PROSPECTS AND CHALLENGES TO THE DEVELOPMENT OF BUSINESSES IN THE WORLD ECONOMY

Edited by
Sławomir Bukowski and Marzanna Lament

CeDeWu

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Introduction

The monograph presents the results of research conducted in Poland and Greece, in such academic centres as: University of Lodz, Kazimierz Pulaski University of Technology and Humanities in Radom, International Hellenic University in Thessaloniki, University of Ioannina and Hellenic Open University. The originality of the monograph is also evidenced by its interdisciplinarity – it combines issues related to the enterprise sector and financial institutions, indicating opportunities for and threats to their development.

The book consists of three main parts divided into thirteen chapters. The first part of the book is titled *The macroeconomic factors of businesses development* and consists of three chapters.

Chapter One analyses the conditions for implementing a capital market union in the light of the realities of the external environment and the European Union itself. The contribution of the chapter is a new look at the issue of integration and development of capital markets in the European Union in the context of the formulation of the "impossible triangle" paradigm, referring to the triad of goals regarding the reconstruction of the European capital market.

Chapter Two presents the importance of gold as a safe haven asset in the international monetary system. It is widely believed that gold is a safe haven asset for investors. The conclusions from the analysis show that gold functions as a safe haven in the short run, but not always in the long run. Additionally, its status depends on the nature of a crisis it protects against.

Chapter Three compares two taxes which affect corporations, especially financial institutions. The first is corporate income tax and the other concerns only financial institutions and is called the asset tax. The comparison uses the 4 sector open economy model by A. Harberger. The aim of the chapter is to argue in support of the theorem that not only income taxes but also asset taxes disturb business activity. Income taxes have potentially different results to the special tax imposed on assets. Data are surveyed concerning the rates

of corporate income tax and special taxes on assets of insurance companies in 2016-2019 in Poland and OECD countries.

The second part of the book is titled *The development of financial institutions* and consists of five chapters.

Chapter Four is to examine the relationship between economic growth measured with GDP (Gross Domestic Product) per capita and PPP (Purchasing Power Parity), a measure of social welfare and the propensity to use traditional forms of banking services as well as via mobile and internet infrastructure in selected countries.

Chapter Five aims at showing the impact of an extreme dividend policy exercised by a small sized Greek bank on its prospects of development.

Chapter Six indicates changes in the NPL (Non-Performing Loans) ratio of non-financial corporations and its main determinants in the Polish banking sector for the period 2009-2020. The NPL ratio is a variable explained in the model with three groups of explanatory variables representing market factors, the financial situation of corporations, and the capital requirements (tightening of prudential standards) of banks.

Chapter Seven examines the relationship between shares in the insurance market and the financial results of insurance companies. It is assumed that the structure of the insurance market influences the financial efficiency of insurance companies. In order to verify the adopted assumptions, a panel model is constructed. The ROE (Return On Equity) ratio is adopted as the dependent variable (explained feature) measuring the financial efficiency of insurance companies. The shares of insurance companies in the insurance market, measured with gross written premium, is considered an explanatory variable. The research covers non-life insurance companies from the Polish insurance market operating in the years 2004-2019.

Chapter Eight discusses the issues of appropriate selection and use of information in the decision-making process of insurance companies. In particular, the phenomenon of information asymmetry and its manifestations in the insurance market are described.

The third part of the book is titled *The development of enterprises* and consists of five chapters.

Chapter Nine examines the impact of business activities (sector) on the selection of instruments of enterprise competing. The concept and nature of competitiveness are discussed and instruments of competing used to gain competitive advantage in the market are described. The chapter presents

the author's study of a representative group of large enterprises that can be generalised to the overall population. The study was carried out in March 2020 on a sample of 253 enterprises by means of CATI (Computer-Assisted Telephone Interview).

Chapter Ten presents the measure of the orchestrator's ability to create value added meeting the requirements of an aggregated long-term assessment of GBN (Global Business Networks) competitiveness (since a GBN is considered a complex structure). A complex assessment of global business systems/networks competitiveness requires that the parameters reflecting the influence of all capital subsystems on its ability to create value added be considered. Ultimately, the author is focused on an approach based on MDA (Multidimensional Statistical Analysis). A Synthetic Indicator of Creation of Added Value (SICAV) is proposed. It is based on an aggregation of quantitative parameters that constitute the image of all important components and is meant for GBN orchestrators (the main corporations of global business systems).

Chapter Eleven focuses on the question of benefits from the use of integrated IT systems in enterprises. It aims to identify benefits to small and medium-sized enterprises that implement IT management systems. Results of the author's CAWI (Computer-Assisted Web Interview) survey are presented of 213 SME enterprises (Small and Medium-size Enterprises) in the Radom subregion.

Chapter Twelve aims to identify and analyse the key factors of start-up success and failure in Poland. To this end, the definitions and development stages of start-ups are analysed and their characteristics identified. The conditions of their development are discussed and the key factors of success are designated. The causes of market failure of these firms are presented as well.

Chapter Thirteen deals with the new forms of accommodation chosen by travellers in recent years, with the main point of reference being the case of Airbnb. The researchers focus not only on the economic size and impact that Airbnb has had on traditional hotel units, but also on the changes it has caused to "the travel culture" and on socio-political issues.

This monograph may be of considerable interest to scholars and business practitioners concerned with the problems of development of financial institutions and enterprises.

Sławomir Bukowski
Marzanna Lament

PART I

THE MACROECONOMIC FACTORS OF BUSINESSES DEVELOPMENT

Małgorzata Janicka*

Chapter 1

"The impossible triangle" on the European capital market

Introduction

The economic and financial crisis that erupted in the global economy in 2008 particularly affected the European Union, including the euro area. It not only revealed the numerous imperfections of the Eurozone resulting to a significant degree from the mechanisms of its operation, but also its key weakness – the discretionary approach to the Eurozone of the member states themselves. Depending on circumstances, the euro area is perceived by these countries as one organism (as a result, for example, intra-zone flows cease to be foreign flows, which is reflected in statistical data, or rather their lack), or as a union of independent countries whose economic situation should not be associated with participation in the zone, but recognised as a consequence of their national policy. Such a dual and divergent approach undermines mutual trust and solidarity among the member countries of the zone.

This observation was confirmed in the course of the crisis in question – in its first phase, the responsibility for the emergence of the crisis was transferred to the member states. Only in the next phase, when the situation became dramatic and threatened the disintegration of the zone was joint action taken to restore

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the lost economic stability of some member countries. This action, however, was not a result of an intra-zone solidarity, but of the fears of countries (which had been immune from the crisis) that a deepening economic collapse of some of the zone's countries would contribute to its collapse and the loss of confidence of international financial markets in the euro.

As a remedy to the negative consequences of the crisis for the entire EU and the euro area in particular, various ideas have emerged to strengthen economic integration, including the construction of two unions: banking and capital markets. While the banking union has become a necessity as a result of inefficient financial supervision mechanisms over credit institutions conducting cross-border activities, the capital markets union, implemented practically in parallel with the banking union, has given the wrong impression of a transnational character of this initiative. The second important difference between these two concepts is as follows: the banking union applies only to the euro area countries (others may join it, but they do not have to), the capital market union covers all the EU member states.

The purpose of the chapter is to analyse the conditions for implementing the capital markets union in the realities of the external environment and the European Union as such. The contribution is a new look at the issue of integration and development of capital markets in the European Union in the context of the "impossible triangle" paradigm referring to the triad of goals regarding the reconstruction of the European capital market. The adopted research methods are qualitative in nature – a review of literature, a critical analysis of source materials, and the development of a new theoretical approach.

1.1. Literature review

In the literature on the construction of the capital markets union, three groups can be distinguished: the EU studies and documents/external documents prepared for the EU, independent external expert studies, and articles of a scientific and journalistic nature. The first of these groups includes primarily: *Action Plan on Building a Capital Markets Union* (2015a); Commission Staff Working Document *Economic Analysis Accompanying the Document Action Plan on Building a Capital Markets Union* (2015b); European Financial Stability and Integration Review (EFSIR): *A Focus on Capital Markets*

Union (2016); Final Communication from the Commission *Capital Markets Union – Accelerating Reform* (2016); *Mid-Term Review of the Capital Markets Union Action Plan* (2017); Economic Analysis Accompanying the document *Mid-Term Review of the Capital Markets Union Action Plan* (2017); *A new vision for Europe's capital markets* Interim Report of the High Level Forum on the Capital Markets Union (2020). These documents contain, above all, arguments for the construction of the CMU, its goals and tasks, a catalogue of proposed actions necessary to take in the construction process, etc. At the same time, it is worth emphasising that the documents developed within the EU focus on justifying the CMU, the potential risks associated with it are hardly mentioned. This is therefore a subjective representation of the problem.

