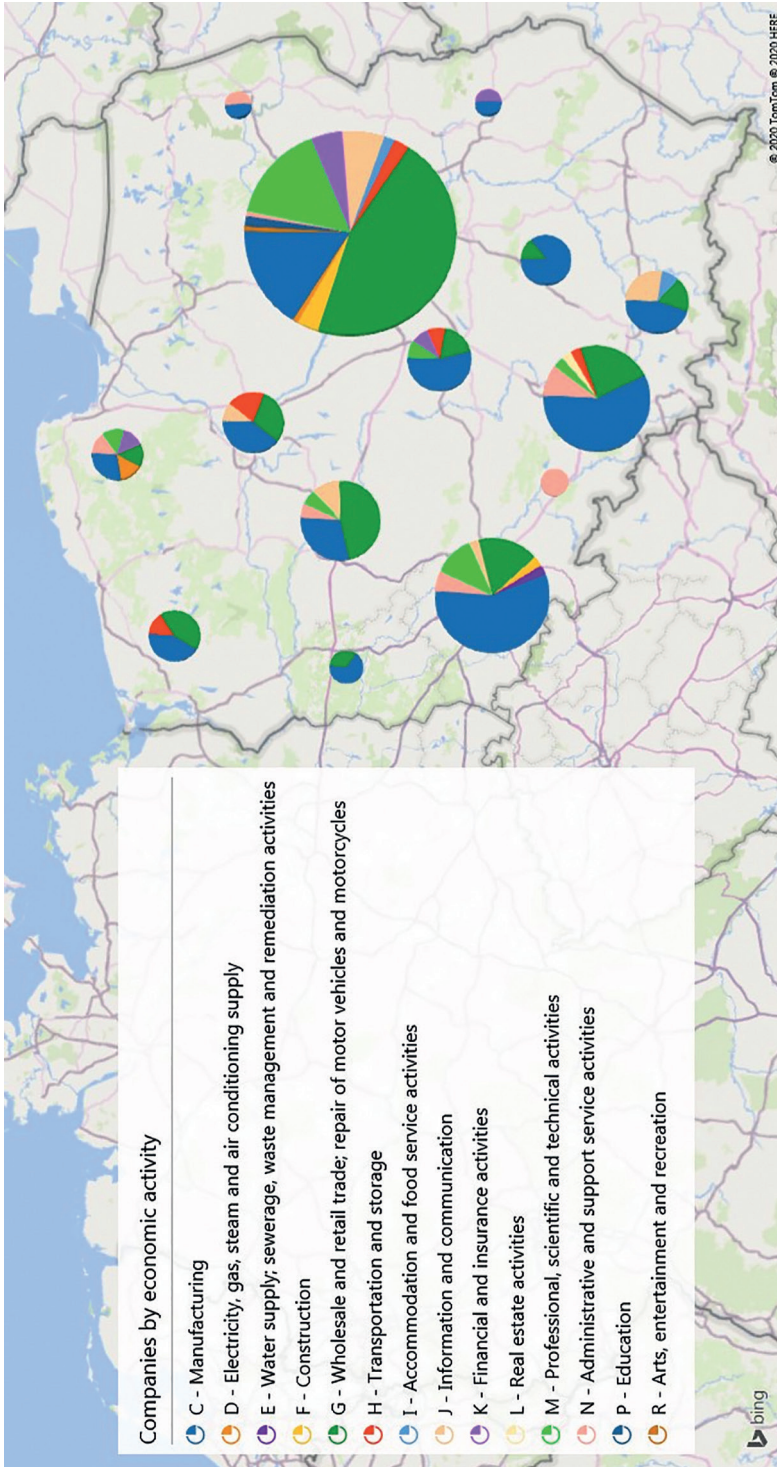
13.4.2. Firms with Japanese capital in Poland

In 2019, there were almost 68 thousand subsidiaries with Japanese shareholders operating in the world [ORBIS database, 2020]. 30% of Japan's total outward FDI stock was found in Europe, with the UK, the Netherlands and Germany characterized by the highest Japanese investment positions. According to JETRO, foreign investments in the wholesale and retail, chemicals and pharmaceuticals, transportation equipment and electric machinery industries were of primary interest (JETRO Statistics).

According to the Orbis database, in 2019 the total number of companies with an ultimate owner or shareholder holding together 51%, located in Japan and operating in Poland, was 264 (Orbis database). After having checked the list, the author excluded 15 companies where no details on an entity could be found or a firm was in liquidation. This narrowed the number of Japanese firms operating in Poland to 249 companies. The number of companies differs across databases as there are various methods of collecting such information. Data identified through a domestic source, the National Court Register (KRS), shows that at the end of 2019 there were 74 Japanese companies registered in Poland, 59 established by Japanese firms and 15 operating through other European companies. For the purpose of this paper, the data from the KRS was merged with the data from the Orbis database, and after excluding double entries the number of companies with Japanese capital functioning in Poland turned out to be 281. 93 of these firms are in the manufacturing sector.

As far as the geographical location is concerned (see Figure 13.3), the majority of Japanese companies from the manufacturing sector are located in the south-western part of Poland, with close proximity to the borders with Germany and the Czech Republic. The highest number of Japanese companies was recorded in Mazowieckie at 125 (of which 20 in manufacturing), Dolnośląskie at 36 (20) and Śląskie at 31 (18). 90 companies are registered in the "wholesale and retail trade; repair of motor vehicles and motorcycles industry" section (56 in Mazowieckie) and 27 in the "professional, scientific and technical activities" section.

Figure 13.3. Companies with Japanese capital by voivodeship and economic section (as at the end of 2019)

Companies by economic activity

C – Manufacturing

D – Electricity, gas, steam and air conditioning supply

E – Water supply; sewerage, waste management and remediation activities

F – Construction

G – Wholesale and retail trade; repair of motor vehicles and motorcycles

H – Transportation and storage

I – Accommodation and food service activities

J – Information and communication

K – Financial and insurance activities

L – Real estate activities

M – Professional, scientific and technical activities

N – Administrative and support service activities

P – Education

R – Arts, entertainment and recreation

Source: Compiled by the author based on data from KRS and Orbis databases.

Japanese manufacturing companies in Poland specialize mostly in car parts and components production, e.g. manual transmissions, gasoline engines, hybrid transaxles, ball bearings, thermal products for vehicles, etc. They participate in an automotive supply chain that incorporates the Czech Republic, France, UK, Russia, Turkey, South Africa, Japan and others [Toyota Motor Poland Sp. z o.o. 2020]. Moreover, as foreign companies operating in Poland have access to governmental grants, Japanese automotive firms such as Toyota Motor Manufacturing Poland Sp. z o.o. and Mitsui High-tec (Europe) Sp. z o.o. are among those who have been granted such aid [Ministry of Economic Development, 2020].

Between 2010 a 2019, approx. 82 companies with Japanese capital were established in Poland, among them 40 in Mazowieckie, 9 in Śląskie and 8 in Dolnośląskie. The most popular industries were wholesale and retail trade; repair of motor vehicles and motorcycles (32%) and manufacturing (24%). The third place was occupied by three industries: information and communication; professional, scientific and technical activities; and administrative and support service activities (10% each). A higher share of non-manufacturing industries suggests an ongoing diversification of Japanese investments in Poland. Recent investors include companies such as Shire Polska sp. z o.o. (wholesale and retail trade), KMD Poland sp. z o.o. (information and communication) or Takeda SCE sp. z o.o. (professional, scientific and technical activities). Moreover, investment in manufacturing is becoming increasingly technologically advanced. The already mentioned world's leading e-engine core manufacturer, Mitsui High-tec, has established its first European plant in Poland, which also demonstrates the growing role of Poland's electromobility industry. Nippon Seiki, a global producer of HUDs (Head-Up-Displays) and instrument clusters used in cars and motorcycles, has announced that by 2023 the company will build a factory near Łódź [automotivesuppliers.pl; Dycha, 2019].

169 Japanese companies reported their level of employment for 2018, which equaled 48,203 people in total (last available data between 2016 and 2018). Five of them had more than 2 thousand employees: Kompania Piwowarska S.A. (Wielkopolskie), NGK Ceramics sp. z o. o. (Śląskie), Fujitsu Technology Solutions sp. z o. o. (Warsaw), Pilkington Automotive Poland sp. z o. o. (Świętokrzyskie) and Yazaki Automotive Products Poland sp. z o. o. (Śląskie). According to available data, three companies exceeded USD 1 billion of operating revenue: Kompania Piwowarska S.A., JTI Polska sp. z o. o. and Toyota Motor Poland Company Limited sp. z o. o. The capital of companies registered with the KRS amounted to PLN 3.6 billion, with Toyota Motor Manufacturing Poland sp z o. o. at the top (PLN 1.3 billion) [Dzienis, 2021].

The perspective of Brexit accelerates the already observed automotive supply chain shift towards Eastern Europe, in particular to the Czech Republic, Slovakia, and even

to Russia and Turkey [Rudlin Consulting 2020]. Matsuura [2017] points out that Poland has become a significant element in the EU automotive supply chain; however, while the production of finished vehicles concentrates in the Czech Republic and Slovakia, Poland specializes in the production of intermediate goods [Matsuura, 2017].

13.4.3. Bilateral trade between Japan and Poland

Trade by product group

According to UNCTADstat, in 2018, Poland's exports to Japan equaled USD 672 million, while imports from Japan reached almost USD 4.2 billion (UNCTADstat). This was 0.1% and 0.9% of the world and the EU-28 exports, respectively, to Japan, and 0.5% and 3.9% of the world and the EU-28 imports, respectively, from Japan (see Figure 13.4).

Figure 13.4. Merchandise trade between Poland and Japan, and the EU-28 and Japan (right scale), exports and imports, million US dollars, 2010–2018
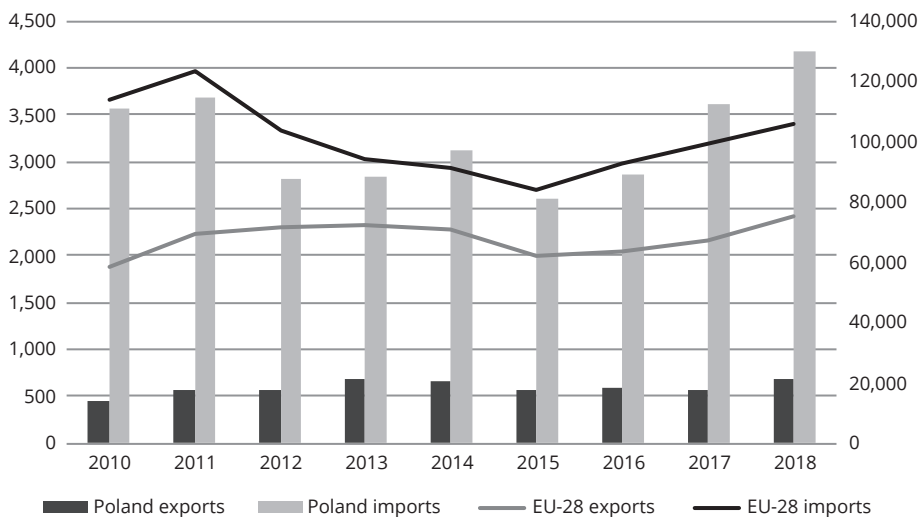
Source: Compiled by the author based on data from UNCTADstat, https://unctadstat.unctad.org, accessed August 27, 2020.

As far as export from Poland is concerned, 58% of exported manufactured goods were medium-skill and technology-intensive, while 15% represented high-skill and technology-intensive manufactures. Labor-intensive and resource-intensive manufactures accounted for 14% of total exported goods from Poland to Japan in 2018. The structure remained little changed throughout the decade.

Table 13.1. Major product groups in Poland's exports to and imports from Japan

Exports		Imports	
2010	2018	2010	2018
Machinery and transport equipment (50%)	Machinery and transport equipment (48%)	Machinery and transport equipment (58%)	Machinery and transport equipment (56%)
Manufactured goods (15%)	Manufactured goods (20%)	Miscellaneous manufactured articles (27%)	Miscellaneous manufactured articles (28%)
Food and live animals (12%)	Miscellaneous manufactured articles (13%)	Manufactured goods (8%)	Manufactured goods (6%)

Source: Compiled by the author based on data from UNCTADstat.

In 2018, in the machinery and transport equipment product group, exports of road vehicles, power generating machinery and equipment, and other industrial machinery and parts were the highest (see Table 13.1). However, in 2018 exports of road vehicles were 24% lower than in 2010 while other industrial machinery and parts surged by 533% over the same period.

The growth in exports of miscellaneous manufactured articles was propelled by the three groups: prefabricated buildings, sanitary, plumbing, heating and lighting fixtures, n.e.s., articles of apparel and clothing accessories grew throughout the whole period, and professional and scientific instruments, n.e.s. In terms of imports to Poland, 68% of goods imported from Japan in 2018 were medium-skill and technology-intensive manufactures (40% in 2010), while high-skill and technology-intensive manufactures accounted for 25% (51% in 2010). The structure of imports of manufactured goods changed between 2010 and 2018, allowing more medium-technology intensive goods to enter the Polish market.

The composition of import products in the machinery and transport equipment category (telecommunication and sound recording apparatus imports decreased by almost 16 pp to 3.5%) and the manufactured goods category (iron and steel imports shrank by 9 pp) did not change much over the past decade. Changes in the structure can be observed for miscellaneous manufactured articles, where the share of professional and scientific instruments, n.e.s. decreased by 44 pp to 27%, photo apparatus, optical goods, watches and clocks dropped by 16 pp to 4.5%, and miscellaneous manufactured articles, n.e.s. increased by 60 pp to almost 67% in 2018.

Trade by stage of production of goods

In this section, for the purpose of more detailed trade analysis, data by production stage provided by RIETI-TID 2018 and OECD BTDIxE Bilateral Trade in Goods by Industry and End-use, ISIC Rev.4 is examined. RIETI-TID 2018 (based on SITC Rev.3 nomenclature) is a database provided by the Research Institute of Economy, Trade and Industry, IAA, which covers all trade commodity goods and classifies data on trade by production stage: final goods (broken down into capital and consumption goods), intermediate goods (processed goods and parts and components) and primary goods. It also groups goods into 13 trading industries, which significantly facilitates the analysis.

During the past decade, Poland's exports were dominated by final goods, represented by consumption goods (47% of total exports on average), and intermediate goods, in particular parts and components (26% on average) (see Figure 13.5). In 2018, the capital goods category of final goods was almost twice as high as in 2010, and reached 17% of the total value of exports.

Figure 13.5. Trade by production stage, intermediate and final goods, total industry, USD millions
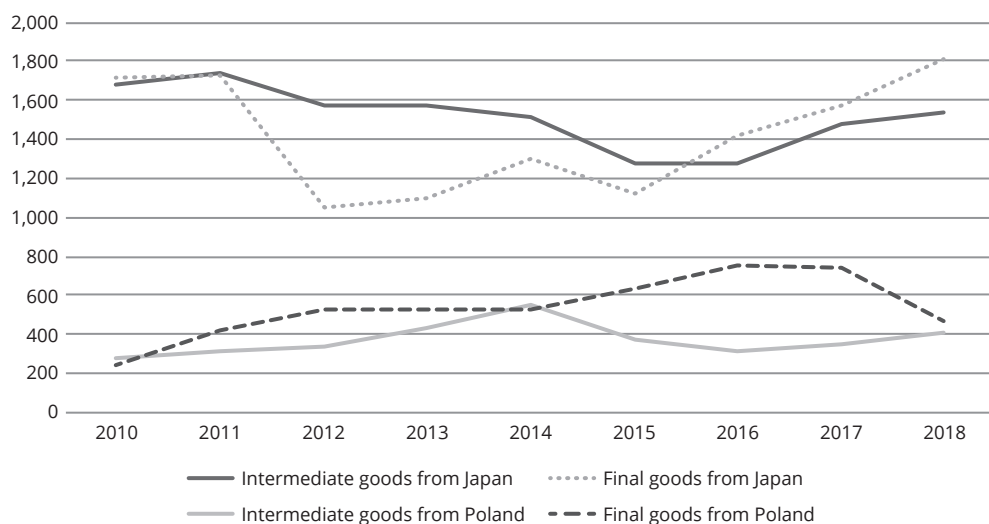
Source: Compiled by the author based on data from RIETI-TID 2018, https://www.rieti-tid.com/trade.php, accessed August 20, 2020 (final goods=consumption goods and capital goods, intermediate goods=parts and components and processed goods).

Moreover, trade with Japan was, on average, characterized by a slightly higher share of intermediates in imports and a higher share of final goods in exports. Trade in final goods proved to contribute more to the growth in both imports (6% up) and exports (94% up).

Figure 13.6. Poland's imports and exports of final goods and intermediate goods from/ to Japan by industry, 2010–2018, % of total final or intermediate goods, respectively

Imports – final goods

Exports – final goods

Legend (Imports – final goods):
- Other
- Household electric appliances
- Precision machinery
- Electrical machinery
- General machinery
- Transportation Equipment

Legend (Exports – final goods):
- Other
- Precision machinery
- Textile
- Toys and Miscellaneous goods
- Chemicals
- Electrical machinery
- General machinery
- Foods
- Transportation Equipment

Imports – intermediate goods

Exports – intermediate goods

Legend (Imports – intermediate goods):
- Precision machinery
- Other
- Transportation Equipment
- Iron and steel , Nonferrous metals
- Electrical machinery
- Chemicals
- General machinery

Legend (Exports – intermediate goods):
- Foods
- Other
- Electrical machinery
- Stone, clay, glass and concrete products
- Transportation Equipment
- Pulp,Paper and Wood
- Chemicals
- General machinery

Source: Compiled by the author based on data from RIETI-TID 2018, https://www.rieti-tid.com/trade.php, accessed August 20, 2020.

A drop in final goods imports from Japan after 2011 (USD 681 million less in 2012) was associated with the great Tōhoku earthquake and the Fukushima disaster, and the subsequent disruptions of supply channels, and special regulations imposed on imports of certain products from Japan (such as green tea or mushrooms). On the other hand, exports of foods in 2010 and 2018 constituted 11% of total exports, whereas, during the time in between, it ranged from 25% in 2014 to 45% in 2016, being susceptible to a variety of issues associated with food safety such as African Swine Fever (ASF), avian influenza, etc. The current COVID-19 pandemic also contributed to the reduction in food exports to Japan [www.portalspozywczy.pl] (see Figure 13.6).

Intermediate goods

In 2019, the value of Poland's exports of intermediate goods to Japan reached USD 310 million, 19% more than in 2010 [OECD.Stat]. During the time between 2010 and 2019, the share of the most technologically advanced intermediates declined from 16% in 2010 to 6% in 2019, the percentage of medium-high inputs decreased from 46% to 38%, while the share of medium-low goods increased from 10% to 16% of total exports of intermediate goods in 2019 [OECD.Stat]. Polish industries focused on medium-low technology inputs for exports to Japan, to the detriment of exports of high and medium-high technology intermediates (see Figure 13.7). According to the data by RIETI-TID 2018, in 2018, general machinery, chemicals, and pulp, paper and wood were the top three product groups, representing the shares of 24%, 21% and 13%, respectively, in the total exports of intermediate goods. Oils and coal, foods and textile goods saw the most dynamic increase compared to 2010. The value of exports of intermediate goods from the transport equipment category decreased by 46% in 2018 compared to 2010.

In 2019, the total value of imports of intermediate goods from Japan to Poland amounted to USD 1.6 bn, 9% less than in 2010 (OECD.Stats). Nevertheless, the asymmetry in bilateral trade of inputs is striking. According to OECD.Stats, Japan's exports to Poland became more medium-high technology intensive, since the share of medium-high technology goods increased by 20 pp and reached 85%, while medium-low technology inputs decreased by 2 pp to the level of 5% of the total imports of intermediate goods in 2019. From Poland's perspective, imports involved general machinery (28% of total intermediate imports) followed by chemicals (23%) and electrical machinery (20%). The highest growth in value between 2010 and 2018 was seen for chemicals, foods, general machinery and textiles.

In Europe, the value of sales of Japanese intermediates in the region is close to that of local sales, which is due to advanced liberalization of trade in the EU. At the same

time, imports of inputs from Japan are gradually decreasing [METI 2019, p. 350]..
Exports to Japan from Asia are substantial, but rather weak from North America and
Europe. The most obvious reasons are long distance and high transportation costs,
while the latter two regions enjoy large local markets [METI 2019, p. 351].

Figure 13.7. Trade in intermediate goods by technology intensity
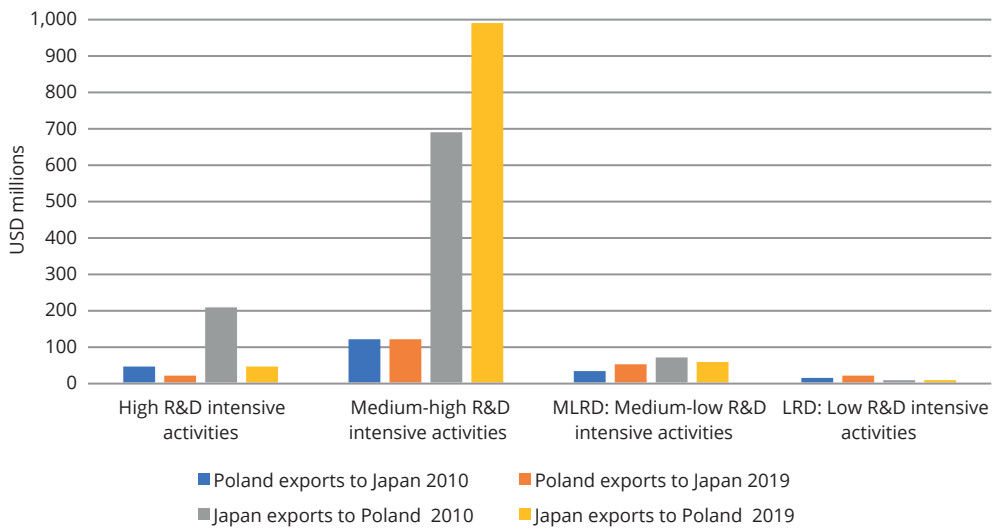
Source: BTDIxE Bilateral Trade in Goods by Industry and End-use, ISIC Rev.4, https://stats.oecd.org/Index.aspx?
DataSetCode=BTDIXE accessed September 8, 2020. For low R&D intensive activities in Japanese exports to Poland in
2010 and 2019 the values are close to 0.

After 2010, Poland demonstrated a positive trade balance in parts and components,
which proves the ongoing upgrade of production processes of domestic manufacturers.
In 2018, 78% of total parts and components exports from Poland were sent to the EU-28
markets. Exports of transportation equipment parts and components accounted for
39% of the total parts and components exports, with 85% of these products sent to the
EU-28 countries [RIETI-TID, 2018]. Poland is an important player in intra-regional
trade, in particular between the European markets and Germany, the latter being the
country's main partner in both regional and global value chains [Degain et al., 2017,
p. 61]. Bilateral trade between Germany and Poland mostly involves intermediate goods
and since there are over 4 thousand companies with Japanese capital in Germany (Orbis
database), a part of it is generated by Japanese affiliates in Europe. It is noteworthy
that in 2016 Poland re-exported 49% of intermediate imports (OECD.Stat TiVA).

The process manufacturing sector, which includes auto manufacturing, furniture,
food processing, textiles, and chemicals is emerging "as a stronghold of growth
in Poland" [McKinsey, 2015, p. 6]. These industries advance Poland's competitive

position and are ready for competitive expansion on the international market. In the long run, however, exporters should compete on brand or technology rather than low costs. [McKinsey, 2015]. This is especially true for Japan, where an exporter can find "120 million sophisticated and affluent consumers" (JapanGov).

13.4.4. Links between Poland and Japan expressed by the OECD TiVA indicators

Poland is highly involved in the global division of labor and this involvement has been deepening. This is confirmed by Poland's total global value chain (GVC) participation index, which stood at 48.1% in 2015 and could be broken down into forward participation of 21.4% and backward participation of 26.6% [WTO 2019]. As far as the top exporters of Poland's inputs through GVC are considered, European countries such as Germany, the Czech Republic and France are the leaders. In this ranking, China and Japan fall far below the European partners, although for China a slight move up can be observed. Among the top foreign input providers for Polish exports, in 2015 China occupied the second position just after Germany and before the Russian Federation. At the same time, Japan was the 14th procurement source in terms of value added. The highest levels of foreign inputs can be found for the following Polish industries: computers, electronic and electrical equipment (46%), transport equipment industry (42%) and chemicals and non-metallic mineral products (35%).

Furthermore, the foreign value added (FVA) in domestic final demand indicator demonstrates how industries in other countries are linked to consumers at home and can be interpreted as "imports of value added" (OECD.Stats TiVA). For Poland, we can observe the highest increase in partner shares between 2010 and 2015 for China (4.2 pp), Turkey (0.6 pp) and Ireland (0.6 pp). Japan's share decreased by 0.6 pp and the country fell from the 11th in 2010 to the 15th position in 2015. A breakdown of the indicator into the top industries shows that the value added from Japan's machinery and equipment, computers, electronic and electrical equipment, and transport equipment industries was the most common value added generated by Japanese companies in the Polish market. However, the growth in the partner's share was observed only for financial and insurance activities.

On the other hand, domestic value added (DVA) embodied in foreign final demand casts light on how industries are connected to consumers abroad. The indicator shows the impact of final demand in foreign markets on domestic output and can be defined as "exports of value added" (OECD.Stat TiVA). The analysis of Poland's top partner shares in the context of DVA sold abroad demonstrates, that the following foreign markets grew in importance between 2010 and 2015: the US (1.6 pp), China

(1.4 pp) and Switzerland (0.4 pp). Japan, which scored 23 rd in 2010 moved to the 21st position in 2015 (with the share of 1%), which means that the upstream impact of final demand in Japan on Poland's output grew. It is worth mentioning that the increase in Japan's share in exports of value added from Poland between 2010 and 2015 was the highest in information and communication, food products, beverages and tobacco, and transport equipment industries.

13.5. Conclusions

Polish-Japanese bilateral economic relations continue to develop slowly yet steadily. The number of Japanese citizens residing in Poland did not change significantly after 2010, while the number of work permit applications has decreased. As the number of work permits issued for delegated workers and those undertaking a management board role has increased, the number of Japanese nationals employed in a Poland-based companies has diminished. Besides the "traditional" manufacturing, Japanese citizens in Poland work in the professional, scientific and technical activities industry, which is a recent development.

After 2010, although Japanese FDI inflow to Poland dropped, the number of Japanese firms in Poland, especially non-manufacturing companies, increased, in particular those from the information and communications industry.

During the time in question, Poland became more specialized in intermediate goods manufacturing and more integrated into regional value chains. Exports to Japan rely more on final goods, with foods being one important category, albeit sensitive to any possible health safety issues. On the other hand, imports concentrate on medium-high technology products, mostly from the transportation equipment, general machinery and electrical machinery industries. However, decreasing procurement from Japan, in particular from the transportation industry, suggests that Poland tends to procure locally and that Poland-based Japanese MNCs are mostly linked to the European production network. Moreover, looking at the OECD TiVA indicators, Japan seems to be a distant partner for Poland, also from the perspective of value added (VA). Nevertheless, the import of VA is more pronounced and, when combined with trade, Japan becomes Poland's 11th largest partner in terms of VA supplies for the Polish market [OECD, 2017].

Recently, new challenges for Polish-Japanese cooperation have emerged. They are mostly related to Brexit, the impact of the Japan-EU EPA on sectoral output and the consequences of the COVID-19 pandemic. But with new challenges come new opportunities, among which increasing exports, attracting tourists, and also developing

cooperation in research and development are within reach. Popularizing Poland's actual strengths and building a national brand associated with high quality and technology, skilled workers and cultural similarities are essential for success with Japan.

Bibliography:

Degain, Ch., Meng, B., Wang, Z. [2017], *Recent trends in global trade and global value chains*, in: "Global value chain development report 2017: measuring and analyzing the impact of GVCs on economic development", WTO, IDE-JETRO, RCGVC-UIBE, pp. 37–68, https://core.ac.uk/download/pdf/288468065.pdf.

