

# Introduction

Since the return to market principles, the Polish economy has been exposed to many interdependent processes including transformation, globalisation and integration with the European Union (Gorynia, 2017a, p. 11). These processes have exerted a direct impact on the economy and its development possibilities. In the early years, transformation constituted the dominant driver which enabled growth through the creation of a sufficient and stable institutional environment. Over time, globalisation and integration gained momentum and have determined the degree of economic openness and willingness to participate in international trade. These processes exhibit a multidimensional character and their effects are easily observable from social, political and economic perspectives. Here, attention is devoted to its economic dimension.

The abovementioned processes have shaped the economic system and the country's openness to other economies. Membership in the Common Market initiated growth in the volume of international trade, accelerated the inflow of foreign direct investment and also led Polish firms to invest in foreign locations. For obvious reasons, companies focused their attention on the Single Market where the abolition of trade barriers guaranteed mutually beneficial transactions. It can therefore be assumed that the interrelationships between transformation, globalisation and European integration led to greater international exposure of the Polish economy and in effect increased its degree of internationalisation.

Internationalisation—either of an economy, an industry or a single company—constitutes an ongoing and dynamic process which undergoes major changes over time. Its assessment is complex and mostly comes down to statistical estimation, i.e. an assessment of the degree of internationalisation over a specific timeline. The degree<sup>1</sup> of internationalisation can be understood in the simplest way as an entity's engagement level in international operations.<sup>2</sup> The degree of internationalisation can be described according to such characteristics as depth (intensity),

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<sup>1</sup> In English-language literature, this term is referred to as either the “degree of internationalisation” (cf. e.g. Szymura-Tyc, 2013) or as the “level of internationalisation” (cf. e.g. Cieřlik, 2010). In this study, the author will use them interchangeably.

<sup>2</sup> The study distinguishes between the inward and outward internationalisation of the industry, which is reflected in e.g. the research scheme design. Details regarding this division are included in Chapter One. Everywhere the general wording “degree (level) of industry internationalisation” is used it refers to its outward approach.

breadth (geographical scope) or mode (Ietto-Gillies, 2009; Pera, 2017). The results can be presented as either a single variable or a multidimensional composite measure. Moreover, the degree of internationalisation can be assessed at different levels—the micro-, meso- and macroeconomic. Here, the focus is on the meso-level, which means assessing an industry's range of activities in foreign markets.

The impact of a company's degree of internationalisation on its widely understood performance is well researched and proved (cf. e.g. Aggarwal, 1980; Delois & Beamish, 1999; Dunning, 1985; Errunza & Senbet, 1984; Karasiewicz, 2013; Lee, 2010; Lu & Beamish, 2001; Vernon, 1971). However, similar studies for the degree of industry internationalisation are still scarce. The few studies in this area indicate that a high degree of internationalisation in an industry (or as some claim degree of globalisation) boosts the development growth of both the companies as well as the industry itself (Elango, 2010; McElroy, Creamer, & Workman, 1985). Similarly, such a relationship is notable that from a macroerspective standpoint closer international trade relations mean a better performing economy (Pera, 2017). Thus, one can conclude that more in-depth studies are needed into the internationalisation process of industries. The research questions can be twofold: what determines the degree of industry internationalisation; and how has it evolved over recent years. Consequently, these research issues are transformed into the main aim of the publication in hand; which refers to both diagnosing the degree of industry internationalisation in Poland, and determining their internationalisation growth factors.

The overlapping of the mesoeconomic perspective—which encompasses the analysis of industries—and the internationalisation concept raises questions over the cognitive approach adopted. Recently, the abandonment of mainstream economics can be observed in favour of heterodox systems. Unrealistic assumptions behind orthodox economics underlay the main reasons for such a shift. Economic reality is inseparable from uncertainty, information asymmetry, opportunism or bounded rationality in the choices made. Thus many, if not most, of the answers to questions about the internationalisation processes of industries can be sought in new institutional economic ideas which here constitute both the background and the foundation for the analysis.

According to North (1981, 1990) institutions, understood as norms of behaviour, pose a complex system of interdependencies which affects the economy (Dopfer, Foster, & Potts, 2004, p. 266). Therefore, the institutional context cannot be simply erased from the economic equation. Understanding institutions as being sort of “rules of the game” enables the new institutional economic assumptions to be transferred into mesoeconomic analysis. According to Dopfer et al. (2004, p. 271) the creation of norms, and as such institutions, is a process; and each process requires changes and adaptations. They claim that although the initiatives for change arise among individuals (i.e. at the microlevel), their for-

mation—or rather origination, diffusion and retention—take place at the mesolevel. Eventually, the petrification of such rules and norms into a stable structure happens at the macrolevel.

Recent years have brought some increase of interest in studies on industries, which in the classic micro and macro approach received little attention. Still, most research treats industry as a contextual factor in the analysis of firms rather than as a strict research focus. This is partly due to the delimitation problem for terms related to industry and the ability to obtain data. That however—in the author’s point of view—cannot justify the neglect of the topic.

Poland is on its way to being transformed from an *efficiency-driven* economy into an *innovation-driven* economy (Jankowska, 2012, p. 10). The key role in its development has been, and will remain, knowledge (Kałowski & Wysocki, 2012, p. 292). One of the ways to enhance a company’s state of the art capabilities is, amongst others, *learning-by-exporting* (Blalock & Gertler, 2004; Mińska-Struzik, 2014); which only proves that internationalisation accelerates the company’s and industry’s growth. Deepening internationalisation can take on various modes. Firstly, the expansion intensity can increase which means scaling-up companies’ engagement in foreign market operations. This is frequently accompanied by an increase in the number of exporters and a notable shift towards equity entry mode. Secondly, the internationalisation breadth can broaden, i.e. firms can expand into new geographical markets. What Polish entrepreneurs are often accused of is the focus on European Union markets and a reluctance to take risk in less well-known areas. Focusing on industry internationalisation also involves a practical rationale. It may lead to selecting those industries crucial to the development of the Polish economy. The research design includes both exploratory and practical objectives. Among the cognitive objectives, the following ones are distinguished:

- conceptualisation of the terms concerning the degree of industry internationalisation,
- assessing the transferability of micro-level internationalisation concepts into meso-level analysis and proposing an original measure for the degree of industry internationalisation,
- preparing a ranking of the least and most internationalised industries in Poland,
- examining industries with the largest amplitude of change in their degree of internationalisation between 2007 and 2015.

Additionally, the conclusions drawn from meeting the cognitive objectives would enable the realisation of the practical goal, which can be described as indicating the preferred ways of using the tools supporting the internationalisation of industries within existing government programmes and schemes.

The research goals set required the use of a diverse research workshop, which was based on a hypothetical-deductive approach. The research model proposed

in the study was supported by an in-depth literature analysis. The initial intention to include an inductive approach into the model was abandoned due to the lack of appropriate analysis units that could serve as a reference point. In spite of the undoubtedly valid criticism by Mintzberg (1979) of focusing on quantitative methods to verify hypotheses (or rather on their mere verification instead of the process of hypotheses formulation), some research areas exhibit a greater “pre-disposition” to use of econometric analysis than others. As in the case of whole economies, analysis of an economic subsystem in the form of industries, where the need for measurement objectivity calls for referring to secondary data, quantitative methods hold certain advantages over qualitative ones. Moreover, taking into account the nature of the research conducted—that to the best knowledge of the author constitutes the first attempt to quantify the level of industry internationalisation in Poland—the use of inductivism could lead to conclusions that are too detailed and, consequently, could pose problems for the generalisation of observed phenomena. Being aware of the shortcomings of the hypothetical-deductive approach, the analysis was—to a small extent—supported by qualitative research that referred to case studies of industries having the largest increase and decrease in internationalisation over the period analysed. The studies developed are of a complementary nature and do not constitute a basis for inferences regarding the research conducted.

The research was mainly based on secondary data collected by the Statistics Poland. However, the construction of an internationalisation measure for industry was also based on the experience of managers, whose opinions enabled a determination of the importance of individual components in the overall degree of internationalisation. These opinions were collected using the Delphi method.

The starting points for the formulation of the research hypotheses were previous theoretical studies as well as the results of empirical research in the area of companies and industries degree of internationalisation. Due to the fact that, as mentioned earlier, the internationalisation of industries is not a commonly undertaken issue, the author mainly relied on experiences drawn from companies and transposed them to the meso level. Among the cognitive objectives of the work, *the identification of key determinants in the degree of internationalisation of industries* was declared. Thus, based on secondary sources relating to the issue, the following hypotheses were suggested:<sup>3</sup>

- H1:** The higher the level of industry transaction costs, the higher the degree of industry outward internationalisation.
- H2a:** The industry life cycle phase is positively related to the degree of industry outward internationalisation in production industries.
- H2b:** The industry life cycle phase is not related to the degree of industry outward internationalisation in non-production industries.

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<sup>3</sup> The hypotheses development can be found in subchapter 3.1.

- H3:** A higher degree of industry outward internationalisation appears in production rather than non-production industries.
- H4:** The higher the degree of industry inward internationalisation, the higher the degree of industry outward internationalisation.
- H5:** The more technologically advanced an industry, the higher the degree of industry outward internationalisation.
- H6:** The more concentrated an industry, the higher the degree of industry outward internationalisation.

The construction of the hypotheses was based on the assumptions of the new institutional economics (taking into account the significance of transaction costs in shaping the internationalisation process) and the forces of globalisation according to Yip (1989). Consequently, the factors studied are the so-called *push factors*, i.e. the study examined how an industry's environment and its specificity determined the degree of industry internationalisation. The analysis does not include the so-called *pull factors*, i.e. those factors that are attributed to the creation of investment-friendly conditions in foreign markets.

As the literature review reveals, the willingness to internationalise varies depending on the external circumstances. Thus the degree of internationalisation may relate not only to industry specific determinants, but it may also be subject to more general factors. The H1-H6 hypotheses refer directly to the analysis of industry internationalisation determinants while the proposed research scheme includes verifying the impact of economic turbulence, i.e. the economic crisis, on the phenomenon analysed. Thus, in H7 it is suggested that the degree of industry outward internationalisation was higher before and after the economic crisis rather than during its occurrence.

Although the centre of the author's interest remains the degree of industry outward internationalisation, analysing the impact of the economic crisis on the internationalisation process, the author decided to include in the considerations an additional, secondary matter. It concerns the impact the economic crisis has had on the level of industry transaction costs. As indicated earlier, the research is based essentially within the new institutional economics framework, where transaction costs play an important role. This research suggests abandoning the classic approach to "measuring" transaction costs by invoking their classical dimensions (Williamson, 1985) of asset specificity, uncertainty and frequency in favour of the method proposed by Coase (1990) of considering firms' financial statements. Although the author is aware of the fact that this constitutes a complex issue to which separate research should be devoted, an attempt is made here to answer the question how the level of industry transaction costs changed due to the global crisis. Hence, in H8 it is assumed that during the economic crisis, the industry transaction costs were higher than before and after its occurrence.

To achieve the objectives and verify the hypotheses a research scheme was developed and followed, which consequently determined the structure of this publication. Chapter One considers the possibility of analysing internationalisation processes in terms of mesoeconomics. Thus, the aim of the chapter is two-fold: the conceptualisation of an industry, its delimitation and the establishment of its most crucial characteristics, as well as defining the concept of the degree of internationalisation. Based on the literature overview conducted, it is apparent why these two concepts can and should be considered together, and how the achieved degree of industry internationalisation impacts the development of firms, the industries themselves, and even whole economies. The remainder of the chapter is focused on discussing the state's role in the development of this phenomenon.

Chapter Two focuses on idea selection and outlining the theoretical research background on the degree of industry internationalisation. The final choice is preceded by an analysis of the various internationalisation theories used in studies devoted to the determinants of companies' internationalisation processes—which here constitute a reference point for the industry level. Ultimately, the new institutional economics is treated as the main theoretical concept on which the research model is based. Although the concept is more often associated with either the analysis of firms' behaviour (e.g. the choice of entry modes) or the analysis of macroeconomic processes (e.g. the role of institutions in economic development), the chapter is devoted to demonstrating that the new institutional economics can also be used in studying industry issues. The research plan also refers to other concepts (e.g. industry globalisation forces according to Yip); however, it is the new institutional economics that remains the major reference for the analysis. The development directions of industries—including their internationalisation patterns—are created by the behaviour of companies that operate in the reality of opportunism, bounded rationality and uncertainty resulting, *inter alia*, from information asymmetry.