The other group, external expert studies, includes reports and working materials prepared by various institutions operating in the official and private sphere (independent of the EU). Their goal is not to convince a wide audience of the need to build a CMU, but to discuss the possible benefits and risks of its implementation. In this case, studies on the entire EU capital market dominate, for example: *Principles for a European Capital…* (2015); House of Lords, European Union Committee (2015); G. Claeys et al. (2018); A.V. Bhatia et al. (2019); K. Lannoo and A. Thomadakis (2019); *Capital Markets Union...* (2019); I.G. Raposo and A. Lehmann (2019); *The FESE Blueprint: Capital Markets Union…* (2020), etc. There are also studies taking into account the perspective of individual domestic markets, which may include, for example, *The Position of the Warsaw Stock Exchange* (2015), whose authors point to the potential threats associated with the construction of a capital markets union for countries with relatively small, developing capital markets.

The articles and studies of strictly scientific nature are currently relatively few due to the fact that the CMU is only in the first phase of construction. Thus, the resulting publications focus primarily on the potential costs and benefits of creating the CMU and/or present the results of analyses showing potential changes that may occur as a result of its creation on a micro- and macroeconomic scale; for example, E. Engelen (2015); F.T. Boldeanu and I. Tache (2016); T.C. Barbu and A.I. Străchinaru (2016); S. Petranov (2017); J. Friedrich and M. Thiemann (2017); M. Janicka (2018); S. Micossi (2019); M. Janicka (2019).

1.2. The genesis of the capital market union in the European Union

The idea of reconstructing the European financial system, including a deepening of the EU capital markets, is far from new. It emerged earlier as a key part of the FSAP in 1999 (*Financial Services…*, 1999), along with the third stage of building of the Economic and Monetary Union (Delors, 1989) and with the creation of the euro zone. At that time, it was believed that benefits of having one currency would be smaller than expected when there was no truly integrated financial market (European Commission, 1990; *Financial Services…*, 1999). As legal regulations concerning the European banking sector became significantly harmonised, the FSAP's point of gravity shifted to the capital market (*Financial Services…*, 2004). The implementation of the FSAP, especially its next stage originally designed to be completed in 2010 (*Green Paper…*, 2005; *White Paper…*, 2005), was interrupted by the outbreak of the economic and financial crisis in the EU. The inability of the EU economy to overcome the negative consequences of the crisis, including no signs of enhancing growth dynamics in the EU Member States (*Euro Area Policies*, 2015), has inspired the European Commission to develop the idea of building the Capital Markets Union (European Commission 2015a, p. 2015b), a stepping stone for the reconstruction of the European financial system – from the bank-oriented to a market-oriented model which dominates in the USA. The US market is the point of reference for changes taking place in the European system, based also on the belief of Europeans that the success of the American economy is largely due to its financing via the capital market. Already back in 1998, one could read that "access to a deep and liquid capital market is one of the biggest competitive advantages of the United States" (*Risk capital markets…* 1999, p. 20). In the Green Paper *Building a Capital Markets Union*, again a reference is made to the US market: "In the US, medium-sized companies, the engines of growth in many countries, receive five times more funding from capital markets than they do in the EU. […] etc." (European Commission 2015a, p. 2). A comparison of key indicators characterising the EU and US capital markets is presented in Table 1.1.

The CMU action plan has identified one general area of intervention on supervision and capital market capacity building and six specific areas of intervention according to the developing phases of the funding escalator and investment, which are defined as follows (*Mid-term Review…* 2017a, p. 12):

1. Strengthening supervision and building capital markets capacity in the EU.
2. Financing for innovation, start-ups and unlisted companies.
3. Making easier for firms to raise money on public markets.
4. Strengthening banking capacity to support the economy.
5. Investing for long-term, infrastructure and sustainable investments,
6. Fostering retail investment.
7. Facilitating cross-border investments.

Table 1.1. Capital markets key statistics, the EU and the US, 2018 (%)

Market	Specification	Europe	EU-27	US
Primary market	Equity funding (% of GDP)	68	50	156
	Corporate debt funding (% of GDP)	77	72	114
Secondary markets	Equity turnover velocity	112	155	161
	Equity turnover (% of GDP)	76	78	252
	Corporate debt turnover velocity	25	22	80
	Corporate debt turnover (% of GDP)	19	16	91

Source: *The FESE Blueprint: Capital Markets Union…* (2019), p. 15.

On a pan-European scale, the CMU action plan, therefore, promotes the following operational objectives (*Mid-term Review…* 2017a, p. 12): greater data availability and comparability on a cross-border basis (for price discovery); more accessibility to markets and products (with fair access); and a stronger enforcement of rules and procedures (to achieve greater legal certainty and investor protection). According to a report prepared by the European Parliamentary Research Service, *Europe's two trillion euro…* (2019, p. 4), potential economic gains to the European economy (EU-28) of over 2200 billion euro could be achieved by the end of the ten-year period from 2019 to 2029, if policies advocated by the Parliament in the 50 fields studied here were to be adopted by the Union's institutions and fully implemented. Among them, building more integrated capital markets could bring about 137 billion euro per year.

The free movement of capital has been implemented in the EU practically since the creation of the EEC. Ultimately, this process was to be completed with the implementation of FSAP. Different initiatives in the field of deepening the integration of capital markets have not been successful, so it can be assumed that the problem is much deeper and does not result from the lack of determination of the EU. The event, which was seen as the main catalyst for accelerating the integration process (i.e., the construction of an economic and monetary union and the creation of a single currency area with a single

monetary policy conducted by the ECB), has given less than expected. It is also worth emphasising that the de jure freedom of capital movement was implemented as early as 1994, when Greece was the last EU country to remove the existing legal restrictions. The problem is not the formal restrictions on the capital flows, but rather the lack of successful de facto integration, or more precisely – of positive integration. This kind of integration is associated with the creation of new legal regulations that enable the emergence of one pan-European capital market, operating on the same principles and offering the same opportunities to entities from all member countries.

As already mentioned, a simple comparison of the European and American financial markets is not justified. The creation of a single currency area, i.e. the euro area, in which a single monetary policy is pursued, does not place an equality sign between the formal and legal framework in which the US and euro area financial markets operate. The US is a federal state with a strong federal authority, national fiscal policy and a national (as opposed to the EU) budget with redistributive functions. In the EU, there is currently no question of creating a political union, on the contrary, bottom-up processes are increasing, contesting the legitimacy of integration. The difference between the US and the EU (or the Eurozone) becomes particularly apparent in the face of the crisis and the possible tools to respond to this crisis – the US responds as a single structure with a centre of power, while the Eurozone in the face of the crisis becomes a group of individual countries, each of which tries to secure its own interest. Separate actions taken at the EU and the euro area levels also create tensions among member states.

The EU extensively emphasises the benefits of the free movement of capital, the threats are far fewer. These benefits are usually derived from the neoclassical theory, according to which capital flows to countries where investors can potentially achieve the highest possible rate of return. Owing to these flows, the process of optimal allocation of capital takes place, which is beneficial from the point of view of investors and the EU as a whole. However, such capital flows can be detrimental to countries with capital outflows, losing development potential, jobs, and tax revenues. Following the reallocation of capital between countries in the euro area or, more broadly, in the EU, peripheral areas and areas of dynamic economic development are beginning to develop.

The US stock exchanges are part of the domestic market. The capital that flows through them serves the development of the country, not only of some states. Interstate redistribution of funds in the US economy takes place at a central level from the national budget. Flows between states that negatively

affect their economic situation are compensated by, among others, the transfer of funds at the central level from the national budget, from "surplus" to "deficit" (*America's fiscal union*... 2011). The country's internal balance is the primary goal, achieved through the implementation of national economic policy, the economic interest of states is secondary to the interest of the country per se.

There is no such mechanism in the EU (and hardly possible to introduce in the near future – countries are opposed to a transnational fiscal policy), the potential outflow of capital from peripheral member countries to the EU financial centres will not be balanced by an inflow of funds from the European budget. The primary goal in the EU is therefore the economic interest of individual member states, not the EU as a whole.

This situation creates not only a discomfort of the developing member countries in the EU, but also a sense of danger regarding its long-term consequences. The creation of the capital markets union may thus be justified from a European point of view and unjustified from a national point of view. These interests may diverge, which has specific consequences for the implementation of the EU solutions at national level.