Dzienis, A.M. [2021], *Japanese Foreign Direct Investment in Poland*, in: R. Dygas, P.K. Biswas (eds.), *Foreign Direct Investment outflow from Asian countries to EU member states*, SGH Warsaw School of Economics Publishing House,, Warsaw, pp. 83–98.

Horie, M. [2019], "ポーランド経済の現状と今後の展望〜 EU 域内屈指の成長センターとして注目されるポーランド 〜" [Current status of the Polish economy and future prospects – Poland attracts attention as one of the leading growth centers in the EU –], MUFG, Research Department, 2019.09.05, https://www.murc.jp/wp-content/uploads/2019/09/report_190905.pdf, accessed: 6.07.2020.

Marinov, A., Marinova, S.T., Morita, K. [2004], *Internationalization of Japanese Multinational Corporations in Central and Eastern Europe*, "Journal of East-West Business", 9:3–4, 27–52, DOI: 10.1300/J097v09n03_03.

Matsuura, M. [2018], "中東欧と「外資依存経済」" [Central and Eastern Europe and the "Foreign Capital Dependent Economy"], Discussion Paper No. 1803, Graduate School of Economics, Kobe University, http://www.econ.kobe-u.ac.jp/activity/publication/dp/pdf/2018/1803.pdf, accessed: 6.7.2020.

Matsuura, M. [2017], "ポーランド経済と海外直接投資. 外資企業のプレゼンスと貢献の観点で" [Polish economy and foreign direct investment. From the perspective of presence and contribution of foreign companies], J-STAGE, Annual Report of Japan-EU Conference 2017/37, pp. 154–174, DOI: 10.5135/eusj.2017.154.

Mazur, G., Takemura, M. [2018], *Polish-Japanese Investment and Trade Relations*, "明大商学論" 第101 巻第1 号 [The Bulletin of the Faculty of Commerce, Meiji University, Vol. 101, no 1], pp. 45–64.

McKinsey [2015], *Poland 2025: Europe's new growth engine*, https://www.mckinsey.com/~/media/mckinsey/business%20functions/economic%20studies%20temp/our%20insights/how%20poland%20can%20become%20a%20european%20growth%20engine/poland%202025_full_report.ashx.

Ministry of Economy, Trade and Industry (METI) (2019), White Paper, Section 2 Global Value Chains, https://www.meti.go.jp/english/report/data/wp2019/pdf/2_3_2.pdf.

Ministry of Economy, Trade and Industry (METI) (2020), Trade Policy Bureau, July 2020, White Paper on International Economy and Trade 2020 [Outline], https://www.meti.go.jp/english/press/2020/pdf/0707_001a.pdf.

OECD [2017], *Poland. Trade and investment statistical note*, http://www.oecd.org/investment/POLAND-trade-investment-statistical-country-note.pdf.

Pałasz-Rutkowska, E. [2019], *Historia stosunków polsko-japońskich tom II 1945–2019*, Uniwersytet Warszawski, Wydział Orientalistyczny, Katedra Japonistyki, Warszawa 2019.

Przeździecka, E., Górska, R., Kuźnar, A., Menkes, J. [2020], *The Effects of EU – Japan Economic Partnership Agreement for Poland's*, "Ekonomista", January 2020, pp. 701–733.

Rudlin Consulting 2020, https://rudlinconsulting.com/category/china-and-japan/.

UNCTAD [2020], World Investment Report, https://unctad.org/en/PublicationsLibrary/wir2020_overview_en.pdf.

Databases:

Bureau van Dijk 2020, Orbis database.

National Court Register (KRS) database.

Japan National Tourism Organization, https://www.jnto.go.jp/jpn/statistics/20200318_3.pdf, accessed: 17.09.2020.

Japan National Tourism Organization, https://www.jnto.go.jp/jpn/statistics/visitor_trends/index.html, accessed 17.09. 2020.

Japanese Trade and Investment Statistics (2020), Japan External Trade Organization JETRO, https://www.jetro.go.jp/en/reports/statistics.html, accessed 8.09.2020.

National Bank of Poland (NBP) Statistics, Foreign Direct Investment in Poland, https://www.nbp.pl/homen.aspx?f=/en/publikacje/ziben/ziben.html, accessed 28.08.2020.

OECD.Stat, BTDIxE Bilateral Trade in Goods by Industry and End-use, ISIC Rev.4, https://stats.oecd.org/index.aspx?queryid=64755, 28.08.2020.

OECD.Stat, FDI statistics according to Benchmark Definition 4th Edition (BMD4), https://stats.oecd.org/Index.aspx?DataSetCode=FDI_POS_CTRY#, August 28, 2020.

OECD.Stat, Trade in Value Added TiVA, https://stats.oecd.org/Index.aspx?datasetcode=TIVA_2018_C1

Research Institute of Economy, Trade and Industry, IAA, RIETI-TID 2018 database, https://www.rieti-tid.com, accessed: 20.08.2020.

UNCTADstat [2020], https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx, accessed: 29.07.2020.

Ministry of Finance, https://www.mof.go.jp/international_policy/reference/iip/data.htm, accessed: 25.09.2020.

Ministerstwo Rodziny, Pracy i Polityki Społecznej, https://psz.praca.gov.pl/web/urzad-pracy/-/8180075-zezwolenia-na-prace-cudzoziemcow, accessed: 24.08.2020.

Statistics Poland, Local Data Bank, https://bdl.stat.gov.pl/BDL/dane/podgrup/tablica, accessed: 5.08.2020.

Urząd do Spraw Cudzoziemców, https://udsc.gov.pl/statystyki/raporty-okresowe/zestawienia-roczne/, accessed: 25.08.2020,

World integrated trade solutions (WITS), http://wits.worldbank.org/visualization/country-analysis-visualization.html, accessed: 25.09.2020.

Web pages:

Dycha, Ł. [2019], *Japanese concern, Nippon Seiki, will invest in Ksawerów*, 16 July 2019, https://uml.lodz.pl/aktualnosci/artykul/29225/2019/7/16/, accessed: 25.09.2020.

Gov.pl, 20 January 2020, Polska w Japonii, *Wizyta Premiera Mateusza Morawieckiego w Japonii*, https://www.gov.pl/web/japonia/wizyta-premiera-mateusza-morawieckiego-w-japonii, accessed: 25.09. 2020.

Japan External Trade Organization (JETRO), World Trade Investment Reports, https://www.jetro.go.jp/world/europe/pl/gtir.html, accessed: 2.09. 2020.

JapanGov, https://www.japan.go.jp/investment/market_potential.html, accessed: 15.09. 2020.

Ministry of Economic Development: https://www.gov.pl/web/rozwoj/informacje-o-udzielo-nej-pomocy-publicznej, accessed: 28.08.2020.

PolandUnraveled.com, https://polandunraveled.com/get-work-permit-poland/, accessed: 21.09.2020.

Portalspożywczy.pl, *Japonia znosi zakaz importu polskiego drobiu i jaj*, https://www.portalspo-zywczy.pl/tagi/eksport-do-japonii,25039.html, accessed September 25, 2020.

Prezydent.pl, 17 February 2015, *Z premierem Japonii o polityce bezpieczeństwa i gospodarce*, https://www.prezydent.pl/archiwum-bronislawa-komorowskiego/aktualnosci/wizyty--zagraniczne/art,374, z-premierem-japonii-o-polityce-bezpieczenstwa-i-gospodarce.html, accessed: 25.09.2020.

Toyota Motor Poland Sp. z o.o. 2020: https://www.toyotapl.com/fabryka-toyoty/o-fabry-ce/o-nas.

https://automotivesuppliers.pl/en/poland/nippon-seiki-invests-in-the-lodz-sez.

Chapter 14

Poland's Economic Cooperation with the Republic of Korea: Trade and Foreign Direct Investment

Marta Mackiewicz

14.1. Introduction

South Korea (the Republic of Korea) has not yet been one of Poland's key economic partners. Geographical distance and cultural differences mean that bilateral economic cooperation is not a priority for either country. According to data from the Ministry of Trade, Industry and Energy, the key trading partners for Korea are China and Hong Kong, the USA, Vietnam and Japan. However, cooperation between Poland and Korea has good prospects ahead of it and can bring a number of benefits for Poland, arising from good innovation policy practices.

The aim of the chapter is to assess the level of cooperation with South Korea in trade and investment and to define the priorities of Polish foreign policy relating to bilateral economic cooperation. In the first case, the analysis of statistical data (in particular from the *Knowledge Database – Foreign Trade* of Statistics Poland, and the databases of the OECD and the National Bank of Poland) on foreign direct investment was used. The discussion is complemented with a comparative analysis and an analysis of the content of websites of foreign investment institutions (PAIH) and the Ministry of Economy and Finance, the Ministry of Trade, Industry and Energy, and the Embassy of the Republic of Korea. The studies presented were conducted with a view to identifying opportunities to improve bilateral economic cooperation, in particular by increasing trade and cooperation. According to the theory of international exchange, raising the level and strengthening economic cooperation can be beneficial for both sides due to their socio-economic development.

14.2. South Korean Economy

The Republic of Korea was one of the so-called Asian Tigers, countries that achieved dynamic economic growth in the latter part of the 20th century, basing their development on exports of goods. The economy of the Republic of Korea is heavily dependent on foreign trade performance, which shows a downward trend. According to the OECD, foreign trade accounted for 41.6% of the country's GDP in 2018. In international trade, Korea has a positive trade balance. Interestingly, the opposite is true of trade in services, where the balance is negative (imports outperform exports). Moreover, services dominate the country's economic structure, accounting for 60.9% of GDP and 69.8% of total employment. Between 1991 and 2018, the share of Korean services in total GDP increased by around 7.2 pp and employment in the sector rose by 21.1 pp. By comparison, industry and agriculture represent around 33.6% and 2.2% of GDP, respectively [OECD, 2020]. Korea is known for its high degree of innovation and technological advancement and is one of the top ten countries with the largest industrial production in the world. The leading industrial sectors are the shipbuilding, electronics, petrochemical, automotive, metallurgical, machinery and construction industries. Industrial production growth in 2018 was 4.6% [OECD, 2020].

The Republic of Korea is one of the countries with the highest broadband access rates and the highest connection speeds. The share of households with internet access is 99.5% [OECD, 2020]. Korea is also one of the leaders in the development of mobile networks.

Due to natural and demographic factors the Republic of Korea is not self-sufficient in food production. A significant part of the country (approx. 70%) is mountainous land, which hinders the development of agriculture. Cropland represents only 16.6% (compared with almost 40% in Poland). For this reason, the Republic of Korea is a net importer of agri-food products and its food production is largely based on imported raw materials [Ministry of Development, 2020].

The Republic of Korea is a major global investor. Korean investment worldwide totaled approximately USD 344 bn at the end of 2017, ranking 20th in the world. At the end of the same period, FDI in the country amounted to USD 230 bn (29th in the world) [OECD, 2020].

The economy's high dependence on foreign trade has translated into an economic slowdown in the wake of the COVID-19 pandemic. Supply chains have been reduced, resulting in production declines, e.g., in the automotive and electronics industries. The South Korean Ministry of Economy and Finance (MOEF) announced a new strategy in 2020 (Korean New Deal: National Strategy for a Great Transformation), to reduce

the negative effects of the pandemic crisis. The Korean government plans to invest 160 trillion South Korean wons (KRW) to create 1,901,000 jobs by 2025, focusing on two main branches – digital development and the green economy [MOEF, 2020].

14.3. Bilateral Economic Cooperation

The Republic of Korea is Poland's key partner in Asia. A Polish-Korean strategic partnership was established in 2013. The country also has free trade agreements (FTAs) with the European Union and the US, EFTA, Chile, Singapore, India, and Peru.

An agreement on economic cooperation between Poland and the Republic of Korea was signed in 2004. In 2016, a Memorandum of Understanding was signed between the Ministry of Development of the Republic of Poland and the Ministry of Trade, Industry and Energy of the Republic of Korea on industrial cooperation. However, the Free Trade Agreement between the European Union and the Republic of Korea, which has been in force since 1 July 2011, is of the greatest importance in terms of economic relations. It also provides for the gradual removal of tariff barriers between the parties and many non-tariff barriers, as well as the improvement of mutual access to markets for investment and services (OJ L 127/9). So far, 70% of customs duties on goods between the EU and the Republic of Korea have been abolished [Ministry of Development, 2020].

The agreement provides for a gradual reduction of customs duties on industrial products to 0%. According to data from the Ministry of Development, the average effective tariff rate, i.e. tariff weighted by the volume of trade in individual commodity groups is about 2% for imports from South Korea to Poland and more than 7% for exports from Poland to Korea [Ministry of Development, 2020].

14.4. Trade Turnover

Poland has a high trade deficit with South Korea. The importance of the country as Poland's trading partner remains stable. No significant fluctuations are witnessed in either total exports or imports. This means that the observed increase in trade volume is due more to the increasing opening up of the Polish economy to trade than to the change in the role played by South Korea in this process. The country's position as a recipient of Polish products and services is negligible and its share of Polish exports ranges from 0.24% to 0.37% (Figure 14.1). Korea, on the other hand, is an important supplier to the Polish market with an average market share of 1.80%.

Figure 14.1. South Korea's share of Polish trade in goods and services (%)*
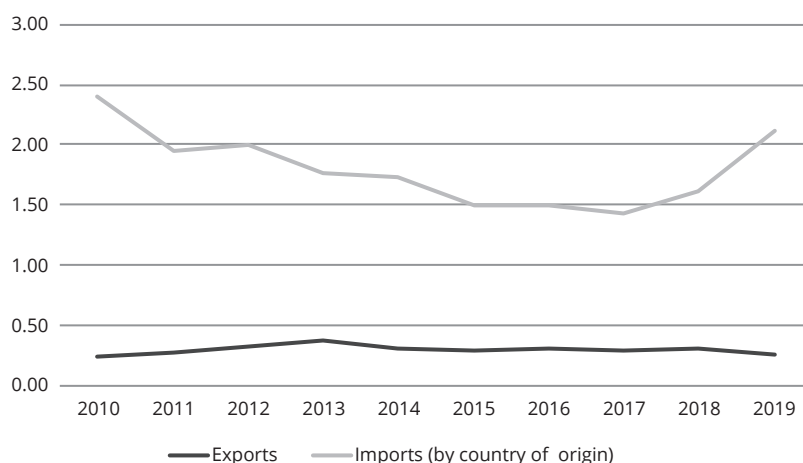
* 2019 data refer to commodity turnover only.

Source: Statistics Poland [2020].

While imports dominated exports in the case of trade in goods, accounting for 97.4% of total trade between 2010 and 2019, the exchange was more sustainable for services, with imports representing 66.6% of total trade.

The structure of trade in goods is highly concentrated. In 2019, three sections (according to the CN classification) accounted for a total of 77.5% of imports, the largest of which (XVI – machinery and mechanical appliances; electrical equipment; parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles) accounted for 58.0% of exports at the same time. Trade in goods with the Republic of Korea is shown in Table 14.1.

Table 14.1. Trade in goods with the Republic of Korea in 2019 (USD thousands)

No.	CN sections	Exports	Imports	Balance
XVI	mechanical and electrical equipment, sound recorders and reproducers	**218,432.4**	**3,262,367.8**	–3,043,935.3
VII	plastics and articles thereof; rubber and articles thereof	45,538.1	**570,834.5**	–525,296.4
XVII	vehicles, aircraft, vessels and associated transport equipment	31,590.3	**524,592.7**	–493,002.5
XV	base metals and articles of base metals	**99,776.0**	**528,204.8**	–428,428.8
VI	products of the chemical or allied industries	35,446.7	280,155.6	–244,708.9
XVIII	optical, cinematographic, measuring, medical instruments and apparatus, watches, etc.	26,582.2	198,826.7	–172,244.5

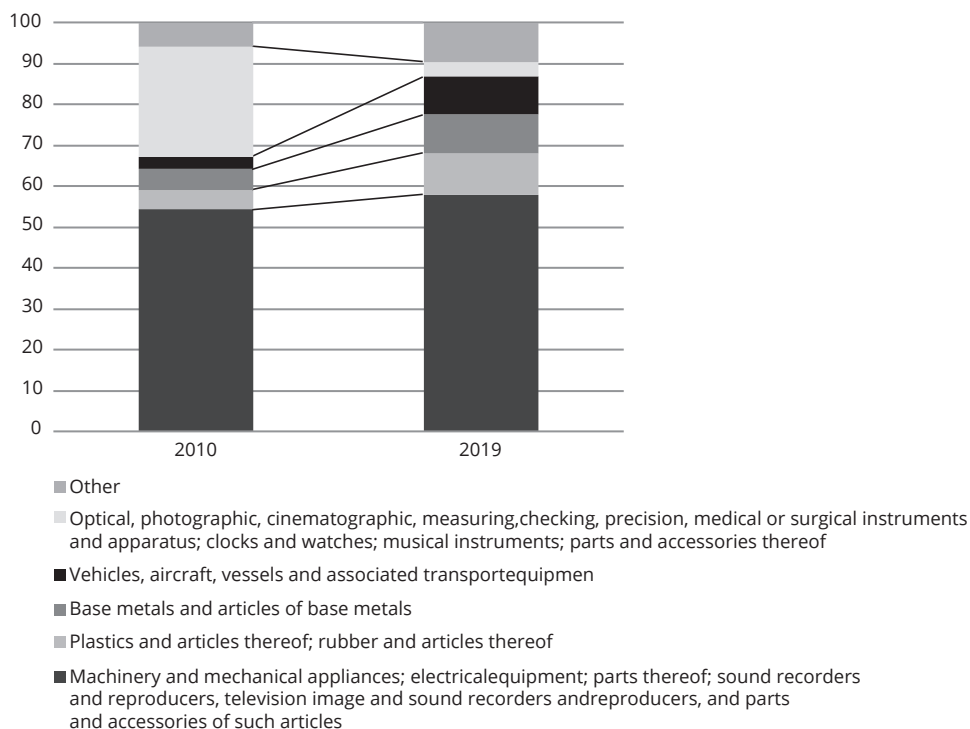| No.	CN sections	Exports	Imports	Balance
XI	textiles and textile articles	4,866.9	130,313.1	–125,446.2
XIX	arms and ammunition, parts and accessories thereof	0.2	30,134.6	–30,134.3
V	mineral products	5,467.1	15,776.1	–10,309.0
VIII	raw hides and skins; articles thereof; travel goods, handbags and similar containers	1,679.0	7,480.9	–5,801.9
XX	miscellaneous manufactured articles	17,135.3	21,703.0	–4,567.7
X	pulp of wood or other fibrous cellulosic material, paper or paperboard	6,299.3	10,099.5	–3,800.2
XXII	other	611.9	1,867.9	–1,256.0
XII	footwear, headgear, umbrellas, walking sticks, prepared feathers, artificial flowers	580.9	1,589.3	–1,008.4
XXI	works of art, collectors' pieces	8.1	56.7	–48.6
III	animal or vegetable fats and oils and their cleavage products	0.0	4.3	–4.3
IX	wood and articles of wood, articles of cork, straw, esparto, basketware	1,883.7	62.3	1,821.4
I	live animals, animal products	7,137.6	115.8	7,021.8
XIII	articles of stone, plaster, cement, asbestos, mica etc., ceramic products, glass	32,251.2	21,707.3	10,543.9
IV	prepared foodstuffs, beverages, spirits and vinegar, tobacco	34,316.5	20,013.4	14,303.1
II	vegetable products	19,659.0	416.2	19,242.9
XIV	pearls, precious or semi-precious stones, imitation jewelry	**108,679.9**	685.5	107,994.4
Total		697,942.2	5,627,008.0	–4,929,065.8

Source: Ibid.

The deepest trade deficit with Korea is generated by dominant imports, i.e. mechanical and electrical equipment and sound recorders and reproducers (USD 3,044 m); plastics and articles thereof, rubber and articles thereof (USD 525 m) and vehicles, aircraft, vessels and associated transport equipment (almost USD 500 m) (Table 14.1).

The share of the largest section has increased from 54.3% to 58% in the last decade. It is worth noting, however, that since 2010 there have been very large changes in the import structure. Section XVIII (optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; clocks and watches; musical instruments; parts and accessories thereof) which ranked in 2010 with a share of 27.0% significantly lost in importance and in 2019 accounted for only 3.5% of imports. This change is primarily attributable to a steep decrease in CN subheading 901380 (liquid crystal devices; other optical appliances and instruments), where the value

of imports decreased from more than USD 1 bn to USD 21 m (Figure 14.2). In 2019, special-purpose machinery and mechanical appliances prevailed in goods imports from Korea (Table 14.2).

Figure 14.2. Commodity groups with the largest share of Poland's imports from South Korea in 2010 and 2019 (%)

■ Other

▢ Optical, photographic, cinematographic, measuring,checking, precision, medical or surgical instruments and apparatus; clocks and watches; musical instruments; parts and accessories thereof

■ Vehicles, aircraft, vessels and associated transportequipmen

■ Base metals and articles of base metals

■ Plastics and articles thereof; rubber and articles thereof

■ Machinery and mechanical appliances; electricalequipment; parts thereof; sound recorders and reproducers, television image and sound recorders andreproducers, and parts and accessories of such articles
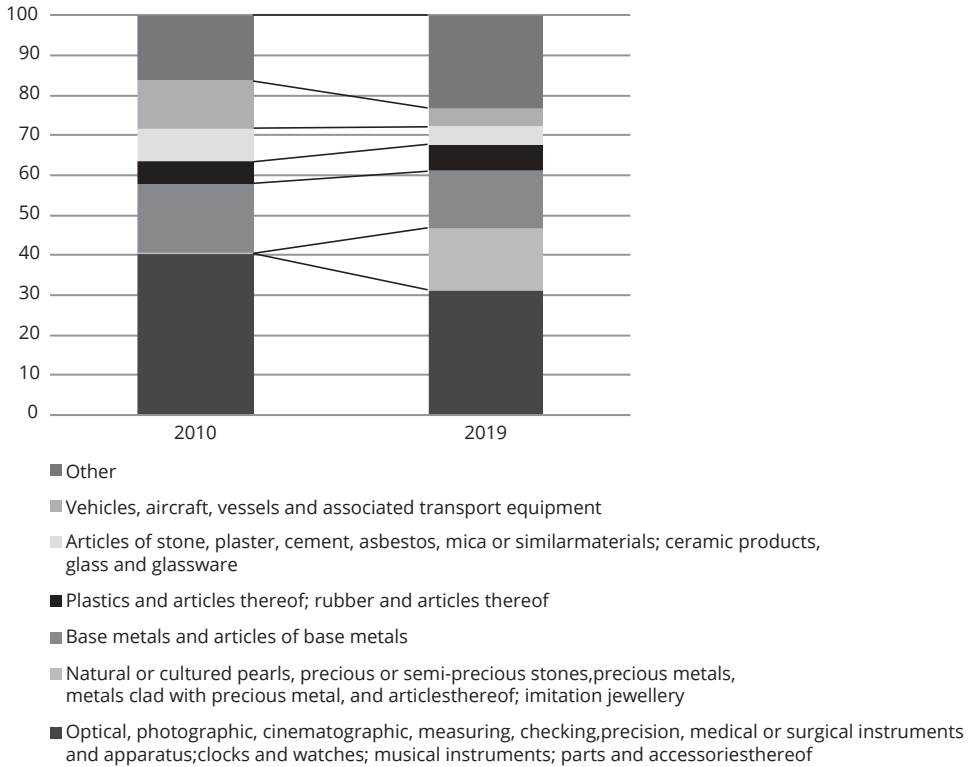
* 2019 data refer to commodity turnover only.

Source: Ibid.

Table 14.2. The largest categories of Polish goods imports from South Korea in 2019.

CN code	Name	Amount (USD m)
847989	machines and mechanical appliances having individual functions, other than those specified under subheadings 84791000 to 84798200	503
850790	parts of electric accumulators, including separators	487
850760	lithium ion batteries	412
852990	parts suitable for use solely or principally with the apparatus of headings 8525 to 8528, except antennas, reflectors and parts thereof	253
847330	parts and accessories of the machines of heading 8471	227

Source: Ibid.

Figure 14.3. Commodity groups with the largest share of Poland's exports to South Korea in 2010 and 2019 (%)

■Other

■Vehicles, aircraft, vessels and associated transport equipment

■Articles of stone, plaster, cement, asbestos, mica or similarmaterials; ceramic products, glass and glassware

■Plastics and articles thereof; rubber and articles thereof

■Base metals and articles of base metals

■Natural or cultured pearls, precious or semi-precious stones,precious metals, metals clad with precious metal, and articlesthereof; imitation jewellery

■Optical, photographic, cinematographic, measuring, checking,precision, medical or surgical instruments and apparatus;clocks and watches; musical instruments; parts and accessoriesthereof

* 2019 data refer to commodity turnover only.

Source: Ibid.

Table 14.3. The largest categories of Polish goods exports to South Korea in 2019

| Code	Name	Amount (USD m)
711299	waste and scrap, other than ash, of precious metals or metals clad with precious metals	108
851010	shavers with self-contained electric motor	53
821220	safety razor blades, including razor blade blanks in strips	31
740311	refined copper – cathodes and sections of cathodes	31
220300	beer made from malt	18

Source: Ibid.

As with imports, there have been significant changes in the commodity export structure (Figure 14.3). The largest increase in the share was recorded in section XIV (natural or cultured pearls, precious or semi-precious stones, precious metals, metals

clad with precious metal, and articles thereof; imitation jewelry; coin), and basically in one of its largest subheadings number 711299 (waste and scrap of precious metals or of metal clad with precious metal, excluding ash) which reached USD 108 m in 2019 (Table 14.3). In 2019, the value of exports in this subheading was zero.

An analysis of the share of high-tech exports[1] in total exports showed that they were subject to considerable fluctuations (ranging at 26–59%), as depicted in Figure 14.4. The first half of the decade was a period of declining trend, but since 2014 it has seen a growth. Given the relatively small amount of these exports, as well as its significant concentration in individual headings, it can be assumed that the proportion of high-tech exports among the goods supplied to the Korean market may be influenced by individual decisions by the largest exporters.

Figure 14.4. Share of high-tech exports in total exports to the Republic of Korea (%)
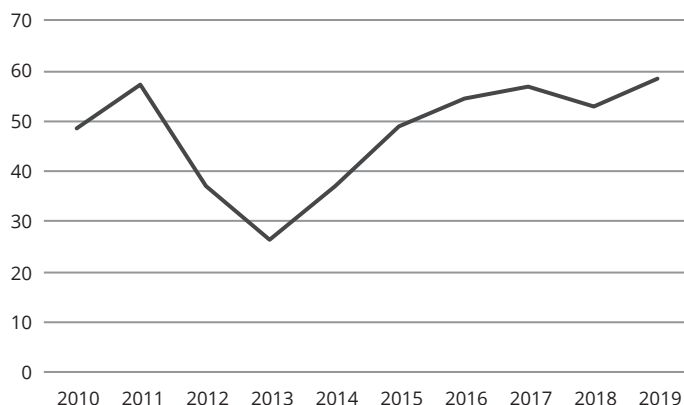
Source: Calculations by the author based on Statistics Poland data.

In 2019, imports were about 8 times higher than exports. It can be seen that from the entry into force of the FTA between the EU and the Republic of Korea until the introduction of the ban on imports of Polish pork, Polish exports grew faster than imports (Table 14.4). In the most recent period, trade in goods has been growing dynamically (Figure 14.5).

The clear disparity between imports from and exports to the Korean market resulted in a trade deficit of more than USD 4.8 bn in 2019, up by nearly USD 596 m from a year before. It is worth noting that the deep deficit of Polish trade with the Republic of Korea

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[1]   The following CN headings are classified as high-tech exports: 2801 to 3825, 8401 to 8548, 8801 to 8908, 9000 to 9033, 9301 to 9307.

is determined by the structural advantages of the Korean economy over the Polish economy – both in terms of labor productivity and the level of production innovation.