Chapter Three is an introduction to the empirical research that is presented in the subsequent—fourth and fifth—chapters. This chapter covers the most important methodological aspects, including research procedure, sample selection and variable operationalisation. Particular attention is paid to the innovative approach of measuring the level of transaction costs based on Coase's suggestions (1990). The research is conducted on the basis of secondary data gathered by the Statistics Poland (aggregated by the PKD 2007 standards) and provided by the owner of the PontInfo Gospodarka database. The main challenges and limitations encountered in constructing and conducting the empirical analyses are also outlined.

The aim of the study is not only to assess the degree of internationalisation of Polish industries, but also to answer the question as to what determines it. In

search for factors determining this phenomenon, a model is created that refers to two fundamental groups: factors directly related to industry characteristics (type, life cycle, degree of inward internationalisation, level of rivalry, level of transaction costs, technological advancement) and factors associated with broadly defined macroeconomic conditions; in this work represented by whether or not the economic crisis was occurring as the research is carried out over three periods: before, during and after the 2008 economic crisis. Due to the fact that the first group of determinants was discussed in previous chapters, where selected aspects regarding industry and the transaction costs theory are presented, Chapter Four is devoted to the crisis. The analysis is carried out according to the following logic—first, the basic indicators as to the economic development of Europe between 2007 and 2015 are discussed. This serves to outline Poland’s position in the international arena. Next, the impact of the crisis on the situation of the Polish economy is discussed, with particular reference to the differences in its course in Poland and other European countries. Finally, considerations are moved to the mesoeconomic level, where an attempt is made to determine how the crisis affected the development of particular industries. This is done by creating a ranking of the industries most and least affected by the crisis.

Chapter Five, the final one, focuses on the empirical verification of previously constructed hypotheses. Based on the secondary data obtained and applying the methods described in the Chapter Three, the cognitive objectives of the work are realised. First, the results of research using the Delphi method are presented, aimed at determining the weights of the proposed measures for the degree of industry outward and inward internationalisation. Then, potential determinants of internationalisation are considered which are verified as to which played a role in the case of Polish industries. Moreover, a cluster analysis is carried out that enables a classification of industries according to the degree of internationalisation they achieved. According to the results in Poland one can distinguish between *local*, *non-equity-based*, *equity-based* and *globalised* industries. As mentioned before, the analysis is based on econometric models. A brief, qualitative discussion<sup>4</sup> of two industries is also included—one of an industry that showed the highest increase in internationalisation in the period under consideration, and the other that showed the largest decline. The whole analysis is summarised with a discussion as to whether and how the state influences the degree of industry internationalisation, which directly refers to the issues discussed in Chapter One.

As the title of this publication suggests, apart from establishing the determinants of the degree of industry internationalisation, it is also important to diagnose its level. As the adopted industry definition refers to the level of classes in

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<sup>4</sup> The word “discussion” instead of a “case study” was used here on purpose since these subchapters do not display all the features of a case study. The author thinks that the phrase “case study” would be a misuse here.

accordance with the PKD 2007 classification of economic activity, the number of units of analysis is very large. Therefore, although a synthetic assessment as to the level of internationalisation was made in Chapter Five, a comprehensive list as to the degree of internationalisation of Polish industries between 2007 and 2015 is included in Appendix 5.

The completion of the research, although driven by the author's interests, could not have been achieved without the support of many people. I would especially like to thank Prof. Marian Gorynia—my teacher—for his support, faith and constant motivation in studying the subject, even in my own moments of doubt. For assistance in the development of the research concept I would also like to thank Prof. Barbara Jankowska, Head of the Department of International Competitiveness at the Poznań University of Business and Economics. It would also not be possible to conduct the econometric analyses without obtaining secondary data, which were provided to me free of charge by the owner of the PontInfo Gospodarka database. My heartfelt thanks go to Mr. Robert Urbanek, whose help in obtaining this data was indispensable.



# **1. Internationalisation as a tool for increasing the dynamics of industry development**

As the Polish experiences of the transformation period show, the economy's openness and participation in the international trade market lead to increased economic growth, increased competitiveness of firms, enhanced innovation growth, knowledge flow, and as a consequence, to an increase in the well-being of society. Economic openness also means vulnerability to the negative effects of globalisation that can affect the country through established channels of international cooperation. The effects of globalisation are visible at every level of a functioning economic system—from the sphere of firms, through industries to whole economies. Although much attention is paid to the issue of opening up economies or the foreign expansion of individual companies, the topic of industry internationalisation is much less explored. Industry, on the other hand, as an economic subsystem, is influenced by globalisation, and as a collective itself it can impact processes occurring on both the micro- and macroeconomic level. The diversity of industries in Poland and the recent processes taking place on the international arena encourage, therefore, taking a closer look at this sphere in the context of its involvement in creating international connections.

## **1.1. Meso-economics as research basis for industry development**

The economic system is frequently understood as a set of interrelated entities (people, companies and institutions) involved in the exchange of capital and goods on the market (Gorynia, 1995). It is a concept that includes many differentiated units that form unique subsystems. These subsystems also differ from one another due to the lack of homogeneity among the entities that create them. They exhibit distinct dynamics and size. The general theory of systems is useful, while delimitating the subsystems of the economic system, as it assumes that wholeness consists of smaller bits of interrelated hierarchical relations. Therefore, in

the context of economics, the economic system can be divided into sub-levels that will remain dependent on one another.

Over the years, economic science has evolved and altered (or rather added) levels of analysis. The flagship classification for units of analysis is the breakdown into micro- and macroeconomic levels, relating to firms and the entire economy respectively. However, there are also intermediate levels—such as, for example, mesoeconomics focused on industries and regions; the micro-micro level, which refers to individual decisions by people (e.g. agents within a company); as well as its reverse pole, i.e. the global level. Mesoanalysis allows the micro- and macroeconomic perspectives to be combined, at the same time identifying common parts called industries that function in parallel to form the economy as a whole (Gorynia, 1995).

Acknowledging the mesoeconomics as a separate research perspective is mostly attributed to the developments in the industrial economics. The focus of this concept is well described by the *structure-conduct-performance* paradigm, first published by Robinson (1933) and Chamberlin (1933) and later developed by Bain (1959). The paradigm relates to the interactions between market structures and its members' behaviour (conduct) and how these relations affect market and company performance. The concept incorporates the feedback effects and presumes that feedback loop enables both firm and market adjustments. Therefore, the analysis focus is pushed from the firm and economy (micro and macro) level to the analysis of an industry or a group of competing companies (Gorynia, 1996, p. 133). However, the mesoeconomics goes beyond understanding the industry in terms of competition only. What interests the researchers is how industry members compete, cooperate and thus, how they regulate the industry's structure. What additionally makes the mesosystem even more complex is the globalisation effect. The mesosystems have historically been identified as a "component" of a national system (economy) whereas more recently they are perceived as a part of a global system. Therefore, analysing the degree of industry internationalisation can facilitate establishing to what extent one encounters global mesosystems.

Due to the subject of this research the analysis will be limited only to the mesoeconomic level, where the crucial criteria for delimitating the economic sub-systems constitute its vertical and horizontal dimensions. The vertical dimension refers to the adoption of the unit of analysis (here, the industry), and in the case of the horizontal dimension to narrowing its geographical scope and the impact it exerts on the consumer. As often happens when defining concepts and terms, it is challenging to find an unambiguous definition of industry in the literature on the subject. Delimitating an industry means defining boundaries that will form a unique sub-system of the economic system (Jankowska, 2002).

When delimitating industry we must once again refer to the vertical and horizontal dimensions. In the vertical approach, delimitation means locating industry

between micro- and macroeconomic perspectives. In this sense, an industry constitutes a subsystem of the national economy, grouping firms and other entities functioning in the market, e.g. institutions. The horizontal dimension in delimitating industry raises more controversy. Apart from geographical scope that can be resolved in a fairly logical and obvious manner,<sup>5</sup> Marshall (1972) declared that the basis for delimitation should be the homogeneity of production technology. Over time, however, analysis from the supply-side perspective proved insufficient. Not all substitute products are obtained through the use of the same technology. Looking at industry from the demand-side perspective, it should be emphasised that an industry is created by those companies that offer a product or service that meets the same needs, regardless of the technological process (Jankowska, 2002).

Delimitating industry with the substitution approach is related to the concept of a substitution gap. Robinson (1969) claimed that products offered on the market create a chain that in some places is disrupted. The discontinuance in the chain is what we call a substitution gap. An industry is composed of those companies that offer products in an uninterrupted part of the chain, up to the substitution gap.

Marshall's activity-based approach to delimiting an industry is mostly criticised due to focus set solemnly on homogeneity of production technology and product features. He does not take into consideration the product substitutability. However, the outcome-based approach is not precise in establishing the industry boundaries. The "demarcation line" remains arbitrary and thus—in practice—the term cannot be operationalised. The industry's boundaries get even more blurry due to product multifunctionality, electronic revolution and technological advancements (Gorynia, 1995, p. 27). Hence, it has been eluded that the supply-side perspective delimits an *industry* and the demand-side perspective refers to a *market*. Neither can be perceived superior as Robinson (1956, p. 361) claims that, "questions relating to competition, monopoly and oligopoly must be considered in terms of markets, while questions concerning labour, profits, technical progress, localisation and so forth have to be considered in terms of industries".

Von Stackelberg (1934) claimed that industry is a term related to the concepts of general and elementary markets. The general market is imperfect and consists of elementary markets, which in turn are fully perfect. An industry in his understanding is an elementary market, where the demand can be described as homogeneous.

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<sup>5</sup> There are three basic geographical delimitations: the administrative approach, the natural geographic approach, as well as the economic and spatial approach (Secomski, 1982). The administrative criterion refers to territorial units distinguished in a given country. The natural geographic delimitation is based on the common natural features of a given region irrespective of the administrative units. The economic and spatial criterion refers to the historical context or social development.

Similarly, Porter (1979) when defining industry referred to the concept of substitutes, assuming that an industry consists of companies remaining in close competition and offering the customer products or services that are one another's substitutes and satisfy the same needs. Porter, however, refrains from limiting the term to a geographical dimension. Likewise, the strategic management approach often invokes the related definition of sector; this again includes companies selling products or services satisfying the same needs, but which are bound by the same geographical market.

Although the industry definition problem remains unresolved, it can be assumed that according to the systemism approach industries display two sets of features—aggregate and structural ones (Gorynia, 1995, p. 46). The aggregate features are created by aggregating the companies' unitary features forming a given industry. Examples of such characteristics are profitability and work efficiency. Structural features, on the other hand, reflect the relationships that exist between the industry's entities. An example of structural properties is for instance its concentration level.

The co-functioning of two frameworks—industry organisation and strategic planning—allows for delimiting a concept closely related to that of an industry. A strategic group is a group of companies that exhibit similar competitive strategies. The behaviour patterns of these industry sub-groups may impact the industry's innovation pace, profitability rate, entry barriers, etc.

Ultimately, the concept of industry cannot be indisputably defined (Table 1.1). The most general and at the same time widely interpretable term is “group of companies delimited according to a given criterion, which (...) immediately signals the existence of a unique set of relations between firms operating within this industry” (Jankowska, 2002, p. 236). With such a definition, another question arises whether an industry should be associated with firms only, or whether it also includes other business entities; such as e.g. industry institutions. Although they do not contribute directly to the production process or service provision to the final recipient, they perform an advisory, lobbying, control, etc. role in relation to companies.<sup>6</sup>

Discrepancies regarding the industry defining approaches may result in posing a question on whether it is indeed feasible to delimit this concept. From the ontological point of view an industry should meet the following arguments (Jankowska, 2002, p. 236):

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<sup>6</sup> Therefore, one encounters a dilemma as to whether it is appropriate to understand industry in a distributive or collective sense (Gorynia, 1995, pp. 45-46). In a distributive sense, an industry simply means a sum of companies that run similar business activities. In a collective sense, an industry also displays features that cannot be directly attributed to the companies operating in it. Thus, the distributive perspective refers to reductionism, while the collective one refers to holism.