The course of the crisis proved that the creation of the Eurozone and the introduction of a single currency did not give birth to a sense of community and solidarity within the Eurozone, like in the US. As a result of the crisis, the attitudes promoting national interest over the Community interest resurged in the member states. In consequence, the member states are cautiously perceiving subsequent initiatives promoting the deepening of integration of financial markets. The EU does not take into account that member states may not be interested in implementing CMU. Less developed economies fear the marginalisation of their capital markets and the outflow of investors, as indicated in the Warsaw Stock Exchange's position on CMU (*Position of the Warsaw Stock Exchange*...). Problems with the construction of CMU have also been outlined in the PwC study (PwC 2015). Considering the fact that even before the outbreak of the crisis the deepening of capital market integration in the EU countries went very slowly, it is highly possible that there are other reasons for this situation which are not a simple consequence of the crisis. The discussion regarding the determinants of the difference in the situation of the European and American markets is the subject of the next section.

1.3. The determinants of capital market integration problems in the EU

A comparative analysis of the US and the EU financial markets usually leads to the conclusion that one of the main problems of the European economy is the insufficient share of the capital market in the transmission of investment funds. As data shows, the banking sector is the dominant segment of the financial market in Europe. Enterprises seeking funds for development prefer using a bank loan (Table 1.2), entities with free financial resources prefer bank deposits than direct or indirect (by institutional investors) investment in the capital market (Table 1.3).

Table 1.2. The financial liabilities of non-financial corporations in the EU and the US (end-2018, % of total financial liabilities)

Financial liabilities	EU-28	US
Shares and other equity	53.0	55.7
Loans	29.6	7.6
Trade credit and advances	8.8	13.8
Debt securities	4.0	13.5
Other liabilities	4.6	9.4

Source: Lannoo, K. and A. Thomadakis (2019), *Rebranding Capital Markets Union: A Market Finance Action Plan*, CEPS-ECMI Task Force Report, Centre for European Policy Studies, p. 21 (based on ECB Statistic Bulletin, FRED Economic Data, Eurostat).

Table 1.3. The financial assets of households in the EU-28 and the US (end-2017, % of total financial assets)

Financial assets	EU-28	US
Currency and deposits	30.0	12.3
Insurance and pension schemes	38.0	32.5
Shares and other equity	19.0	35.6
Mutual funds	8.0	12.0
Debt securities	2.0	5.1
Other financial assets	3.0	2.5

Notes: The category "other financial assets" for the EU includes: other accounts receivable, financial derivatives and loans; for the US: other accounts receivable and loans.

Source: Lannoo, K. and A. Thomadakis (2019), *Rebranding Capital Markets Union: A Market Finance Action Plan*, CEPS-ECMI Task Force Report, Centre for European Policy Studies, p. 13 (based on Eurostat and OECD).

The differences in the financial systems of the EU and the US have been present for years. A key question arises in this situation, is striving to change the model of the financial system in European countries really justified? As a majority of available studies present arguments for deepening the integration of the capital markets and changing the model of the financial system (see section 1), there is no need to quote them again. However, it is worth trying to identify potential reasons for the lack of success of the measures taken in this area so far.

Europe and the United States are perceived as areas with different economic and social models. European countries prefer the social market economy model, the USA – a pure free market model. This approach is reflected, among others, in the diversity of the operating financial system models. Europeans prefer the banking sector – lower profit, but also lower investment risk; Americans prefer the capital market – potentially higher returns with a greater risk. Convincing Europeans to commit their savings to the capital market more broadly signals the expectation that they will change their attitude towards risk acceptance. The EU Commission is one-sided in its opinion on the capital market advantages – investing on the capital market should in the long run bring a higher rate of return than bank deposits. However, first of all, only potentially, as evidenced by collapse on the stock markets caused by various factors (in February 2020, due to the coronavirus, the main US stock indices, Dow Jones and S&P 500, recorded the largest weekly (February 24-28.02) declines since October 2008, the beginning of the last major global economic crisis). Secondly, investors must accept a higher level of risk associated with capital market investments. Bank deposits and securities are not substitutable. Capital raising companies are also in a new situation, e.g., taking a bank loan does not require disclosing information about an enterprise.

In parallel with the reorientation of the European financial system, a second change is being implemented, i.e., deepening the integration of the fragmented European capital markets – CMU. As previously indicated, earlier plans to create a pan-European capital market have not been successful. It is worth considering whether this concept is equally attractive for EU member states as it is for the EU itself. However, this discrepancy, which seems illogical (member states are part of the EU), is unfortunately an important component of the functioning of the EU. The problem with deepening the integration is largely a result of the fact that plans in this area are prepared by the European Commission, which represents a supranational position. The EU member

states pursue national policies and focus on national interests. In this situation, some solutions that do not comply with these interests are not approved.

As indicated in the *Interim Report of the High Level Forum on the Capital Markets Union* (2020, p. 4), "finally, completing the Capital Markets Union requires significant political will and courage to change that which has existed for decades. This is perhaps the most important reason why the Capital Markets Union has not been completed yet. Up until now, Member States have expressed strong support in principle for the Capital Markets Union but have shown limited appetite to translate this into actual support during technical negotiations. In many cases, protecting Member States' national rules and structures has prevailed over the objective of improving capital markets' efficiency and integration."

The opinion of the Warsaw Stock Exchange (Poland) towards CMU creation is critical. An important argument is the fear of an outflow of foreign and Polish capital to the markets of countries whose stock exchanges are the largest (in terms of capitalisation and turnover), the most competitive (in terms of costs and quality of transaction services), and best developed (e.g., due to the technological solutions used). Until recently, stock exchanges were the central entities of domestic capital markets and brokered the flow of funds between domestic entities. With the start of the second wave of globalisation of financial markets and the processes of their liberalisation in the 1980s, the lifting of barriers to cross-border capital flows has significantly changed the status quo. Foreign capital gained freedom of access to domestic markets, while domestic capital could float to foreign markets. For capital-poor developing countries, the inflow of capital was beneficial, as it was for investors from capital-rich regions of the world.

The free movement of capital is also a threat to some countries – it is not just about the effect of contagion, which is, among others, experienced by stock markets in recent years. The ongoing process of consolidation of stock exchanges, which is one of the consequences of the financial liberalisation, has led to the development of leading exchanges in the global economy on which the bulk of global trading is focused. Investors with high capital strength invest primarily on these stock exchanges; as a result, small domestic stock exchanges lose development prospects. They also become heavily dependent on the decisions/sentiment of foreign investors who, by investing relatively small capitals, are able to create a bull market and bear market, regardless of the economic situation of a country (the situation on the Warsaw Stock Exchange in recent years is a perfect example). The concentration of capital in several

regions of the EU may lead to the marginalisation of small domestic stock exchanges. They will become the EU's peripheral markets, with no chance to change their position. A positive situation from the point of view of the whole European market – the concentration of capital on leading exchanges – may be unfavorable for its individual components.

These concerns seem to be confirmed by the data contained in Tables 4 and 5. In January 2020, four exchanges dominated (not only) on the European market both in terms of capitalisation and turnover value: Euronext, Deutsche Börse, SIX Swiss Exchange, and NASDAQ Nordics & Baltics. Centres attracting financial capital have already developed, this trend can only intensify. This is a real threat to small stock markets, which are in a difficult situation.

Table 1.4. The market capitalisation of the European stock exchanges (without the LSE), all market segments, domestic equity, January 2020 (million euro, %)

Exchange	Value at Month End (EUR m)	% Share in Total Capitalisation
Athens Exchange	47 145.52	0.45
BME (Spanish Exchanges)	700 949.32	6.70
Bucharest Stock Exchange	23 133.66	0.22
Budapest Stock Exchange	26 824.19	2.57
Bulgarian Stock Exchange	14 282.20	1.37
CEESEG – Prague	23 022.63	2.20
CEESEG – Vienna	115 620.45	1.11
Cyprus Stock Exchange	3 917.00	0.04
Deutsche Börse	**1 834 197.26**	**17.54**
Euronext	**4 377 562.00**	**41.87**
Luxembourg Stock Exchange	36 085.66	0.35
Malta Stock Exchange	4 725.13	0.05
NASDAQ Nordics & Baltics	**1 447 789.30**	**13.85**
SIX Swiss Exchange	**1 647 122.11**	**15.76**
Warsaw Stock Exchange	131 703.19	1.26
Zagreb Stock Exchange	20 383.45	1.95
TOTAL	10 454 463.07	-

Source: The author's own elaboration, the Federation of European Securities Exchanges, https://fese.eu/statistics/ (access: 10.03.2020).