Figure 14.5. Dynamics of trade with the Republic of Korea between 2010 and 2019 (USD millions)
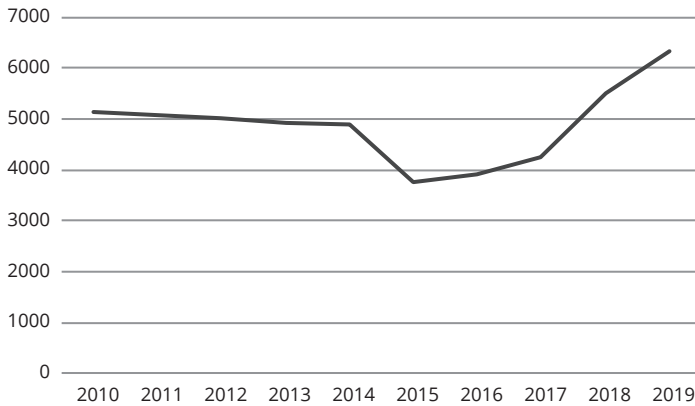
Source: Ibid.

Table 14.4. Value and dynamics of trade with the Republic of Korea between 2010 and 2019 (USD millions)

Year	Exports	Imports	Balance
2010	275.5	4,866.8	–4,591.3
2011	416.3	4,647.2	–4,230.9
2012	530.7	4,492.3	–3,961.6
2013	723.5	4,192.3	–3,468.8
2014	506.8	4,400.7	–3,893.9
2015	424.5	3,331.6	–2,907.1
2016	506.5	3,395.1	–2,888.6
2017	544.0	3,711.0	–3,167.0
2018	615.1	4,881.7	–4,266.6
2019	697.9	5,627.0	–4,929.1

Source: Ibid.

The significant decrease in exports to Korea in 2014 was mainly due to a large (almost EUR 127 m, or 39%) decrease in demand for goods falling within the leading section XVI (mechanical and electrical equipment), as well as the ban imposed by the Korean authorities in mid-February 2014 on port imports from Poland. Exports of "live animals and animal products" to Korea fell by EUR 23.5 m (whereas in 2013 it represented 19% of the value of exports in this product group).

14.5. Investment

According to Statistics Poland data, as at the end of 2018, there were 203 companies with Korean capital participation operating in Poland. The capital invested by them amounted to almost PLN 2.5 bn. Almost two-thirds of these companies, i.e. 131 entities, were companies employing up to 9 people. In 45 companies, the participation of foreign capital exceeded USD 1 m.

According to NBP data, in 2018 the net inflow of capital to Poland from Korean direct investment amounted to PLN 101.5 m, representing 0.2% of total foreign direct investment in Poland. It consisted of the reinvested earnings of PLN 63.8 m and inflows of equity capital (PLN 43.4 m) and a negative value of debt instruments (–PLN 5.8 million).

Poland's outward direct investment positions in South Korea amounted to PLN 11.7 m. They consisted of PLN 2 m in equity and PLN 13.3 m in debt instruments. Reinvested earnings had a negative value of –PLN 3.6 m (Table 14.5).

Table 14.5. Foreign direct investment in 2018 (PLN millions)

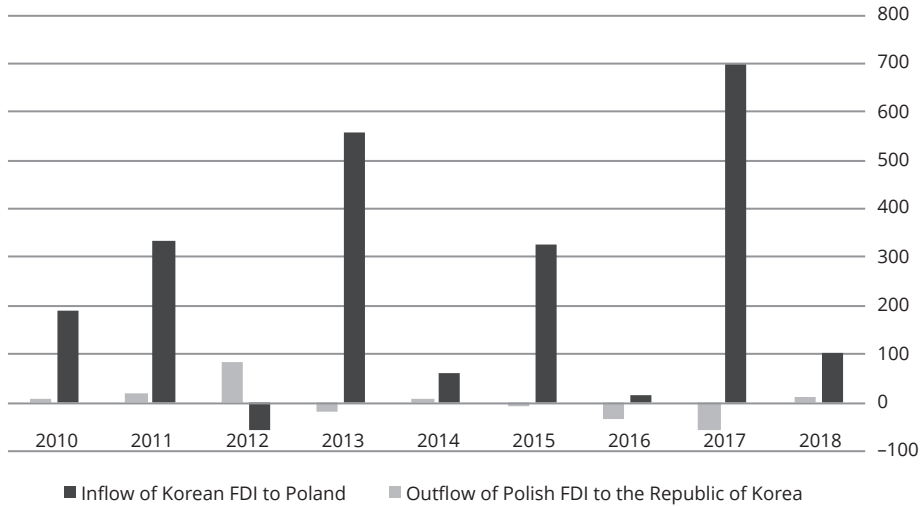| Description	Equity	Reinvested earnings	Debt instruments			Total
	net	net	net	liabilities	assets	
Inflow of Korean foreign direct investment to Poland	43.4	63.8	–5.8	90.4	96.2	101.5
Outflow of Polish direct investment to the Republic of Korea	2.0	–3.6	13.3	17.8	4.5	11.7

Source: NBP [2020a, 2020b].

Figure 14.6 shows the inflow of Korean foreign direct investment to Poland and outflow of Polish foreign direct investment to the Republic of Korea. As can be seen, Polish foreign direct investment is rare in the Korean market. The first significant Polish investment in Korea was the acquisition of a stake in Hanil Corporation by Selena (construction chemicals). In 2014, Toruńskie Zakłady Urządzeń Okrętowych Towimor opened a factory in Busan, South Korea.

At the end of 2018, Poland's net FDI positions for inward foreign direct investment from Korea amounted to PLN 1,119.5 m, representing 0.13% of Poland's total net inward foreign direct investment positions. They consisted of equity positions in the amount of PLN 1,320.2 m and a negative value of debt instruments (– PLN 200.7 m).

Poland ranks low in terms of direct investment in the Republic of Korea – in 2018 its value amounted to PLN 4.5 m. Equity transactions amounted to PLN 20.5 m and
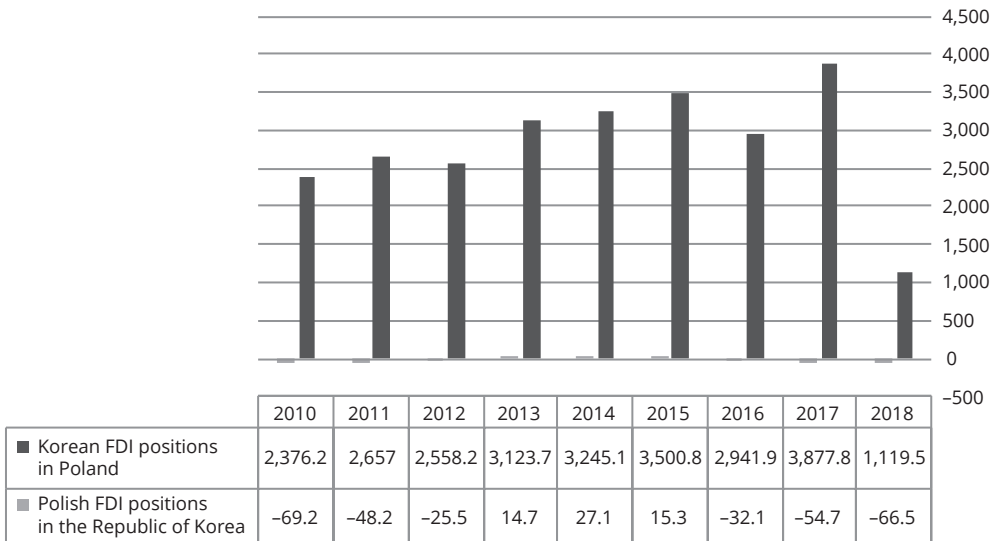
transactions in debt instruments had a negative value (–PLN3.6 million). A comparison of inward and outward positions in 2010–2018 is shown in Figure 14.7.

Figure 14.6. Dynamics of foreign direct investment in 2010–2018 (PLN m)

Source: Ibid.

Figure 14.7. Inward and outward FDI positions in 2010–2018 (PLN millions)

	2010	2011	2012	2013	2014	2015	2016	2017	2018
■ Korean FDI positions in Poland	2,376.2	2,657	2,558.2	3,123.7	3,245.1	3,500.8	2,941.9	3,877.8	1,119.5
■ Polish FDI positions in the Republic of Korea	–69.2	–48.2	–25.5	14.7	27.1	15.3	–32.1	–54.7	–66.5

Source: Ibid.

Foreign direct investors' income from investments made in Poland in 2018 reached PLN 80.4 m. Dividends amounted to PLN 15.7 m, reinvested earnings reached PLN 63.8 m and income on debt instruments (interest) was PLN 0.9 m. Income derived by Polish direct foreign investors in Korea in 2018 was negative (–PLN 4.6 m). A comparison of income from foreign direct investment in both countries for the period 2010–2018 is shown in Figure 14.8.

Figure 14.8. Investors' income from foreign direct investment in 2010–2018 (PLN millions)

	2010	2011	2012	2013	2014	2015	2016	2017	2018
▪ Korean investors' income on FDI in Poland	283.2	325.9	373.8	311.8	441.1	278.6	234	337.9	80.4
■ Residents' income on Polish FDI in Korea	5.9	0	16.4	–0.8	2.1	2.8	–0.2	–0.9	–4.6
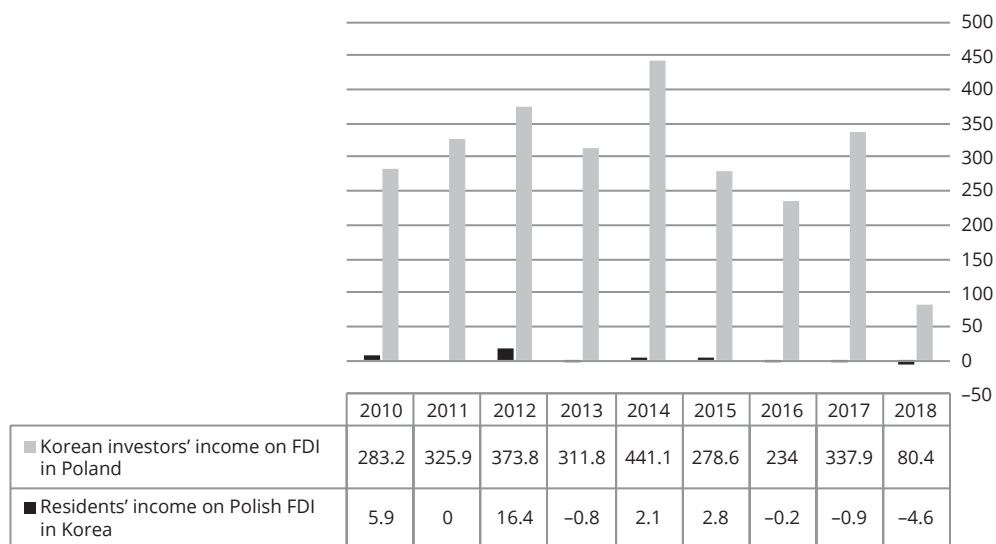
Source: Ibid.

Korean investment was initiated in the 1990s by Daewoo. This company invested in the FSO automotive plant. It was not until a dozen or so years later that the Korean giants LG and Samsung appeared. The dominant sectors for Korean FDI are the production of consumer electronics (TV sets), household appliances and automotive parts, and software R&D. There are also companies operating in the logistics, construction, finance and chemical sectors.

The Polish Agency for Investment and Trade (PAIH) ranks the Republic of Korea among Poland's most important trading partners because of the country's third place in terms of the number of projects brokered by PAIH. Most of them involved the automotive (21) and electronic (17) industries. The largest Korean companies in Poland include companies such as [PAIH, 2019]:

▪ LG – manufacture of electronic products (plasma and LCD televisions and household appliances); the company has several subsidiaries, including LG Electronics,

LG Innotek Poland, LG Chem Poland, and LG Display Poland (the last-mentioned is engaged in the production of ceramics and porcelain);

- Samsung Electronics – sales of telecommunications and IT equipment and hardware in Wronki and R&D in Warsaw;
- SK Chemicals – a company operating in the chemicals and telecommunications industry; invested in a factory in Dzierżoniów, where it produces films and coatings for LCD televisions and screens; Włocławek factory – a joint venture with the Polish company Anwil – engaged in the production of PET granules used in the plastics industry;
- Mando – a factory of braking systems and power steering systems in Wałbrzych.
  Other large investors include: AceHinge Tech, Daedong System, Deerfos, Dong Yang Electronics, Dong-A Hwa Sung, H&D, Heesung Electronics, Humax, Jung Soo Kim, Koam Pacific, Koam S.R. O., Korea Fuel-Tech, Mecen, Pearl Stream, Polrok, Shinchang Electronics, SL Corporation, Ssang Geum, Unwha Industrial [PAIH, 2019].

Recent major Korean investments in Poland include the construction of a lithium-ion battery factory for electric vehicles by the Korean company LG Chem (https://www.lgchem.com/main/index). Samsung Electronics Polska set up Samsung Inkubator Rzeszów, a startup incubator based in Rzeszów. It is an initiative implemented together with the Aviation Valley Association and Rzeszow University of Technology aimed at developing digital competences and new projects in the field of the Internet of Things (https://startupinkubator.pl/).

The total value of the capital invested by Polish companies is significantly lower than that invested by Korean entities (as shown in Figures 14.6–14.8). Polish investors in the Korean market include the Wroclaw-based company Selena, which operates in the construction chemicals sector. The company holds a stake in the Korean company Hanil Corporation.

14.6. Summary and Conclusions

Due to its geographical distance, high labor costs in Korea and the relatively low penetration rate of the Korean market by Polish exporters, the country was not an investment destination for Polish entrepreneurs. Polish investment in Korea is virtually invisible. Substantial disparities also exist in trade – South Korea, being a more developed and technologically advanced country, exports eight times more to Poland than Poland to Korea, which results in a substantial trade deficit. Trade in services is more balanced than trade in goods.

Korea is a strategic area of cooperation in Asia for Poland. This certainly applies to those sectors where the Republic of Korea is a net importer and in which Korean companies have made large investments in Poland. The latter include the electronics and automotive industries, as well as the R&D sector and ICT services.

Areas where trade cooperation can be improved may also be identified. The Republic of Korea is one of the countries with the highest broadband access rates and the highest connection speeds. It is also one of the leaders in the development of mobile networks. Therefore, the Korean IT/ICT market, including the video game industry, can be a good area of cooperation for Polish companies.

As already mentioned, Korea does not have good natural conditions for the development of agriculture, and a significant part of food is imported. This is another area of opportunity for Polish exporters. To this end, it is necessary to enhance the recognition of Polish products and to adapt agri-food products to the needs of Korean consumers based on marketing research. According to information from the Polish Embassy in Seoul, Koreans have been showing keen interest in Polish health food (e.g. freeze-dried or organic products). It is also worth mentioning that before the ban on imports of raw pork from Poland it was one of the main Polish products exported to the Korean market.

The economic plans and development vision presented in the *Korean New Deal: National Strategy for a Great Transformation* highlight concern for the natural environment and focus on technologies that do not cause environmental pollution. Korean companies are active in the field of renewable energy research and green technology solutions, such as environmentally neutral waste disposal methods [MOEF, 2020]. This is another area for cooperation in the development of environmental technologies. Poland can be an attractive investment area for Korean automotive companies, especially for electric vehicle parts and batteries.

Closer cooperation between Poland and South Korea will be possible if the barriers that currently restrict their bilateral economic relations are reduced. These include the market protection instruments used by the Republic of Korea. However, they will be phased out under the TFA with the European Union. This period should be used to better identify the needs of Korean companies and consumers and to understand cultural circumstances. The Chinese Silk Road may provide an opportunity for the development of cooperation.

Bibliography

Council Decision of 16 September 2010 on the signing, on behalf of the European Union, and provisional application of the Free Trade Agreement between the European Union and its Member States, of the one part, and the Republic of Korea, of the other part (OJ L127/1).

Embassy of the Republic of Korea in Poland [2020], *Informacja o gospodarce Republiki Korei i stosunkach gospodarczych z Polską*, http://overseas.mofa.go.kr/pl-pl/wpge/m_9438/contents.do (accessed: 16.09.2020).

JP Weber, PAIH [2019], *Poland, Land of Opportunities Electromobility and other sectors in the heart of Europe*.

Ministry of Development [2020], *Republika Korei. Informacja o stosunkach gospodarczych z Polską*.

MOEF [2020], *Korean New Deal: National Strategy for a Great Transformation*.

NBP [2020a], *Inwestycje bezpośrednie – zagraniczne*, https://www.nbp.pl/home.aspx?f=/publikacje/zib/zib.html (assessed: 19.09.2020).

NBP [2020b], *Inwestycje bezpośrednie – polskie*, https://www.nbp.pl/home.aspx?f=/publikacje/pib/pib.html (accessed: 19.09.2020).

OECD [2020], *Country Statistical Profile: Korea 2020*.

PAIH [2019]. *Lista największych inwestorów zagranicznych w Polsce – 2017/2018*.

Statistics Poland [2020], *Dziedzinowe bazy wiedzy – handel zagraniczny*, http://swaid.stat.gov.pl/SitePagesDBW/HandelUslugi.aspx (accessed: 19.09.2020).

Chapter 15

Economic Relations between Poland and China in the Belt and Road Era

Agnieszka McCaleb

15.1. Introduction

Over the last three decades China has gained in importance as Poland's economic partner, especially in trade, becoming one of the top three import partners. After the launch of China's Go Global strategy in 2001 and Poland's accession to the European Union (EU) in 2004, we could observe increasing interest from Chinese investors in investing in Poland, motivated mainly by access to the EU market. China's 16+1 initiative introduced in 2012 and China's Belt and Road Initiative of 2013, aimed at enhancing economic ties between China and Europe, gave rise to hopes for more Chinese investors coming to Poland and more opportunities for Polish exports to China. At the same time, since the 2008 global financial crisis, Poland has intensified and improved relations with China [Heiduk and McCaleb, 2014].

The aim of this paper is to investigate the economic relations between Poland and China in the period 2010–2020 and presence of Chinese nationals in Poland. Tightening economic relations, promoting Chinese exports, foreign direct investment, implementation of infrastructure projects, enhancing people-to-people exchanges are the objectives of China's Belt and Road Initiative (also called the New Silk Road). The paper also seeks to answer the question of whether the Belt and Road Initiative has contributed to growth of Polish exports to China, inflow of Chinese FDI to Poland, and intensification of human exchanges.

15.2. Poland-China Trade Relations

Poland's trade relations with China are asymmetric, with China being more important for Poland than vice-versa, as pointed out by Mroczek [2020], Weresa and Napiórkowski [2020], which results from the differences in the sizes of these economies. China has

been among Poland's top three trade partners in imports since 2007, the biggest among Asian countries. In 2009, China advanced from third to second place among Poland's major import partners [Table 15.1; Yearbook of Foreign Trade Statistics of Poland]. From China's perspective, Poland is an insignificant trade partner. In 2010–2018, both China's exports to and imports from Poland increased in terms of the share in its total exports and imports, although it remained relatively small, below 1% of the country's exports and imports. The share of China's exports to Poland in its total exports grew from 0.59% in 2010 to 0.83% in 2018, while China's imports from Poland in total imports rose from 0.12% to 0.17% [UNCTAD 2020]. Poland's imports from China increased from the level of 9.4% of total imports in 2010 to 12.3% in 2019, meaning a 2.8 pp rise, which indicates China's growing role as Poland's source of imports (Table 15.1). In terms of Poland's export to China, it fluctuated over time around 1% of Poland's total exports, which shows China's little importance as Poland's export partner, in spite of growth in its value from USD 1.6 billion in 2010 to USD 2.97 billion in 2019 (Figure 15.1). In 2010–2018, Poland's trade deficit with China increased from the ratio of 10:1 (imports to exports) in 2010 to 12.5:1 in 2018, to decrease slightly to 11:1 in 2019 [Yearbook of Foreign Trade Statistics of Poland, 2020].

Table 15.1. Poland's main partners in international trade

Year	2010	2014	2019
Import	Germany – 21.9% Russia – 10.2% China – 9.4%	Germany – 22.0% China – 10.4% Russia – 10.3%	Germany – 21.9% China – 12.3% Russia – 6.1%
Export	Germany – 26.1% France – 6.8% United Kingdom – 6.2%	Germany – 26.3% Czech Republic – 6.5% United Kingdom – 6.4%	Germany – 27.7% Czech Republic – 6.1% United Kingdom – 6.0%

Source: Yearbook of Foreign Trade Statistics of Poland, 2011, 2015, 2020, Statistics Poland, https://stat.gov.pl [accessed: 10.09.2020].

In 2010, China was Poland's biggest supplier in imports in 3 categories out of 21 (CN – Combined Nomenclature): (1) textiles; (2) machinery and mechanical appliances, electrical and electrotechnical equipment; and (3) miscellaneous manufactured articles. In 2019, China's significance increased as it became Poland's biggest supplier in 5 categories out of 21: (1) machinery and mechanical appliances, electrical and electrotechnical equipment; (2) textiles; (3) miscellaneous manufactured articles, raw hides and footwear;; (4) base metals and articles thereof; (5) optical, photographic, cinematographic, measuring instruments and apparatus;; and second largest in 3 categories: basic metals, optical products, articles of stone (Figure 15.3).

Figure 15.1. Role of China in Poland's exports in the period 2010–2019 (value of exports in USD – left axis, share of exports to China in total exports – right axis)
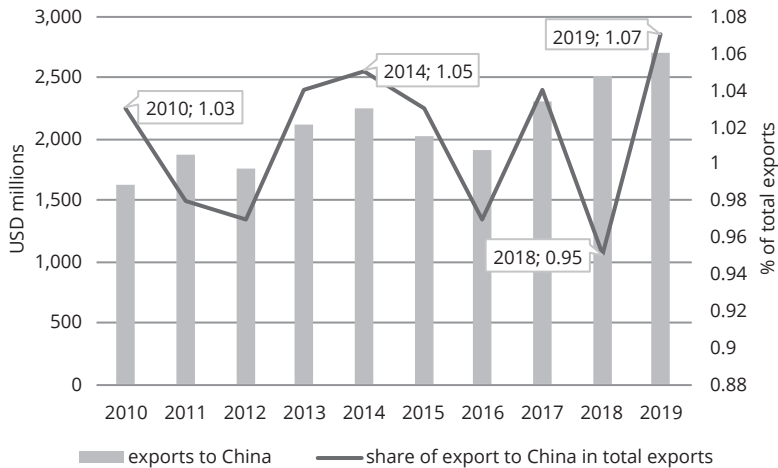
Source: Author's elaboration based on data from UN Comtrade (2020).

Figure 15.2. Role of China in Poland's imports in the period 2010–2019 (value of imports in USD – left axis, share of imports from China in total imports – right axis)
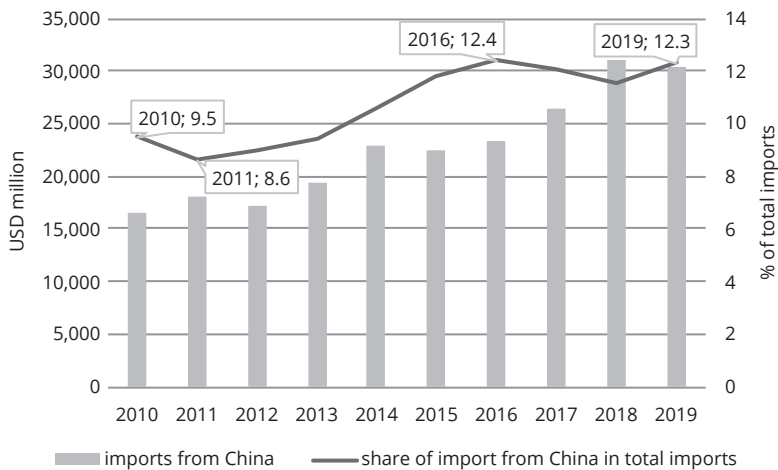
Source: Author's elaboration based on data from UN Comtrade (2020).

The majority of Chinese exports to Poland are highly processed parts and components imported by foreign multinational corporations having assembly/production facilities in Poland. Meanwhile, the structure of Poland's exports to China, which were dominated until 2010 by natural resources (copper and copper products), machinery and mechanical appliances, electrical and electrotechnical equipment, and products of chemical industry

changed in 2019 to be dominated by: (1) machinery and mechanical appliances, electrical and electrotechnical equipment, (2) base metals and articles thereof, (3) plastics and rubber, (4) live animals; animal products (Figure 15.4).

Figure 15.3. Poland's main import products from China, 2010 and 2019, USD thousands
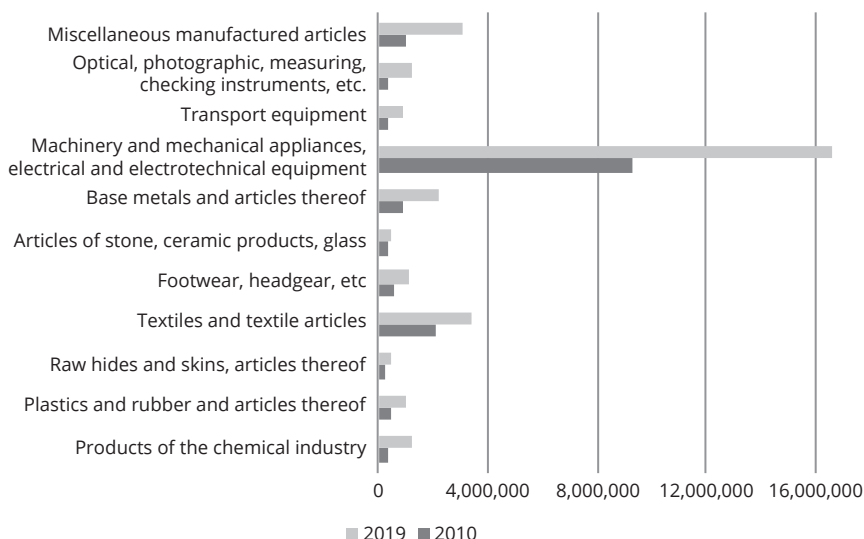
Source: Yearbook of Foreign Trade Statistics of Poland, 2011, 2020, Statistics Poland, https://stat.gov.pl [accessed: 10.09.2020].

Figure 15.4. Poland's main export products to China, 2010, 2017–2019, USD thousands
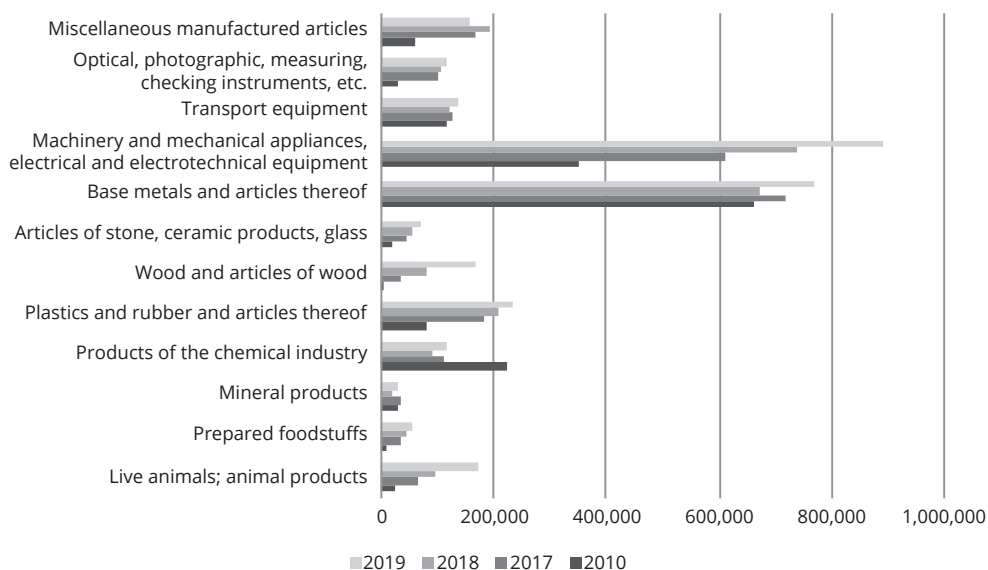
Source: Yearbook of Foreign Trade Statistics of Poland, 2011, 2019, Statistics Poland, https://stat.gov.pl [accessed: 10.09.2020].