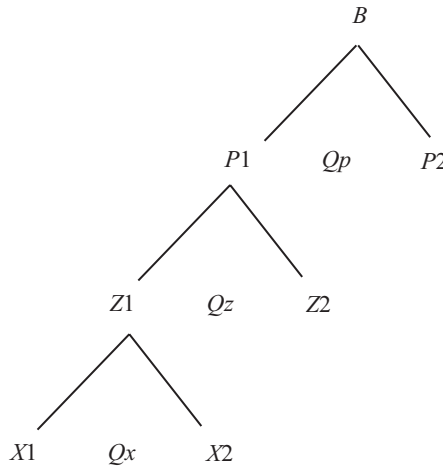
**Table 1.1. “Traditional” concepts of an industry**

Author	Delimitation criterion	Definition of an industry	Critique of the theory
Marshall (1972)	homogeneity of manufacturing technology	companies manufacturing products with the same technical characteristics (Marshall, 1972, p. 69)	goods may be intersubstitutable, and identical products may be manufactured using different technologies
Chamberlin (1933)	product substitutability	groups of competing firms—producers of close substitutes (Hay & Morris, 1979, p. 10)	no objective criteria for distinguishing close/distant substitutes
Robinson (1969)	homogeneity of needs	companies offering products in a continuous substitution chain; a chain contains products meeting the same needs, regardless of the technology applied and the product characteristics (Robinson, 1969, p. 17)	invalidity of the thesis about the existence of a continuous substitution chain and occurrence of substitution gaps only at the points determining industry boundaries
von Stackelberg (1934), Abbott (1958)		an industry is a perfect market, characterised by homogeneous demand; the sum of such elementary markets creates a holistic market, which is an imperfect market (Abbott, 1958, p. 96; von Stackelberg, 1934, p. 29)	no objective criteria for distinguishing close/distant substitutes
Bain (1959), Porter (1999)	product substitutability	a given industry is made up of producers of substitutes (Porter, 1999); Bain found that the boundaries of an industry market are determined by a high rate of cross-elasticity (Bain, 1959, pp. 6-7)	no objective criteria for distinguishing close/distant substitutes; reservations about the concept of cross-elasticity of demand (Needham, 1978)

Source: (Jankowska & Kania, 2017, p. 71).

- an industry as a whole should be treated as a higher-level object in relation to the micro-entities (industry members),
- an industry has a specific structure created by its members along with the links they establish,
- relations between individual industry members as well as between industry members and industry as a whole are established by their constant interactions.

In attempt to verify how to delimit an industry Jankowska (2002, p. 241) proposes an industry model referring directly to the “substantial being” concept (Figure 1.1).



**Figure 1.1. The industry model as a “substantial being”**

*B* – an industry

*P1, P2* – industry members

*Qp* – industry members interactions

*Z1, Z2* – industry members’ resources (human capital, assets)

*Qz* – organisational interactions

*X1, X2* – individual positions within an organisation

*Qx* – employee interactions

Source: (Jankowska, 2002, p. 241).

It can be concluded that an industry is a collective set of companies since it creates a sub-system of mutually intertwined elements. Simultaneously it can however be questioned whether an industry always exhibits collective features or rather at times can be perceived in a distributive way. Here, it is worth to underline that to delimit an industry one can invoke either the activity-based or outcome-based approach. Imposing the outcome-based perspective results in the creation of a sub-system that should not be called an industry if one refers to the “substantial being” concept. Such sub-system constitutes an apt tool of cognition but its elements do not interact with one another. Likewise, applying the activity-based approach will only qualify the delimited sub-system to be labelled an industry if its components remain related (Jankowska, 2002, p. 242). However, when an activity-based delimitation results in recognition of a sub-system composed of mutually intertwined elements which influence the structure and the functioning of the identified sub-system, one has indeed distinguished *an industry*.

Industry delimitation is all the more difficult as industry boundaries become blurry due to technological progress. Thus, it is difficult to determine whether a given company belongs to one or other industry, or it is in fact present in several industries at the same time, since its products range is so wide (Figure 1.2).

### 2.1.3. Behavioural internationalisation models

Another group of factors determining a company's degree of internationalisation are factors relating to innovation models and strategic planning. Innovation means a sequence of activities leading to the creation of new or improved products/services, technological processes or organisation changes. According to Schumpeter (1960) an innovation is understood as (1) the creation of a new product/service; (2) the implementation of a new technology; (3) the opening of a new market; (4) the acquisition of new resources; (5) the reorganisation of an industry structure. Among the innovation-based models one can also find behavioural theories and concepts such as the diffusion of innovation (Rogers, 1962).

Apart from innovation-based models, the strategic planning approach is also based on behavioural theories. The internationalisation process, including the degree of a company's engagement in foreign operations, here results from the long-term strategic plan which is normally preceded by a detailed analysis of the target market, possible entry modes, as well as the preparation and implementation of a marketing plan (Whitelock, 2002). The degree of internationalisation is derived from the goals that the company intends to pursue in individual markets.

Innovation-based models along with the strategic planning perspective assume that internationalisation is a gradual process; therefore reaching new destinations takes time, and so does increasing the degree of internationalisation. The main factors determining the pace of internationalisation can be divided into external and internal factors. Among the most frequently named exogenous factors are the following: level of industry rivalry, size of domestic market, governmental aid and trade barriers. Among the endogenous factors there are for example product type, company size and technology in use.

A part of these factors can not only refer to the internationalisation process of a company but can also determine the degree of internationalisation in an industry.<sup>32</sup> The abovementioned exogenous determinants refer in truth to the environmental conditions of the industry in the domestic country. The level of industry rivalry, expressed for instance by the degree of industry concentration, determines an industry's structure and thus facilitates the understanding of the strategies applied locally. The basis for forecasting the possible development opportunities for an industry in a given country is information on local demand and the trends that this demand is subject to. Together, these factors can determine whether it is worth investing in the domestic market, or whether it will be necessary for companies to either look for demand abroad or switch industries. These

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<sup>32</sup> It is assumed here that the decision of a single company has the power to determine the decisions of other companies, which in effect changes the way the entire industry functions.

decisions can be influenced by government, which—through targeted subsidies—can alter the way companies project their existence in an industry. All these factors are the so-called *push factors*—unfavourable local market conditions forcing companies to seek internationalisation as a remedy for further development. Slightly different is the effect trade barriers may have on foreign expansion. Depending on whether one considers export or import barriers, these restrictions may cause either a growth or a decline in the level of internationalisation.

The type of product, its technological advancement and the size of the company are also commonly known as determinants of the degree of internationalisation. Again, these factors can be transposed to the meso level. Within an industry, products or services usually have a similar level of technological advancement, which is reflected in the classifications of international statistical institutions. The size of an industry may, for instance, be determined by the number of active companies within the industry and its structure, i.e. the distribution of companies by size.

However, it should be noted that along with the change in research perspective, the perception of these factors also changes—those factors that were previously perceived as external ones do not necessarily remain exogenous. For example, in the case of a company's internationalisation, intra-industry competition is an exogenous factor since it describes its immediate environment. In the case of an industry, however, it transforms into an internal characteristic as it no longer represents the context in which the subject under study is embedded.

#### **2.1.4. New institutional economics in the study of the internationalisation process**

Developing countries, including so-called *catching up* and *transition* countries, have become a testing ground for numerous conceptual frameworks (Cieřlik & Kaciak, 2009). This interest results from the possibility of observing significant changes occurring in such economies, which facilitates the assessment of the impact the institutional environment has on the processes taking place in the country. Hence, the new institutional economy, with particular emphasis on the transaction costs concept, is of considerable interest.

At the same time, economists express concerns that the theories which emerged during years of studying developed economies do not necessarily have to be reflected in developing ones (Bruton, Ahlstrom, & Oblój, 2008; Cieřlik & Kaciak, 2009; Tsui, 2004). One of the issues most often raised is the possibility of an assumption mismatch (Zahra, 2007), which can cause the results of empirical research to be inconclusive. In the case of the assumptions of new institutional economics, however, this is a dubious objection since the behavioural



foundations of this theory are universal and do not depend on the development level of individual economies.

It is widely believed that the level of transaction costs in an economy depends directly on the economic development of the country (North, 1981; Piątek, 2015). The more local is the trade, the lower are the transaction costs due to the lack of any need for a third party (institution) to regulate the contract execution. Along with an increase in products/services complexity and the broadening of the geographical scope of trade, the uncertainty and thus the level of transaction costs also increase. In order to minimize costs it becomes necessary to introduce institutions, broadly understood, that can ensure the stability and legal validity of the transactions. Although research on the role institutions play as economic regulators is still ongoing, the recognition of these dependencies have become a starting point to analyse how the level of transaction costs and the effectiveness of institutional operations affect a company's willingness to undertake foreign expansion.

Of particular importance is the analysis of internationalisation processes, which were almost non-existent before the transformation. For example, in Poland before 1989 there were only 767 companies involved in export activities (Cieślak & Kaciak, 2009). Along with the transition from a centrally planned economy to a free market economy, their number increased significantly, as did the foreign direct investment in-flow. This gave rise to a natural question as to how the institutional context influences the expansion decisions of companies. Did the earlier lack of a stabilised institutional environment<sup>33</sup> and the birth of a new order reduce contractual uncertainty and the asymmetry of information? Did the new institutional order reduce transaction costs in the economy? These and similar questions have contributed to the popularisation of new institutional economics as the theoretical framework for research on internationalisation, from both the macro- and microeconomic perspectives.

Since the 1970s, within the new institutional economics mainstream, the concept most frequently invoked in internationalisation research has been the transaction cost theory. Santos, Barandas and Martins (2015) analysing publications between 1970 and 2010 from six leading journals<sup>34</sup> on international business,

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<sup>33</sup> The institutional environment is understood very broadly. It covers both the normative, cultural and regulatory aspects (Grosse & Trevino, 2005). The normative aspect concerns the establishment of rules for the functioning and interdependence of institutions, as well as setting the objectives for the whole system. The cultural aspect reflects the specificity of the internal processes, rules and principles characteristic for a given community. The regulatory aspect, on the other hand, includes the creation of specific rules and legislation, as well as sanctions enforced in the event of violation of the rules established.

<sup>34</sup> *International Business Review*, *Asia Pacific Journal of Management*, *Journal of International Business Studies*, *Management International Review*, *Journal of International Management*, *Journal of World Business*.

show that the transaction cost theory was used in about 23% of all publications on the company internationalisation process. Similarly, an analysis of the institutional environment appeared in about 8% of publications. These two aspects are closely interlinked with each other, since a commonly accepted thesis exists that the more frequent the changes in less-stable institutions, the higher are the transaction costs (Meyer, 2001). The interdependence between transaction costs and internationalisation is mainly examined in three dimensions:

- choosing the optimal entry mode (e.g. Anderson & Gatignon, 1986; Brouthers, 2013; Gatignon & Anderson, 1988; Hennart, 1988; Meyer & Peng, 2001),
- choosing the target country (e.g. Jones & Butler, 1988; Tatoglu & Glaister, 1998),
- intensifying the scope of internationalisation<sup>35</sup> (e.g. Jones & Butler, 1988; Jones & Hill, 1988; Noteboom, 1993).

#### 2.1.4.1. The agency theory and the degree of internationalisation

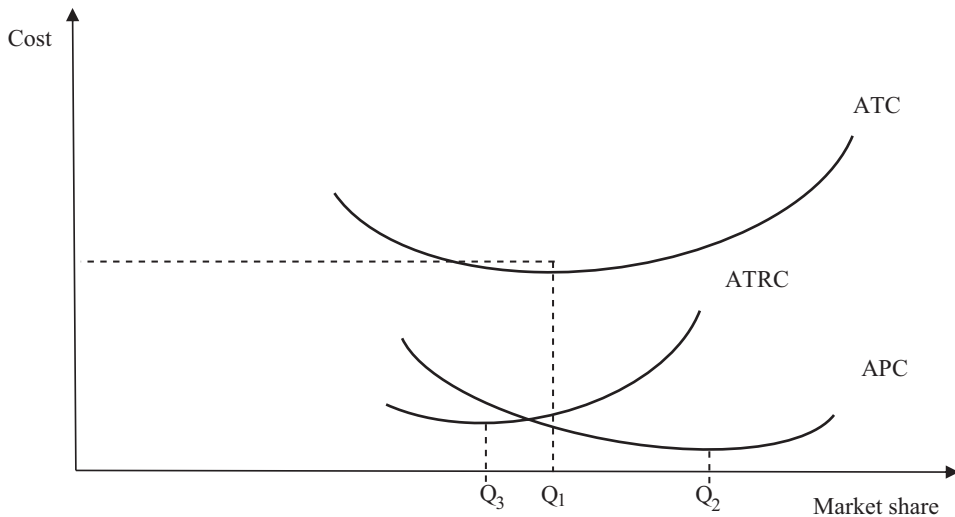
The agency theory presumes that in a company one encounters a *principal* who employs (or rents) an *agent* to run the company. By means of a contract the agent and the principal set the goals and expectations to be met in the development of the company. Usually, there are situations in which the short-term (agent's) goals differ from long-term (principal's) goals.

The agency theory is also used in research on the internationalisation process of companies. Decisions of the agent are very often listed as potential determinants of the pace, mode and intensity of foreign activities (*agent-specific determinants*). For instance, Bala Subrahmanya (2014) examines how the agent's age, experience and preferences influence the internationalisation degree of Hindu small and medium-sized companies between 2010 and 2011. These observations confirm that the agent's behaviour has a significant impact on a company's foreign operations.