Table 1.5. Domestic equity trading on the European stock exchanges (without the LSE), January 2020 (million euro, %)

Exchange	Trading days	Trades	Turnover (EURm)	% Share in Total Turnover
Athens Exchange	21	548 872	1 138.8	2.50
BME (Spanish Exchanges)	22	3 299 148	34 788.2	7.66
Boerse Stuttgart	22	197 731	1 206.3	2.66
Bucharest Stock Exchange	20	45 548	189.0	0.04
Budapest Stock Exchange	22	129 730	749.6	1.65
Bulgarian Stock Exchange	22	4 238	12.2	0.00
CEESEG – Prague	22	35 101	219.4	0.05
CEESEG – Vienna	22	351 187	2 228.3	4.90
Cyprus Stock Exchange	21	2 987	4.1	0.00
Deutsche Börse	**22**	**9 892 889**	**108 615.0**	**23.91**
Euronext	**22**	**21 836 808**	**163 171.0**	**35.93**
Luxembourg Stock Exchange	22	622	3.9	0.00
Malta Stock Exchange	21	801	6.5	0.00
NASDAQ Nordics & Baltics	**22**	**13 613 744**	**59 211.0**	**13.04**
SIX Swiss Exchange	**21**	**5 435 069**	**78 311.0**	**17.24**
Warsaw Stock Exchange	21	1 801 887	4 303.6	0.95
Zagreb Stock Exchange	21	7 608	22.3	0.01
TOTAL	-	57 203 970	454 180.2	-

Source: The author's own elaboration, the Federation of European Securities Exchanges, https://fese.eu/statistics/ (access: 10.03.2020).

As the FESE experts indicate, in the CEE region, the average stock market capitalisation accounts for less than 20% of GDP (approximately) in comparison to an average of 75% of GDP in the EU. A group of the FESE experts has identified and analysed the main challenges faced by these markets as follows (*The FESE Blueprint: Capital Markets Union*… 2019, p. 30):

- Lack of proportionality and resources,
- Lack of an equity culture,
- Lack of attractive stocks (few top performers, etc.) paired with a lack of harmonisation of investment rules,
- Lack of quality capital, especially related to innovation and intangible assets (research, skilled workforce, financial education, advisory services, etc.) – markets are dominated by SMEs without an adequate ecosystem to cater for their needs, especially from the investors' perspective,
- Lack of post-trade infrastructure,

- Lack of private pension schemes and missing capital market orientation,
- Low weighting market in international portfolios due to local market classification results, lack of research coverage and of trust in the local legal framework.

The development of these smaller markets will contribute towards the strengthening of European competitiveness on a global level, but one should remember that reducing the distance between central and peripheral exchanges will be very difficult, if at all possible.

A third parallel initiative is the inclusion of sustainable finance in the construction of the CMU. This idea was discussed extensively in reports prepared by the High-Level Expert Group on Sustainable Finance (*Interim Report* 2017, *Final Report* 2018); based on their conclusions, the *Action Plan: Financing Sustainable…* (2018) was introduced. While most of its provisions relate to an increase in the volume of financing for low-carbon projects and focus on environmental issues, some refer to the characteristics of the capital market per se. This is the short-termism phenomenon: the investment decisions do not take into account the long-term perspective of a given venture and focus on short-term profits of a speculative nature.

Although this postulate is justified in its essence – changing the way investors make decisions and moving from a short-term to a long-term perspective, it is not compatible with the basic rules of capital market. An immanent feature of this market is a short-term speculative activity (generating liquidity), as well as the domination of a relatively short-term investment perspective among investors (from their point of view, the period of over 4 years is already long, see ESMA Report 2019). It is worth emphasising that such attitudes dominate the American capital market, to which the European market aspires. No one in the US would take the initiative to fight short-termism.

It is worth quoting the most puzzling excerpt from the *Action Plan: Financing Sustainable…*: "Despite the efforts made by several European companies, undue short-term market pressures may make it difficult to lengthen the time horizon in corporate decision-making. Corporate managers may become overly focused on short-term financial performance and disregard opportunities and risks stemming from environmental and social sustainability considerations. As a consequence, the interactions between capital market pressures and corporate incentives may lead to unnecessary exposure in the

long-term to sustainability risks. The Commission will engage with all relevant stakeholders to analyse this issue more closely." (European Commission 2018, p. 13). This paragraph proves that the authors of the plan probably have not fully grasped the operating principles of capital markets. Short-term investments/ transactions are the inherent components of these markets as they generate market liquidity. If investors committed their financial resources only for the long-term, trade in the markets would die out and the capital market would fail to deliver its primary functions: the mobilisation, evaluation and transformation of capital (Janicka 2019, p. 91).

To sum up, the European Union is trying to simultaneously implement three goals forming a kind of "impossible triangle"[1]:

1. Create a union of capital markets
2. Change the operating model of the financial system 3. Introduce sustainable finance into the functioning of the capital market – eliminate the short-termism, develop long-term investment.

Changing the model of the financial system's operation is conducive to building a capital markets union, but limits the possibility of changing investors' attitudes – if they take a greater risk on the capital market, they leave the investment when they deem it appropriate, in the short or long term.

The creation of a capital markets union and the promotion of long term investment limits the sense of a thorough reconstruction of the financial system model – sustainable long-term investments are socially responsible, with a relatively stable rate of return, requiring a group of long-term investors, which is not necessarily consistent with the idea of domination of the pan-European capital market over the banking sector.

Finally, if a combination of sustainable finance with a change in the operating model of the financial system – long-term investments as the domain of the continental system – is expected, its reconstruction is difficult to justify. It is also worth pointing out that one of the largest economies in the world, Germany, operates in the banking model and does not report problems with access to investment funds.

[1] The classic approach to the so-called „impossible triangle" paradigm (also called „the impossible trilemma" or „the macroeconomic triangle") was formulated by M. Obstfeld, A. Taylor and J. Shambaugh (2004). In their view, the term „impossible triangle" means that it is impossible to achieve the following three goals at the same time:
– stability of exchange rate,
– independence of monetary policy,
– full liberalisation of capital flows

This triad of goals makes it difficult to identify an overarching objective. It is possible to deepen the integration of capital markets without a reconstruction of the European financial system, although theoretically the reconstruction is a condition for deepening such integration, because only then making such an effort makes sense. Investors can be persuaded to invest in the long term, but looking at the behaviour of capital markets as a consequence, e.g., black swans, it's really hard to expect them to remain in a potentially unprofitable investment. In this situation, it is most important to identify a priority objective, the implementation of which will be crucial from the point of view of European interests.

Conclusion

A key limitation of the neoclassical theory is the homogeneous perception of capital –this theory assumes a long term involvement of capital and its production character. In the 21st century, this approach is wrong – capital flows vary in terms of form, time, and goals pursued. The idea of a pan-European capital market created on the basis of the neoclassical model does not take into account the complexity of threats to EU member states that go hand in hand with potential benefits. This causes some countries concerns related to e.g., a marginalisation of their capital markets. The incompleteness of integration activities is also a wider problem; in the concepts of building the CMU, there are no solutions for countries that will be on its periphery and will feel the negative consequences of this situation in their economies.

The EU is once again trying to accelerate the development of the capital market by increasing its importance in the European economy and deepening its integration. At the same time, the EU is facing the challenge of today, which is sustainable development, also perceived from the perspective of sustainable finances related to the functioning of the capital market. This creates a kind of triad of goals – the impossible triangle defined in the article. The effectiveness of a simultaneous implementation of all goals seems doubtful, there is also an anxiety whether they are not partly mutually exclusive. All the more so as the first two initiatives (changing the model of the financial system and deepening the integration of capital markets) are not implemented by the EU for the first time.

It is worth quoting the opinion of K. Lanoo and A. Thomadakis (2019), experts dealing with CMU issues: "In fact, most CMU measures are focusing on the development of capital markets rather than on creating a union of them. In particular, four out of the six areas of intervention identified by the CMU Action Plan [...] are related to the development of capital markets, while only one of the six [...] focuses on removing cross-border obstacles to the creation of a single capital market in the EU. Moreover, the last area of intervention (i.e., enhancing banking capacity) is about the development of bank financing capacity. This clearly illustrates that the CMU project so far has indeed been more about enhancing the financing of the economy and less about achieving the ultimate goal of a fully integrated European capital market. Hence, it is imperative that minds now become properly focused on a clear objective."

The solution to this problem may be a hierarchy of goals regarding the reconstruction of the European capital market. It is worth considering not only what should be a priority because of the EU interest, but also what are the conditions for implementing subsequent European plans at the member states' level. They are the ones which ultimately decide the success of these plans' implementation.

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Abstract

By building the capital market union (CMU). the European Union (EU) is making another attempt to accelerate the development of the capital market by increasing its importance in the European economy and deepening its integration. At the same time, the EU is facing the challenge of today, which is sustainable development, and incorporates sustainable finance ideas into the construction of the CMU. As a result, a kind of triad of goals emerges – "the impossible triangle". The effectiveness of the simultaneous implementation of all goals seems doubtful, there is also the fear that they are partly mutually exclusive, all the more so as the first two initiatives (changing the model of the financial system and deepening the integration of capital markets) are not taken by the EU for the first time The purpose of the chapter is to analyse the conditions for implementing the capital markets union in the light of the realities of the external environment and the European Union as such.