The significant year-on-year growth in exports of these product groups has been explained by Ambroziak [2020, p. 27] to be a result of the trade war between the USA and China, which benefitted Polish exports to China.

Poland's trade deficit with China is, to a considerable extent, attributable to Poland's role in European value chains as assembly/processing base dominated by foreign multinational firms. Between 2010 and 2018, China increased its importance as a source of intermediate goods for Poland. It is assessed that around 30% of imports from China are imports of parts and components [Ministry of Entrepreneurship and Technology, 2019]. In 2010, China was Poland's ninth top partner (3.18%) in intermediate goods imports to become fourth top country in 2016, accounting for 4.73% behind Germany (26.1%), Italy (5.42%) and Belgium (4.90%), and to drop to fifth in 2018 with 4.73%, behind Germany, Italy, Russian Federation and Belgium [World Bank World Integrated Trade Solution, 2020]. In 2011, China was Poland's third source of value added in imports, accounting for 7.5% behind Germany (18%) and Russian Federation (9.7%) [OECD, 2015]. Both China's value added in Poland's gross exports and in Poland's final demand have been steadily growing, the former from 1.77% in 2010 to 2.54% in 2015, with a drop in 2011 to 1.69%, and the latter from 1.96% in 2010 to 3.4% in 2015 [OECD TiVA, 2020]. This indicates that China has been increasingly important for Poland's final goods as well as for Poland's exports. For Western European economies, the share of non-EU countries is higher in exports than in imports (contrary to the situation for Poland where the share of non-EU countries is higher for imports than for exports) due to growing demand in non-EU countries [Mroczek, 2020]. Goods processed in Poland, mainly parts and components, are exported to for example Germany, Czech Republic and Hungary, to be exported from these countries as final goods to third countries, for example to China [Ambroziak, 2017]. As Szunomar [2020, p 36] explains, Visegrad countries' trade deficit with China is attributable to their export dependence on Germany and trade surplus with this country that exports final goods or spare parts to China. Poland's exports to Germany constituted nearly 35% of Poland's total exports in 2018 [Yearbook of Foreign Trade Statistics of Poland, 2019]. In 2011, China was among four countries which generated 53% of the gross trade surplus between Poland and Germany. This means that China's demand for German exports contributes to generation of Poland's value added (exported to Germany). In 2011, German demand for Chinese value added was responsible for almost 10% of Poland's trade deficit with China in gross terms, with another 10% generated by demand from Russia, France, the United Kingdom, and Italy [Ambroziak, 2017, p. 66]. Thus, Poland's aim should be to have Polish firms climb up the value chain.

15.3. Chinese Foreign Direct Investment in Poland in 2010–2019

Chinese outward FDI (OFDI) has been growing dynamically since the introduction of the Go Global strategy in 2001, covering both developing and developed countries, driven by various objectives, such as searching for natural resources, market outlets and strategic resources. China's OFDI declined in the period 2017–2019 due to new restrictions imposed by the Chinese government and screening mechanisms for incoming FDI in host countries, designed to control and potentially block acquisitions of businesses of strategic significance for the economy, e.g. owing to their technological know-how. Thus, China's M&As in 2019 reached the lowest level of the past decade [WIR, 2020]. In 2018, China was third in the world in terms of OFDI stock [MOFCOM 2019]. In 2019, in terms of FDI outflows China was world's 4th largest investor with USD 117 billion, behind Japan, the USA and the Netherlands, in that order [WIR 2020].

When studying Chinese FDI in Poland, it is important to first briefly discuss the issues related to FDI data reporting. The accuracy of data on Chinese firms operating globally and specifically on the EU market has been raised by numerous researchers [e.g., Heiduk and McCaleb, 2014; Henderson, 2019; Kalwasiński, 2018; McCaleb, 2021]. The National Bank of Poland (NBP), in its inward FDI data broken down by country, takes into account investments coming from a given country without investigating the ultimate owner of the investment. In such a case, a common practice of Chinese investors in the European Union who invest through the Netherlands, Luxembourg or Switzerland is not captured [McCaleb, 2018]. These investments are reported as Dutch, Swiss or from Luxembourg. By the same token, these statistics do not include in Chinese FDI in Poland Chinese firms' acquisitions in third countries, as a result of which subsidiaries located in Poland change their owner to one originating from China. This problem with FDI data has prompted international organizations and some national authorities responsible for the collection of data to take measures to trace investments to the ultimate owner. As a result, since 2013, the NBP has been providing the OECD with data on FDI stock based on the ultimate investing country [Kalwasiński, 2018]. According to the OECD statistics on FDI stock by ultimate investing country, at the end of 2018, China's FDI stock in Poland amounted to USD 942 million (versus USD 297.4 million by immediate country, according to NBP), which reveals the scale of disparities. Nevertheless, even based on the OECD data, Chinese FDI stock in Poland proves to be of negligible size at a mere 0.41% of total FDI stock in Poland (OECD Stat).

When looking at China's FDI stock in Poland and other CEE countries, for which data in the mentioned OECD statistics database is available, we can see that Hungary

has been an unquestionable leader in attracting Chinese FDI, while as of 2018 the value of China's FDI stock in the Czech Republic and Poland was similar (Figure 15.5). The sudden increase in China's FDI in the Czech Republic was caused by improved political relations between the two countries. Taking into account the size of these countries in terms of population, Poland received a relatively little amount of Chinese FDI.

Chinese investors, being emerging country multinational corporations (EMNCs), are latecomers globally. When compared with other major emerging countries investing in Poland China's FDI stock is behind that of Russia's but ahead of Turkey, India and Mexico (Figure 15.6).

Figure 15.5. China's FDI stock by ultimate investing country in the Czech Republic, Hungary and Poland, 2013–2018, (USD millions)

Source: Author's elaboration based on OECD Stat (https://stats.oecd.org/#)
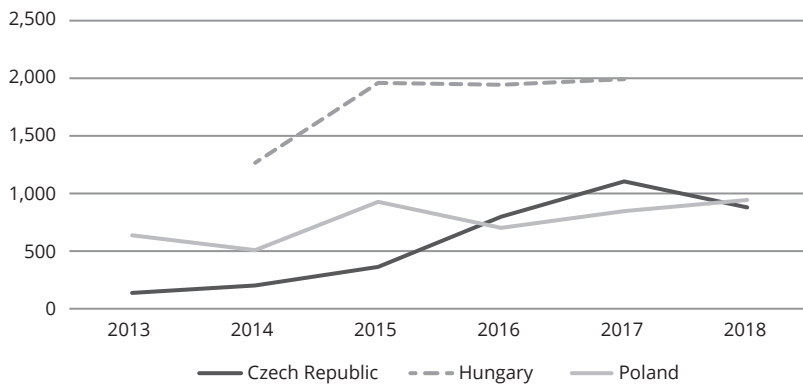
Figure 15.6. Emerging countries leading in FDI stock in Poland, 2013–2018 (USD millions)

Source: Author's elaboration based on OECD Stat (https://stats.oecd.org/#)
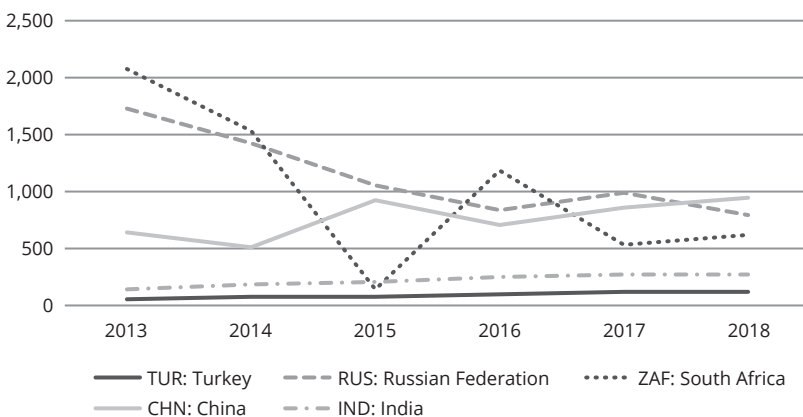
The next section will provide more detailed characteristics of Chinese investors in Poland in terms of industries, location, motivation and employment generation.

15.4. Chinese Companies in Poland

To study Chinese companies in Poland, a database has been composed combining data from the COIG database, which collects data from the National Court Registry (KRS) and the Orbis database (accessed 30st July 2020) which collects information on subsidiaries having a foreign shareholder holding at least 51%, located in a foreign country. This new database comprises a total of 2502 companies with Chinese capital or having a Chinese national on board, which registered in Poland in 2010–2020 (these will be called Chinese companies for simplification further on in the paper). Of this group, 660 companies registered in 2010–2014, and 1842 in 2015–2020. The relatively low number of Chinese firms in 2010–2014 may be a result of the global financial crisis, while a growing number of Chinese firms and Chinese residents establishing operations in Poland since 2015 may be an outcome of the BRI. A majority of the companies in both periods engaged in "Wholesale and retail trade; repair of motor vehicles and motorcycles" (1913 companies). Other activities in 2010–2020 included: Manufacturing (122), Professional, scientific and technical activities (101) and Accommodation and food service activities (97). In 2015–2020 increased interest was observed compared to 2010–2014 in the following activities: Information and communication (eighteen-fold increase); Transportation and storage (over five-fold increase); Manufacturing (almost four-fold increase in the number of registered companies); Water supply; sewerage; waste management and remediation activities (four-fold increase); Wholesale and retail trade; repair of motor vehicles and motorcycles (2.5 increase); Accommodation and food service activities (3.4 increase) (Table 15.2). The significant increase in the number of Chinese firms engaged in information and communication (dominated by Huawei and ZTE), transportation and storage may be a result of the BRI, with Poland believed to have an opportunity to become a transportation and logistics hub, which Chinese firms aim to benefit from.

The biggest ten Chinese MNCs in Poland, based on the operating revenue for the last available year (mostly 2018) are: TPV Displays Polska Sp. z o.o. (manufacture of electronic components), Nexteer Automotive Poland Sp. z o.o. (manufacture of other parts and accessories for motor vehicles), Volvo Car Poland (sales of cars and light motor vehicles), TCL Operations Polska Sp. z o.o. (manufacture of electronic components), Ingram Micro Sp. z o.o. (wholesale of computers, computer peripheral equipment and software), Joynext Sp. z o.o. (manufacture of other parts and accessories for motor

vehicles), BWI Poland Technologies (manufacture of other parts and accessories for motor vehicles), Syngenta Polska (wholesale of chemical products), Joyson Safety Systems (manufacture of other parts and accessories for motor vehicles), Grammar Automotive (manufacture of other parts and accessories for motor vehicles) [Orbis database, 2020].

Table 15.2. Economic activities of companies with Chinese capital registered in Poland in two periods: 2010–2014 and 2015–2020

Economic activity	2010–2014	2015–2020
Agriculture, forestry and fishing	0	3
Manufacturing	26	96
Electricity, gas, steam and air conditioning supply	2	4
Water supply; sewerage, waste management and remediation activities	3	12
Construction	7	13
Wholesale and retail trade; repair of motor vehicles and motorcycles	542	1,371
Transportation and storage	6	32
Accommodation and food service activities	22	75
Information and communication	2	36
Financial and insurance activities	1	11
Real estate activities	11	21
Professional, scientific and technical activities	19	82
Administrative and support service activities	10	45
Education	3	14
Human health and social work activities	3	4
Arts, entertainment and recreation	0	4
Other service activities	3	19

Source: Author's elaboration based on compiled database using COIG and Orbis data.

In the analyzed two periods, the most popular location for Chinese firms was Mazowieckie voivodeship, with the number of registered Chinese firms almost tripling in 2015–2020 compared to 2010–2014. Other popular locations were Śląskie, Dolnośląskie, Małopolskie and Wielkopolskie voivodeships (Table 15.3) as they have developed industry (and are leaders in attracting foreign investors) and good transport links with Western Europe and areas being part of regional value chains such as the Czech Republic and Slovakia in the automotive industry. As of 2020, in a majority of voivodeships, Chinese firms operating in "wholesale and retail trade, repair of motor vehicles" dominate, apart from Pomorskie and Dolnośląskie (Figure 15.7). The rapid growth in the number of firms operating in in this sector was related to identifying the

Polish market as having a good potential for Chinese cheap products such as clothes, footwear, toys. Thus, small stores with these goods proliferated across big and smaller Polish towns [Mazuś 2015].
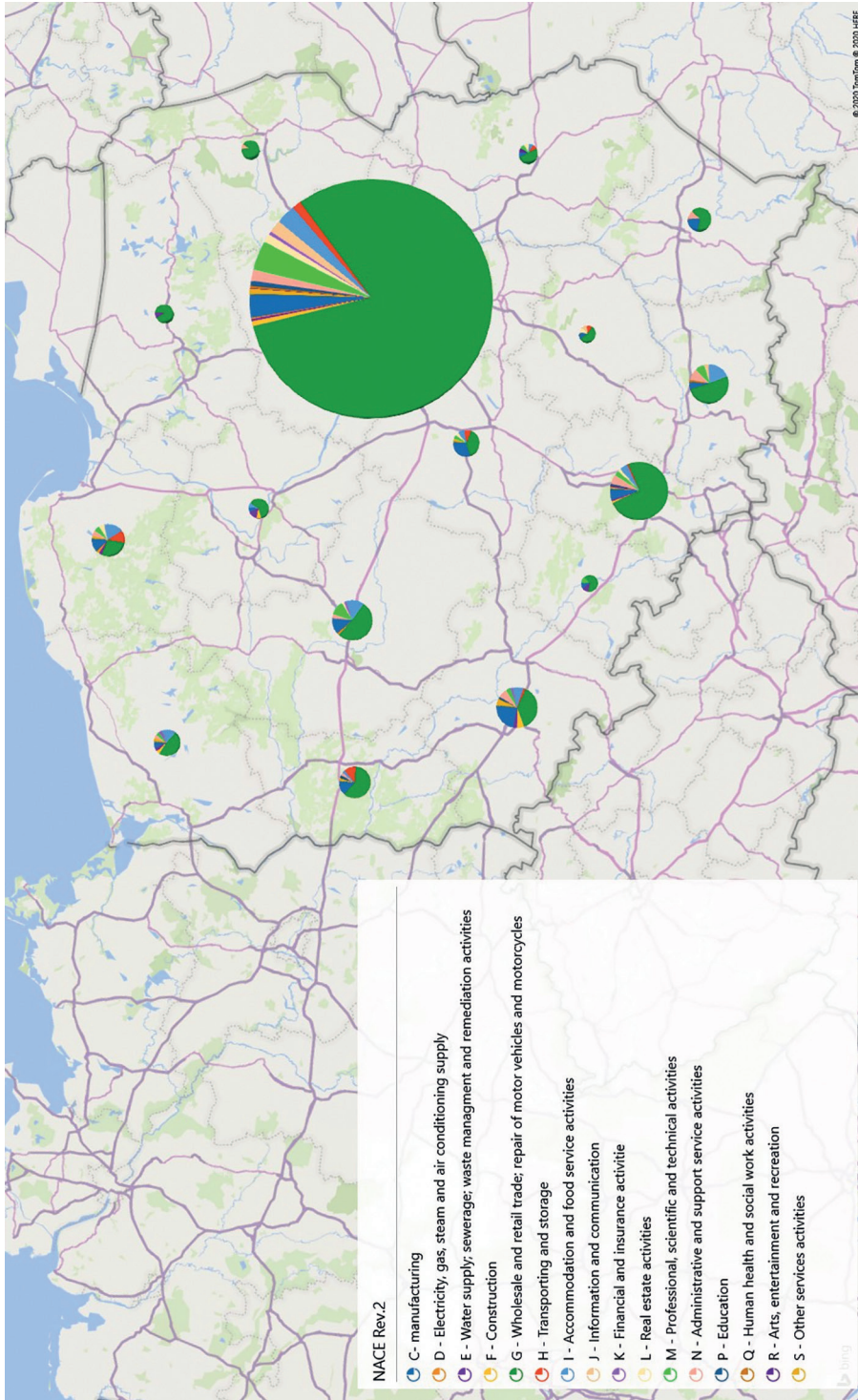
Table 15.3. Number of registered Chinese firms in Poland by voivodship, 2010–2014 and 2015–2020

Voivodship	2010–2014	2015–2020	Total
Dolnośląskie	10	46	56
Kujawsko-Pomorskie	4	9	13
Łódzkie	3	20	23
Lubelskie	6	6	12
Lubuskie	9	24	33
Małopolskie	9	42	51
Mazowieckie	530	1,501	2,031
Opolskie	3	6	9
Podkarpackie	2	16	18
Podlaskie	3	8	11
Pomorskie	7	28	35
Śląskie	41	72	113
Świętokrzyskie	2	7	9
Warmińsko-Mazurskie	2	9	11
Wielkopolskie	23	31	54
Zachodniopomorskie	6	0	6

Source: Author's elaboration based on compiled database using COIG and Orbis data.

When comparing Chinese firms in the two periods in terms of their location and represented industries, it can be seen that in 2015–2020 some Chinese firms were attracted to locations previously neglected, such as Warmińsko-Mazurskie and Podlaskie voivodeships, and that in all locations Chinese activities became more diverse (figures 15.8 and 15.9). In most locations these new industries represent accommodation and food service activities, administrative and support service activities, financial and insurance activities, transportation and storage, which indicates an increasing interest from Chinese firms in Poland in the provision of services, probably mostly to existing Chinese firms. Notably, 32 companies were registered in transportation and storage in 2015–2020, compared with only 6 in the previous period. This suggests the BRI has a positive effect on Chinese firms that enter this industry in Poland with the intention to support trade and logistics being developed under the BRI.

Figure 15.7. Chinese firms registered in 2010–2020 in Poland by industry (number of firms)

NACE Rev.2

- C- manufacturing
- D - Electricity, gas, steam and air conditioning supply
- E - Water supply; sewerage; waste managment and remediation activities
- F - Construction
- G - Wholesale and retail trade; repair of motor vehicles and motorcycles
- H - Transporting and storage
- I - Accommodation and food service activities
- J - Information and communication
- K - Financial and insurance activitie
- L - Real estate activities
- M - Professional, scientific and technical activities
- N - Administrative and support service activities
- P - Education
- Q - Human health and social work activities
- R - Arts, entertainment and recreation
- S - Other services activities

Source: Author's elaboration based on compiled database using COIG and Orbis data.

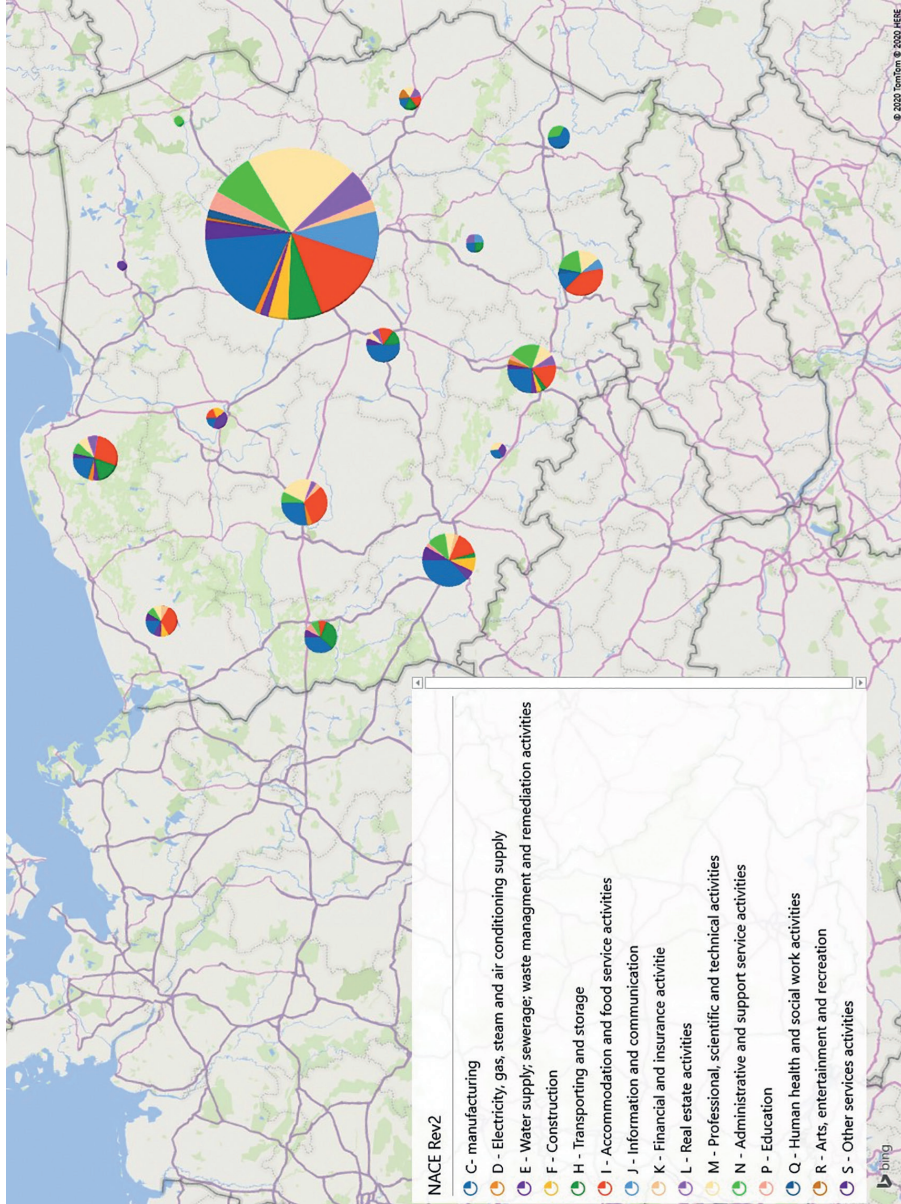Figure 15.8. Chinese firms by industry, excluding "wholesale and retail trade", registered in Poland in 2010–2014, (number of firms)

NACE Rev2

- C - manufacturing
- D - Electricity, gas, steam and air conditioning supply
- E - Water supply; sewerage; waste managment and remediation activities
- F - Construction
- H - Transporting and storage
- I - Accommodation and food service activities
- J - Information and communication
- K - Financial and insurance activitie
- L - Real estate activities
- M - Professional, scientific and technical activities
- N - Administrative and support service activities
- P - Education
- Q - Human health and social work activities
- S - Other services activities

Source: Author's elaboration based on compiled database using COIG and Orbis data.

Figure 15.9. Location of Chinese firms in Poland by industry, excluding "wholesale and retail trade, repair of motor vehicles and motorcycles", registered in 2015–2020 (number of firms)

NACE Rev2

- C - manufacturing
- D - Electricity, gas, steam and air conditioning supply
- E - Water supply; sewerage; waste managment and remediation activities
- F - Construction
- H - Transporting and storage
- I - Accommodation and food service activities
- J - Information and communication
- K - Financial and insurance activitie
- L - Real estate activities
- M - Professional, scientific and technical activities
- N - Administrative and support service activities
- P - Education
- Q - Human health and social work activities
- R - Arts, entertainment and recreation
- S - Other services activities

Source: Author's elaboration based on compiled database using COIG and Orbis data.

Out of 122 Chinese firms engaged in manufacturing, a majority chose the capital or Polish industrial regions: Mazowieckie (65), Dolnośląskie (13), Łódzkie (7), Śląskie (7), Wielkopolskie (7). After a slowdown in 2010–2014, with only 26 Chinese manufacturing forms registered, the next period 2015–2020 saw 96 Chinese manufacturing firms come to Poland, which indicates that Poland is increasingly attractive for Chinese investors. A majority of Chinese manufacturing firms in the second period represented the following industries: production of technical gases (19 firms), manufacture of other parts and accessories for motor vehicles excluding motorcycles (5), production of motorcycles, bikes and wheelchairs (5), production of basic organic and inorganic chemicals (4), manufacture of consumer electronics (3). Technical gases are used widely in industrial production in metal processing such as welding and cutting, in food technology and electronics industry. We can thus observe Chinese firms establishing themselves as suppliers, probably to existing Chinese manufacturing firms in electronics and manufacturing of parts for motor vehicles.

Table 15.4. Characteristics of Chinese automotive firms operating in Poland as of 2018

Company Name	Ownership type	Year of Entry	Entry Mode	Location	Voivodship	Number of employees in 2018
Nexteer	SOE	2010	M&A	Tychy	Śląskie	1,583
BWI Poland Technologies	SOE	2009	M&A	Kraków	Małopolskie	2,032
Grammer Automotive Polska	private	2018	M&A	Bielsko-Biała	Śląskie	786
Fabryka Łożysk Tocznych SA	SOE	2013	M&A	Kraśnik	Lubelskie	2,103
Joysonquin Automotive Systems Polska	private	2015	M&A	Wałbrzych	Dolnośląskie	455
Gardner Aerospace Tczew	private	2017	M&A	Tczew	Pomorskie	na
Inalfa Roof Systems	SOE	2013	greenfield	Września	Wielkopolskie	na
Auria Solutions	SOE	2017	JV	Swarzędz	Wielkopolskie	9
Joyson Safety Systems Poland	private	2016	M&A	Krzeszów	Dolnośląskie	780(2017)
Tristone Flowtech Poland	private	2017	M&A	Wałbrzych	Dolnośląskie	630
Carcoustics Poland	private	2016	M&A	Bielany Wrocławskie	Dolnośląskie	5(2016)
Flexinder Poland	private	2018	greenfield	Bieruń	Śląskie	na
Tenglong Auto Parts	private	2018	greenfield	Bieruń	Śląskie	4

Source: Orbis database (accessed September 2020).

Chinese firms from the automotive industry are an interesting case, as their presence in Poland is due to Chinese firms' takeovers in third countries, such as Germany, Japan, and the United States. They are all manufacturers of parts and equipment for the automotive industry. In 2010–2020, there were 13 subsidiaries of Chinese auto parts manufacturing firms in Poland, of which 6 entered after 2010, and 5 after 2015. They are mainly located in Śląskie an Dolnośląskie voivodeships (Table 15.4). Five of them are state-owned companies controlled by either central SASAC or its provincial divisions (Fabryka Łożysk Tocznych is owned by SASAC Hubei Province, BWI Poland Technologies and Inalfa Roof Systems by SASAC Beijing Municipality Government).

The motivation behind Chinese auto parts makers acquiring competitors from developed countries is two-fold. Firstly, they aim at accessing advanced technologies in auto parts production that they lack themselves and which are costly to develop in-house. Secondly, they want to enter automotive industry global value chains [Pawlicki and Luo 2017]. Based on available data from Orbis database on employment, Chinese auto parts manufacturers are among the biggest Chinese employers in Poland. They include seven large firms employing between 455 to 2103 workers (Joysonquin Automotive Systems Polska, Tristone Flowtech Poland, Joyson Safety Systems Poland, Grammar Automotive Polska, Nexteer Automotive Poland, BWI Poland Technologies, Fabryka Łożysk Tocznych SA) and six small firms with employment between 4 to 9 workers. In general, employment in Chinese auto parts firms has been increasing in the recent years.

## 15.5. Infrastructure Projects

After the well-known failure of COVEC with building a highway section in 2012, now Chinese construction firms' strategy has been to engage with Polish partners when bidding for public procurement contracts. China's Pinggao has carried out work on energy infrastructure projects since 2013. Sinohydro was involved in building a flood protection system on the Odra River in 2014 under a project commissioned by the World Bank. Sinohydro's recent three projects in Poland include the construction of the Chełm – Lublin 400kV power line and flood protection reservoirs in Kotlina Kłodzka (Kłodzko Valley) [Dziennik Gazeta Prawna 2019]. A flood projection system project in Dolnośląskie voivodeship (Szalejowo Górne and Krosnowice) has also been implemented by the Power Construction Corporation of China. Stecol was trying to win public bids in Poland from 2017 to be eventually awarded two road construction contracts. In 2019, Stecol won a bid to build a ring road near Łódź [Fedoruk 2019] and in the next year part of the A2 highway [TVN24, 2020]. Stecol and Sinohydro,

together with a Polish partner, have also sought public contracts for railway upgrade projects, which have not yet been awarded as of September 2020. From mid-2019 till February 2020, Chinese firms tendered 10 out of 23 bids for road construction or upgrade projects [Business Insider 2020], which shows their increasing interest in infrastructure construction in Poland. If successful, such projects may help them to enter the old EU member states' markets.