#### 2.1.4.2. Transaction cost theory and the degree of internationalisation

The empirical studies carried out so far focus primarily on determining the optimal scale of production and trade. As Chart 2.1 indicates, with an increase in production, transaction costs decrease, but this only happens to a certain level of market share (Q3). Although further production increases bring further reductions in total average costs (production costs + transaction costs), the transaction costs themselves start to increase again. Since reducing transaction costs in the local market is no longer possible, it is necessary to look for recipients in foreign markets.

<sup>35</sup> Most empirical studies as internationalisation degree recognise a simple indicator of the share of export revenues to the general level of sales revenues.



**Chart 2.1. Production and transaction costs along with market share**

APC – average production costs

ATC – average total costs

ATRC – average transaction costs

Source: (Jones & Butler, 1988, p. 208).

The dependence between production costs and transaction costs observed by Jones and Butler (1988) became the starting point for studies on a company's engagement in foreign operations. Since it is still difficult to reach an agreement on a common definition and explicit measure of transaction costs,<sup>36</sup> this issue is much less frequently raised than, for example, the issue of choosing the optimal market entry mode. This reluctance is due to the fact that entry mode research is most commonly based on Williamson's (1975, 1985) approach to transaction costs measurement, where the "measure" is established by assessing the asset specificity needed in production as well as transaction frequency and uncertainty. Assessing the company's optimal engagement abroad is a more complex task as it requires establishing some actual level of transaction costs. However, in the 1970s and 1980s when studies on transaction costs measurement were especially intense, the available data did not allow for detailed analysis to be made.<sup>37</sup>

<sup>36</sup> More information on the topic can be found in Chapter Three.

<sup>37</sup> The necessity to measure transaction costs through the use of financial statements was already indicated by Coase (1990). For more information see Chapter Three.

## 2.2. Levels of economic analysis and new institutional economics

The new institutional economics was born in response to distrust regarding the limitations of neoclassical theory and the belief that the neoclassical approach does not take into consideration an important mechanism influencing companies and the economy—institutions. The analysis of institutional differences becomes crucial in understanding the reasons for economic development in catching-up countries, where the attempt to apply orthodox theory or even development economics does not give tangible results (Legiędź, 2013; Tywoniak, Galvin, & Davis, 2007). In spite of the different conceptual assumptions new institutional economics does not contradict neoclassical theory, but supplements it by viewing the company as more than just a production function. In retrospect, it is worth noting that the new institutional economics offers two research perspectives—a macroeconomic and a microeconomic one. The macroeconomic perspective, or otherwise institutional macro-level analysis, provides information on the influence of the institutional environment on a country's development. Microanalysis, however, focuses on the influence of the institutional environment on a single organisation (Legiędź, 2013).

The distinction of these two economic analysis levels is nothing new, since earlier theories also referred to a division into micro- and macroanalysis. However, a kind of novelty here is the synthesis of these two analysis levels, i.e. an attempt to answer the question as to how companies change in the face of globalisation (Rosińska, 2008). As Rosińska points out, companies are autonomous economic entities capable of independent organisation; however, at the same time they co-create a system and thus shape their own external environment. The author goes so far as to claim that companies co-create the global system, i.e. they create mechanisms and norms of functioning in the macroeconomic sense. It can be questioned whether a set of companies can directly impact the macroeconomic regulations, however the logic itself is understandable. Companies co-creating a system do, to some extent, affect the economic mechanisms.

In the light of the abovementioned considerations, one can come to the conclusion that the new institutional economics is also applicable to a mesoeconomic analysis, although this is an implicit assumption, rarely expressed explicitly. Rosińska (2008) cites the example of systems, understood as groups of companies creating the environment. Although she does not define the system explicitly, according to her assumptions a system might be a group of competing companies performing a specific business activity. In such a sense an industry—which is the subject of interest for mesoeconomic analyses—can also be labelled a system. Commons (1925, p. 375) suggests that the unit of analysis should be char-

acterised by conflict, mutuality and order; which is why in the new institutional economics it is generally accepted that the analysis refers directly or indirectly to a transaction, as such a unit is responsive to all three principles. However, as Williamson notes (1998), a transaction is not the only concept that meets the terms laid down by Commons—basically the main point of management—it can be a transaction, organisation or any management system. Coase (1937, 1960) and Williamson (1975, 1985) very often defined a company as a set of transactions. Accepting this line of reasoning means that since a company consists of transactions and the industry is made up of companies, it is in consequence a set of even more transactions (Mroczek-Dąbrowska, 2016b, p. 125).

Kapeller and Scholz-Wäckerle (2016) note further links between the new institutional economics and the mesoeconomy:

- systemicity and dynamism observed in the relations between institutions and industry entities,
- the ability of industry members (agents) to learn and use past experience,
- the ability of industry members to establish market relations and search for transaction costs optimisation (*social optima* vs. *individual optima*).

They point out that analyses carried out at the mesoeconomic level derive from the institutional approach inspired by the works of Veblen, Commons and Mitchell, as well as the new institutional economics. They also suggest that these concepts are much better suited for industry research than neoclassical theory. Dopfer and others (2004, pp. 268-269) claim that the mesoeconomic level is crucial in observing all market dependencies. They emphasise that the current neoclassical view of the economic system broken down to only the micro- and macroeconomic perspective is insufficient. Accepting the role of institutions as the warrant for executing rules and norms, allows questions to be raised concerning control and change—processes absolutely crucial from the perspective of new institutional economics.

A good summary of these considerations is the publication by Gorynia, Jankowska and Maślak (2000, p. 53) who indicate that the new institutional economics is well suited for the analysis of industry structure since it does the following:

- emphasises the role of the institutional environment,
- is not bound by the *homo oeconomicus* vision but adopts more realistic behavioural assumptions,
- provides tools for analysing the structure of economic systems, including monopolistic and oligopolistic behaviours manifested by some industries,
- allows for the use of normative theories regarding the issue of state policy,
- disregards the “black box” rule and analyses the processes occurring within an entity,
- emphasises that market solutions do not equal optimal solutions.

## **4. The impact of the economic crisis on the macroeconomic and industry situation in Poland**

The economic crisis that began with the bursting of the speculative bubble in the real estate market in the United States in 2007 very quickly spread to Europe. Already in 2008 the financial institutions had to bear the consequences of these events, and soon afterwards a definite deterioration in the economic conditions—not only in financial markets—could be observed (European Commission, 2009). Initially, it was strongly believed that the European economy—which was based on export revenues and a strong position of companies and individual households—would easily resist the turbulence in the financial markets. This erroneous assessment was overturned at the end of 2008 when Lehman Brothers declared bankruptcy, causing panic in the financial and stock markets.

The functioning of a market economy is inextricably linked to fluctuations in economic activity, which in practice means the inevitable occurrence of both periodical recessions and times of prosperity (Gorynia & Mroczek-Dąbrowska, 2017). Business cycles have different patterns and are caused by different factors. Although their existence is well known to both economists and entrepreneurs, the actual appearance of a crisis in the economy seems to always come as a surprise. As the research aims to study the impact of the latest economic crisis on the degree of industry internationalisation in Poland, the following chapter discusses the performance of Poland against other European countries at the time. It then continues with analyses of Polish industries.

### **4.1. Europe's developmental indicators between 2007 and 2015**

Europe, as a member of global financial and commercial markets, quickly felt the effects of global overliquidity. There were three basic channels through which changes were transferred. The first one was related to the pressure on European exchange rates related directly to changes in the US dollar exchange rate, and indirectly also to the Chinese renminbi and Japanese yen. Another source

proved to be borrowers with liabilities in the currencies of those countries where interest rates and the costs of servicing liabilities were favourable at the time. These contributed to the “overflowing” of a global overliquidity of capital to European countries. Thirdly, the liberalisation of capital markets allowed the free flow of capital to countries in which a significant increase in *per capita* income was observed. A significant part of this capital was invested in the real estate market, which was greatly affected by financial turbulence (Berger & Hajes, 2009; Boone & van den Noord, 2008; Dreger & Wolters, 2009).

Shortly after, the fluctuations in the financial markets were also transferred to other economic spheres, causing significant changes in macroeconomic indicators. Table 4.1 presents the value of exports of goods for selected European countries before and after the crisis. Comparing the year-to-year values, the most significant decreases were recorded in 2009, therefore at a time when the effects of the financial crisis began to be observable in Europe.<sup>50</sup> The greatest declines, of about 20%, were seen in Finland and Estonia, whilst the only increase was reported by Iceland. Starting in 2010, each European country started on a path to quickly return to the situation before the economic crisis. Most of the economies managed to reach this level by 2011, and only in Norway did the process take until 2015.

**Table 4.1. The value of exports of goods in billion US\$ (fixed prices 2010) for selected European countries between 2007 and 2015**

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015
Belgium	363.70	369.92	335.04	369.67	394.50	395.83	399.35	420.05	433.84
Croatia	24.50	24.69	21.21	22.52	23.02	22.99	23.71	25.14	27.50
Cyprus	12.89	12.81	12.29	12.84	13.56	13.19	13.46	14.04	14.92
Czech Republic	127.12	132.50	119.48	137.00	149.55	155.95	156.24	169.76	179.98
Denmark	167.60	174.09	158.04	162.68	174.39	176.41	179.26	184.86	189.20
Estonia	14.67	14.80	11.80	14.63	18.17	19.05	19.57	20.06	19.93
Finland	105.98	112.96	90.27	95.84	97.75	98.96	100.06	97.34	98.16
France	710.03	712.60	632.31	689.32	736.74	755.45	769.87	795.37	829.30
Germany	1442.44	1470.30	1260.53	1443.74	1563.28	1607.45	1635.03	1710.83	1800.34
Greece	74.84	77.44	63.10	66.17	66.18	66.96	67.97	73.24	75.50
Hungary	101.62	108.64	96.25	107.13	114.15	112.10	116.79	127.40	138.24
Iceland	6.30	6.51	7.04	7.11	7.36	7.62	8.13	8.39	9.16
Ireland	214.95	206.77	216.38	228.86	236.08	239.81	247.12	282.77	391.34
Italy	602.94	584.30	478.83	535.26	563.02	576.11	580.14	595.92	622.22

<sup>50</sup> This work assumes that “an economic crisis involves at least a one-year annualised decrease in the real GDP value and in other indicators of the economic situation” (Dzikowska & Trąpczyński, 2017, p. 44).

Table 4.1 – cont.

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015
Lithuania	20.60	23.38	20.39	24.26	27.99	31.46	34.56	35.69	35.56
Luxembourg	90.29	95.23	84.14	92.87	96.62	99.28	104.51	119.12	127.29
Malta	10.54	12.59	12.53	13.40	13.62	14.61	14.78	15.36	16.00
Netherlands	586.90	597.66	544.45	601.82	628.32	652.16	666.03	695.67	740.70
Norway	176.55	176.78	169.53	170.47	169.08	171.74	168.89	174.10	182.32
Poland	168.61	180.51	169.78	191.97	207.06	216.55	229.72	245.06	263.91
Portugal	72.62	72.39	65.00	71.19	76.20	78.79	84.30	87.95	93.35
Slovakia	68.84	70.92	59.03	68.32	76.52	83.65	89.22	92.69	98.62
Slovenia	32.25	33.59	28.02	30.87	32.99	33.19	34.20	36.15	37.96
Spain	378.44	375.24	333.88	365.34	392.40	396.57	413.56	431.30	449.39
Sweden	231.04	235.63	201.49	225.56	239.32	241.67	239.80	252.41	266.76
Switzerland	353.91	367.57	330.93	373.42	391.75	396.04	456.23	428.14	438.46
United Kingdom	707.95	712.05	650.20	688.75	731.69	733.36	739.52	759.15	796.90
Euro area	5016.68	5061.50	4434.06	4936.14	5259.14	5392.59	5505.14	5760.80	6130.01
European Union	6620.43	6705.26	5920.46	6551.41	6987.63	7142.11	7295.54	7636.84	8110.26

Source: Based on OECD (n.d. (a)) (accessed 27.02.2018).

Some of the basic indicators of a country's economic development are the GDP measures (Table 4.2). Again in 2009, almost all countries recorded a decline in both total GDP and GDP per capita. The only exception was Poland, which recorded a growth of 0.3% and 0.2% respectively. Again the highest decline, of approximately 17%, concerned Estonia and Lithuania. By 2014, almost all European countries had managed to achieve their pre-crisis GDP level; however, the process was slower than in the case of the exports. In this respect Greece is in the worst situation as its ratio is still more than 20% lower than in 2006 and 2007. By 2015 Portugal, Cyprus, Italy and Spain had not yet reached their pre-crisis levels either.