The chapter contributes a new look at the issue of integration and development of capital markets in the European Union in the context of the formulation of "the impossible triangle" paradigm, referring to the triad of goals regarding the reconstruction of the European capital market The adopted research methods are qualitative in character – a review of the literature, a critical analysis of source materials, and development of a new theoretical approach.

Ireneusz Pszczółka*

Chapter 2

Gold as a safe haven at a time of crisis

Introduction

Gold has been the most important metal operating in the international monetary system over the past two thousand years. Regardless of changes in the monetary environment, it is still a part of it. Gold has various roles in the global economy as a store of value, a safe haven for investors, an inflation hedge, and of course a jewellery material. It is still an important component of the foreign exchange reserves of central banks (Pszczółka, 2011, pp. 31-42). Since the breakdown of Bretton Woods, gold is no longer the cornerstone of the international monetary system, nevertheless, it still attracts considerable attention from investors and central banks as well as media and researchers. Owing to the ongoing process of escalating uncertainty of financial markets and political tension (Li, Lucey, 2017, p. 6), diversifying a portfolio becomes more and more important. In the era of globalisation, correlations among most types of assets increase dramatically, however, gold is still known to be frequently uncorrelated with other assets (Beckmann, Berger, Czudaj, 2014, p. 4). In addition, investors have traditionally used gold as a hedge against inflation or a falling dollar. Because gold is priced in dollars, if the dollar loses value, the nominal price of gold will tend to rise, thus preserving its real value.

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In this way, gold can act as a hedge against the exchange rate risk for investors with dollar holdings (Capie, Mills, Wood, 2005, pp. 343-52).

In times of crisis, investors look for assets that ensure investment security, often using those considered a safe haven. During stable periods, these assets may have both a positive and negative correlation with risky assets, but during a crisis, in order to stabilise an investor's portfolio, they should only show a negative correlation (Baur, McDermott, 2016, pp. 70-71). The group of traditional and commonly indicated safe haven assets, apart from international currencies and debt instruments of the most important economies, includes gold, which is the subject of analysis in this chapter.

It is a review whose purpose is to assess the importance of gold as a safe haven asset in the international monetary system in the light of worldwide literature. The basic research method used is the study of global literature.

2.1. The safe haven concept

Safe haven assets have been widely explored in the academic literature (Agyei-Ampomah, Gounopoulos, Mazouz, 2014, p. 507). According to S. Li and B.M. Lucey (2015, p. 36), the term refers to assets preferred by investors to secure capital during the periods of market stress. D.G. Baur and B.M. Lucey (2010, pp. 218-219) define safe haven as an asset that gains when risk aversion increases in financial markets or the foundations of economies become uncertain. They define a safe haven as an asset that is uncorrelated or negatively correlated with another asset or portfolio at times of market stress or turmoil in the domestic or global economy, leading to liquidity constraints. According to A. Kaul and S. Sapp (2006, pp. 761-762), safe haven means assets with low investment risk and high liquidity. On the other hand, A. Ranaldo and P. Söderlind (2010, p. 387) define a safe haven as a component of an investment portfolio whose profitability is unrelated to or negatively related to the return on other assets in the portfolio. A safe haven asset must therefore be the one that holds its value in 'stormy weather' or adverse market conditions. It offers investors an opportunity to protect their wealth during these conditions (Baur, McDermott, 2010, p. 1888).

There are several characteristics that a safe haven asset might have. Possibly, it should have a stable value during "times of stress". There is no

simple definition of "a time of stress", but in our case it is about potential losses in the financial market resulting from e.g., negative stock market returns. A safe haven asset could be understood as something that can be accessed during times of stress. These two conditions allow to think that if gold is a safe haven, then its value should be stable when other asset markets falter and that its stable value should be dependably accessible during times of stress. A final thought suggests itself that a safe haven should be liquid, something that investors believe can be bought or sold anytime without impacting its price (Erb, Harvey 2013, pp. 23-24).

The second condition mentioned for a safe haven is that, during the times of stress, it should be possible to access a safe haven asset. C.B. Erb and C.R. Harvey (2013, pp. 24-25) point out the example of the Hoxne Hoard, which is on display at the British Museum. The Hoxne Hoard is an example of what can happen when trying to make a safe haven investment. It is the largest collection of Roman gold and silver coins discovered in England. Evidence suggests that the hoard was buried sometime after 400 A.D. by a wealthy family seeking a safe haven for some of its wealth. The 5th century A.D. was a time of great social stress and political turmoil in England as the Western Roman Empire unraveled. The fact that the hoard was discovered in 1992 means that this family failed to reclaim its safe haven wealth. This is an example of an "unsafe haven". Authors note that the weight of gold limits its portability, both during normal times and during the times of stress. The cited example shows that historically gold has been viewed by many as being durable and largely imperishable, characteristics which make gold its own safe haven against the ravages of the world, but the world is not necessarily a safe haven for the owner of gold.

2.2. The preservation of gold during crises – a literature review

Gold's role as a safe haven asset has been intensively studied in recent decades. This function of gold is primarily due to its holding of value over the long term. According to S. Harmston (1998, pp. 9-34), gold over time maintains a real purchasing power in relation to other goods and semi-finished products. The author analyses changes in the purchasing power of gold in five countries at different times (United States: 1796-1997, United Kingdom:

1596-1997, France: 1820-1997, Germany: 1873-1997 and Japan: 1880-1997). S. Harmstron points out that gold does not always maintain its purchasing power in the short term. This happens during the periods of instability resulting from hostilities (e.g., Napoleonic Wars, Civil War, Franco-Prussian War, World War I, World War II, War in the Persian Gulf). This is partly due to the fact that, for instance, other commodities are needed more during hostilities and their prices are rising faster than the price of gold. However, in the times of economic change or high inflation, gold is the best of all assets. S. Harmstron's research (1998, pp. 54-55) shows that despite changes in the price of gold, in the long term it maintains the historical level of purchasing power in relation to other goods and assets. This is an important feature to keep gold's safe haven status.

C.B. Erb and C.R. Harvey (2013, p. 23) come to similar conclusions. They argue that gold may not hedge against day-to-day inflation surprises but provides some protection in a hyperinflationary environment and may not provide very effective hedging for currencies in the usual circumstances but may offer some protection in the situations of significant debasement – such as hyperinflation. S. Li and B. M Lucey (2015, p. 36) point out that the inflation panic in the United States due to the second oil shock in 1979 was the reason to start discussions in the literature about the importance of gold as a safe haven. J. Bialkowskiy, M.T. Bohl, P.M. Stephan and T.P. Wisniewski (2015, p. 336) think that the most likely explanation for the gold price boom from 1979 to 1982 is that hyperinflation (caused by the second oil crisis and amplified by an expansive monetary and fiscal policy) and geopolitical turmoil (due to the beginning of the Iran-Iraq war and the Soviet invasion of Afghanistan) caused financial market participants to look for stable investments in unstable times. Similarly, many investors might have returned to gold as a safe haven at the time of the recent financial crises. In the presence of serious questions regarding the viability of the banking sector and the international monetary system, the acquisition of gold represents a perfectly rational reaction of investors.

D.G. Baur and B.M. Lucey (2010, p. 226) suggest that the role of gold as safe haven is determined by the evolution of the gold price itself. They base their hypothesis on the increasing gold price after the beginning of the bear market in March 2000 and the breakpoint in the long term trend of gold price. D.G. Baur and T.K. McDermott (2010, p. 1887) agree with this conclusion. They test the hypothesis that gold represents a safe haven against stocks of major emerging and developing countries. Their analysis for a sample spanning

a period from 1979-2009 shows that gold is both a hedge and a safe haven for major European stock markets and the United States but not for Australia, Canada, Japan and large emerging markets such as the BRIC countries. The findings are strongest for daily data, especially for extreme shocks occurring with a probability of less than one percent and suggest that investors react to short-lived and extreme shocks by seeking out a safe haven in gold. In this context, gold can be seen as a panic buy in the immediate aftermath of an extreme negative market shock. More gradual trends in stock markets (weekly or monthly) do not appear to elicit the same impulsive response from investors (Baur, McDermott, 2010, p. 1893).

D.G. Baur and T.K. McDermott (2010, p. 1888) argue that gold may act as a stabilising force for the financial system by reducing losses in the face of extreme negative market shocks, but the haven effect is generally only present in developed, not in emerging markets. Additionally, investors are most likely to look for a haven in response to severe market shocks suffered over a short period. Their evidence leads to the conclusion that losses suffered in emerging markets, even if severe, do not induce an international investor movement towards the safe haven. It means that, according to D.G. Baur and T.K. McDermott (2010, p. 1893), gold is quite a weak safe haven for some emerging markets and investors tend to accept losses in emerging market stocks, rather than seek an alternative haven asset. They may decide to move their capital from emerging to developed markets.