15.6. The Chinese in Poland

Chinese nationals staying in Poland with valid resident permit increased substantially in the period 2010–2019 from 3016 persons in 2010 to 8485 in 2019, and the peak year was 2018 with 9001 [Office for Foreigners, 2020]. In terms of number, the Chinese are the eighth largest minority in Poland. The rapid increase in the number of Chinese nationals was recorded in 2016 (7042 persons) and 2017 (8831) with year-on-year growth rates of 24% and 25%, respectively. A majority of the Chinese in Poland live near the capital, especially in Lesznowola commune, where the Chinese Trade Center in Wólka Kossowska is located, and in Jaworzno-Jeleń with its Chinese Wholesale Center, as well as in Tri-city, Cracow and Bydgoszcz [Wardęga 2017].

Figure 15.10. Work permits issued by Polish authorities to Chinese nationals for selected groups of employees and professions, 2008–2019
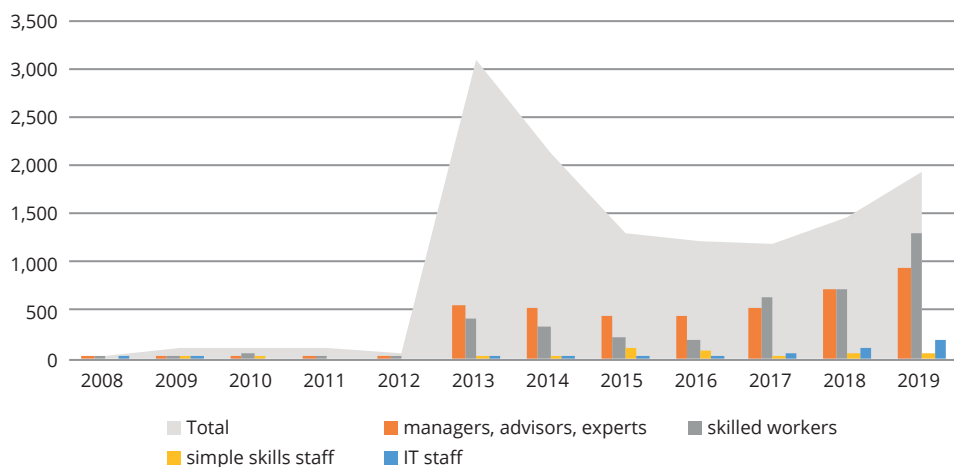
Source: Author's elaboration based on psz.praca.gov.pl, 29.09.2020.

In the analyzed period, increasing numbers of Chinese nationals can be seen coming to Poland for work, especially as skilled professionals. Based on work permits

issued by Polish authorities to Chinese nationals, a rapid increase in their number is observed in 2013, with 3089 permits, while in 2010 it was only 114 (Figure 15.10). This can be explained as an effect of the illegal immigrants amnesty law that entered into force on 1 January 2012 [DW 2011]. Until 2019, the number of work permits for Chinese nationals was above one thousand annually (except for 2014, when it was 2133 and for 2019 with 1935) [PSZ Praca 2020]. From 2013, among the permits issued, the number of those granted to managers, advisors and experts is notable at 554 in 2013, with an increase in 2018 and 2019, to 705 and 925, respectively. The 'skilled workers' category also saw an increase from 44 in 2010 to 416 in 2013, and high numbers at the end of the 2010 s, at 649 in 2017, 719 in 2018 and 1301 in 2019. The number of IT staff coming to Poland for work increased significantly also at the end of the 2010s, to 110 in 2018 and 207 in 2019. The increase in the number of Chinese specialists working in Poland results from the intensification of Chinese companies' activities in the Polish market.

Table 15.5. Fields of study most popular among Chinese students in Poland (by the number of students), 2017–2018

Name of the fields of study according to ISCED-F 2013	2017	2018
Construction and civil engineering	35	36
Economics	91	81
Electronics and automatics	4	7
Electricity and energy	23	26
Finance, banking and insurance	35	44
Education of teachers with thematic specialization	17	22
Linguistics	50	83
Fashion, interior design and industrial design	14	12
Music and performing arts	162	156
Language learning	30	16
Gardening	20	22
Motor vehicles, ships and planes	16	18
Plant and animal production	9	12
Psychology	28	26
Accounting and taxes	74	100
Sports	19	15
Dentistry	31	24
Software and application development and analysis	4	11
Management and administration	194	196
Other	308	352
TOTAL	1,164	1,259

Source: Author's elaboration based on Statistics Poland database on Chinese students in Poland by field of study, 2017–2018.

Chinese students show a steadily increasing interest in studying in Poland, from 515 students in 2010 to 1259 in 2018. It is attributed to the competitive fees charged by Polish higher education institutions compared with Western Europe [Wardęga 2017]. The fields of study most often chosen by Chinese students coming to study in Poland are management and administration, music and performing arts, accounting and taxes, economics and linguistics. This shows that the fields of study that Chinese students find most attractive are business and economics as well as music, while technology universities attract fewer Chinese students.

Chinese students are especially attracted to Polish higher education institutions teaching music, with 47 students in 2010, 141 in 2016, 172 in 2018. Poland attracts music students from China where it is known as homeland of Frederic Chopin [Statistics Poland, 2020].

Chinese tourists also have shown growing interest in Poland, with 60 thousand having visited the country in 2015, 130 thousand with at least one overnight accommodation in 2017 (55% growth year-on-year), 136 thousand in 2018 (4.4%) and 137 thousand in 2019 [Polska Organizacja Turystyczna, 2016, 2020]. It is important to note that Chinese tourists when choosing a destination are guided by local regulations that are affected by political relations between countries. One example is the arrest of a Huawei employee in Poland in January 2019, after which Chinese travel agencies were pressured to limit trips to Poland [Polska Organizacja Turystyczna, 2020]. Poland has a weak economic and tourist image among the Chinese. It does not have a consistent brand and symbol which could attract Chinese tourists. Poland has the advantage of being perceived as a safe location, and being different from Western Europe, as Chinese tourists are increasingly interested in less common tourist destinations.

15.7. Conclusions

In the period 2010–2019, China's importance as Poland's source of imports increased, as it advanced from being third top partner in imports with 9.4% of Poland's total imports to the second position with 12.3%. Poland's imports from China were dominated with machinery and mechanical appliances, electrical and electrotechnical equipment, in spite of a slight decrease from 55.5% in 2010 to 50.6% of total imports from China. While raw materials and food products, i.e. less technologically advanced goods have remained Poland's main exports to China, the last years of the 2010 s saw an improvement in its structure, as technologically advanced products, machinery and mechanical appliances, electrical and electrotechnical equipment became key in exports to China. The increase in exports to China of parts for the electronic industry, wood

and meat products since 2018 is explained as an effect of the US-China trade war. The trade in machinery and mechanical appliances, electrical and electrotechnical equipment between Poland and China, which only intensified over the studied period of time, is attributable to Poland's position in the European value chains where Poland is an assembly base of intermediate inputs or final products that are exported to final markets in the EU or processed further in other EU countries for export to the EU or outside the EU markets. Polish exports of food products to China are unstable as they show dependence on animal diseases, or political and economic developments out of control of Polish authorities or exporters.

Poland's heavy reliance on Chinese imports contrasts with very small Chinese FDI in Poland, which amounted to only 0.41% in 2018. China's FDI stock in Poland did not increase much between 2010 and 2018 and even dropped slightly in 2014 and 2016. This shows that Poland is not an attractive location for Chinese FDI in spite of different initiatives launched during the 2010 s such as 16+1 and Belt and Road Initiative. During that time, however, first big acquisitions of Polish firms by Chinese investors could be observed, which were motivated by seeking strategic resources such as technology and distribution channels (e.g., Novago – waste processing, Huta Stalowa Wola civil division – manufacturing of construction and mining machinery, Fabryka Łożysk Tocznych – manufacturing of ball bearings). Over the analyzed period, more diversity was witnessed in industrial structure of Chinese investors, with more investors spread geographically dealing with accommodation and food service activities, administrative and support service activities, financial and insurance activities, transportation and storage, which result from successful development of e-commerce by Aliexpress and could also be related to expectations brought by the Belt and Road Initiative. The Chinese companies engaged in manufacturing were mostly located near the capital and in Poland's industrial regions, Śląskie, Dolnośląskie and Wielkopolskie voivodeships. Chinese companies are also trying to enter the infrastructure market. The COVEC case, which failed to build a highway section in 2012, resulted in some Chinese firms bidding for public contracts in partnerships with local construction companies. The Chinese companies most active and successful so far in infrastructure projects are Sinohydro and Stecol/Power Construction Corporation of China.

With the increase in imports from China and more Chinese firms, both big ones in telecommunications, such as Huawei and ZTE, and automotive industry, such as Nexteer, Joyson, BWI, Fabryka Łożysk Tocznych, and small ones in wholesale and retail trade, there has been an increase in the number of Chinese nationals living in Poland, while their total number is smaller than the Chinese diaspora in Hungary that amounts to about 20,000 people. Importantly, there is a trend in more Chinese coming to Poland who are skilled professionals. Another group of Chinese people coming

to Poland are students who mostly study majors related to business, administration and economics. A notable group of Chinese students in Poland are those who study music. The growth rate in the number of Chinese students coming to Poland is quite low, however, given the large number of Chinese nationals studying abroad. Lastly, Poland has been attracting an increasing number of Chinese tourists who, having seen the world's major tourist sites, are ready to explore less frequented destinations. Both Polish higher education institutions and tourist attractions could benefit from a more strategic promotion effort in China.

Looking at Poland's economic relations with China through the lens of the Belt and Road Initiative, the Chinese side can be seen to be putting the objectives of this strategy into effect. Goods exports to Poland have increased over the past decade, Chinese companies have been implementing infrastructural projects and investing. Increasing numbers of Chinese nationals have been coming to Poland to work, study and visit the country.

Bibliography:

Ambroziak, Ł. [2017], *Decomposition of Poland's Bilateral Trade Imbalances by Value Added Content*, "Entrepreneurial Business and Economics Review", 5 (2), pp. 51–69.

Ambroziak, Ł. [2020], *Skutki amerykańsko-chińskiej wojny handlowej dla międzynarodowych łańcuchów dostaw*, https://pie.net.pl/wp-content/uploads/2018/07/PIE-Raport_Wojna_handlowa.pdf, 6.11.2020.

Bachulska, A., Bērziņa-Čerenkova, U.A., Pejić, N. [2020], *We the people? The challenges of societal relations with China*, in:: I. Karásková (ed.), *Empty Shell No More: China's Growing Footprint In Central And Eastern Europe*, Policy Paper, https://chinaobservers.eu/new-publication-empty-shell-no-more-chinas-growing-footprint-in-central-and-eastern-europe/, 7.09.2020.

Business Insider [2020], https://businessinsider.com.pl/wiadomosci/chinskie-firmy-w-przetargach-na-budowe-drog-w-polsce/ke8xd62, 21.10.2020.

DW (2011), *Polska: abolicja dla nielegalnych imigrantów*, https://www.dw.com/pl/polska--abolicja-dla-nielegalnych-imigrant%C3%B3w/a-15513027, 09.11.2020.

Dziennik Gazeta Prawna [2018], *Chińskie firmy budowlane nie miały w Polsce dobrej prasy. Ale teraz wygrywają przetargi*, https://auto.dziennik.pl/drogi/artykuly/578014, chinskie-firmy-budowlane-drogi-wykonawcy-przetarg.html, 21.10.2020.

Dziennik Gazeta Prawna [2019], *Firmy budowlane z Chin chcą modernizować polską kolej. Eksperci obawiają się „syndromu Covecu"*, https://gospodarka.dziennik.pl/news/artykuly/612693, firmy-budowlane-chiny-modernizacja-polska-kolej.html, 21.10.2020.

Fedoruk, A [2019], *Chińskie firmy dostaną drugą szansę? "Szczęki nam opadły"*, https://www.forbes.pl/gospodarka/budowa-zachodniej-obwodnicy-lodzi-przetarg-wygral-stecol-z-chin/0dc4t3j, 21.10.2020.

Heiduk, G., McCaleb, A. [2014], *Chinese FDI and Financial Engagement in Poland, in: Chinese investments and financial engagement in Visegrad countries: myth or reality?*, Á Szunomár (ed.), Budapest, Institute of World Economics, pp. 55–73, available at: http://vki.hu/Chinese_financial_assistance_in_V4. pp 55–73.

Henderson, J. and Hooper, M., (forthcoming), *China and European Innovation. Corporate Acquisitions and Their Consequences, Development and Change*.

Kalwasiński, M., [2018], *Bezpośrednie Inwestycje Zagraniczne Chin W Polsce – Problem Rzeczywistej Skali Inwestycji,* "Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu", No. 523, pp. 163–179.

Kauf, S., Laskowska-Rutkowska, A. [2019], *The location of an international logistics center in Poland as a part of the One Belt One Road Initiative*, "LogForum", Vol. 15, Issue 1, pp. 71–83.

Lasoń, M. [2018], *Miejsce Chińskiej Republiki Ludowej w Polityce Zagranicznej Polski w Drugiej Dekadzie XXI w.* "Krakowskie Studia Międzynarodowe", XV: 2019 No. 2., pp. 37–50.

Lubina, M. [2017], *Big Words, Little Results: the Chinese Investments in Poland from the Political Perspective*, "Polish Political Science Yearbook", Vol. 46(2), pp. 150–171.

Mazuś, M [2015], *Jak radzi sobie w Polsce cicha chińska mniejszość*, "Polityka", https://www.polityka.pl/tygodnikpolityka/spoleczenstwo/1636349,1, jak-radzi-sobie-w-polsce-cicha-chinska-mniejszosc.read, 09.11.2020

McCaleb, A. [2015], *China's automobile industry: development, policies, internationalization*, "Gdańskie Studia Azji Wschodniej", 2015/8, pp. 165–174.

McCaleb, A. [2021], *FDI outflow from China to Poland – two decades of Chinese FDI in Poland*, in: Dygas and Biswas (eds.), *Asian investment in Europe*, SGH Publishing House.

McCaleb, A. [2018], *Comparing Chinese, Indian and South African investment in Poland,* 15th European Association for Comparative Economic Studies Conference, SGH Warsaw School of Economics.

Ministry of Entrepreneurship and Technology [2019], *Chińska Republika Ludowa. Notatka krajowa*.

MOFCOM [2019], *Duiwai touzi hezuo guobie (diqu) zhinan: Bolan (2019 nian ban)* (Foreign investment cooperation country (region) guide: Poland (2019 edition), http://www.mofcom.gov.cn/dl/gbdqzn/upload/bolan.pdf, 9.9.2020.

Money.pl [2019], *Nowy Jedwabny Szlak ominie Polskę? „Konkurencja nie śpi"*, https://www.money.pl/gospodarka/nowy-jedwabny-szlak-ominie-polske-konkurencja-nie-spi-6386924004382337a.html, 21.10.2020.

Mroczek, W. [2020], *The geographical diversification of Poland's foreign trade*, "Obserwator Finansowy", https://www.obserwatorfinansowy.pl/in-english/the-geographical-diversification-of-polands-foreign-trade/, 22.09.2020.

OECD-WTO [2015], *Trade in Value Added: Poland. OECD-WTO Trade in Value Added*.

Pawlicki P, Luo S. [2017], *China's cars and parts: development of an industry and strategic focus on Europe*, in: *Chinese investment in Europe: corporate strategies and labour relations*, Publisher: European Trade Union Institute, Editors: Jan Drahokoupil, pp 41–59.

Office for Foreigners [2020], Statistics, https://udsc.gov.pl/statystyki/raporty-okresowe/ zestawienia-roczne/, 22.10.2020.

Pietrobelli, C., Rabellotti, R., Sanfilippo, M. [2010], *The 'Marco Polo' Effect: Chinese FDI in Italy*, https://www.chathamhouse.org/sites/default/files/public/Research/International%20 Economics/pp0210italy.pdf, 31.07.2020.

Polska Organizacja Turystyczna [2016], *Analiza rynków zagranicznych na podstawie sprawozdań zagranicznych Ośrodków Polskiej Organizacji Turystycznej 2015*, https://wot.waw. pl/wp-content/uploads/2016/08/Analiza-rynk%c3%b3w-ZOPOT-2015.pdf, 5.10.2020.

Polska Organizacja Turystyczna (2020), *Zagraniczny Ośrodek Polskiej Organizacji Turystycznejw Pekinie, Sprawozdanie rok 2019*, https://www.pot.gov.pl/attachments/article/1804/ ZOPOT%20Chiny%202019.pdf, 5.10.2020

PSZ.Praca.gov.pl [2020], Zezwolenia na pracę cudzoziemców https://psz.praca.gov.pl/web/ urzad-pracy/-/8180075-zezwolenia-na-prace-cudzoziemcow#, 29.09.2020.

Statistics Poland [2020], Studenci pochodzenia chińskiego 2 Polsce 2004–2018 (database).

Sulisz, J. [2018], *Polski magazyn energii ze słońca 1,26 MW*, https://satkurier.pl/news/175092/ polski-magazyn-energii-ze-slonca-1–26-mw.html, 21.10.2020.

Szczudlik, J. [2020], *Poland: Mutual "charm offensive" with China amid Covid-19*, in: J. Seaman (ed.) *Covid-19 and Europe-China Relations, A country-level analysis*, European Think-tank Network on China (ETNC) Special Report, pp. 50–53.

Szunomár, Á., McCaleb, A. [2017], *Chinese foreign direct investment in central and eastern Europe: an institutional perspective*, in: Chinese investment in Europe: corporate strategies and labour relations, Publisher: European Trade Union Institute, Editors: Jan Drahokoupil, pp.121–140.

Szunomár, Á, McCaleb, A [2018], *East Asian Foreign Direct Investment in Central and Eastern Europe: motives, location choices, and employment approaches*, CESifo FORUM, Winter Vol. 19, pp. 9–14.

Szunomár, A., Karindi, L., Leonte, A. [2020], *Economic relations: A sugar cane, or a sugar-coated stick?*, in: I. Karásková (ed.) (2020), *Empty Shell No More: China's Growing Footprint In Central And Eastern Europe*, Policy Paper, https://chinaobservers.eu/new-publication-empty-shell-no-more-chinas-growing-footprint-in-central-and-eastern-europe/, 7.09.2020

Wardęga, J. [2017], *CHIŃCZYCY W POLSCE – NIEWIDOCZNA MNIEJSZOŚĆ*, „Studia Migracyjne – Przegląd Polonijny", No. 2(164)/2017, pp. 121–141.

Weresa, M.A., Napiórkowski, T.M., (forthcoming), *Inicjatywa Pasa i Szlaku z perspektywy polskiej*, SGH Publishing House.

Wiśniewski, P.A. [2012], *Aktywność w Polsce przedsiębiorstw pochodzących z Chin* (*Activity of Chinese companies in Poland*), „Zeszyty Naukowe", 34, Collegium of World Economy, SGH, Warsaw.

World Bank World Integrated Trade Solution [2020], *Poland Intermediate Goods Imports By Country and Region* https://wits.worldbank.org/CountryProfile/en/Country/POL/ Year/2016/TradeFlow/Import/Partner/by-country/Product/UNCTAD-SoP2, 22.09.2020.

Poland's Bilateral Economic Ties with India in the Context of the Economic Potential of Its Trading Partners

Robert Dygas

16.1. Introduction

This chapter aims to identify trends in bilateral economic relations between Poland and India in 2010–2020 and seeks to outline further developments in these relations. India is a highly growing economy that has attracted foreign investment, including capital from Poland, for many years. The country should be perceived as a top-ranked global economy and one of the largest democracies in the world. According to data from the International Monetary Fund, India was the fifth economy in the world in 2019 in terms of gross domestic product (GDP) measured at current prices, which amounted to USD 2.9 trillion [IMF, 2019]. Prime Minister Nerendra Modi's plans are very ambitious – the country's economy is expected to reach USD 5 tn by 2024, making India self-reliant (Hindi: *Aatmanirbhar Bharat*) and play a more important role in the global economy.

To this end, special project groups were set up by the Government of India in June 2020 to harmonize the investment policy of individual states with the central level for inflows of foreign direct investment. A key slogan defining the nature of the measures taken is "Make in India for the World".

In view of its important position in Europe, membership of the European Union and leadership of the Visegrad Group, Poland is beginning to be seen by Asian countries as a significant trading partner. Sectors such as new technologies, energy, medical, agri-food and cinematographic industries can enhance Poland's cooperation with India. According to NBP data, by 2018 Polish companies invested more in India than Indian companies in Poland. This shows that India is becoming one of the key Asian countries from Poland's economic development perspective.

This chapter is divided into three main parts. The first one presents India's economic potential in the context of economic cooperation with Poland. The second

part provides an analysis of the existing relations and trade between Poland and India, taking into account the revealed comparative advantage (RCA). The third part of the chapter focuses on the main directions of further development and the assumptions of international trade policy, including the share of bilateral foreign direct investment between Poland and India. The analysis was based on information, data and indicators from the World Bank, OECD, UNCTAD, Eurostat, CIA World Factbook, IMF, and the World Health Organisation. The methodology adopted is based on drawing conclusions from available data and scientific studies on international relations between Poland and India.

The literature on the developments in foreign direct investment between Poland and India is not very extensive due to the insufficiently researched topic of bilateral relations between these countries. It should also be stated that no systematic and methodical studies have been carried out to date to answer the fundamental questions about the place and role of foreign direct investment in both countries. In this context, it is crucial to identify and understand India's economic potential and its proper use by Poland. The countries' mutual scientific cooperation has led to numerous publications, most of which stress the need for legal changes in order to improve the development of economic relations between India and Poland. The authors of such publications are often scientists from India, who lived in Poland long enough to learn about the problems and barriers that arise in developing mutual investment relations in the context of cultural differences and business etiquette. Both Poland and India have carried out local government reforms giving local authorities more freedom to shape bilateral investment and fiscal policies (e.g. tax exemptions).

The main research questions sought to be answered in this chapter are as follows:

- To what extent is Poland exploiting India's economic potential to promote its own development?
- What are the size and dynamics of bilateral trade?
- What is the commodity structure of imports and exports between Poland and India?
- What is the situation of bilateral foreign direct investment between Poland and India?
- How will foreign direct investment between Poland and India develop in future?

Finding answers to these questions will provide a forecast for further international relations between Poland and India.

16.2. India's Economic Potential in the Context of Economic Cooperation with Poland

India is the fifth largest economy in the world and ranks 63rd in the Ease of Doing Business ranking released by the World Bank. In 2018 and 2019, the country implemented 59 reforms, representing a fifth of all reforms recorded worldwide [World Bank, 2020]. The latest changes concern the following areas of doing business: starting a business, dealing with construction permits, trading across borders and resolving insolvency. In addition, India has already been facilitating international exports and imports for four years, while developing industry and land infrastructure, as well as the maritime sector. India's economic potential can be considered in terms of its mineral resources, trade, growth dynamics, foreign direct investment, human capital and military position in the world. Officially, India has been a union of states since 1947, but its political system has been referred to as "Indian socialism" since 1991 due to its high degree of state interventionism. From an economic point of view, it is a developing country with a mixed economy, using coal (44% of total primary energy supply) and oil (24% of total primary energy supply). India has the fourth largest coal reserves in the world, but due to problems in its extraction, the country imports 150 million tons of coal per year [PAIH, 2018]. Due to the ever-increasing demand for energy, India is developing its energy sector using renewable energy sources (RES). A new solar park, the largest such system in the world (larger than those in China or Egypt) with a capacity of 2.05 GW has been commissioned in Pavagada, Kartanaka State. Its construction took five years (2015–2020). Overall, in 2019 RES generated 82 GW of energy in India, compared to 9.1 GW in Poland (70% of this capacity is provided by wind power and 5.2% comes from solar sources).

The analysis of bilateral cooperation between India and Poland should be preceded by a comparison of the main indicators defining the economic potential of the two countries, which is provided in Table 16.1. India's economic growth rate is much faster Poland's, at an estimated 5% per annum between 2019 and 2020, compared with around 3%–3.7% in Poland[1]. A summary of key data is presented in Figure 16.1 in the form of a pentagon of competitiveness for India and Poland.

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[1]   This year's draft Budget Act provides for a GDP growth of 3.7% in 2020, but it is currently difficult to estimate the impact of COVID-2019 on Poland's economic growth rate.

Table 16.1. India and Poland – selected indicators, 2018–2019

	India	Poland
Population in millions and trend (2019)	1,368 (increasing since 1960)	37 (decreasing since 2000)
Real GDP growth in % (2019)	5	3.7
GDP per capita in USD (2019)	2,044	15,909
CPI inflation	4.8	1.8
Public debt per capita in USD (2018)	1,367	7,485
Unemployment rate in % (U)	5.36[*]	3.47
Government budget to GDP ratio in % (G)	–7.44	–0.71
Current account to GDP ratio in % (CA)	–0.9	0.5
Average monthly wage in USD (2019)	1,380	427
Nuclear energy share of total energy production (2019)	1,8%	0%
Global Competitiveness Index (GCI) 4.0 – position in ranking (2019)	68	37
Digital Transformation Index (DTI) – share of ICT industry leaders (2018)	11%	5%
World Digital Competitiveness Ranking (WCDR) – position in ranking (2019) and competitiveness trend	44 (increasing)	33 (decreasing)

[*] The COVID-19 pandemic caused a significant increase in unemployment by 25–27% from March 2019 [OECD, 2020].

Source: Compilation by the author based on data from: ceicdata.com https://countryeconomy.com/countries/compare/poland/india, https://www.defence24.pl/140-indyjskich-glowic-jadrowych, www.populationof.net, www.delltechnologies.com, www.imd.org, statista.com, as well as IMF [2019] and WEF [2019].

Figure 16.1. Pentagon of competitiveness for India and Poland in 2019
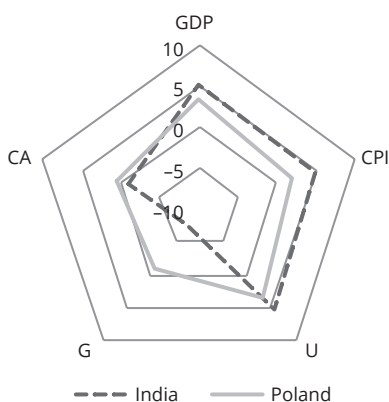
Designations: GDP – GDP growth (%), U – unemployment rate (%), CPI – inflation rate (%), G – government budget to GDP ratio (%), CA – current account to GDP ratio (%).

Source: Compilation by the author based on data from Table 16.1.

On the basis of the data presented in Table 16.1, it can be concluded that, despite lower GDP per capita and lower monthly earnings than Poland, as well as a lower position in the GCI 4.0 ranking, India is a thriving economy, with huge human capital potential and the production of energy and nuclear weapons. In addition, the country is leading the development of the ICT industry (in 2018, it was represented by 11% of leader firms, with the global average of 5% according to the DTI). In addition, in 2015–2018, there was a downward trend in Poland's digital competitiveness, as opposed to India, which saw a growth in this case – despite Poland's higher position in the World Digital Competitiveness ranking [IMD, 2019]. In view of the above, India could be an important and attractive economic partner for Poland, which is the fastest-growing economy among the Visegrad Group countries and has the economic potential to double GDP growth to 5% according to a McKinsey report [2020]. According to analysts, in order for Poland to maintain its leading position in Eastern Europe, it is necessary to develop industrial production, trade, and services. In addition, the country needs an increase in capital investment and an increase in the level of innovation, which is currently below the EU average. However, this requires stronger relations between business and scientific centers. In this case, closer scientific cooperation between India and Poland can contribute to reducing this gap and to the development of bilateral trade, which will be discussed more broadly further on in the chapter.