Another very often referred to measure of economic and social development is the unemployment rate. The first weakening of the labour market was already visible in 2008, but the problems deepened in 2009 (Table 4.3). Until 2007 European Union countries had sought to achieve the objectives set in the Lisbon Strategy, which meant achieving an overall employment level of 70% of society (European Commission, 2009). The European Union was close to implementing this, reaching an employment level of 68%, thanks especially to the professional activation of women and the elderly. The current level for the rate of unemployment results from the economic crisis, the consequences of which are still visible. In most



Table 4.2. GDP values of selected European countries between 2007 and 2015

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015
Belgium	A <sup>a</sup> 477.7	481.5	470.6	483.6	492.2	493.4	494.4	501.1	508.1
	B <sup>b</sup> 44960.8	44956.4	43591.3	44380.2	44556.0	44337.6	44209.7	44702.3	45068.3
Croatia	A <sup>a</sup> 64.2	65.5	60.7	59.7	59.5	58.2	57.6	57.3	58.6
	B <sup>b</sup> 14476.7	14778.9	13704.4	13505.8	13899.3	13636.9	13529.4	13517.8	13936.0
Cyprus	A <sup>a</sup> 24.7	25.7	25.2	25.6	25.6	24.9	23.4	23.1	23.5
	B <sup>b</sup> 32236.6	32651.9	31223.6	30818.5	30138.6	28775.1	27130.6	27045.8	27738.5
Czech Republic	A <sup>a</sup> 207.5	213.1	202.9	207.5	211.2	209.5	208.5	214.1	225.5
	B <sup>b</sup> 20151.2	20520.8	19424.3	19808.1	20118.6	19929.8	19826.8	20343.7	21381.7
Denmark	A <sup>a</sup> 334.1	332.4	316.1	322.0	326.3	327.0	330.1	335.4	340.8
	B <sup>b</sup> 61174.6	60504.8	57229.1	58041.4	58575.6	58487.8	58788.1	59437.9	59967.7
Estonia	A <sup>a</sup> 23.6	22.4	19.1	19.5	21.0	21.9	22.3	22.9	23.3
	B <sup>b</sup> 17627.0	16716.5	14282.6	14638.6	15798.6	16538.2	16918.6	17453.4	17734.0
Finland	A <sup>a</sup> 260.4	262.3	240.6	247.8	254.2	250.6	248.7	247.1	247.1
	B <sup>b</sup> 49239.2	49363.7	45065.8	46202.4	47171.0	46277.6	45715.7	45239.4	45086.7
France	A <sup>a</sup> 2669.3	2674.5	2595.8	2646.8	2701.9	2706.8	2722.4	2748.2	2777.5
	B <sup>b</sup> 41696.7	41545.3	40116.4	40703.4	41349.2	41224.7	41249.5	41431.0	41689.7
Germany	A <sup>a</sup> 3441.4	3478.6	3283.1	3417.1	3542.2	3559.6	3577.0	3646.0	3709.6
	B <sup>b</sup> 41831.9	42365.1	40086.1	41785.6	44125.3	44259.3	44354.7	45022.6	45412.6
Greece	A <sup>a</sup> 332.1	331.0	316.7	299.4	272.0	252.2	244.0	245.8	245.1
	B <sup>b</sup> 30054.9	29874.7	28514.8	26917.8	24495.7	22830.5	22251.3	22565.7	22648.8
Hungary	A <sup>a</sup> 138.0	139.2	130.0	130.9	133.1	130.9	133.7	139.3	144.0
	B <sup>b</sup> 13727.7	13869.4	12974.1	13092.2	13347.6	13196.2	13509.9	14119.1	14629.2
Iceland	A <sup>a</sup> 14.6	14.8	13.7	13.3	13.5	13.7	14.3	14.6	15.2
	B <sup>b</sup> 46695.2	46531.3	43152.7	41676.5	42375.0	42663.3	44126.0	44477.9	45820.1

Table 42 – cont.

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015
Ireland	A <sup>a</sup> 238.0	228.6	218.0	222.0	228.6	228.7	232.4	251.8	316.1
	B <sup>b</sup> 54096.3	50918.4	48071.7	48671.9	49942.5	49851.0	50542.4	54527.3	68030.9
Italy	A <sup>a</sup> 2234.5	2211.0	2089.8	2125.1	2137.3	2077.1	2041.2	2043.5	2063.9
	B <sup>b</sup> 38236.8	37585.3	35363.4	35849.4	35994.1	34885.3	33887.3	33616.0	33984.1
Lithuania	A <sup>a</sup> 41.8	42.9	36.5	37.1	39.4	40.9	42.3	43.8	44.6
	B <sup>b</sup> 12928.3	13405.2	11546.8	11984.9	13000.2	13681.0	14304.8	14932.6	15341.8
Luxembourg	A <sup>a</sup> 53.7	53.1	50.7	53.2	54.6	54.4	56.4	59.6	61.3
	B <sup>b</sup> 111968.4	108577.4	101939.6	104965.3	105264.8	102404.6	103721.8	107152.9	107648.6
Malta	A <sup>a</sup> 8.4	8.7	8.4	8.7	8.9	9.1	9.5	10.3	11.0
	B <sup>b</sup> 20591.0	21142.0	20466.6	21087.8	21296.3	21685.3	22471.6	24080.2	25511.5
Nether lands	A <sup>a</sup> 842.8	857.1	824.8	836.4	850.3	841.3	839.7	851.6	870.9
	B <sup>b</sup> 51447.3	52118.1	49897.2	50338.3	50937.6	50213.0	49969.9	50497.2	51410.5
Norway	A <sup>a</sup> 431.4	433.5	426.2	429.1	433.3	445.1	449.7	458.6	467.7
	B <sup>b</sup> 91617.3	90917.5	88260.0	87770.3	87481.2	88689.5	88538.7	89275.0	90104.1
Poland	A <sup>a</sup> 431.6	449.9	462.6	479.3	503.3	511.4	518.5	535.5	556.1
	B <sup>b</sup> 11320.6	11800.0	12124.6	12597.9	13222.8	13435.5	13630.7	14088.8	14640.2
Portugal	A <sup>a</sup> 240.6	241.0	233.9	238.3	234.0	224.5	222.0	224.0	228.1
	B <sup>b</sup> 22817.3	22829.9	22128.9	22538.7	22159.5	21353.2	21228.1	21533.5	22016.8
Slovakia	A <sup>a</sup> 85.3	90.1	85.2	89.5	92.0	93.6	94.9	97.6	101.3
	B <sup>b</sup> 15868.8	16747.8	15818.6	16600.6	17046.6	17299.6	17538.7	18003.5	18678.9
Slovenia	A <sup>a</sup> 49.8	51.4	47.4	48.0	48.3	47.0	46.5	47.9	49.0
	B <sup>b</sup> 24673.4	25447.4	23252.1	23437.5	23540.7	22864.2	22574.7	23224.4	23731.2
Spain	A <sup>a</sup> 1468.1	1484.5	1431.4	1431.6	1417.3	1375.8	1352.4	1371.0	1418.1
	B <sup>b</sup> 32459.9	32303.2	30874.1	30736.6	30321.7	29414.9	29008.0	29496.4	30532.5

Sweden	A <sup>a</sup>	488.7	486.0	460.8	488.4	501.4	500.0	506.2	519.3	542.8
	B <sup>b</sup>	53421.0	52711.2	49554.3	52076.3	53061.6	52519.7	52722.9	53561.9	55395.1
Switzer land	A <sup>a</sup>	567.4	579.7	566.8	583.8	593.7	599.6	610.7	625.7	633.4
	B <sup>b</sup>	75143.7	75793.6	73189.2	74605.7	75029.8	74984.1	75499.7	76410.9	76472.5
United King- dom	A <sup>a</sup>	2517.3	2505.4	2400.5	2441.2	2476.6	2513.3	2564.9	2643.2	2705.3
	B <sup>b</sup>	41050.4	40536.1	38545.9	38893.0	39150.8	39455.4	39996.5	40908.8	41536.9
Euro area	A <sup>a</sup>	12915.6	12972.7	12386.7	12645.3	12847.9	12733.8	12702.8	12871.7	13139.6
	B <sup>b</sup>	38826.9	38808.6	36935.4	37617.7	38303.1	37879.2	37660.5	38033.6	38704.5
European Union	A <sup>a</sup>	17315.0	17398.3	16639.5	16992.7	17280.6	17206.5	17251.1	17551.1	17957.0
	B <sup>b</sup>	34635.8	34671.2	33059.6	33687.6	34286.1	34065.2	34053.2	34538.6	35232.5

A – GDP (constant 2010 US\$ bn).

B – GDP per capita (constant 2010 US\$).

Source: Based on OECD (n.d. (b)) (accessed 27.02.2018).

of the analysed cases the unemployment rate has not yet dropped to the levels for the years 2006 or 2007. The most difficult situations were faced by Greece (24.9%) where the increase in the unemployment rate in comparison to 2007 was over 16 pp; Spain (22.1%) which also had to deal with an almost 14 pp increase; and Cyprus (14.9%) with an increase of 11 pp. Poland and Germany were not subject to these labour market trends and their unemployment rate was visibly decreasing. Poland hit its lowest rate in 2008 (7.1%), though subsequent years saw an increase to over 10% before finally falling to a level of 7.5% in 2015. The German case—surprisingly—was entirely unique, as in the entire period analysed the unemployment level kept declining from 8.7% in 2007 to 4.6% in 2015.

**Table 4.3. Unemployment rate in selected European countries between 2007 and 2015**

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015
Belgium	7.5	7	7.9	8.3	7.1	7.5	8.4	8.5	8.5
Croatia	9.9	8.5	9.2	11.6	13.7	15.9	17.3	17.3	16.3
Cyprus	3.9	3.7	5.4	6.3	7.9	11.8	15.9	16.1	14.9
Czech Republic	5.3	4.4	6.7	7.3	6.7	7	7	6.1	5
Denmark	3.8	3.4	6	7.5	7.6	7.5	7	6.6	6.2
Estonia	4.6	5.5	13.5	16.7	12.3	10	8.6	7.4	6.2
Finland	6.9	6.4	8.2	8.4	7.8	7.7	8.2	8.7	9.4
France	8.1	7.5	9.1	9.3	9.2	9.8	10.4	10.3	10.4
Germany	8.7	7.5	7.7	7	5.8	5.4	5.2	5	4.6
Greece	8.4	7.8	9.6	12.7	17.9	24.4	27.5	26.5	24.9
Hungary	7.4	7.8	10	11.2	11	11	10.2	7.7	6.8
Iceland	2.3	2.9	7.2	7.6	7	6	5.4	4.9	4
Ireland	4.7	6.4	12	13.9	14.6	14.7	13	11.3	9.4
Italy	6.1	6.7	7.7	8.4	8.4	10.7	12.1	12.7	11.9
Lithuania	4.2	5.8	13.8	17.8	15.4	13.4	11.8	10.7	9.1
Luxembourg	4.1	5.1	5.1	4.4	4.9	5.1	5.8	5.9	6.7
Malta	6.5	6	6.9	6.8	6.4	6.3	6.4	5.8	5.4
Netherlands	3.2	2.8	3.4	4.4	5	5.8	7.2	7.4	6.9
Norway	2.5	2.6	3.1	3.5	3.2	3.1	3.4	3.5	4.3
Poland	9.6	7.1	8.2	9.6	9.6	10.1	10.3	9	7.5
Portugal	8	7.6	9.4	10.8	12.7	15.5	16.2	13.9	12.4
Slovakia	11.1	9.5	12	14.4	13.6	14	14.2	13.2	11.5

Table 4.3 – cont.

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015
Slovenia	4.8	4.4	5.9	7.2	8.2	8.8	10.1	9.7	9
Spain	8.2	11.3	17.9	19.9	21.4	24.8	26.1	24.4	22.1
Sweden	6.2	6.2	8.4	8.6	7.8	8	8.1	8	7.4
Switzerland	3.7	3.4	4.1	4.5	4	4.2	4.4	4.5	4.5
United Kingdom	5.3	5.6	7.5	7.8	8	7.9	7.5	6.1	5.3

Source: Based on OECD (n.d. (c)) (accessed 4.12.2015).

It is also worth noting that 2009 was a particularly difficult year for the European Union when it comes to indicators of economic development. Comparing measurements on a global scale, one could conclude that Europe was affected by a regional crisis (Dzikowska & Trąpczyński, 2017), though the lasting effects of the crisis in individual countries varied.