The above conclusions result from an analysis of the crises of 1987 and 2007+ and the Asian crisis of 1996-1998. D.G. Baur and T.K. McDermott (2010, p. 1894) find that gold was a strong safe haven for most developed markets during the peak of 2007+ financial crisis as well as during the 1987 stock market crash, but not for the Asian crisis. Their results show that gold is a safe haven for the increased levels of global uncertainty proxied by the conditional volatility of a world stock market. However, gold is not a safe haven for extreme levels of global uncertainty. Rising uncertainty causes investors to seek out the safe haven but under extreme uncertainty gold co-moves with other assets (e.g., stock markets), establishing a market of one, that is, where all assets move in the same direction. This is consistent with later conclusions concerning the Covid-19 pandemic.

D.G. Baur and B.M. Lucey (2010, p. 228) claim that gold is a safe haven for the stock market, but generally not for the bond market. A very important conclusion is that gold only functions as a safe haven for a limited time, around 15 trading days. In the longer run, it is not a safe haven, that is, investors that

hold gold more than 15 trading days after an extreme negative shock lose money with their gold investment. This finding suggests that investors buy gold on the days of extreme negative returns and sell it when market participants regain confidence and volatility is lower.

S. Li and B. M Lucey (2015, p. 43) find that sometimes silver, platinum and palladium act as safe havens when gold does not. At times, silver and other precious metals are stronger havens than gold, just like in 1996 (during the Asian crisis). This means that other precious metals may serve as risk management tools during economic and financial crises. According to S. Li and B. M Lucey (2017, p. 5), other precious metals perform better as safe havens in many developed countries. For instance, in the United States silver is the best safe haven against S&P500 and bond market falls. Still, gold is the best safe haven in the United Kingdom, against both stock and bond market events, as well as in Germany and Italy, but not in France and Switzerland. Gold is more usual than the other metals as a safe haven against Canadian bond market declines, while silver is more common against Canadian stock market falls. Gold is the most common against Nikkei225 index falls but the least common against Japanese bond index declines. Interestingly, in China gold is the least common safe haven for both stock and bond market declines.

D.G. Baur and T.K. McDermott (2013, pp. 22-23) argue that the safe haven demand for gold is driven by investors' ambiguity-aversion. Based on the *Ellsberg Decision Rule* (M. Basili, C. Zappia, 2018, pp. 12-15), they illustrate how investors' preferences among stocks, bonds and gold might be expected to vary for the different degrees of shock magnitudes and the associated uncertainty. Essentially, under this decision rule, as shocks become more extreme and uncertainty increases, investors give greater weight to their "worst case scenario". Since gold is a physical asset and its value does not depend on the decisions of a single government or central bank, it is plausible that investors view gold as the best alternative in a "worst case scenario".

J. Beckmann, T. Berger and R. Czudaj (2014, p. 13) analyse the importance of gold in the period from January 1970 to March 2012, which includes the times of major oil price shocks as well as several other crises that can be called "black swans", for instance, the 9/11 terrorist attacks or the 2007+ global financial crisis. They show that gold generally serves as a hedge and a safe haven, however, this ability depends on the specific economic environment under observation. According to R. O'Connell (2007, p. 2), the gold price performance depends heavily on the nature of an external

problem. Where geopolitical tensions are involved, as for instance in the attack of 9-11, the price does tend to rise, both on the back of regional reasons and professional buying. D. Bredin, T. Conlon and V. Poti (2015, p. 321) also confirm that gold is an investment asset and its investment potential is linked to its diversification benefits when held with other assets. It is due to its low levels of correlation with equity indices, highlighting its role as a diversifier. They emphasise that gold consistently acts as a short-run hedge for all financial assets. During financial crises, gold is found to consistently act as a safe haven for equities and debt across all horizons. However, they point out that during the economic contractions of the early 1980's, gold is found not to have acted as a safe haven, in fact contributing to an increased portfolio risk (Bredin, Conlon, Poti, 2015, p. 325). S. Agyei-Ampomah, D. Gounopoulos and K. Mazouz (2014, p. 517) also believe that gold is a hedge for the bond market, especially sovereign bonds of countries with serious debt issues (i.e., Greece, Italy).

M. Akhtaruzzaman, S. Boubaker, B.M. Lucey, A. Sensoy (2020, pp. 20-21) point out that gold has traditionally been considered as a safe haven during several crises. However, they show mixed results regarding the safe haven status of gold during the COVID–19 pandemic. They provide evidence that the Covid–19 pandemic affects the gold's safe haven status. In particular, they find that the correlations between gold and equity returns (S&P500, Euro Stoxx 50, Nikkei 225, and China FTSE A50 indices) are negative during the first phase of the Covid–19 pandemic, indicating that gold is a safe haven for equity indices in this period. However, in the second phase, when governments intervened with monetary and fiscal stimulus packages to combat the Covid–19 pandemic, gold lost its safe haven asset property in favour of equity indices. The optimal weights of gold in the portfolios of global equities and commodities significantly rose during the second phase, showing that investors increased the optimal weights of gold as safe haven during the crisis. These results indicate that gold would be a good hedging strategy for global equities and commodities only during the first phase, because the hedging cost significantly increased during the second phase. A characteristic feature of the investor behaviour during the Covid-19 pandemic was a search for liquidity, which strengthened the importance of international currencies as a safe haven at the expense of other traditional safe haven assets including gold (Cheema, Faff, Szulczyk, 2020, p.107).

Conclusion

The literature review shows that gold tends to act as a safe haven asset following financial crises and offers protection to investors against losses in financial markets, however, it cannot be regarded as a panacea for all financial and economic shocks. Gold is usually referred to as a safe haven asset, possibly because it was among the first forms of money and has traditionally been used as an inflation-hedge. Moreover, gold is usually uncorrelated with other types of assets, which is an important feature in an era of globalisation during which correlations have soared dramatically among most asset types. Despite changes in the price of gold, in the long term it maintains the historical level of purchasing power in relation to other goods. Gold functions as a safe haven in the short run, but not always in the long run. Additionally, the role of gold as a safe haven is determined by the evolution of the gold price itself and depends heavily on the nature of the crisis, with the peculiarity of the Covid-19 pandemic being an example.

To conclude, gold provides protection at different times across countries but it does not provide the safe haven status consistently over time or across asset classes.

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Abstract

The chapter presents the issue of using gold as a safe haven. The aim is to assess the importance of gold as a safe haven asset in the international monetary system in the light of worldwide literature. It is widely believed that gold is a safe haven asset for investors. The conclusions from the analysis show that gold functions as a safe haven in the short run, but not always in the long run. Additionally, its status depends on the nature of a crisis it protects against. The analysis of the significance of gold as a safe haven at times of financial and economic crises, presented in the chapter, shows the importance of the problem and implies the need to undertake further research into this issue. The basic research method used in the chapter is a study of world literature.

Jarosław Cwyl*

Chapter 3

Taxes imposed on the earnings of financial institutions and property taxes in the incidence model of taxes

Introduction

The costs of transactions, including taxes, have a crucial meaning for business activity, especially for international trade, location decisions, and the scale of investments. Taxes are usually treated as factors which reduce the value of a business. The incidence theory shows very clearly the influence of taxes on capital mobility.

The aim of the chapter is to argue in support of the theorem that not only income taxes but also asset taxes interfere with business activity. Income taxes have potentially other effects than special taxes imposed on assets. Data are used on the rates of corporate income tax and of the special tax on the assets, technical provisions, and equity of insurance companies in Poland and OECD countries. The figures cover the period 2016-2019.

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3.1. Financial institutions/financial enterprises, non-financial enterprises, investment decisions (capital mobility), and taxation

Gross capital formation is disrupted by taxes, specially by income taxes on financial and non-financial enterprises. Insurance companies, banks, and other kinds of financial institutions are very important types of enterprises. The fact that insurance companies collect insurance premium determines the rules for financial management like: capital requirements, solvency, and investment decisions. The main goal of business activity doesn't change, but the key difference between non-financial and financial enterprises is the approach to investing. Other differences concern the following issues:

- Capital structure and the amount of debt,
- Liquidity,
- Profitability,
- Approach to investing.