16.3. Trends in Bilateral Trade

In 2019, India's global trade in goods and services amounted to EUR 1,078.8 bn, which represented 2.9% of global trade, placing India 8th in the world ranking. Trade between India and the EU-27 accounted for 1.8% of the European Union's total trade, which in turn enabled India to rank 12th in trade between the EU-27 and other countries.

The literature describes the beginnings of cooperation between Poland and India, dating back to the 1950 s [Weresa, 1990]. Interestingly, despite the systemic differences and the political setup that prevailed in Poland until the 1990 s (socialist system), India then invested in Poland, mainly in the mechanical industry and agriculture.

A summary of trade between Poland and India is presented in Table 16.2.

Table 16.3 presents a comparison of the industry structure of bilateral imports and exports in 2010 and 2019 in EUR millions. The data below show that Poland imported more than it exported to India. Since 2010, imports have tripled, and exports doubled. The goods with the largest increases in the value of imports are products of the textile and machinery industries. Machinery and mineral products recorded the largest

increases in exports. It can therefore be concluded that trade with India between 2010 and 2019 mainly concerned the machinery and mineral products industries.

Table 16.2. Trade between Poland and India, 2010–2019 (EUR billions)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Imports	0.5	0.7	0.7	0.8	0.9	1.2	1.4	1.6	1.4	1.5
Dynamics (%)	–	40	40	60	80	140	180	220	180	200
Exports	0.3	0.4	0.5	0.4	0.4	0.4	0.6	0.7	0.8	0.6
Dynamics (%)	–	34	67	34	34	34	100	134	167	100
Balance	–0.2	–0.3	–0.2	–0.4	–0.5	–0.8	–0.8	–0.9	–0.6	–0.9

Source: Compilation by the author based on data from Statistics Poland [2020].

Table 16.3. Comparison of the commodity structure of imports and exports between Poland and India in 2010 and 2019 (EUR millions)

Commodity category (CN)	Imports		Percentage share of total imports (change from 2010)	Exports		Percentage share to total exports (change from 2010)
	2010	2019		2010	2010	
Total	**501.8**	**1,550.1**		**254.8**	**501.8**	
I – live animals; animal products	1.1	9.6	0.40	0.2	1.4	0.14
II – vegetable products	28.6	45.5	–2.76	0.1	13.7	2.07
III – animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes	0.1	0.5	0.01	0.0	0.1	0.02
IV – prepared foodstuffs, beverages, spirits and vinegar, tobacco and manufactured tobacco substitutes	15.3	45.0	–0.15	9.1	3.3	–3.06
V – mineral products	8.5	15.1	–0.72	15.5	159.7	**18.50**
VI – products of the chemical or allied industries	82.7	175.9	–5.13	28.6	35.7	–5.73
VII – plastics and articles thereof; rubber and articles thereof	27.9	87.3	0.07	18.2	52.1	0.88
VIII – raw hides and skins; leather, furskins and articles thereof; saddlery and harness; travel goods, handbags and similar containers; articles of animal gut (other than silkworm gut)	9.4	21.8	–0.47	2.1	4.3	–0.16
IX – wood and articles of wood; wood charcoal; cork and articles of cork; manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork	0.7	0.4	–0.11	0.8	4.1	0.32

Commodity category (CN)	Imports		Percentage share of total imports (change from 2010)	Exports		Percentage share to total exports (change from 2010)
	2010	2019		2010	2010	
Total	**501.8**	**1,550.1**		**254.8**	**501.8**	
X – pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard; paper and paperboard and articles thereof	0.7	1.7	–0.03	2.9	13.8	0.99
XI – textiles and textile articles	118.7	288.3	–5.06	4.5	5.1	–0.98
XII – footwear, headgear, umbrellas, sun umbrellas, walking sticks, seat-sticks, whips; riding-crops and parts thereof; prepared feathers and articles made therewith; artificial flowers; articles of human hair	14.6	84.9	2.57	0.7	0.4	–0.21
XIII – articles of stone, plaster, cement, asbestos, mica or similar materials; ceramic products, glass and glassware	23.3	84.1	0.78	6.5	7.7	–1.37
XIV – natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof, imitation jewelry; coin	3.6	9.3	–0.12	1.3	0.4	–0.45
XV – base metals and articles of base metals	49.2	214.1	4.01	72.5	106.6	–12.04
XVI – machinery and mechanical appliances; electrical equipment; parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles	45.1	283.7	**9.31**	65.0	195.1	4.52
XVII – vehicles, aircraft, vessels and associated transport equipment	53.2	136.5	–1.80	16.3	11.6	–4.61
XVIII – optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; clocks and watches; musical instruments; parts and accessories thereof	8.1	19.8	–0.34	7.3	20.8	0.34
XIX – arms and ammunition, parts and accessories thereof	0.1	0.2	–0.01	0.3	1.3	0.08
XX – miscellaneous manufactured articles	11.0	26.1	–0.51	2.9	12.4	0.77
XXI – works of art, collectors' pieces and antiques	0.0	0.3	0.02	0.0	0.1	0.02

Source: Ibid.

In 2019, imports were dominated by textiles and machinery and mechanical appliances. At that time, Poland exported mainly mineral products and machinery

and mechanical equipment to India. The largest change in the share of individual groups of goods in total imports between 2010 and 2019 was recorded for machinery and mechanical appliances (9.31%), while in exports the change involved mineral products (18.50%). The trade volumes for the first half of 2020 are shown in Table 16.4.

Table 16.4. **Changes in Polish exports to and imports from India between January and May 2020 (EUR m)**

	January 2020	February 2020	March 2020	April 2020	May 2020	Total
Imports	113.0	132.9	131.3	122.1	78.7	578.0
Exports	85.3	50.7	45.1	21.1	25.8	228.1

Note: Data based on CN commodity classification.

Source: Statistics Poland [2020, January – May].

Imports and exports between Poland and India saw a decline from March 2020 due to the lockdown of the economy caused by the coronavirus pandemic. The Indian market was closed for three months, as were other countries around the world, leading to the break-up of global supply chains (GVCs) and consequently a decline in trade. Table 16.5 compares data from January to May for 2019 and 2020, respectively. Exports decreased significantly more during that period than imports (–22.73%). Goods which saw the steepest declines, with the highest share in imports and exports, were: machinery and mechanical appliances (–33,01% and –23,90%, respectively) and precious metals and articles thereof (–16.48% and –23.09%). Imports of mineral products (–13.93%) also decreased, while their exports increased by 12.50%.

Table 16.5. **Comparison of changes in exports and imports between Poland and India in the periods from January to May 2020 and from January to May 2019 (EUR m)**

	Imports			Exports		
	January–May 2019	January–May 2020	change (%)	January–May 2019	January–May 2020	change (%)
Total	**662.6**	**578.0**	**–12.77**	**295.2**	**228.1**	**–22.73**
XVI – machinery and mechanical appliances	145.7	97.6	–33.01	92.9	70.7	–23.90
V – mineral products	5.6	6.3	12.50	76.1	65.5	–13.93
XV – base metals and articles of base metals	97.1	81.1	–16.48	43.3	33.3	–23.09

Source: Compiled by the author from Statistics Poland [2020] data.

India's exports fell by a record 34.5% in March 2020 and imports by almost 29% as a result of a significant reduction in the supply of leather, petroleum products, jewels and jewelry. This reduced the country's trade deficit by USD 9.76 bn. The sectors that saw negative growth in the case of full taxation were petroleum (8.10%), handicrafts (2.36%), yarn and cotton fabrics (10.67%), engineering (5.87%), jewels and jewelry (11%) and skins and leather (9.64%). The tea, coffee, rice, tobacco and cashew sectors also experienced negative growth in 2019–2020.

Table 16.6 presents the revealed comparative advantage index to show which sectors of Poland's exports have an advantage or not over India from an international trade perspective. The RCA is determined by the j-th sector's share of total exports and of the j-th country, in relation to the j-th sector's share of total exports of countries in a particular reference group (e.g. the world). For example, in Table 16.6, India's share of Polish exports of live animals and animal products was 0.22% in 2019, compared with the 4.14% share of this category in world exports in that year. The ratio of these two figures allows the RCA for this product category to be determined at 0.000531. Since the RCA is less than 1 and greater than 0 in this case, this means that there is no comparative advantage of Polish exports in this product category to India in 2019. A weak comparative advantage occurs when the RCA ranges between 1 and 2 and the average is between 2 and 4. A strong advantage occurs when the RCA is above 4 [Posłuszny, 2011].

Table 16.6. Revealed comparative advantage (RCA) in trade between Poland and India in 2010 and 2019 (EUR millions)

CN commodity classification	CN category share in global exports (%)		India's share of Polish exports (%)		RCA	
	2010	2019	2010	2019	2010	2019
I – live animals; animal products	3.75	4.14	0.08	0.22	0.000209	0.000531
II – vegetable products	2.04	2.02	0.04	2.11	0.000192	0.010441
III – animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes	0.27	0.20	0.0	0.1	0	0.00077
IV – prepared foodstuffs, beverages, spirits and vinegar, tobacco and manufactured tobacco substitutes	5.17	6.98	3.57	0.51	0.006908	0.000728
V – mineral products	4.28	2.25	6.08	24.58	0.014213	0.109264
VI – products of the chemical or allied industries	6.54	6.89	11.22	5.50	0.017163	0.007976
VII – plastics and articles thereof; rubber and articles thereof	6.53	6.94	7.14	8.02	0.010939	0.011557

cont. Table 16.6

CN commodity classification	CN category share in global exports (%)		India's share of Polish exports (%)		RCA	
	2010	2019	2010	2019	2010	2019
VIII – raw hides and skins; leather, furskins and articles thereof; saddlery and harness; travel goods, handbags and similar containers; articles of animal gut (other than silkworm gut)	0.40	0.45	0.82	0.66	0.020604	0.01471
IX – wood and articles of wood; wood charcoal; cork and articles of cork; manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork	2.08	2.03	0.31	0.63	0.001509	0.003109
X – pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard; paper and paperboard and articles thereof	3.12	2.82	1.14	2.12	0.003648	0.007533
XI – textiles and textile articles	3.29	3.92	1.77	0.79	0.005368	0.002003
XII – footwear, headgear, umbrellas, sun umbrellas, walking sticks, seat-sticks, whips; riding-crops and parts thereof; prepared feathers and articles made therewith; artificial flowers; articles of human hair	0.40	1.01	0.27	0.06	0.006868	0.00061
XIII – articles of stone, plaster, cement, asbestos, mica or similar materials; ceramic products, glass and glassware	1.87	1.97	2.55	1.19	0.013642	0.006017
XIV – natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof, imitation jewelry; coin	0.61	0.57	0.51	0.06	0.008364	0.00108
XV – base metals and articles of base metals	11.20	9.67	28.45	16.41	0.025405	0.01697
XVI – machinery and mechanical appliances; electrical equipment; parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles	26.06	25.09	25.51	30.03	0.009789	0.01197
XVII – vehicles, aircraft, vessels and associated transport equipment	15.79	13.52	6.40	1.79	0.004051	0.001321
XVIII – optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; clocks and watches; musical instruments; parts and accessories thereof	0.95	2.04	2.86	3.20	0.030158	0.015696
XIX – arms and ammunition, parts and accessories thereof	0.01	0.04	0.12	0.20	0.117739	0.050031
XX – miscellaneous manufactured articles	5.59	7.27	1.14	1.91	0.002036	0.002626
XXI – works of art, collectors' pieces and antiques	0.06	0.19	0.0	0.02	0	0.00081

Source: Ibid.

On the basis of an analysis of the data presented in Table 16.6 and the value of the indicators of revealed comparative advantage (RCA), it should be concluded that Poland did not have a competitive advantage in trade with India in any commodity export category, which confirms India's untapped economic potential to strengthen Poland's position in international trade.

Also in the area of agricultural cooperation, Poland does not take advantage of the commercial potential of food exports to India. Trade in agri-food commodities with India in 2013–2019 is presented in Table 16.7.

Table 16.7. Exports of agricultural products to India in 2013–2019 (EUR millions)

	2013	2014	2015	2016	2017	2018	2019
Exports	3.9	6.4	9.0	5.6	10.3	9.1	18.4
Dynamics (%)	–	63.8	40.8	–38.6	85.5	–11.8	102.8

Source: MRiRW reports 2013–2019.

The Ministry of Agriculture and Rural Development (MRiRW) has been seeking for many years to offset the negative balance in trade with India. In 2018, Polish agri-food exports to India reached EUR 9.1 m. The main Polish exports to the Indian market were apples, which accounted for about 40% of the value of agri-food exports to India. According to MRiRW data, the value of these exports in 2016 was USD 1.44 m, an increase of 250% compared to 2015, while in the first half of 2019 the value of apple exports increased to USD 11.2 m. Another agricultural product that can become a major export to India is the Polish potato. Poland ranks second in Europe and eighth in the world as exporter of this vegetable, which is not genetically modified, and at the same time displays high resilience to adverse growing conditions and immunity to diseases. Poland can sell to India not only consumer potato, but also processed potato in the form of potato starch, chips, crisps, flakes and granules [Polska The Times, 2020]. In the context of the provisions of agreements between Poland and India concerning areas of cooperation, this is not a significant achievement for Poland in relation to the overall trade relations. On the Indian side, too, there is a belief that opportunities of trade cooperation with Poland have not been fully exploited. During a visit by Szymon Giżyński, Secretary of State at the Ministry of Agriculture, to India in 2019, Amit Lohani, President of the Forum of Indian Food Importers (FIFI) stressed the need to import other agri-food products from Poland. The most important outcome of this meeting was a declaration of support from the Government of India regarding the procedures for the authorization of Polish companies to sell agri-food products on the Indian market.

Yet agriculture is not the only area where India sees an opportunity for further trade cooperation with Poland. Mining and the film industry are also important in this respect[2]. Indian cinematography is one of the world's leaders in terms of the number of productions. Every year, 2,000 films are made in different languages in India, compared to just 40 in Poland. In terms of revenue from the distribution of films in cinemas, India ranks 6th in the world [MPPA, 2018]. Poland signed an audiovisual co-production agreement with India in 2012. It also covers television production. Under the agreement, the Polish company Artevision signed a contract with the Indian film producer Auracine Entertainment. In March 2019, the Polish Institute of Film Arts also entered into a cooperation agreement with the Indian Producers Guild.

Poland's cooperation with India in the mining sector has continued for many years. Both economies rely on coal, but Poland must also meet the challenges of implementing the *European Green Deal* strategy [COM (2019) 640 final], set by the European Commission for energy transition of the EU member states. The Government of India aims to increase coal production from 708 million tons in 2016 to 1 billion tons per year in 2020, so Polish companies should take advantage of this opportunity to cooperate. The leader in this area is currently Jastrzębska Spółka Węglowa, the largest producer of coking coal in the EU, which signed a cooperation agreement with Essar Steel in 2017, ensuring the continuous sale of coke produced in its plants. Relevant mining cooperation agreements were also signed between the Silesian Voivodeship and West Bengal in 2017. The energy transition of EU countries requires exploring alternative energy sources, including renewables, an area in which India also has extensive experience. It creates additional opportunities for the investment of Indian capital in Poland. More broadly, the topic of bilateral foreign investment is set out later in the chapter.

16.4. Foreign Direct Investment of Poland and India

According to data from the Government of India website www.makeinindia.com, India ranks among the top ten destinations for foreign direct investment (FDI) in the world. The country has seen a significant increase in equity inflows (46%) and total FDI inflows (37%) since the launch of the Make in India initiative[3] in 2014. According to a report by India's Department for Promotion of Industry and Internal Trade, total

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[2]   More than 1,000 feature films are produced annually in India, compared with around 45 in Poland. It is estimated that cinemas in India are visited by about 12 million viewers every day, which corresponds to four months' audience in Poland.

[3]   In 2014, Government of India, led by Prime Minister Narendra Modi, launched a dedicated website for foreign investors, www.makeinindia.in, covering 25 key sectors of the economy with investment support.

foreign direct investment to India in 2018 amounted to USD 42.4 bn [DIPP, 2018]. Table 16.8 shows foreign direct investment flows from India to Poland and from Poland to India in 2010–2018. Table 16.9 lists the most important investment projects implemented by Indian companies in Poland between 2009 and 2019.

Table 16.8. Foreign direct investment inflows from India to Poland and from Poland to India between 2010 and 2018 (EUR millions)

	2010	2011	2012	2013	2014	2015	2016	2017	2018
FDI flow, India–Poland	−13.1	−0.6	2.1	−5.7	11.6	5.8	17.1	17.8	−11.1
FDI – position*	53.2	57.0	69.8	23.9	36.8	44.0	57.9	78.0	65.0
FDI flow, Poland–India	6.8	13.0	26.6	52.0	23.7	−8.5	4.4	19.9	18.7
FDI – position*	130.3	140.7	164.9	198.2	211.3	215.2	223.1	209.2	216.0

* Equity and reinvested earnings and other capital.

Source: NBP reports (no report for 2019).

The inflow of foreign direct investment from India to Poland between 2010 and 2018 was irregular, and from 2018 the withdrawal of investment from Poland by Indian investors (negative FDI flows) could be observed. The main reasons hampering the inflow of capital from India include problems in recruiting workers interested in coming to Poland from India and visa procedures related to their migration. The main area in which Indian entrepreneurs invested was the IT industry related to the outsourcing of services [Dygas, 2020]. The largest Indian companies operating in Poland are currently Wipro, HCL, and Uflex. Despite the lack of government support programs for Polish entrepreneurs willing to operate in the Indian market, Poland's FDI position in India (EUR 216 m) was more than three times higher in 2019 than that of India's FDI in Poland (EUR 65 m). It should be noted that until 2019 Poland had not been considered by India as a major partner in the Eastern European region. This is evidenced by the data in Table 16.8, which even take into account divestments in 2010, 2011, 2013 and 2018. Today, due to the economic changes caused by the coronavirus pandemic, Poland has the opportunity to establish fruitful cooperation with India on foreign direct investment as leader of the Visegrad Group, as well as Germany's most important trading partner, with whom India has a very strong economic relationship. What is also an important aspect is the future shape of mutual foreign direct investment, which will depend on the ranking of the strength of the impact of both economies on world trade. India has a chance to become the world's third largest economy in the next decade.

Indian companies have a transparent procedure for investing in EU countries, but this arrangement is not applicable to Polish companies that would like to invest in India. Polish companies that invested their capital in India between 2008 and 2019

are: Toruńskie Zakłady Materiałów Opatrunkowych (medical services), Billenium (IT services), Lumel S.A. (electromagnetics), CanPack (can production) and Aiut (telemetry). Polish companies typically invest in various industries through joint ventures with local Indian companies. The industry structure of total foreign direct investment in India is set out in Table 16.10.

Table 16.9. Investment projects of Indian companies in Poland in 2009–2019

Company	Industry	Investment (EUR m)	Jobs	Year
Intelenet Global Services	BSS-BPO	3.0	300	2009
Uflex	packaging	65.0	130	2011
Wipro	BSS-BPO	2.0	200	2011
Mphasis	BSS-IT	1.0	80	2012
Qburst	BSS-R&D	0.3	35	2012
Infosys	BSS-BPO	1.5	300	2013
WNS Global Services	BSS-BPO	2.5	500	2013
HCL Poland	BSS-IT	1.0	250	2017
Varroc Lighting Systems	automotive	42.0	400	2018
Varroc Lighting Systems	BSS- R&D	1.5	150	2019
ALLIANCE RENTALS	tourism	5.0	10	2019
Total		**124.8**	**2,355**	

Source: PAIH [2019].

Table 16.10. Industry structure of global FDI inflows to India between 2000 and 2020

Industry	FDI (USD m)	Share (%)
Services (finance, banking, outsourcing, insurance, R&D)	82,000.96	17.45
Computer software and hardware	44,911.21	9.56
Telecommunications	37,270.95	7.93
Trade	27,594.95	5.87
Construction	25,662.33	5.46
Automotive	24,210.68	5.15
Chemicals	17,639.48	3.75
Infrastructure	16,846.88	3.58
Pharmaceuticals	16,500.62	3.51
Tourism	15,288.97	3.25
Energy	14,987.93	3.19
Metallurgical	13,401.78	2.85
Food processing	9,980.75	2.12

Source: DIPP [2020].

What poses a major challenge to further cooperation between India and Poland is the COVID-19 coronavirus pandemic forcing the economic isolation of both countries, with pessimistic forecasts for both economic growth and the economy as a whole.

The sectoral approach to mutual investment between Poland and India is presented in Table 16.11. It can be a reference point for the selection of strategic trade areas during the restart of the global economy following the pandemic [Dygas, Shukla, 2020].

Table 16.11. Future FDI opportunities between India and Poland – industry-based approach

Future FDI opportunities – sectoral approach	
FDI in Poland by Indian companies	1) further increase of investment in IT and ITES 2) BFSI – due to the growing significance of the sector in India and global operations of Indian entities 3) clothing and textiles – due to India's potential and capabilities in this area; Poland as a gateway to the European continent 4) automotive sector – due to India's potential and capabilities in the region; Poland as a gateway to the European continent 5) healthcare and pharmaceuticals 6) BPO & KPO 7) furniture and finishing materials
FDI in India by Polish companies	1) processing, storage and preservation – due to huge demand in area in India and because India is one of the largest manufacturers of fruit, seeds and other agricultural products 2) clean coal technology – India remains heavily reliant on thermal energy generation and requires improved environmentally-friendly technology 3) other green technology solutions 4) electromobility – electric vehicles 5) personal care and cosmetics sector

Source: Based on Dygas, Shukla [2020, p. 222].

India's Ministry of Trade and Industry is reviewing its FDI policy on an ongoing basis to limit acquisitions of Indian companies as a consequence of COVID-19. The current position of the Government of India is that a non-resident entity may invest in India, subject to FDI policy, with the exception of those sectors/activities that are prohibited. Also, an entity of a country which has a land border with India or in which the beneficial owner of an investment in India is established or is a national of such a country may only invest under a government procedure. In the context of these developments and pending the restart of the global economy, it will take time and much effort involving economic and diplomatic agreements to re-establish ties between Poland and India. Poland, having a good geopolitical arrangement with the US, can take advantage of this asset to develop a new economic strategy for Asian countries, with a particular focus on India.

16.5. Conclusions

The chapter answers the research questions raised in the introduction section about bilateral relations between Poland and India regarding the opportunity for Poland to exploit India's economic potential, the characteristics of trade between these countries and mutual direct investment in the period 2010–2019. The COVID-19 pandemic, which has continued since the end of 2019, has led to significant global changes in the international economy. The closure of Polish and Indian borders for many months has prevented trade between the countries as well as planned visits by the Polish government to India. This is reflected in the decrease in bilateral trade volume (described more broadly in sub-chapter 16.3 in Table 16.5). Between January and May 2020, exports decreased by 22.73% compared to the same period of 2019, and imports dropped by 12.77%. Trade between India and Poland was largely based on exports of machinery and mechanical appliances and mineral products. There are promising prospects for growing trade in the agricultural and film sectors. India is one of the most important economies in the world with enormous economic potential. Its comparative characteristics versus Poland are presented in Table 16.1 together with the pentagon of competitiveness and an analysis of the revealed comparative advantages (RCAs). India is a huge Asian country with high economic growth and high development opportunities (human capital), and with access to nuclear weapons. The basic conclusion from the assessment of bilateral trade relations between the two countries is that Poland has been unable to take advantage of its cooperation with India not only economically but above all strategically to strengthen and secure its economic position in Europe.

The creation of such a strategy requires a stable economic policy of the Government of Poland towards Asian countries. As a first step, consular procedures for granting Polish visas to Polish for investors from India should be simplified, as they still involve a long waiting time. This is an important part of the investment process, which may encourage potential investors from India to choose countries other than Poland. Energy, mining, international trade and defense should be the most important areas of cooperation between Poland and India. Indian foreign policy seeks to increase foreign direct investment inflows, which special investment incentives designed for companies willing to move from China. After the COVID-19 pandemic, India is to be a self-sufficient country based on the system of self-government of villages managed by local councils (*panchayati raj*), drawing on the legacy of Mahatma Gandhi. High hopes are also placed in the *Make in India* programme created by Indian Prime Minister

Narendra Modi, which focuses on the development of industry, medical services, public transport, energy, clean water supply and technology [Sanjaya, 2020].

Attention should also be paid to the asymmetry of foreign direct investment between India and Poland in the period 2010–2018 (Table 16.8). Interestingly, an analysis of NBP data shows that in 2018 equity and reinvested earnings and other capital inflows from Poland to India were more than three times higher than India's foreign direct investment in Poland. The reason is that Indian companies invested in Poland mainly through mergers and acquisitions (M&As), rarely engaging in greenfield projects. According to the Government of India report, Poland's share of foreign direct investment in India between April 2000 and March 2020 was USD 684.44 m, representing 0.15% of total foreign investment inflows to India globally [DIPP, 2020]. This means that Poland is not a significant economic partner in terms of total foreign investment. The financial services sector (17.45%) and IT (9.56%) accounted for the largest share of total investment in India according to the data presented in Table 16.10.

Polish companies operating in India had to face a different business culture, different standards and regulations, often diverse even between the different states of India, as well as the lack of local support in running a business through dedicated Polish government agencies. Developing trade with India and deepening the economic partnership, including the establishment of conditions for the development of further foreign investment, should be one of the priorities in Poland's economic policy relating to cooperation with Asian countries.

Bibliography

Agreement between the Government of the Republic of Poland and the Government of the Republic of India amending the Agreement between the Government of the Republic of Poland and the Government of the Republic of India concerning co-operation in the field of defence, done on 17 February 2003 in New Delhi, signed in Warsaw on 30 May 2011 (Journal of Laws of 2011, No. 180, item 1076).

Agreement between the Government of the Republic of Poland and the Government of the Republic of India for the promotion and protection of investments, signed in Warsaw on 7 October 1996 r. (Journal of Laws of 1998, No. 34, item 186).

Agreement between the Government of the Republic of Poland and the Government of the Republic of India on audiovisual co-production, signed in Warsaw on 4 July 2012 (MP 2012, item 805).

Agreement between the Government of the Republic of Poland and the Government of the Republic of India on co-operation in combating organised crime and international terrorism, signed in New Delhi on 17 February 2003 (Journal of Laws of 2005, No. 34, item 302).

Agreement between the Government of the Republic of Poland and the Government of the Republic of India on cooperation in the field of health and medicine, signed in Warsaw on 24 April 2009 (MP 2010, No. 59, item 777).

Agreement between the Minister of Agriculture and Rural Development of the Republic of Poland and the Ministry of Agriculture and Farmers Welfare of the Republic of India on co-operation in the field of agriculture, signed in Warsaw on 22 April 2017 (MP 2017, item 573).

Agreement concerning the cultural co-operation between the People's Republic of Poland and the Republic of India, signed in New Delhi on 27 March 1957 (Journal of Laws of 1958, No. 57, item 281).

Agreement on Economic Cooperation between the Government of the Republic of Poland and the Government of the Republic of India, signed in Warsaw on 19 May 2006 (MP 2007, No. 60, item 693).

Agreement on tourism cooperation between the Government of the Republic of Poland and the Government of the Republic of India, signed in Warsaw on 24 April 2009 (MP 2009, No. 72, item 908).

Baker, D.C., Diggs, H.T. [1956], *A monthly inventory of information from U.S. Government Foreign Service Offices and other sources that may not otherwise be made available promptly*, US Department of Interior, Bureau of Mines, Division of Minerals, United States.

Balcerowicz, P. [2010], *Gospodarcze wcielenie Indii – tygrys czy słoń?*, in: *Świat Orientu – Orient w świecie* (pp. 135–157), A. Bareja-Starzyńska, P. Balcerowicz, J. Rogala (eds.), Wydawnictwa Uniwersytetu Warszawskiego, Warsaw.