Since an analysis of each single development measure in assessing the impact of the crisis on the situation in Europe is tedious and does not give unambiguous answers, it is still worth using synthetic measures in such evaluations. Dzikowska, Gorynia and Jankowska (2017) created a ranking on the basis of which it is possible to assess to what extent individual economies experienced significant slowdowns in 2009 and which of them showed the greatest difficulties in returning to their pre-crisis performance (Figure 4.1)

		During the economic crisis	
		Heavily exposed	Weakly exposed
Directly after the economic crisis	Difficulties in overcoming the effects of the crisis	Austria, Canada, Denmark, Finland, France, Greece, Iceland, Ireland, Italy, Japan, the Netherlands, Portugal, Spain, UK	Belgium, Norway
	Ease in overcoming the effects of the crisis	El Salvador, Estonia, Mexico, Russia, Singapore, Sweden, Turkey, USA	Australia, Chile, Columbia, the Czech Republic, Egypt, Germany, Hong Kong, Israel, Jordan, Kazakhstan, Malaysia, Morocco, New Zealand, Peru, Poland, South Korea, Switzerland, Thailand,

**Figure 4.1. European economies compared with the rest of the world during and after the economic crisis**

Items assigned to groups on the basis of the equal span formula.  
Classification shown in alphabetical order, not by indicator value.  
Source: Based on (Dzikowska et al., 2017, p. 141).

As easily noted and what has already been highlighted before, Europe found itself in a difficult position both during and after the economic crisis. Most economies have experienced considerable difficulties in returning to their pre-crisis situation. Only a few countries that experienced a significant slowdown in 2009 managed to quickly reclaim their previous position (Estonia, Sweden). On the other hand, Poland and the Czech Republic were countries considered to be relatively the least exposed to the effects of the slowdown and therefore not affected by its consequences in the long run. While this is proved by their performance, the indicators also imply a significant distinction between the two countries. Poland was indeed the least affected by the crisis in Europe and was relatively quick in rebuilding its pre-crisis image. Another interesting case is Norway. From a multivariate assessment the country cannot be considered an economy strongly affected by the economic crisis. However, even the rather moderate impact of the crisis had its long-term consequences and Norway belongs to the group of countries that did not fully recover from its effects.<sup>51</sup>

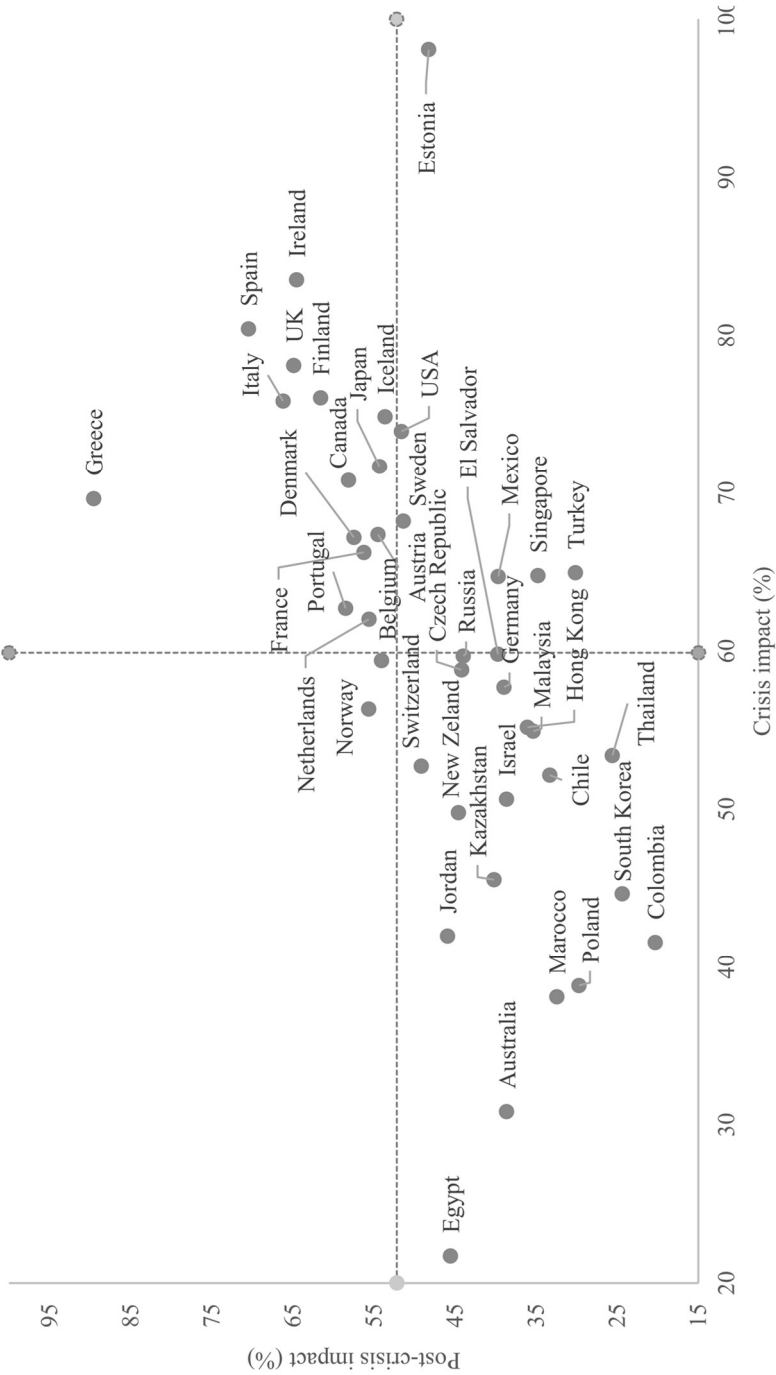
More detailed results of the analysis are shown in Chart 4.1. As easily observable, the country that has been severely hit by the crisis and which is still experiencing adjustment problems is Greece. The reasons behind this situation can be sought in the existence of a shadow economy (20-25% of GDP), an inefficient industrial sector, imperfections in the institutional environment and high public debt (Mitsakis, 2014; Markantonatou, 2013). The “inverse” of Greece is Estonia, which during the crisis recorded a deterioration of its economic situation, though in subsequent years showed significant improvements in most dimensions of socio-economic life.

## 4.2. The impact of the economic crisis on Poland

In the years 2006 and 2007, despite the symptoms of the crisis experienced abroad, the Polish economy grew at a rate of 6% per year. Further analysis indicates that only in the fourth quarter of 2008 Poland experienced a decline with a growth rate of -0.3%. The indicators presented in subchapter 4.1 clearly show that Poland did not find itself in a most difficult economic situation either during the crisis or directly afterwards. Since Poland was the only country in Europe reporting growth at that time, the country was labelled a “green island”. However, although the scale of the impact of the crisis on Poland was smaller compared to

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<sup>51</sup> Theoretically, Belgium was in a similar situation, but the values of its indicators were on the border of belonging to the group of countries significantly affected by the crisis (the value for Belgium amounted to 59.4, with a grouping threshold of 59.89).



**Chart 4.1. Situation of economies during and after the global economic crisis**

Source: Based on (Dzikowska et al., 2017, p. 141).

other countries, it does not mean that symptoms of the economic slowdown did not occur at all.

Gradzewicz, Growiec, Kolasa, Postek and Strzelecki (2014) argue that the main reason for the increase stems from capital accumulation combined with adjustments in the labour market. Capital investments in Poland originate mostly from European funds, whose long-term nature guaranteed the continuity of investment projects. The adjustments in the labour market were mainly limited to a reduction in the number of working hours and were temporary rather than permanent. Drozdowicz-Bieć (2011, p. 41) looks somewhat differently at this phenomenon, indicating especially the relatively low share of loans in financing business and consumption, the country's increasing competitiveness in the years preceding the crisis, the relatively low level of openness in the economy, the inflow of investment funds from the Union European, the floating exchange rate, the existence of a shadow economy, and the government's reluctance to create and implement stabilisation packages. As the author indicates, the mortgage loan market in Poland did not exhibit speculative features, i.e. the system of granting loans was transparent and did not show any abuse (Drozdowicz-Bieć, 2011). Zelek (2011b) indicates that an economic policy focused on the growth of consumer spending and the increase in export sales enabled a smooth comeback to the pre-crisis situation. This is somewhat contradictory to the insights of Drozdowicz-Bieć (2011), who emphasises that it was Poland's relatively small dependence on exports<sup>52</sup> that cushioned the impact of the crisis on the country. Cross-referencing these observations with data on Polish exports broken down into sections (Table 4.4), the following can be concluded:

- most sections of the economy were indeed not very dependent on export sales, with the main exceptions being Section B (Mining and Quarrying) and Section C (Manufacturing),
- Sections B and C employ ca. 40% of the total people employed in Poland and account for about 30% of registered business entities, thus they remain a vital part of the economy,
- in the entire period analysed, including the time of the economic crisis, no significant changes in the value and share of exports within total sales revenues are noted.

The symptoms of economic slowdown and fear of the unknown caused some companies in Poland to implement adaptation strategies (Kania, Mroczek-Dąbrowska, & Trąpczyński, 2017, pp. 155-172). As indicated by Zelek and Marniak (2011) and Orłowski, Pasternak, Flaht and Szubert (2010) defensive atti-

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<sup>52</sup> Drozdowicz-Bieć (2011) reports that Poland's GDP in 2007-2009 was approximately 40% from sales to foreign markets, while in Hungary this ratio amounted to ca. 80%, in Slovakia to 86%, in the Czech Republic to 76%, and in Lithuania to 55%. Poland displayed less "need" for pro-export activities due to the absorptive domestic market.



**Table 4.4. Share of export revenues in total revenues—divided into sections of PKD 2007 between 2007 and 2015**

Section	2007	2008	2009	2010	2011	2012	2013	2014	2015
	(%)								
A	4	4	6	6	5	6	7	6	8
B	20	19	20	26	26	31	33	29	28
C	35	35	36	37	38	39	41	41	42
D	1	1	1	1	1	2	2	2	1
E	3	3	3	6	6	6	6	5	5
F	5	4	3	4	4	4	5	4	4
G	6	6	5	6	5	6	7	7	7
H	19	16	18	18	17	17	20	21	19
I	1	1	1	1	1	1	2	1	1
J	6	5	6	6	7	8	9	11	12
K	0	0	2	2	2	3	2	3	2
L	0	0	0	1	2	2	1	1	1
M	13	14	11	12	13	14	19	20	20
N	4	3	3	8	8	8	8	9	9
O	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
P	1	7	0	3	2	2	3	2	1
Q	0	0	2	2	1	1	1	1	2
R	0	0	0	0	0	0	0	0	0
S	7	9	11	19	21	24	24	19	19
T	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
U	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

n/a – data not available.

Source: Based on the PontInfo Gospodarka database (accessed 22.06.2016).

tudes prevailed among the SME sector, and their strategies focused, among other things, on reducing costs, activities and employment, as well as rationalising their product and market portfolio.

While it is quite obvious that the economic crisis had a much smaller impact on the economic situation of Poland than other European economies, some researchers (e.g. Gradzewicz et al., 2014) claim that it is dangerous to prejudge the existence of such a dependency at all. In their opinion, there are no lasting effects of the crisis on the country's development measured, for example, by *capacity utilisation* or *total factor productivity*. However, it should be remembered that due to the relatively short time that has elapsed since the beginning of the crisis, these results could change by 2020 in various ways:

- Poland may fall into the middle income trap (Aiyar, Duval, Puy, Wu, & Zhang, 2013) slowing down convergence towards more developed countries,

- the impact of the crisis may be revealed in other indicators than the ones evoked (e.g. permanent unemployment rate),
- the impact of the crisis may not be noticeable at the macroeconomic level but at the industry level, which may be overlooked when analysing the aggregated data.

### **4.3. The situation of Polish industries during and after the crisis**

This subchapter presents a reproduction of quantitative research on the impact the economic crisis exerted on the standing of Polish industries (Dzikowska et al., 2017, pp. 146-157). The original research was carried out on GUS data and was conducted at both the macroeconomic and the mesoeconomic level. The replication of this research at the industry level is aimed at supplying more detailed results as it covers all sections of economic activity (not only section C as in the primary research), and does not refer to divisions but to classes (here understood as industries) according to PKD 2007 standards. Two changes were applied compared to the original survey: the year 2009 was chosen as the year of the economic crisis; and the year 2011<sup>53</sup> instead 2012 is referred to as the prosperity year. The purpose of these changes was to verify how quickly individual industries managed to overcome the negative effects of the crisis.