The author concentrates on the investment problem because it is crucial to the value of capital employed in a firm. In non-financial enterprises, investments increasing the value of tangible assets primarily boost production capacities, but in insurance companies, the concept of production capacity is understood quite differently. For the purposes of this study, investment decisions are defined as the ability to increase the number of effective insurance contracts and multiply equity by gross capital formation. This cannot be ensured by a purchase of a physical good or an appropriate allocation of financial investments. Of course, tangible physical assets and fixed assets also have some importance for an insurance company, but it is marginal. However, increasing the ability to conclude an insurance contract depends on several important financial factors. An insurance contract, in order to be effective, must be based on the principle of universality of insurance coverage. In a way, this depends on the capital resources held, nevertheless, an insurance company still participates in the gross capital formation. In addition, the dominant sources of financing are the so-called technical provisions, the value of which depends on the accuracy of estimates, i.e., the insurance fund. On the other hand, insurance companies invest the accumulated funds of policyholders in various types of financial investments. It should be emphasised that life insurance companies accumulate significant technical provisions and thus

create investments in financial instruments, which results from long-term insurance contracts. In effect, the capital structure in an insurance company as a financial institution will have a completely different meaning than for a non-financial enterprise. Apart from the important issues of capital requirements, it should be noted that, in principle, for an insurance company it is important to raise the numbers of their employees, insurances, and policyholders.

Private investments are subject to profit taxation, i.e., income tax and dividend tax (Stiglitz, 2004, p. 797). In both non-financial and financial enterprises, this double taxation increases the cost of financing new investments. The financing of insurance companies, however, mainly comes from technical provisions.

An obvious question arises from these considerations: does the tax burden differ depending on the type of activity? Therefore, it is reasonable to use the conclusions of A. Harberger's open economy model which explains the impact of taxes on the profits of insurance companies (Harbeger, 1980, p. 17). Insurance companies, together with financial institutions, form a sector of the four-sector shifting model. This sector is characterised by: free cash flows from abroad and a free shaping of the market price on the domestic market.

3.2. The four-sector model of income tax shifting – the open economy model

The four-sector incident model is based on the classic Heckscher-Ohlin model of international exchange and includes 4 sectors of the economy: corporate and non-corporate enterprises, internationally tradable and non-tradable goods. This model is presented in a simplified manner in the Table 3.1:

The industry sector plays a central role in the model, because the prices of internationally traded goods are determined by the level of the world prices, while capital is internationally and domestically mobile and has a specific global rate of return which takes into account differences in the levels of domestic risk. Capital, however, has one alternative to flows abroad – it can flow to other corporate enterprises located in the same country, even non-corporate ones, looking for favourable differences in the rate of return on invested capital. Adjustments in this market sector affect other sectors of the economy owing to the fact that the sector is opened to capital flows and the prices of goods are

Table 3.1. The four-sector model of shifting the tax on corporate profits

Specification	Corporate sector	Non-corporate	Impact income tax	Transmission impulse
Tradable goods	Industry	Agriculture	• Worldwide price for the product applies • Mobile capital, including differences in risk premium of the states.	Capital flows
Non-tradable goods	Financial Institutions-Insurance company*	Services	Tax disturbs prices and wages	Pressure on salaries
Transmission impulse	Capital flows	Pressure on salaries		

* In the original study by A. Harberger, this sector was represented by Transport and utilities

Source: The author's own study based on A.C. Harberger, 2008, pp. 9-18.

determined in the international market. The existing capital-intensive corporate sector still has a sub-sector that produces internationally non-tradable goods, but this sector is opened only to capital flows, both internationally and domestically. Originally, in A. Harberger's model, this sector is represented by the capital-intensive enterprise sector "Public transport and utilities". For the purposes of this chapter, the sector is represented by financial corporations, including insurance companies. It is reasonable to consider that financial institutions meet the assumptions of the model, as capital flows can be realised both directly by opening a plant in a country and indirectly by providing capital to existing plants. Only the assumption that there is no trade in insurance services for the sector requires additional justification. Language limitations and the need for an individual approach to the policyholder and the insured make it impossible to offer the same service abroad. The other two sectors of non-corporations are represented by Agriculture and Service Activities. In the case of Agriculture, the products refer to internationally tradable goods, in the case of a Service Activity, to internationally non-exchangeable products. The workforce in the model is considered to be an immobile factor, which can still be considered a valid assumption. Ultimately, the imposition of income tax on corporate enterprises reduces wages throughout the economy. As J. Gravelle (1995, p. 274) points out, if any assumptions in Harberger's 4 sector model are not fulfilled, such as: a perfect international substitution of goods, perfect international capital mobility, and the burden of capital income taxes falling on the immobile factors, the results of the model don't apply and must be modified. According to Gravelle, the income tax burden depends on its proportion to

worldwide capital stock, rather than being incurred by immobile factors, such as workforce. Nevertheless, many researchers conclude that labour bears a substantial burden of corporate income tax (Gentry, College, 2007, p. 34).

3.3. An analysis of changes in the model after the introduction of income tax and property tax on financial institutions

Before comparing the imposition of a tax on corporate profits to the imposition of a tax on financial institutions, conclusions will first be drawn from an analysis of tax increases. The impulse to throw it out of equilibrium is the imposition of a new levy or an increase in the current taxation.

With the imposition of an income tax on corporate profits, corporate gross return must increase in order to maintain the net return after tax at the current level. This is necessary because changes in the net rate of return force immediate changes in capital flows until the level of the domestic net rate of return is equal to the world net rate of return. An increase in the gross return rate in the industry and financial institutions sector must be compensated by a cut in real wages and salaries in order for internationally tradable products to remain competitive (Haberger, 1995, p. 56). Wages in the financial institutions would not have to fall in real terms, because the world price does not apply here, so there is a possibility of shifting the burden to the consumers of this sector. Nevertheless, there will be pressure to cut real wages from the industry sector. This, in turn, benefits the entire sector of financial institutions and their consumers. Nevertheless, as the financial institution sector is capital intensive, a fall in real wages cannot completely neutralise the negative impact of an additional tax burden. There should be no outflow of capital from the financial institutions sector, but an inflow of capital from the Industry sector, as well as to non-corporations, is possible. However, a capital inflow to financial institutions will potentially be the easiest. Thus, however, the net rate of return will not fall below the net rate of return in the Industry sector, and therefore at the international level. The pressure to cut wages in the corporate sector will have beneficial effects on non-corporates, temporarily increasing the net rate of return in both the sectors, which will also be driven by the decline in wages. The price of

services may drop, while in Agriculture, the benefits will be noted by business owners. Attracting capital to these enterprises should bring the net rate of return back to the national level; this depends on the rate of adjustment processes. The inflow of capital should lead to a decline in the prices of domestic services and an increase in landowners' benefits.

When the impulse to increase a tax relates selectively to financial institutions (asset tax), a different sequence of events takes place. First, financial institutions will increase the gross return rate by the amount of tax in order to preserve capital. Then the capital will not have an impulse to flow to other enterprises. This hike in price for consumers means that they will bear the brunt of the tax burden. Due to the necessity to maintain the universality of insurance protection, tax costs may be shifted to labour resources. This may create pressure to cut wages across the economy to absorb the tax burden. This, in turn, could cause an inflow of capital to Industry in order to bring the net rate of return to the world level. It can be seen that the tax on financial institutions has a completely different effect than the tax on corporate profits.

However, an important nuance must be added to this discussion. Since many countries decide to undertake similar actions with regard to the additional tax burden on financial institutions at virtually the same time, the results of imposing tax resemble the case of the closed economy model (Harberger, 2008, p. 11). As a result, the model used for the explanation requires adjustments to its assumptions. The assumption of capital mobility is weakened due to the fact that a tax increase in one country does not result in a movement of capital abroad, because the net return rates on the entire international market are declining as a result of a similar tax in many other countries. Thus, tax increases are not accompanied by a constant net return, but by a real decrease, which, however, does not trigger compensatory capital flows. Hence, a corporate profits tax causes a reduction in the net rate of return in the Industry and Financial Institutions sectors, which will translate into capital injections in other enterprises and a drop in the national net rate of return. The decline in the net rate of return is actually determined by the diminishing in the global net rate of return.

3.4. Asset taxes on financial institutions in Poland

Following the end of the economic crisis of 2008-2011, new public levies appeared in many countries after financial support was provided to financial institutions. A tax on the assets of financial institutions has been imposed lately as well. This, in turn, causes certain difficulties in the operation of these entities. The taxing of assets of commercial banks old mean taxing loans, while in insurance, insurance contracts would be charged. Obviously, such taxation would have to induce a tax pass-on adjustment. The effect of imposing discriminatory taxation, which can be considered a tax on financial institutions, is also valid for this model.

The tax base for domestic insurance companies, domestic reinsurance companies, the branches of foreign insurance companies and foreign reinsurance companies, the main branches of foreign insurance companies and foreign reinsurance companies is the excess of the total value of a taxpayer's assets over PLN 2 billion. The rate is 0.0366% of the value per month. Such taxation is very unfavourable for institutions due to the fact that many assets in insurance companies are necessary to ensure the solvency and feasibility of insurance cover, e.g., financial deposits, while in banks this applies to granted loans. This makes the solution controversial as it is inconsistent with maintaining the balance of the financial sector.