Cooperation Programme between the Minister of Culture and National Heritage of the Republic of Poland and the Ministry of Culture of the Government of the Republic of India for the years 2010–2013, done in New Delhi on 7 September 2010 (MP 2010, No. 98, item 1153).

Decision of the Minister of Economy, Labour and Social Policy of 26 April 2004 on the preliminary arrangements in anti-dumping proceedings in connection with the import into the Polish customs area of graphite electrodes originating in India (MP 2004, No. 18, item 317).

DIPP [2018], *Foreign Direct Investment India*, https://dipp.gov.in/sia-newsletter/foreign-direct-investment-india-annual-issue-2018 (accessed: 5.09.2020).

DIPP [2020], *Fact Sheet on Foreign Direct Investment*, https://dipp.gov.in/sites/default/files/FDI_Factsheet_March20_28May_2020.pdf (accessed: 23.08.2020).

Dygas, R., Shukla, S. [2020], *FDI Flow between India and Poland-Analysis of Current Status and Future Opportunities*, in: *Global Challenges India's Opportunities in Business Adversity*, S. Shukla, A. Deshpande (eds.), Excel India Publishers, Alkesh Dinesh Mody Institute for Financial & Management Studies, University of Mumbai.

Dygas, R. [2020], *Determinants of foreign direct investment outflow from India to Poland*, "International Journal of Management and Economics", 56(2), pp. 1–9.

European Commission [2019], *Trade Websites*, https://www.trade.europa.ec.eu (accessed: 11.09.2019).

Extradition Treaty between the Republic of Poland and the Republic of India (Journal of Laws of 2005, No. 156, item 1304).

Gedam, R. [1999], *Statistical Profile of India 1999*, Deep & Deep Publications, New Delhi.

IBEF [2020], *Indian Economic Development & Growth Report*, https://www.ibef.org/economy/monthly-economic-report (accessed: 13.03.2020).

IMD [2019], *World Digital Competitiveness Ranking 2019*, https://www.imd.org/globalassets/wcc/docs/release-2019/digital/imd-world-digital-competitiveness-rankings-2019.pdf (accessed: 14.03.2020).

IMF [2019], *World Economic Outlook 2019*, https://www.imf.org/en/Publications/WEO (accessed: 15.09.2020).

Institute of International Finance [2020], *Capital Flows Report Sudden Stop in Emerging Markets*.

Invest India [2020], *Ministry of Commerce and Industry Reviews FDI Policy to Curb Takeovers/Acquisitions of Indian Companies Due to COVID-19*, https://www.investindia.gov.in/team-india-blogs/ministry-commerce-and-industry-reviews-fdi-policy-curb-takeoversacquisitions (accessed: 20.04.2020).

Kugiel, P. [2015], *"GoIndia": nowy etap współpracy polsko-indyjskiej*, "Biuletyn PISM", 36(1273), pp. 1–2.

KUKE [2020], *Mapa rynków eksportowych*, www.mapa.kuke.com.pl (accessed: 3.09.2020).

Make in India [2020], *India among Top 10 FDI Destinations in the World*, https://www.makeinindia.com/india-among-top-10-fdi-destinations-in-the-world (accessed: 3.09.2020).

McKinsey [2020], *Polska 2030. Szansa na skok do gospodarczej ekstraklasy*, mckinsey.com.pl (accessed: 15.09.2020).

MPPA [2018], *Theme Report 2018, A comprehensive analysis and survey of the theatrical and home entertainment market environment (THEME) for 2018*, https://www.motionpictures.org/wp-content/uploads/2019/03/MPAA-THEME-Report-2018.pdf (accessed: 5.09.2020).

OECD [2020], *OECD Economic Outlook (volume 1)*.

PAIH [2018], *Indie. Przewodnik po rynku*, Polska Agencja Inwestycji i Handlu, Warsaw.

PISF [2020], *Porozumienie PISF z indyjską Gildią Producentów*, http://pisf.pl/aktualnosci/porozumienie-pisf-z-indyjska-gildia-producentow/ (accessed: 5.09.2020).

Polska The Times [2020], *Polskiego ziemniaka droga do Indii*, 28.12.2020.

Posłuszny, K. [2011], *Konkurencyjność międzynarodowa jako miara skuteczności restrukturyzacji przemysłu*, "Ekonomia Menedżerska", 9, pp. 49–61.

Resolution of the Sejm of the Republic of Poland of 5 June 1998 on nuclear tests carried out by the Republic of India and the Islamic Republic of Pakistan (MP 1998, No. 18, item 261).

Rynek Elektryczny.pl [2020], *Moc zainstalowana OZE w Polsce*, https://www.rynekelektryczny.pl/moc-zainstalowana-oze-w-polsce/ (accessed: 10.03.2020).

SadyOgrody.pl [2020], *Indie silnym partnerem Polski we współpracy w sektorze rolno-spożywczym*, https://www.sadyogrody.pl/handel_i_dystrybucja/106/indie_silnym_partnerem_polski_we_wspolpracy_w_sektorze_rolno_spozywczym,17385.html (accessed: 15.07.2020).

Sanjaya, B. [2020], *What India should do after the Coronavirus lockdown end*, https://econo-mictimes.indiatimes.com/news/economy/policy/what-a-post-lockdown-india-should-focuson/articleshow/75542198.cms?utm_source=contentofinterest&utm_medium=te-xt&utm_campaign=cppst (accessed: 5.05.2020).

Serwis Rzeczypospolitej Polskiej [2019], *Górnictwo szansą na polsko-indyjski biznes*, https://www.gov.pl/web/aktywa-panstwowe/gornictwo-szansa-na-polsko-indyjski-biznes1 (accessed: 3.03.2020).

Serwis Rzeczypospolitej Polskiej [2020], *Polska w Indiach*, https://www.gov.pl/web/indie/indie (accessed: 23.08.2020).

Statistics Poland [2020], *Dziedzinowa baza wiedzy*, http://swaid.stat.gov.pl/ (accessed: 13.04.2020).

Staśkiewicz, R., Walczak, M. [2019], *Ocena sytuacji w handlu zagranicznym w 2018 roku*, Mini-sterstwo Przedsiębiorczości i Technologii, Departament Analiz Gospodarczych, Warsaw.

Tandkulkar, S.D., Bhavani, T.A. [2007], *Understanding Reforms. Post 1991 India,* Oxford University Press, New Delhi.

The Economic Times [2020], *Exports Dip by 34.57 per cent in March. Total Shipment at $ 314 Billion in 2019–20*, https://economictimes.indiatimes.com/news/economy/foreign-trade/exports-dip-by-34–57-per-cent-in-march-total-shipment-at-usd-314-billion-in-2019-20/articleshow/75161847.cms? (accessed: 20.04.2020).

The European Green Deal Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, Brussels, COM (2019) 640 final.

WEF [2019], *The Global Competitiveness Report 2019*, http://info.worldbank.org/governance/wgi/index.asp (accessed: 7.06.2020).

Weresa, M. [1990], *Polsko-Indyjskie stosunki gospodarcze. Podstawy traktatowe i powiązania rzeczowe*, SGPiS, Warsaw.

World Bank [2020], *Doing Business 2020*, http://databank.worldbank.org/ddp/home.do?Step=1&id=4 (accessed: 8.07.2020).

Żółtkowski, W., Paradysz, S., Soroka, P., Karpiński, A. [2013], *Jak powstawały i jak upadały zakłady przemysłowe w Polsce (1946–2012)*, Muza SA, Warsaw.

Data sources

http://apps.who.int/ghodata (accessed: 3.02.2020).

https://countryeconomy.com/countries/compare/poland/india (accessed: 17.02.2020).

http://fsi.imf.org (accessed: 20.02.2020).

http://epp.eurostat.ec.europa.eu/guip/introAction.do?profile=cpro&theme=eurind&lang=en (accessed: 4.03.2020).

http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database (accessed: 7.04.2020).

http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/themes (accessed: 23.07.2020).

http://prawo.sejm.gov.pl/isap.nsf/ByKeyword.xsp?key=Indie (accessed: 4.05.2020).

http://stats.oecd.org/index.aspx (accessed: 17.03.2020).

http://stats.unctad.org/FDI/ReportFolders/reportFolders.aspx (accessed: 21.03.2020).

http://stats.unctad.org/Handbook/ReportFolders/reportFolders.aspx (accessed: 30.05.2020).

http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx?sRF_ActivePath=P,5,27&
   sRF_Expanded=,P,5,27 (accessed: 10.09.2020).

http://www.cepii.fr/anglaisgraph/bdd/gravity.asp (accessed: 11.04.2020).

https://www.cia.gov/library/publications/the-world-factbook (accessed: 9.03.2020).

https://www.defence24.pl/140-indyjskich-glowic-jadrowych (accessed: 15.10.2020).

https://www.gov.pl/web/rolnictwo/raporty-i-ekspertyzy (accessed: 20.10.2020).

https://www.nationmaster.com/statistics (accessed: 2.08.2020).

https://www.nbp.pl/home.aspx?f=/publikacje/raporty_i_analizy.html (accessed: 13.11.2020).

http://www.nsd.uib.no/macrodataguide/topic.html (accessed: 18.04.2020).

https://www.populationof.net/ (accessed: 3.12.2020).

www.delltechnologies.com (accessed: 10.05.2020).

Summary and Conclusions

Poland's Competitive Position at the Beginning of 2021

Arkadiusz Michał Kowalski, Marzenna Anna Weresa

The turn of the third decade of the 21st century is a period of violent socio-economic shocks caused by the COVID-19 pandemic. Poland has faced new challenges in many areas of life, such as ensuring the efficiency of the healthcare system, maintaining the continuity of many sectors of the economy that have been severely affected by the economic downturn, maintaining the functioning of the education system, ensuring access to culture for society, etc. In the times of any crisis, the government is faced with the need to solve the most pressing problems on an ongoing basis and is focused on introducing measures to prevent such developments in the future. Both previous crises, in particular the global financial and economic crisis, and the current collapse caused by the COVID-19 pandemic, prompt reflection on how the economy and society respond to various external shocks and make it even more reasonable to seek answers to the question about the level of competitiveness of the economy. This trend of exploration is aligned with the main objective of this monograph, which is to determine the competitive position of the Polish economy in 2020 in comparison with other EU member states. In these comparisons, Poland is benchmarked in particular against other EU countries from Central and Eastern Europe, which have achieved a level of economic development similar to Poland's and are its direct competitors in international markets. Enhancing the knowledge on this subject will make it possible to draw economic policy lessons and to make systemic changes that are necessary to respond more efficiently when the next crisis situation arrives [Gates, 2020]. Furthermore, in view of the rise of protectionist tendencies, as well as the pandemic of temporary restrictions on international cooperation, the monograph has also adopted a specific objective, which is to define the state of Poland's bilateral relations with the world's key economies and to identify opportunities for their development after the pandemic. The largest economies representing all continents have been selected for the analysis, which are Poland's important economic partners, namely the United States, Germany, Ukraine and four Asian countries – Japan, South Korea, China and India.

The analyses of the competitiveness of the Polish economy carried out in Part I of the monograph show that the COVID-19 pandemic has resulted in a significant deterioration in the macroeconomic indicators, which make up the so-called "magic pentagon" of competitiveness (GDP growth rate, inflation, unemployment, general government balance as a percentage of GDP and current account balance as a percentage of GDP). According to preliminary estimates of the European Commission, the decrease in GDP in 2020 (– 3.6%) is not as strong in Poland as the EU average (–7.4%), but the Polish GDP growth forecast for 2021 is worse than the EU average (3.3% vs. 4.1%) [European Commission, 2020, p. 199]. Compared to the main economic partners whose bilateral trade with Poland is analyzed in this monograph, Polish's competitive position in 2020 determined by the real GDP growth rate and the forecast of its changes are rather unoptimistic. After strong GDP declines in 2020 in all the analyzed countries (with the exception of China, where GDP growth is estimated to be around 2.1% in 2020), return to growth is expected in 2021–2022. However, the rate of GDP growth in Poland during this period will be comparable to the level forecast for Germany, which does not guarantee catching up with Poland' western neighbor. What is more, it should be noted that the rate of GDP growth in Poland will be significantly lower than that of the emerging economies such as China and India (Figure 17.1), which will affect bilateral economic cooperation and may also make it difficult to compete with these countries in international markets.

**Figure 17.1. Real GDP growth rate, 2019–2022**
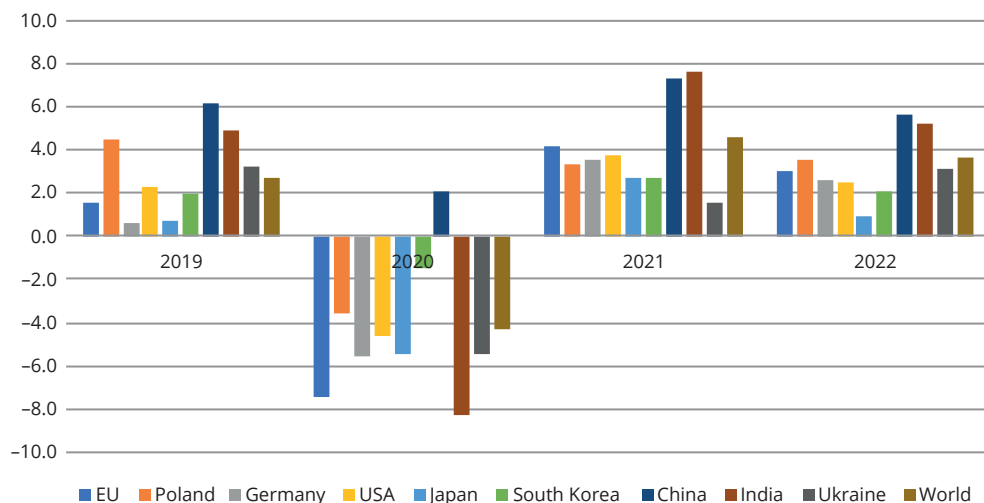
Note: 2020 data – preliminary estimates, 2021–2022 data – forecast.

Source: Compiled by the authors from European Commission [2020] and World Bank [2020] data.

A broader picture of the macroeconomic situation in 2020 compares the main economic indicators of Poland's "magic pentagon" of competitiveness in 2020 with average EU indicators and with those reported by Poland in 2019. Looking at the changes in the five macroeconomic indicators recorded in 2020 compared to those achieved in 2019, it can be seen that the decrease in GDP in 2020 was accompanied by an increase in inflation (by 1.5 pp). The economic slowdown also resulted in a slight increase in unemployment (by 0.7 pp) and a substantial deterioration in the government budget balance in relation to GDP (from a slight surplus of 0.7% in 2019 to a deficit of –7.4% in 2020). However, the positive current account balance in relation to GDP (1.8%) was maintained close to that achieved in 2019.

Figure 17.2. Main macroeconomic indicators for Poland vis-à-vis the EU average in 2020 and compared with the 2019 performance
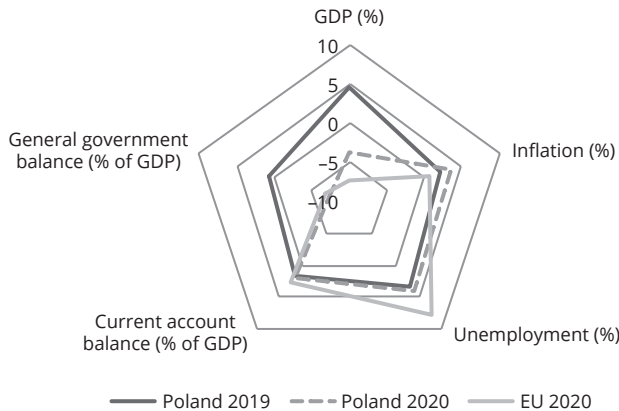
Source: Compiled by the authors from European Commission [2020] data.

The condition of the Polish economy in 2020, measured by the five macroeconomic indicators discussed above, is slightly better than the average of the EU: Poland had a less deep decline in GDP than the EU average (–3.6% vs. –7.4%) and lower unemployment (4% and 7.7% respectively). However, when it comes to the size of the public finance deficit Poland's position is slightly worse that the EU average (Figure 17.2). The deepening of the budget deficit is undoubtedly influenced both by the revenue side, i.e. the decline in economic activity and by the increase in budgetary expenditure introduced to offset the effects of the pandemic.

All the dimensions of competitiveness discussed in the monograph are synthesized in an index compiled by the Institute of Management Development (IMD). The latest data place Poland 18th in the EU in terms of economic competitiveness – ahead of Latvia, Italy, Hungary, Bulgaria, Greece, Romania, Slovakia and Croatia. European

competitiveness leaders are the Nordic countries. Three of them – Denmark, Sweden and Finland – were among the top five in the rankings. The Netherlands and Ireland are also among the most competitive European economies. Among the Central and Eastern European member states, Estonia, the Czech Republic and Slovenia (Figure 17.3) were ranked the highest.

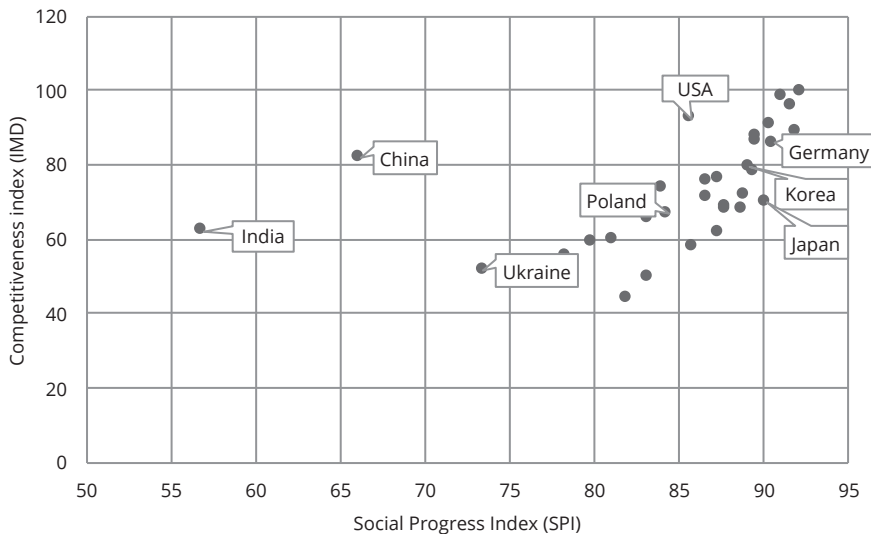**Figure 17.3. Competitiveness of EU countries in 2020 – IMD ranking**
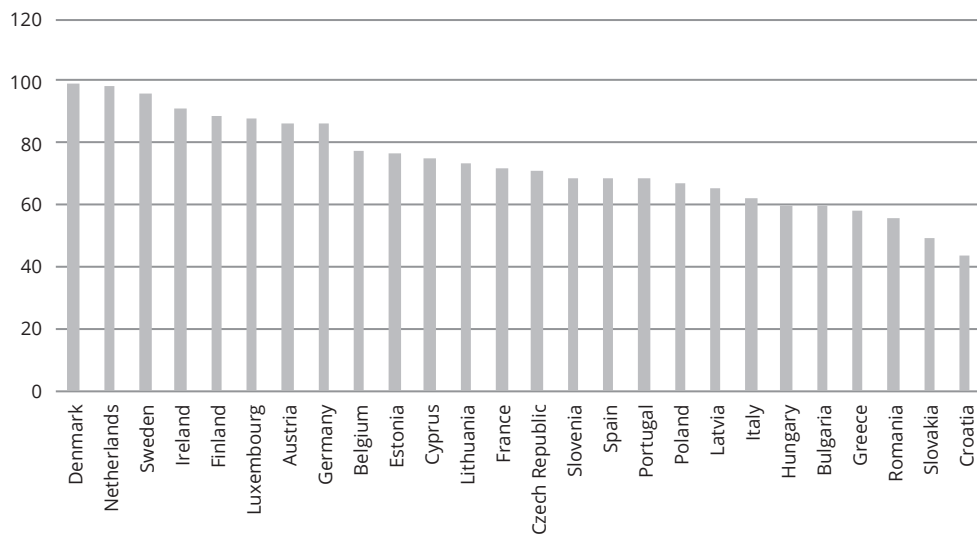
Source: Compilation by the authors based on IMD [2020, pp. 34–35] data.

At a time of pandemic, the sustainable dimension of competitiveness is becoming more important than before as it relates to the elimination of socio-economic exclusion and the environmental impacts of economic activity. One synthetic measure of sustainable competitiveness is the Social Progress Index (SPI). The index consists of three groups of factors describing basic human needs, foundations of wellbeing, and opportunity for personal development [Stern, Krylova, Harmacek, 2020]. The index does not include economic performance, such as growth indicators, which makes it possible to directly compare social and environmental progress, without taking into account economic indicators. Green, Harmacek and Krylova [2020] show that there is a positive and strong but non-linear link between the Social Progress Index (SPI) and GDP per capita. Even a small increase in GDP per capita in low-GDP countries translates into a relatively large improvement in social progress. At the same time, as countries achieve higher levels of income per capita, the SPI change rate decreases. It means that a change in GDP per capita does not fully explain social progress as countries with similar levels of GDP per capita do not achieve the same level of social

progress [Green et al., 2020, p. 8]. In view of these conclusions, it is worth juxtaposing SPI performance with the competitiveness index in order to find out whether and to what extent the two phenomena, competitiveness and social progress, are correlated.

Poland ranks 31st in the world in terms of the Social Progress Index [Green et al., 2020], i.e. higher than in the overall IMD competitiveness ranking [IMD, 2020]. This indicates a higher level of progress in terms of broad-based social development than in other dimensions of competitiveness. The question therefore arises as to how much the SPI is correlated with the competitiveness index. According to the geographical scope of the analyses adopted in this monograph, the determination of correlations covers EU member states and countries categorized as Poland's major economic partners. For EU member states, the correlation between the Social Progress Index and the competitiveness index is high, with Pearson's correlation coefficient of 0.84. However, it reaches a lower value (0.47) when the analysis is extended to non-European countries, which are studied in the monograph in terms of bilateral cooperation with Poland. The weakening of the correlation coefficient is influenced by the disparities between the SPI and the competitiveness index in China, India and Ukraine. China and India have a relatively lower Social Progress Index compared to their position set by the competitiveness index, while the opposite is true for Ukraine (Figure 17.4). This may have specific implications from the bilateral cooperation perspective, but this issue requires further in-depth studies beyond the scope of this monograph.

Figure 17.4. Competitiveness and social progress – Poland compared with selected countries in 2020

Summing up the competitiveness analysis carried out in the monograph and referring to Poland's bilateral cooperation with major economic partners discussed in Part III, it is worth comparing the competitive position of Poland with these partners' performance in the rankings. The analysis of bilateral links covered seven of Poland's economic partners: the US, Germany, Ukraine, Japan, South Korea, China, and India. The choice of these economies was related to their importance in Polish relations with foreign countries and the importance of these countries in the world economy. Figure 17.5 compares the competitiveness of these economies in 2020 with Poland's performance. The best performer in the analyzed group is the United States (10th in the world), followed by Germany (17th in the world) and China (20th in the world). Poland, with its 39th position in the global ranking, is ahead only of two countries from the analyzed group, i.e. India and Ukraine. These results may indicate the existence of an asymmetry in terms of Poland's bilateral ties with most of the mentioned trading partners. This has important implications for the policy supporting the international expansion of Polish companies, which should focus more on qualitative rather than quantitative aspects of economic exchange.

Figure 17.5. Competitiveness of Poland compared to selected economic partners according to the IMD ranking in 2020
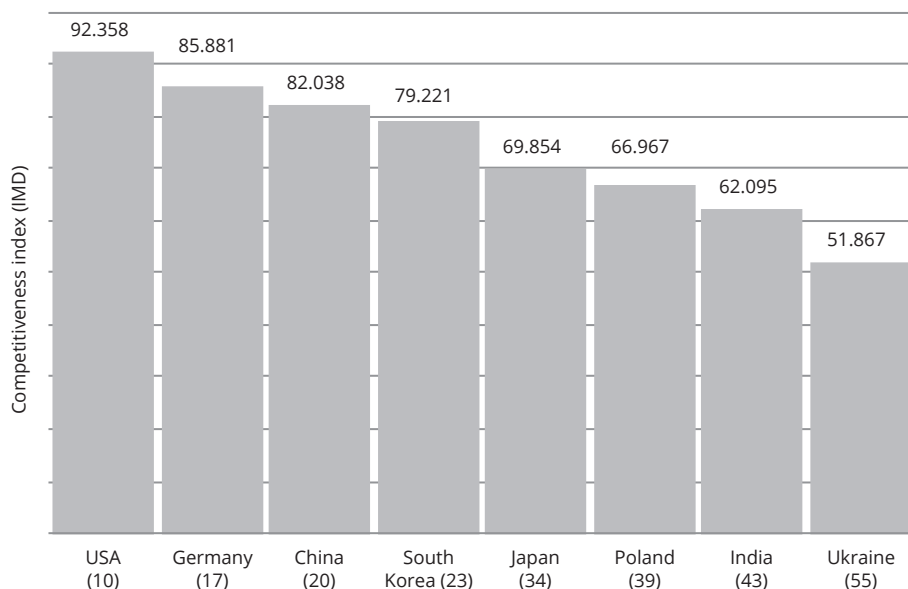
Note: The number in brackets show the country's position in the global ranking.

Source: Compilation by the authors based on IMD [2020, pp. 34–35].

The assessment of bilateral economic relations with Poland's major economic partners, provided in Part III of the monograph, focuses on three elements:

1) trade,
2) foreign direct investment (FDI),
3) migration.

A summary of data on Poland's trade with the analyzed countries is presented in Table 17.1.

Table 17.1. Poland's foreign trade with the analyzed countries in 2018

Country	Trade balance (USD '000s)	Exports (USD '000 s)	Imports (USD '000 s)	Import share (%)	Export share (%)
Germany	13,734,797.62	73,691,774.70	59,956,977.08	22.40	28.15
China	28,471,016.54	2,501,427.07	30,972,443.61	11.57	0.96
USA	332,271.91	7,283,604.93	7,615,876.84	2.84	2.78
South Korea	4,202,088.76	615,308.40	4,817,397.17	1.80	0.23
Japan	3,500,651.12	671,576.69	4,172,227.81	1.56	0.26
Ukraine	2,238,723.90	5,271,783.25	3,033,059.36	1.13	2.01
India	1,304,399.61	819,617.25	2,124,016.86	0.79	0.31

Source: World Bank.

Germany is Poland's largest trading partner: in 2018, Germany accounted for 28.15% of exports and 22.4% of imports. At the same time, attention should be paid to Poland's positive trade balance, which reached a surplus of USD 13.7 bn with Germany in 2018. In contrast, a negative trade balance was recorded in Poland's trade with China, which is the country with the largest share of Polish imports except Germany (11.57%).

In the context of bilateral trade, a negative trade balance should be noted with most of the analyzed economies (except Germany and Ukraine). At the same time, Poland's economy has specialized in the production of intermediate goods, integrating with regional value chains through inclusion into European production networks. A particularly high trade deficit occurs in Poland's economic relations with China. Imports from China are dominated by machinery and mechanical appliances, electrical and electrotechnical equipment despite a slight decrease from 55.5% to 50.6% of all Polish imports from China in 2010. Poland's main export products are less technologically advanced food products and raw materials (in particular copper). However, there is an increase in Polish exports of high-tech products such as machinery and mechanical appliances, as well as electrical and electrotechnical equipment. The period 2018–2019 saw an increase in exports to China of electronic parts, wood and meat products, which could be a result of the trade war between the US and China. At the same time, the

increase in trade in machinery and mechanical appliances, electrical and electrotechnical equipment between Poland and China is due to Poland's position in the European value chains, where it an assembly base for semi-finished products or end products. It should also be pointed out that Polish food exports are instable due to their high dependence on animal diseases and political and economic developments.