Industry ranking is based on a multivariate measure including the following items (Dzikowska et al., 2017, p. 147):

- number of employees, in thousands,
- revenues from total activities, in millions of zlotys,
- net value of fixed assets, in millions of zlotys,
- capital expenditures, in millions of zlotys,
- net financial performance, in millions of zlotys.

These indicators reflect the scale of operations, an industry's performance and its development potential. Variables are transformed as a percentage deviation from the baseline (2007 is treated as the point of reference), but only in the case of the net financial result as a difference in relation to the baseline.<sup>54</sup> The analysis was carried out for 338 activity classes<sup>55</sup> due to a lack of or incomplete

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<sup>53</sup> In 2011 Poland's economic growth was robust and the unemployment rate was low and stable.

<sup>54</sup> Due to the negative net financial results achieved in some industries.

<sup>55</sup> In some cases groups were used instead of classes, since not all economic activities are broken down into classes.

information in the case of the remaining industries. The study covers 154 production industries, 167 service industries and 17 industries classified as other.

In order to create a synthetic measure, the coefficient of variation of individual variables is revised, which in each case exceeds the threshold of 0.2. Variables are considered destimulants, thus they are transformed and standardised.

As a result of having created the rankings, it is possible to state which industries were most strongly/weakly affected by economic turbulence (2009) and which industries recorded the largest/smallest problems with returning to the situation before the economic crisis (2011). Analysis of the data at the class level rather than group level allows for determining whether there is a significant differentiation within the sample, and the additional inclusion of non-production industries builds a more complete overview of the entire economy. Tables 4.5 and 4.7 present the rankings for the situation during and after the crisis respectively. The higher the indicator value (between 0 and 1), the greater is the impact of the crisis or the difficulties of adjustment.

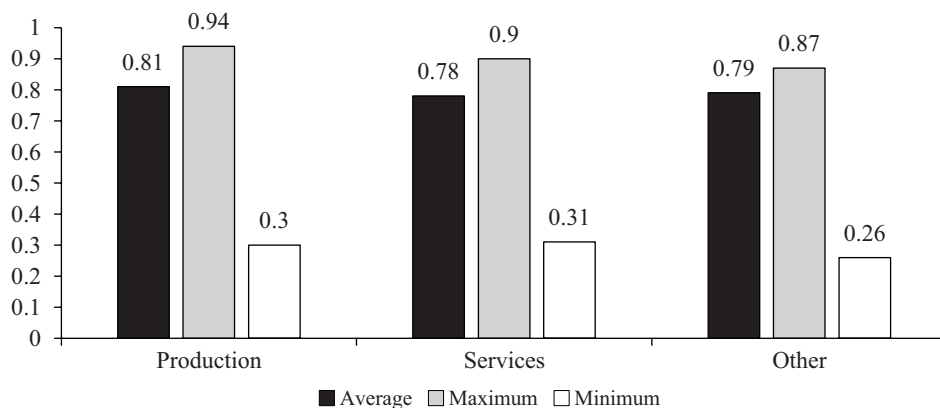
**Table 4.5. Activity ranking during the economic crisis—selected industries**

No.	PKD	Impact	No.	PKD	Impact
1	24.10	0.94	329	82.99	0.68
2	73.12	0.90	330	42.12	0.67
3	10.42	0.87	331	35.14	0.66
4	24.42	0.86	332	95.21	0.65
5	24.34	0.86	333	23.11	0.63
6	24.44	0.86	334	66.22	0.61
7	20.60	0.86	335	46.11	0.59
8	28.91	0.85	336	64.99	0.31
9	28.49	0.85	337	28.96	0.30
10	13.20	0.85	338	01.19	0.26

Full industry listing can be found in Appendix 6.

Source: Based on the PontInfo Gospodarka database (accessed 22.06.2016).

The industries most affected by the crisis were those manufacturing basic iron and steel as well as ferro-alloys. Overall, the manufacture of basic metals turned out to be severely impacted by the crisis (items 1, 4, 5, 6), which coincides with the results of analysis at group-level (Dzikowska et al., 2017). However, cast iron (24.51, see Appendix 6) for example is in 84th position with a score of 0.82, which suggests that the industry dealt with the crisis much better than the other industries in the same group. The growing of various non-perennial crops, the manufacture of plastics and rubber machinery, as well as various financial service activities (except insurance and pension funding n.e.c.) best handled the



**Chart 4.2. Statistics on industry types during the economic crisis**

unfavourable economic conditions. Chart 4.2 presents a short summary of the impact the crisis had on industries, broken down by their types.

As indicated in Chart 4.2, production industries were the most affected by the economic slowdown. The average ratio for these industries was 0.81, while service industries reported an average of 0.78, and other industries 0.79. These scores do not differ significantly which suggests that the crisis affected all types of activity in Poland. The influence of particular variables on the final ranking is presented in Table 4.6.

**Table 4.6. Impact of various factors on the ranking structure during the crisis**

Factor	Production industries	Service industries	Other industries
Number of employees	negative	positive	neutral
Revenues from total activities	positive	positive	positive
Net value of fixed assets	positive	negative	negative
Capital expenditures	very negative	very negative	very negative
Net financial performance	very negative	very negative	positive

Scale from very positive to very negative was assigned to groups on the basis of the equal span formula.

Depending on the industry type, the impact of individual factors on the industry performance was different (e.g. number of employees, net financial results). There was a considerable deterioration in the net financial results generated, and this concerned about 70% of production and service industries, causing respectively a drop from 15% to over 30% in relation to 2007. Other industries recorded a slight increase in this area which amounted to approximately 3%. Capital expenditures deteriorated with a drop—on average—of 18% among all industries.

The number of employees decreased by approximately 6% in production industries, increased by approximately 4% in service industries, and among other industries remained at a steady level. Although for service and other industries there was a noticeable negative impact regarding the net value of fixed assets, the impact of this variable was rather low. In the analysed period, revenues in the entire economy grew—in production industries by approximately 5%, in service industries by approximately 11%, and in other industries by as much as 17%.

Table 4.7 presents a ranking indicating which individual industries still struggled with the effects of the crisis in 2011. Comparing the ranking—during and after the crisis—enables a determination as to whether the industries that were severely hit by the slowdown were able to rebuild their pre-crisis position.

**Table 4.7. Ranking of activities during the time of prosperity—selected industries**

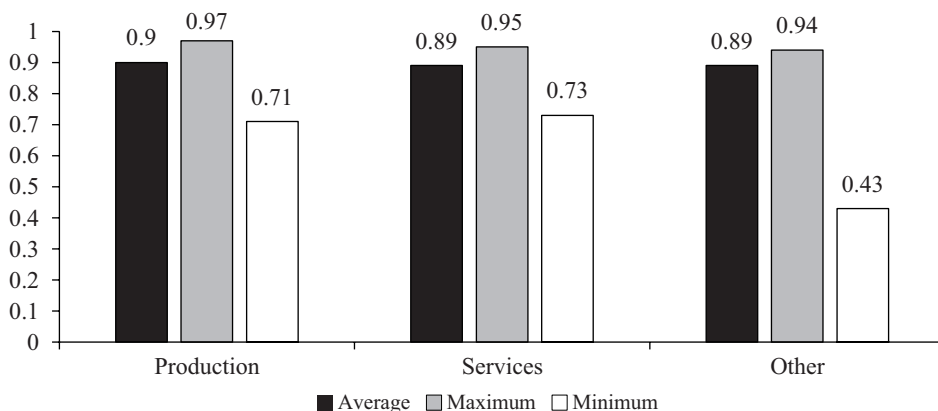
No.	PKD	Impact	No.	PKD	Impact
1	24.10	0.97	329	43.91	0.80
2	46.90	0.95	330	42.12	0.80
3	73.12	0.94	331	31.03	0.78
4	28.11	0.94	332	68.10	0.77
5	81.10	0.94	333	78.20	0.77
6	43.12	0.94	334	64.99	0.75
7	20.16	0.93	335	82.99	0.73
8	74.90	0.93	336	46.52	0.71
9	47.21	0.93	337	46.11	0.59
10	23.32	0.93	338	35.14	0.43

Full industry listing can be found in Appendix 7.

Source: Based on the PontInfo Gospodarka database (accessed 22.06.2016).

Analysing the scope of changes among Polish industries after the global crisis, a distinct variation can be noticed in their ability to recreate the pre-crisis performance. The manufacture of basic iron, steel and ferro-alloys; the non-specialised wholesale trade; as well as activities related to media representation were still struggling. Additionally, the situation deteriorated significantly for the manufacture of engines and turbines, except aircraft, vehicle and cycle engines (154th position during the crisis, 4th afterwards); and combined facilities support activities (192th position during the crisis, 5th afterwards). The greatest improvement was recorded in the other industry section of granting credit (23rd position during the crisis, 312th afterwards).

As Chart 4.3 shows, the average values for production, service and other industries after the global crisis were similar. This means that when it comes to the type of industry, there was no clear leader who was able to find a prescription



**Chart 4.3. Statistics on industry types during the time of prosperity**

to combat the effects of the crisis. Throughout the period, two of the analysed features deteriorated for production industries, and two for service industries (Table 4.8). In relation to 2007, in production industries, employment decreased by approximately 6%, but at the same time it increased by approximately 12% in services and approximately 4% in other industries. In production, increased employment concerned only about 40% of industries (63 industries), and a decrease in as many as 60% (98 industries). The employment trend among service industries was the reverse, and an employment growth was also noted for about 57% of other industries. Revenues grew in all sections, with growth of 29% for services, 26% for production, and more than 55% in other industries. The net value of fixed assets was positive for all industries; however, as in the case of previous indicators, the most significant improvement concerned other industries (an increase of approximately 90% compared to 2007). Financial results turned out to be negative for service (59 industries) and production (83 industries). A similar relationship occurred in the case of capital expenditures, where the decrease amounted to 13% and 18% respectively.

**Table 4.8. Factor impact on the ranking structure during the prosperity time**

Factor	Production industries	Service industries	Other industries
Number of employees	negative	positive	positive
Revenues from total activities	positive	positive	very positive
Net value of fixed assets	positive	positive	positive
Capital expenditures	negative	negative	neutral
Net financial performance	negative	negative	positive

Scale from very positive to very negative was assigned to groups on the basis of the equal span formula.

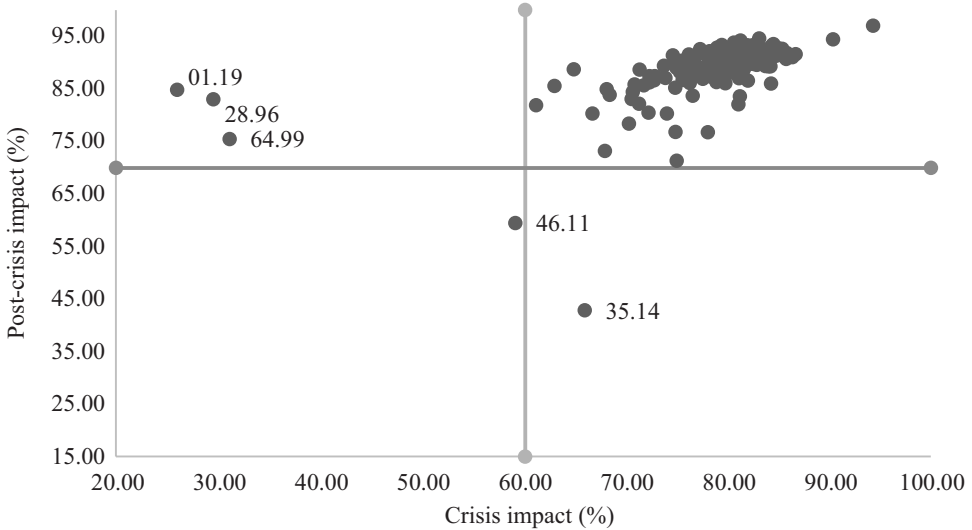
Similarly to the ranking of countries, an attempt to cross-reference the situation of industries during and after the economic crisis was made (Chart 4.4). However, it should be remembered that the analysed situation concerns Poland, a country in which the effects of the crisis—in comparison with other economies—were not the most visible. As can be easily observed, most industries struggled both during the crisis and shortly afterwards. It should be remembered that these are relative values and crafting a similar ranking for Europe might prove such conclusions to be premature. Hence, for the sake of a more appropriate analysis, it is worth focusing on the scores that stand out.

Five industries clearly stood out from the others. Agents involved in the sale of agricultural raw materials, live animals, textile raw materials, and semi-finished goods (46.11) performed relatively well during and after the crisis. Trade in electricity (35.14) achieved worse results in 2009, but managed to rebuild its standing quickly. What is more surprising and also interesting is the situation of three industries which, although initially not feeling the symptoms of economic slowdown, in subsequent years showed declines.