Over the past decade, exports from Poland to Japan have relied primarily on final goods, with food, although sensitive to all kinds of safety and health issues, being an important category. On the other hand, imports from Japan to Poland showed a higher share of intermediate goods. They were dominated by medium-advanced technology products, mainly from the transport, general purpose machinery, electrotechnical and electronic industries. It should be mentioned that during the period considered, exports of intermediate products from Poland to Japan increased by 19%. However, what contributed to this were sales of medium and low-technology products (chemicals and wood pulp, paper and wood). Despite there still being a huge advantage of supplies from Japan, their declining value, in particular from the transport industry, suggests that Poland tends to make purchases locally, and that Japanese multinationals based in Poland are mostly linked to the European production network. Recently, new challenges to Polish-Japanese cooperation have also emerged. These are mainly related to Brexit, the impact of the EPA between Japan and the EU on sectoral production and the effects of the COVID-19 pandemic. Along with the new challenges, additional opportunities are emerging to increase exports. Building on Poland's strengths and creating a national brand, associated with high quality and technology, qualified workforce and cultural similarities, are essential to success in economic cooperation with Japan.

In trade with South Korea, Poland records a high deficit. At the same time, the importance of South Korea as Poland's trading partner did not change significantly during the period considered, which means that exports and imports were not subject to significant fluctuations in terms of total exports and imports of goods and services. The structure of commodity trade is highly concentrated on machinery and mechanical appliances, electrical equipment, and sound and image recorders and reproducers. This section is the largest in terms of both imports and exports between Poland and South Korea, while generating the deepest trade deficit with Korea (USD 3,044 m in 2019). Areas can also be identified where trade cooperation can be improved. The Republic of Korea is one of the countries with the highest broadband access density and the highest internet speeds. It is also one of the leaders in the development of mobile networks. For this reason, the Korean IT/ICT market, including the video game industry, can be a good area for expanding cooperation with Polish companies. Also, the fact that Korea does not have good natural conditions for the development of agriculture, and

a significant part of food is imported, can have a positive impact on Polish exports. According to the Embassy of Poland in Seoul, for several years Koreans have been showing a strong interest in Polish health food (e.g. freeze-dried or organic products). It is also worth mentioning that before the ban on imports of Polish raw pork, it was one of the biggest Polish exports to the Korean market. Closer cooperation between the two countries will be possible if the barriers that currently restrict their bilateral economic relations are reduced. These include the market protection instruments used by the Republic of Korea. However, they will be phased out under the FTA with the European Union. The run-up period should be used to better identify the needs of Korean companies and consumers and to understand cultural circumstances. The development of the New Silk Road initiated by China may also be an opportunity for cooperation between Poland and South Korea. It should be noted that not only China is actively interested in this project, but also other Asian countries which hope to gain better access to the European market through it. One example is South Korea, which, through the Eurasia Initiative launched in 2013, is working to integrate transport and logistics into the New Silk Road as much as possible. In view of the above, it can be concluded that the Chinese Belt and Road Initiative (BRI) is a project that has no geographical constraints, as it brings together the interests of many countries both in Europe and across broadly defined Asia [Kowalski, 2020].

Poland's trade with India between 2010 and 2019 mainly concerned the machinery and mineral products industries. The percentage share of Polish trade with India in total exports and imports in 2019 was still small (0.3% for exports, 0.8% for imports). During the period under analysis, Poland imported more than it exported to India (with a threefold increase in imports and twofold in exports). Imports and exports between Poland and India have declined since March 2020 due to the closure of the economy in the wake of the COVID-19 pandemic, with exports falling significantly more than imports. Poland did not have a competitive advantage in trade with India in any of the export commodity categories, which confirms the claim of India's untapped economic potential to strengthen Polish's position in international trade.

Due to its geographical location, cultural proximity and importance in Polish eastern politics, Ukraine is Poland's important trading partner. During the period considered, i.e. between 2010 and 2019, Poland achieved a positive balance in trade with Ukraine at approx. USD 2 bn per year, with the exception of 2013, when it amounted to as much as USD 3.5 bn. Polish exports to Ukraine are dominated by highly processed industrial goods with a high value added, such as nuclear reactors, boilers, machinery and mechanical appliances and parts thereof (12.16% in 2019), vehicles other than railway or tramway rolling stock and parts and accessories thereof (11.28%), and electrical machinery and equipment and parts thereof, sound recorders

and reproducers, television image sound recorders and reproducers, and parts and accessories thereof (7,69%). The high degree of concentration of trade testifies to the low diversification of Polish exports to the Ukrainian market. Similarly, the commodity structure of Polish imports from Ukraine was strongly polarized during the analysis period and it showed a low degree of diversification, with the dominance of mineral products and their derivatives and metallurgical products, in particular two commodity groups, namely ores, slag and ash (15.96% of the value of Polish imports from Ukraine in 2019) and iron and steel (14.53%).

In terms of bilateral trade, the United States is Poland's important partner for exports and imports, while Poland does not play a particularly significant role in the US exports and imports. It is worth noting, however, that the value of trade between these countries has increased markedly in recent decades, which may result in closer cooperation in the future. Another important observation is the reduction of the trade deficit, which is currently at a historical low for Poland. The key features of bilateral trade is the high share of intra-industry trade and the importance of Polish energy imports.

The long-term trends in foreign trade between Poland and Germany depend on the economic situation in both countries. The Federal Republic of Germany is the largest foreign market for Polish goods and the largest foreign supplier of goods to Poland. Polish-German trade developed dynamically between 2010 and 2019. During that period, two stages can be distinguished: the first from 2010 to 2014, when there was a gradual increase in both Polish exports to Germany and imports from Germany to Poland, and the second from 2015 to 2019, when trade values were subject to certain fluctuations related to periods of economic downturn in both countries. Trade between Poland and Germany reached a record level in 2019, with exports amounting to EUR 235.8 bn and imports close to EUR 234 bn. In the first quarter of 2020, despite the outbreak of the pandemic, there was no decrease in (commodity) trade volume. Moreover, it increased by 3.1% compared to Q1 2019. It should be noted that this situation is an exception compared with Germany's other trading partners from Central and Eastern Europe (the Czech Republic then saw a 4.1% and Russia a 14.2% decrease). The share of exports to and imports from Germany in Polish trade did not change much between 2010 and 2018, with total exports to Germany ranging between 26% and 27.6% and imports at 21%–23% during the period. One of the main features of the structure of Polish exports to Germany is its relatively constant commodity structure. Among Polish export goods, the following represented the highest percentages in 2018: vehicles and accessories thereof, boilers and machines, electrical equipment and parts thereof, furniture, and agri-food articles. On the other hand, the structure of Polish imports from Germany was dominated at that time by the following groups of goods: boilers

and associated machinery, road vehicles and accessories thereof, electrical appliances and parts thereof, as well as agri-food products, plastics and articles thereof, and clothing. Both countries are now strongly export-oriented and have a similar goal of developing foreign expansion.

Another form of Poland's bilateral economic cooperation with selected countries analyzed in this monograph is foreign direct investment. Data on the inflow of foreign direct investment in 2019 from Poland's economic partners analyzed in the monograph are presented in Table 17.2.

Table 17.2. Foreign direct investment of selected countries in Poland – inflows in 2019 (USD m)

Description	Equity	Reinvestment of earnings	Debt instruments			Total FDI inflows
	net	net	net (4 = 5–6)	liabilities	assets	net (7 = 2 + 3 + 4)
Germany	196.3	2,959.9	27.1	810.0	837.1	3,129.1
South Korea	311.6	145.3	533.3	632.4	99.1	990.2
USA	65.4	330.1	236.3	450.4	214.1	631.7
India	0.0	77.0	17.0	10.2	–6.8	93.9
China	2.0	9.1	79.1	84.2	5.1	90.2
Japan	22.9	28.5	21.9	–15.4	6.5	29.6
Ukraine	4.0	–160.6	4.2	9.8	5.6	–160.3

Source: NBP.

Among the countries analyzed, Germany, followed by South Korea and the US, had the largest share of FDI inflows in Poland in 2019. At the same time, the share of reinvested earnings in net inflows is reflected in the geographical pattern of inflows from the countries responsible for the largest stock of foreign direct investment, including Germany. It should be noted that for total net foreign direct investment in Poland and originating from Ukraine, there was a negative inflow in 2019. This means that the value of Ukrainian capital withdrawn from the Polish economy exceeds the value of the capital flowing into Poland in the form of FDI, which is the result of earnings being withdrawn from Poland by Ukrainian investors.

China has a very small share of the total FDI stock in Poland, which was only 0.41% in 2018 and did not increase significantly between 2010 and 2018. During the period under analysis, however, the first large Chinese acquisitions of Polish companies took place, driven by the search for such assets as technology and distribution channels (e.g. Novago – waste treatment, or the Rolling Bearing Factory). Greater diversification of the industrial structure of Chinese investment can also be observed, mainly

in accommodation and food services, administrative services, financial and insurance service, as well as transport and storage (e.g. Panattoni providing warehousing and storage space), which is the result of the successful development of the e-commerce business by Aliexpress. Chinese manufacturing companies were located mainly near Warsaw and in industrial regions of Poland, in the Śląskie, Dolnośląskie and Wielkopolskie voivodships. Chinese companies are also trying to enter the infrastructure market, but the failure of the COVEC consortium building a section of the A2 motorway has forced them to often bid for public contracts as partners of local construction companies. An opportunity to increase Poland's attractiveness for Chinese investors is the aforementioned BRI initiative, aimed at creating the New Silk Road, an extensive infrastructure network connecting the countries of East and Central Asia, the Middle East and Europe. Poland is not, admittedly, the final destination for China, but it can play an important role as a transit zone and a logistics and transshipment center, a point of market entry. This offers opportunities for Chinese investment in both land and marine transport infrastructure, as well as in the development of logistics and transport clusters [Kowalski, 2019].

Between 2010 and 2019, the stock of Japanese foreign direct investment in Poland decreased, while the number of companies with Japanese capital, in particular in the information and telecommunications sector, increased. Poland also remained the biggest beneficiary of Japanese foreign investment in Central and Eastern Europe. Companies with Japanese capital operating in Poland employ a total of more than 48,000 workers. Over the past decade, more Japanese investments in the manufacturing industry have involved more advanced technology. Mitsui High-tec, one of the leading manufacturers of motor cores in the world, has chosen Poland for investment in its first European factory, which also indicates the growing role of the Polish electromobility industry in Europe. In addition, Nippon Seiki, a manufacturer of head-up displays (HUDs) and instrument clusters used in cars and motorcycles, has announced that by 2023 it will build a factory near Łódź.

Poland ranks low in terms of FDI inflows from the Republic of Korea – the value of direct investment amounted to a mere PLN 4.5 m in 2018. Polish investment in the Korean market is still rare, mainly due its geographical distance, high labor costs in Korea and the relatively low penetration rate of the Korean market by Polish exporters. According to National Bank of Poland data, in 2018 the net inflow of FDI to Poland from Korea amounted to PLN 101.5 m, representing 0.2% of total foreign direct investment in Poland. As of the end of 2018, there were 203 companies with Korean capital participation operating in Poland. The largest ones include LG, Samsung Electronics, SK Chemicals. The Polish Agency for Investment and Trade (PAIH) ranks the Republic of Korea among Poland's most important trading partners. The dominant

sectors in Korean investment are the manufacture of consumer electronics (television sets), household appliances, automotive parts, and software R&D.

The inflow of foreign direct investment from India to Poland was irregular between 2010 and 2018, and from 2018 the withdrawal of investment from Poland by Indian investors (negative investment flow) could be observed. According to data published by the Government of India, Poland's share of foreign direct investment in India for the period April 2000 to March 2020 was USD 684.44 m, representing 0.15% of total foreign investment flowing into India. One of the main reasons hampering the inflow of capital from India to Poland is the difficulty in recruiting workers interested in migration to our country and entry visa procedures. Despite the lack of government support programmes for Polish entrepreneurs willing to operate on the Indian market, the position of Polish FDI in India was more than three times higher in 2019 (EUR 216 m) than the FDI position of India in Poland (EUR 65 m). In 2020, India tightened its policy on foreign direct investment inflow, which must mostly follow a government procedure.

In investment cooperation with Ukraine, especially regarding foreign direct investment, Poland was a much more important partner for Ukraine than Ukraine for Poland during the period under analysis. Initially, in 2013–2015, there was a significant withdrawal of Polish capital from Ukraine due to the unfavorable economic situation and political circumstances, in particular, the risk of escalating tensions in relations with Russia following the annexation of Crimea. This was followed by high net foreign direct investment flows from Poland in 2016–2019, with the largest values reported for 2017–2018, when the FDI inflows amounted to USD 122.4 m and USD 139.3 m, respectively. As regards total net foreign direct investment in Poland originating from Ukraine, the period 2010–2019, with the exception of 2013, saw negative values of the inflows. This means that due to the transfer to Ukraine of earnings derived in Poland, the value of Ukrainian capital withdrawn annually from the Polish economy exceeded the value of the capital flowing into Poland.

The inflow of direct investment from the US to Poland is characterized by large fluctuation depending on the year analyzed. The reverse direction of investment (from Poland to the United States) has been also changing significantly, but these amounts are much smaller and rather insignificant compared to the huge global investments in that country. The Polish market has historically attracted foreign capital thanks to its low labor cost. The wages of Polish workers remain relatively low compared to Western European countries, but in recent decades there has been a marked increase. In view of the overall economic development of Poland, investment attractiveness has increased for high-technology sectors, accompanied by a decrease in attractiveness for labor-intensive sectors. Many US technology companies are already based in Poland

(e.g. IBM, Dell, Tech Data, Microsoft, Google). In 2020, technological giant Microsoft announced a massive investment worth more than USD 1 billion that could boost Poland's importance in the strategically advanced technology initiatives the US wants to locate in Central and Eastern Europe.

Between 2010 and 2019 there was a significant asymmetry between German FDI in Poland and Polish FDI in Germany. In 2010, the value of the inflow of German FDI into Poland amounted to EUR 23.4 bn, and by 2019 it reached EUR 37.2 bn, making Germany the second largest investor in Poland, after the Netherlands. According to the latest data published by NBP, German investors are mainly present in the Polish market in the manufacturing, retail and financial intermediation sectors. Such a large scale of German investment activity in Poland may be interpreted as a sign of the intensive involvement of German companies in cross-border and local supply chains. This certainly makes it easier to gain competitive advantages, including control of the supply model, tax optimization, ensuring appropriate quality and standards of production, unifying business processes, and controlling distribution. The inflow of Polish FDI to Germany between 2010 and 2019 showed significant fluctuations, which may indicate multidirectional, dynamic flows between the two countries. The record performance was reported in 2011, when the inflow of Polish FDI to Germany exceeded EUR 2 bn. Its value then fell (with the lowest recorded in 2014 at EUR 1,071 bn), and increased significantly in the last two years reaching the ceiling of EUR 2 bn again in 2019. Polish companies investing in Germany are active in many industries. These include the fuel and chemical industry, IT, assembly and construction, and trade. Polish investment in Germany and its development is a signal of significant changes in Polish-German economic relations. This clearly indicates the growing potential of Polish companies to take over German companies, which can thereby avoid closure. Incentives for such practices also come from the Polish government and German partners, who hold special events and conferences for Polish and German businesses.

Table 17.3 presents data on Polish direct investment abroad placed in selected countries in 2019.

Among the countries analyzed in this monograph, the largest values of Polish residents' direct investment transactions abroad were reported for Germany, followed by Ukraine and the US. In terms of international capital flows, Poland and other Central and Eastern European countries are traditionally regarded as attractive economies for foreign investment inflow. However, the question arises whether this region can be seen as a foreign investor, i.e. whether companies in the region are interested in the internationalization of their activities not only through exports, but also through foreign direct investment. The latter type of foreign market entry is a challenge, as it requires more resources and carries increasing risks. The value of investment outflows

from Poland is significantly lower than that of investment inflows, but the literature [Kowalski, 2018] points to increasing outbound investments in recent years, which confirms Dunning's investment development path (IDP) hypothesis.

Table 17.3. Polish foreign direct investment in selected countries in 2019 (outflows from Poland, USD m)

| Description | Equity | Reinvestment of earnings | Debt instruments | | | Total FDI inflows |
	net	net	net (4 = 5–6)	liabilities	assets	net (7 = 2 + 3 + 4)
Germany	–166.2	73.7	390.7	204.7	–186.0	298.2
Ukraine	11.8	103.4	15.4	9.8	25.2	99.8
USA	62.1	24.5	11.7	74.0	62.3	49.3
India	1.3	26.5	9.3	8.5	0.8	18.5
Japan	0.0	0.0	2.4	1.5	–0.9	2.4
China	7.9	5.9	–60.8	13.2	74.0	62.8
South Korea	–1.1	–0.3	–401.2	0.5	401.7	–402.6

Source: NBP.

The third form of international economic relations analyzed in the monograph in the context of Poland's bilateral cooperation with selected countries is the flow of labor, i.e. migration. With the increase in imports from China and the increase in the number of Chinese companies, both large – in telecommunications (Huawei and ZTE) or the automotive industry (e.g., Nexteer, Joyson, BWI, Rolling Bearing Factory) and small – in wholesale and retail trade, there has been an increase in the number of Chinese nationals living in Poland. Importantly, the number of Chinese citizens coming to Poland, who are qualified professionals, is also increasing. Another group of Chinese nationals coming to Poland are students, who mostly choose courses in business, administration and economics. It should be noted, however, that the growth rate in the number of Chinese students coming to Poland is quite low, given the large number of Chinese nationals studying abroad. Poland has also been attracting, albeit on a much smaller scale than many other countries in Europe, an increasing number of Chinese tourists who, after having seen the world's major tourist attractions, are ready to visit less frequented destinations.

Poland is not a popular destination for migrants from Japan. According to data as of 1 January 2020, there were 942 foreigners of Japanese nationality living in Poland. This represented only 0.2% of the total number of foreigners in Poland. After 2010, the number of Japanese nationals in Poland fluctuated slightly, reaching a maximum of 1032 people in 2018. Most foreigners of Japanese origin choose a short-term destination

for a visit to Poland, and the most popular regions of residence are the Mazowieckie and Dolnośląskie voivodeships. In 2019, the share of work permits issued to Japanese citizens amounted to 0.1% of all work permits issued in Poland, a decrease of 9 pp compared to the 2010 share. The majority of work permits were applied for by highly qualified workers in the following sectors: industrial, professional, scientific and technical activities and trade.

Poland is also not an important migration destination for Indian citizens, although the number of migrants from India to Poland has been steadily increasing since 2010 despite difficulties in obtaining a visa. According to data from the government website www.migracje.gov.pl, between 2010 and 2020 the number of migrants from India to Poland increased almost sixfold (1,423 migrants in 2010 and 9,634 migrants in 2019). These include mainly students, temporary workers in the service sector (e.g. Uber, kebab bars), as well as young people looking for better living conditions. Poles travelled to India between 2010 and 2019 more often for tourist than business purposes. There is no exact data on the size of the Polish diaspora in India. According to estimates from various sources, several thousand Poles live there permanently. Travel restrictions in force since 2020 due to the coronavirus pandemic have stopped migration between Poland and India.

The economic migration of Ukrainians to Poland is of particular importance in bilateral economic relations with Ukraine. It intensified in 2013, reaching around 196,000 people, and increased to more than 920,000 in 2019. It should be noted that a significant proportion of economic migrants from Ukraine were not officially registered. In addition, Ukrainian economic emigrants transferred a significant part of their earnings (according to NBP's estimates, up to about 40%) to their families and close persons in Ukraine. However, the influx of economic migrants from Ukraine has significantly increased the labor force in Poland, contributing the development potential of the entire Polish economy. In particular, they filled vacancies which did not involve particularly high skills, i.e. they carried out simple work which did not require special professional qualifications. Employees from Ukraine were most often employed on construction sites, in the hospitality and food service sectors, as drivers or couriers, and much less often in production companies.

In 2018, 765 people officially emigrated from Poland to the United States, while 697 people immigrated from the United States to Poland. However, these figures are much smaller than in the past. According to official data, there are currently around 8.97 m people in the United States who declare Polish ancestry, 51.3% of them being women and 48.7% men [Census Bureau, 2019]. The inclusion of Poland in the Visa Waiver Program should certainly be regarded as a historic success, but it may seem less impressive given that most of Poland's neighbors have been in the program for

more than a decade. According to the data of the Department of Homeland Security [DHS, 2020], for the fiscal year 2019, 4,700 persons born in Poland were granted a lawful permanent resident status in the United States; for comparison, the same figure for persons born in Germany was 4,848, the Czech Republic 714, and Slovakia 422. On the other hand, according to 2020 data, 2,472 US citizens currently have permanent or temporary residence in Poland, of whom 903 got their permits in the Mazowieckie voivodeship and 512 in the Małopolskie voivodeship [UDSC, 2020]. While permanent migration between Poland and the United States is relatively high, taking into account every type of residence, flows between Poland and its neighbors are dwarfing its significance.

Issues related to Polish migration to Germany do not take an important place in the international debate on migration [Nowosielski, 2019]. This is quite puzzling, because, as a community, Poles in Germany are a large group (second only to Turks), which assimilates quite well into German society, but is not present in public discourse. According to Statistisches Bundesamt data, in 2019 there were around 863,000 Poles in Germany, with the highest proportion living in North Rhine-Westphalia and Bavaria. A milestone in the development of the migration of Poles to Germany was 2011, when the Federal Republic of Germany officially opened up its labor market to immigrants from the new EU countries. A fairly typical form of employment in Germany was the establishment of sole proprietorships by Poles. In 2018, around 180,000 such entities were active in the Federal Republic of Germany, of which nearly 50,000 companies were craft firms.

The studies carried out in this monograph provide important lessons for the economic policy supporting competitiveness when the COVID-19 pandemic is over. New risks will be related mainly to changing business conditions, as well as social, environmental, demographic and technological factors. The key challenges to be taken into account when designing a policy boosting competitiveness are:

- labor market restructuring,
- growing digitalization and digital competence gaps,
- inefficiency of the healthcare system,
- increase in protectionism in the global economy,
- social risks (confidence crisis, growing educational inequalities, etc.).

The economic crisis triggered by the spread of SARS-CoV-2 has slowed down the pace of globalization, while bringing restrictions on trade, investment and migration at international level. This situation poses particular challenges in terms of economic policies aimed at using different forms of international cooperation to build Poland's competitive advantage in today's global economy. The most important issues in the context of supporting Poland's bilateral relations with other countries include:

- promoting Polish exports, including the development and wider use of new forms of support, making greater use of digital technologies;
- seeking to include Polish companies in global value chains and, in particular, to increase involvement in higher-value-added segments of the value chain;
- creating favorable conditions for attracting foreign direct investment, which is important especially in the face of the projected strong decline in FDI flows;
- developing a new, more efficient support system to facilitate the establishment and fostering of cooperation between foreign investors and Polish companies;
- promoting international R&D cooperation between Polish business and academic entities.

Bibliography

Census Bureau [2019], *2019 ACS 1-Year Estimates Selected Population Profiles*, https://data.census.gov/cedsci/ (accessed: 6.11.2020).

DHS [2020], *2019 Yearbook of Immigration Statistics*, https://www.dhs.gov/immigration-statistics/yearbook/2019/table3 (accessed: 6.11.2020).

Dunning, J.H. [1981], *Explaining the International Direct Investment Position of Countries: Towards a Dynamic or Developmental Approach*, "Weltwirtschaftliches Archiv", 117(1), pp. 30–64.

European Commission [2020], *European Economic Forecast Autumn 2020*, European Commission Directorate-General for Economic and Financial Affairs, Brussels.

Gates, B. [2020], *Responding to Covid-19 – A Once-in-a-Century Pandemic?*, "The New England Journal of Medicine", 382(18), pp. 1677–1679.

Green, M., Harmacek, J., Krylova, P. [2020], *Social Progress Index 2020 – Findings*, https://www.socialprogress.org/assets/downloads/resources/2020/2020-Social-Progress-Index-Executive-Summary.pdf (accessed: 20.11.2020).

IMD [2020], *IMD World Competitiveness Yearbook 2020*, Institute for Management Development, Lausanne.

Kowalski, A.M. [2018], *Benefits of Broadening the Analysis of International Competitiveness: The Case of CEE Countries*, "AIB Insights", 18(1), pp. 7–11.

Kowalski, A.M. [2019], *The Perspectives on Interregional Cluster Cooperation under BRI Frame*, in: *Opportunities and Challenges. Sustainability of China-EU Relations in a Changing World*, J. Shi, G. Heiduk (eds), China Social Sciences Press, Beijing pp. 189–209.

Kowalski, A.M. [2020], *Pozycja Korei Południowej w globalnych łańcuchach wartości w perspektywie Inicjatywy Pasa i Szlaku*, in: *Inicjatywa Pasa i Szlaku. Chińska ekspansja, nowe łańcuchy wartości i rosnąca rywalizacja*, M.J. Radło (ed.), SGH Publishing House, Warsaw, pp. 249–263.

Nowosielski, M. [2019], *Dynamika migracji z Polski do Niemiec i charakterystyka polskiej zbiorowości*, "Studia BAS", 4(60), pp. 75–100.

Stern, S., Krylova, P., Harmacek, J. [2020], *2020 Social Progress Index. Methodology Summary*, www.socialprogress.org/global/methodology (accessed: 20.11.2020).

UDSC [2020], *Mapy i dane statystyczne imigrantów i służb migracyjnych Polski*, https://migracje.gov.pl/ (accessed: 6.11.2020).

World Bank [2020], *Ukraine*, http://pubdocs.worldbank.org/en/226251492011114754/mpo-ukr.pdf (accessed: 21.11.2020).

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SGH Warsaw School of Economics is an innovative economic university that develops intellectual potential and creates leaders in response to the challenges of the future. It is an influential center for academic research, new ideas and initiatives undertaken by the academic community and alumni, as well as by business representatives, NGOs and public administration. As an autonomous and socially responsible university, SGH promotes ethical citizenship through its teaching, research and social engagement activities.

The quality of education gained at the SGH is widely recognized by employers, who seek to recruit its graduates. SGH awards 1,200 Bachelor's and 1,600 Master's degrees each year. The present educational success of the SGH and its alumni results from an individualized study program enabled by an innovative structure, in which the faculty members are gathered in five research units called collegia.

SGH offers numerous international programs conducted in cooperation with foreign partners. One notable example is the University's CEMS (The Global Alliance in Management Education) membership – the world's leading association of business schools, corporate partners and NGOs. CEMS also offers a renowned Master degree in International Management. SGH is also a member of PIM (Partnership in International Management) – the largest international consortium of leading business schools.

Another considerable merit of the University is that both its alumni and its staff have been actively involved in shaping the economic and public spheres in Poland and Europe alike. Some of the most noteworthy examples include a former Polish prime minister and deputy prime ministers, the majority of ministers of finance after 1989, the first Polish commissionaire in the European Commission, two presidents of the National Bank of Poland, members of the Monetary Policy Council, presidents of the Polish Stock Exchange, chairpersons and members of the Polish Financial Supervision Authority, government experts, advisors, as well as specialists serving the European Union, other European institutions, and the UN.

The competitiveness of economies is an issue that becomes particularly important in times of crises. The collapse triggered by the COVID-19 pandemic, spreading virtually all over the world in 2020, has a different impact on individual economies and generates multiple social and economic effects. The debate on competitiveness in times of crisis focuses not only on maintaining or improving the competitive position, but also on the emergence of new dimensions of this phenomenon and the change in the significance of the various competitiveness factors. New economic policy approaches and instruments are also being developed to strengthen the resilience of economies to the crisis and improve competitiveness in difficult times.

Joining this debate by academics and practitioners, the present monograph seeks to find out the competitive position of the Polish economy in 2020 and the direction of its changes between 2010 and 2020, and to identify the factors driving these changes in the period under analysis.

In view of the pandemic-induced strong slowdown in international trade growth and capital flows, an additional specific goal of the monograph is to determine the status of Poland's bilateral economic ties with major economic partners and to identify new areas of cooperation yet to be untapped. The results of the analyses in the monograph provide a reference point for further research into the impact of the COVID-19 pandemic on Poland's bilateral economic cooperation and indicate the directions of economic policy aimed at strengthening Poland's international relations after the pandemic.