Other financial service activities—except insurance and pension funding n.e.c.—(64.99) showed significant decreases in the value of investments and the value of fixed assets. At the same time, the industry showed an increase both in the number of its members (about 5-fold) and the number of employees (about 7-fold). However, company ownership costs increased, in particular operating and financial costs, which undermined the financial situation of companies in the industry.

The manufacture of plastic and rubber machinery (28.96) was badly affected since all five factors deteriorated, in particular investments and the value of fixed assets. Although the industry grew in terms of the level of employment, revenues declined and net financial result worsened. However, the analysis can be misleading. Companies reported their peak results (revenues, profit, degree of internationalisation) exactly in the crisis period, i.e. 2009. This means unreliable or rather unexpected reference data.

The last of the industries considered—growing various non-perennial crops (01.19)—also reported troubles in all the aspects analysed. The largest decreases were recorded in financial performance (a 10-fold decrease) and the value of fixed assets (a 5-fold decrease). The industry is still in the stage of maturity, but the first symptoms of transition to the decline stage are already there—profitability decreases along with the number of industry members. The costs of maintaining core operations as well as operating and financial costs are also increasing. The number of companies with foreign capital decreased—in 2014 only one foreign investor achieved a positive financial result, while the other three that did not perform were planning to leave the industry. That eventually happened in 2015.



**Chart 4.4. Situation of industries during and after the global economic crisis (degree of impact in %)**

Items assigned to groups on the basis of the equal span formula.

## Summary

Although it is objectively assumed that Poland did not experience the effects of the economic crisis as much as other European countries did, a statement that the economy did not suffer at all would be a far-reaching distortion. In various spheres of economic life there were visible symptoms of the crisis, which also influenced the strategies applied by companies both in domestic and foreign markets. This situation also influenced the way various industries performed at the time. One of the stylised facts about business cycles is that there is an assumption a crisis affects all industries in the economy. In the light of the analysis conducted this statement can be considered true, although the extent to which turbulence has affected particular industries of the economy is different. Production industries suffered the most in Poland; however, the difference in relation to non-productive industries is relatively small. One also has to bear in mind that the industries' performance was also stable in reference to industries in other countries.

The fact that individual industries actually revealed signs of economic slowdown and that a return to pre-crisis performance levels did not in all cases proceed smoothly justifies proposing the following hypothesis: that the economic



situation in a country can determine the willingness of industries to participate in foreign ventures. Thus, Chapter Five partially concentrates on the potential effects the crisis might have caused to degree of industry internationalisation. This, in turn, can answer the question whether companies treat internationalisation process as an integral, strategic way of handling their business or as an *ad hoc* tool for gaining additional revenues.

- the industry life cycle is significant in determining the degree of industry outward internationalisation and exhibits a negative relation in both production and non-production industries,
- the industry type, the degree of industry inward internationalisation and the level of industry technological advancement are significant in determining the degree of industry outward internationalisation but exhibit a positive relation.

**Table 5.19. Results of hypotheses H1-H6 verification: summary**

Hypothesis	Factor statistically significant	Relationship direction
H1: The higher the level of industry transaction costs, the higher the degree of industry outward internationalisation	yes	negative
H2a: The industry life cycle phase is positively related to the degree of industry outward internationalisation in production industries	yes	negative
H2b: The industry life cycle phase is not related to the degree of industry outward internationalisation in non-production industries	yes	negative
H3: A higher degree of outward industry internationalisation appears in production rather than non-production industries	yes	positive
H4: The higher the degree of industry inward internationalisation, the higher the degree of industry outward internationalisation	yes	positive
H5: The more technologically advanced an industry, the higher the degree of industry outward internationalisation	yes	positive
H6: The more concentrated an industry, the higher the degree of industry outward internationalisation	yes	negative

## 5.5. Degree of industry internationalisation and level of transaction costs—the impact of economic stability

Following research based on the Delphi study, the final structure of the degree of industry internationalisation was decided upon. The measure can take values in the range of <0:1> where 0 stands for no international industry links and 1 stands for solely international operations. Appendix 5 provides a list of industries with their degree of internationalisation reference for the years 2007-2015.<sup>68</sup>

<sup>68</sup> The Appendix includes classes and groups which undergo no further subdivision. The results are presented only for industries for which at least one value of the indicator is quantifiable.

In order to verify the H7 hypothesis that *the degree of industry outward internationalisation was higher before and after the economic crisis rather than during its occurrence*, variance analysis was applied. The grouping factor was the time reflecting the economic conditions in the country. Five groups were selected and if any differences in mean values were observed, Tukey's honest significant difference test (HSD) for equal sample sizes was used. This test is meant to compare all possible pairs of means and at the same time allows for the creation of homogeneous groups (Stanisz, 2006, p. 273). The results of the analysis are presented in Table 5.20.

**Table 5.20. Analysis of variance**

	SS effect	df effect	MS effect	SS error	df error	MS error	F	p
Degree of industry outward internationalisation	0.122	4	0.030	76.034	1215	0.0626	0.4877	0.7448

The variance analysis indicates that there are no grounds for rejecting the hypothesis of equal degree of internationalisation means for the years 2007, 2009, 2011, 2013 and 2015. The descriptive statistics for all five time points are presented in Table 5.21.

**Table 5.21. Descriptive statistics for the years 2007, 2009, 2011, 2013 and 2015**

	Mean	Number of valid items	Standard deviation
2007	0.32	244	0.24
2009	0.32	244	0.24
2011	0.33	244	0.25
2013	0.34	244	0.26
2015	0.34	244	0.25
Total	0.33	1220	0.25

The data does not point to significant differences in means, which suggests that the overall economic conditions do not directly influence the international operations of industries. Thus, no support is found for hypothesis H7. Since no significant differences in mean values are found, there are no indications to run a *post hoc* Tukey test.

To verify hypothesis H8 (*during the economic crisis the industry transaction costs were higher than before and after its occurrence*) a similar procedure was run on the data concerning industry transaction costs. Here the results of the

variance analysis confirm significant differences among the five time reference points (Table 5.22).

**Table 5.22. Analysis of variance**

	SS effect	df effect	MS effect	SS error	df error	MS error	F	p
Level of industry transaction costs	28.15	4	7.04	1045.60	1215	0.86	8.18	0.00

To establish at which time points (before, during or after the economic crisis) the level of transaction costs were the highest, a *post hoc* Tukey test was run. The results of this test are presented in Table 5.23.

**Table 5.23. The HSD Tukey test: results**

	{1} M = 21.32	{2} M = 19.04	{3} M = 19.67	{4} M = 18.79	{5} M = 19.64
1 {1}		0.006398*	0.000266*	0.000018*	0.000223*
2 {2}	0.006398*		0.924947	0.335294	0.910813
3 {3}	0.000266*	0.924947		0.832816	0.999999
4 {4}	0.000018*	0.335294	0.832816		0.853102
5 {5}	0.000223*	0.910813	0.999999	0.853102	

\* significant differences.

The results of the HSD test confirm that grounds exist for rejecting the hypothesis of equal means. However, no support can be found for the prediction that the highest level of transaction costs was during the crisis period. A significantly higher level of transaction costs appeared only in 2007, in the time preceding the economic slowdown. This could be due to the fact that during the crisis companies sought to minimise expenses and non-production costs—including transaction costs—which were a desirable source of savings.

## 5.6. Changes in the degree of internationalisation of Polish industries—a qualitative overview

In the period between 2007 and 2015, as quantitative research proves, very few Polish industries underwent radical changes in terms of their degree of internationalisation. However, at the same time a more in-depth look shows that sev-

eral industries could be singled out which profoundly changed their international orientation. The following subchapters briefly discuss selected characteristics of two industries in cases where the highest increase and decrease in internationalisation was observed. This qualitative overview is intended to highlight the circumstances that led to these changes.

### 5.6.1. Industry with the highest increase in its degree of internationalisation between 2007 and 2015

The industry with the largest increase in its degree of outward internationalisation between 2007 and 2015 in Poland turned out to be research and experimental development in the social sciences and humanities (72.20 in PKD 2007). It includes research and development work in the social sciences, humanities or interdisciplinary fields, but where the first two categories dominate. In the industry there are 428 registered entities in Poland, however almost all employ less than 10 people (Table 5.24).

**Table 5.24. Research and experimental development in the social sciences and humanities: industry characteristics 2007-2015**

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Number of registered entities <sup>a</sup>	3	3	4	3	3	5	6	6	7
Number of bankruptcy or insolvency proceedings	2	n/a	0	2	1	1	1	0	2
Employment level (persons)	63	n/a	65	70	98	185	242	274	301

<sup>a</sup> – entities employing more than 9 persons.

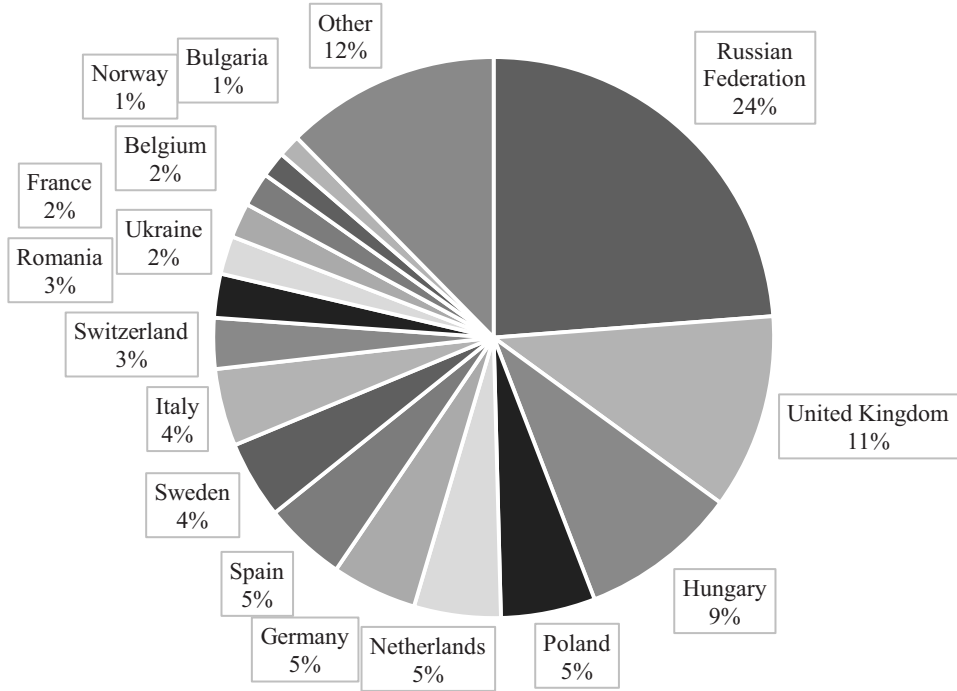
n/a – data not available.

Source: Based on the PontInfo Gospodarka database (accessed 3.12.2017).

The industry experienced high growth dynamics, manifested not in the number of registered entities, but in the number of employees. In 2007, only 63 employees were employed in the industry, whilst in 2015 the number exceeded 300 people. The revenue growth rate was also impressive—from less than PLN 1 mln in 2007 to over PLN 87 mln in 2015. Also, the net profit rate increased from approximately 1% in 2007 to 13% in 2013 and remained stable thereafter. The economic crisis did not seem to affect the operations of this industry in any visible way.

Poland is the fourth country in terms of the number of entities registered within the industry in Europe. Poland is ahead of countries such as Russia, the

United Kingdom and Hungary (Chart 5.2). The size structure is dominated by small companies with an 87% share, while medium-size companies account for 12%, and large ones for only 1%.



**Chart 5.2. Research and experimental development in the social sciences and humanities in Europe**

The results do not add to 100% due to rounding off the values.

Source: Based on the Bureau van Dijk (n.d.) (accessed 3.12.2017).

Along with the dynamic development of the industry, its orientation towards foreign markets is also noticeable. The synthetic measure for the degree of outward internationalisation in 2007 amounted to 0, which in practice meant that this industry was focused only on the domestic market. Despite the fact that in 2009, i.e. during the economic crisis, this industry recorded an increase in the measure, in subsequent years (2010 and 2011) the degree fell again to a level of 0. Only since 2012 has the measure started to increase strongly. The main component contributing to the level achieved in 2015 (score of 0.47) were revenues generated in foreign markets (Table 5.25).

Unfortunately, in terms of geographical coverage, there is no information as to which countries were the preferred directions for companies' foreign expansion. Hence, it is difficult to determine whether an increase in the intensity of