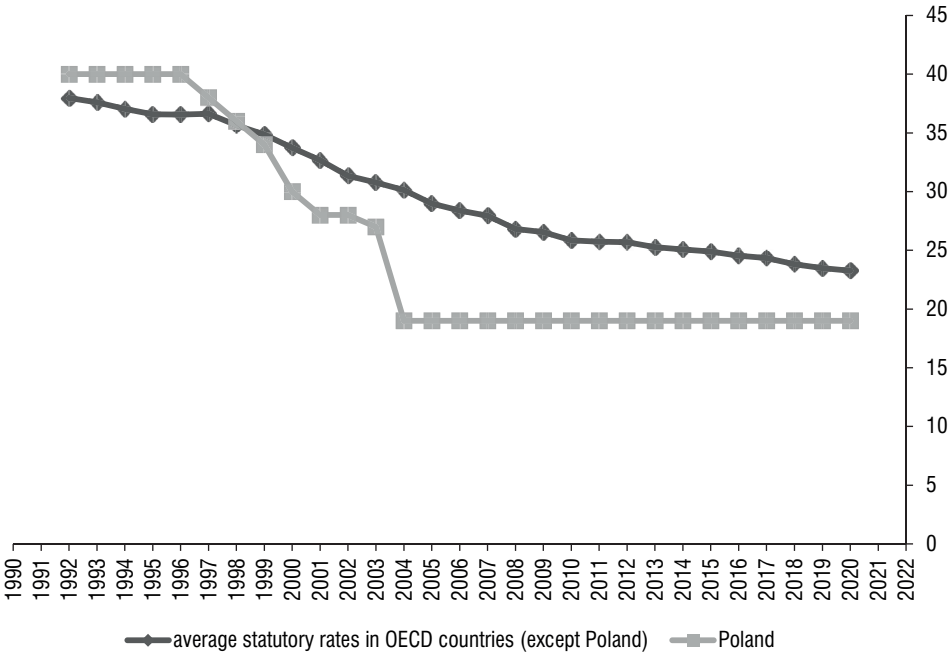
The tax is not tax deductible for the purposes of determining income tax (Article 16 sec. 1, point 70 of the Corporate Income Tax Act and the Tax on Certain Financial Institutions Act of January 15 (Journal of Laws 2019, item 1836)). The above-mentioned solutions will also apply to the tax on assets of insurance companies.

3.5. Tax rates for corporates in OECD countries and tax burden for insurance companies in Poland

Since the introduction of the corporate income tax to Poland (The Corporate Income Act of February 15, 1992 – the uniform text – Journal of Laws of 2020, item 1406), there has been a tendency to reduce the rate of income tax on profits of corporate enterprises, and thus financial institutions, around the world. Obviously, the specific rates depend only on the political will

of the rulers, but as can be seen in the figure below, it is influenced by global tendencies in the belief that good conditions for capital formation are created. In Poland, the rate was reduced faster in the period 1996-2001 and 2004. These reductions resulted in the fact that the standard rate is still below the OECD average. However, this difference has been narrowing. Consequently, the relationship between tax rates and the absorption of foreign funds for Poland is favourable. It should be noted that, in general, the situation fosters attracting foreign capital in terms of the friendliness of the tax system, however, capital flows can be influenced by other factors, such as interest rates and a country's investment risk premium. Finally, the flows may vary due to differences in rates between countries. The fact remains that the differences in tax rates between countries are being reduced.

Figure 3.1. Statutory tax rates charging the profits of enterprises subject to tax on profits in 1992-2020, taking into account the total burden with regional differentiation



Source: The author's own study based on OECD data, oecd.org, Tax Database, (Access: 22.11.2020).

Capital flows can fluctuate due to the degree of difference in tax rates. The level of the income tax burden of individual insurance companies in Poland is presented Table 3.2.

Table 3.2. The ratio of the tax amount to earnings before taxes in insurance companies in 2016-2019 (%)

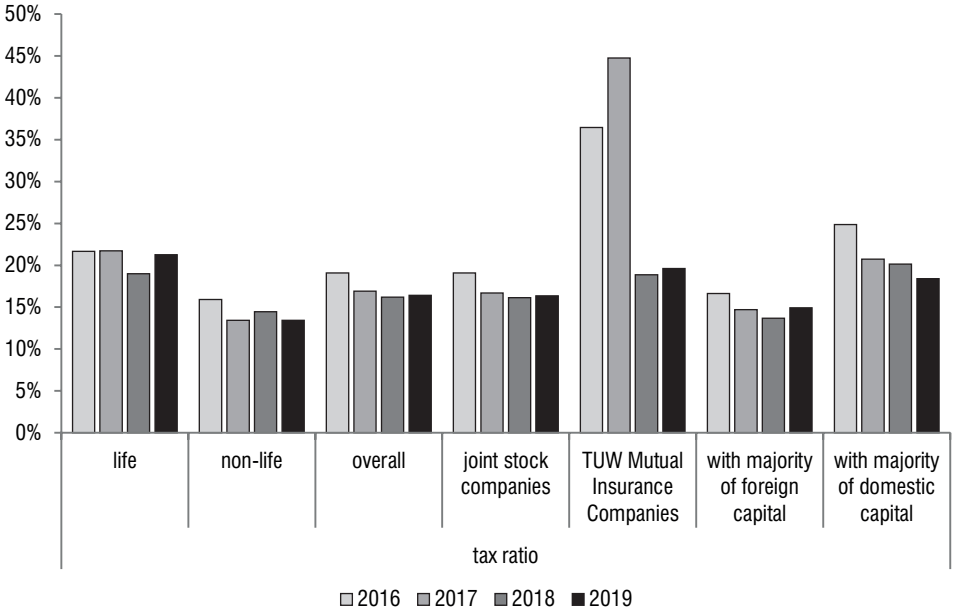
Specification	2016	2017	2018	2019	Average
Category I of the insurance sector	21.67	21.72	19.00	21.27	20.91
Category II of the insurance sector	15.92	13.43	14.46	13.43	14.31
Joint-stock companies	19.09	16.69	16.14	16.34	17.07
TUW (Mutual Insurance Companies)	36.45*	44.74*	18.88	19.62	29.92
With a majority of foreign capital	16.64	14.72	13.67	14.93	14.99
With a majority of domestic capital	24.85	20.73	20.15	18.39	21.03
Overall	19.08	16.91	16.18	16.40	17.14

* In 2016 and 2017, mutual insurance companies generated gross losses and negative tax burdens.

Source: KNF, Insurance Market Yearbook 2019, 2018, 2017.

Surprisingly, it should be noted that insurance companies with a majority of foreign capital showed a higher tax burden than domestic insurance companies. This may be due to a change in the approach of the Polish state to tax optimisation through the use of transfer pricing. The tightening of tax regulations could have a negative impact on the level of burden on insurance companies, because the amount of deductions related to the interest tax shield was limited and the minimum income tax was applied. Taking into account the trend, these phenomena were not significantly reflected in the statistics. The low tax burden on the financial result of mutual insurance companies is noteworthy. However, these entities are much smaller than other insurers.

Figure 3.2. The relation of the income tax to the gross results of insurance companies in 2016-2019



Source: KNF, Insurance Market Yearbook 2019, 2018, 2017 (Accessed: 20.11.2020).

The above figure shows a downward trend in the tax to gross profit ratio. It should be noted that in the period 2016-2019, insurance companies showed stable dynamics of asset growth in spite of the asset tax. It is also presented in the table 3.3.

It is important that not only company assets but also equity increased, with the exception of life insurance companies. This may prove that the wealth tax could have had a negative impact on the investments of these organisations. This impact could become apparent due to the long-term nature of their insurance contracts. On the other hand, companies with the majority share holdings of foreign capital recorded a similar increase in equity. This confirms that the imposition of the tax on assets harmed only life insurers, but irrespective of the origin of their capital.

Table 3.3. The dynamics of changes in the value of assets, equity and technical provisions in insurance companies in 2016-2019 (%)

Specification	2016	2017	2018	2019
Assets:	**100.00**	**106.36**	**104.09**	**104.88**
Category I of the insurance sector	100.00	101.45	92.30	90.95
Category II of the insurance sector	100.00	112.55	118.96	122.46
Joint-stock companies	100.00	106.17	103.67	104.19
TUW (Mutual Insurance Companies)	100.00	114.76	122.39	134.96
With a majority of foreign capital	100.00	105.63	102.76	105.62
With a majority of domestic capital	100.00	107.18	105.59	104.03
Overall	100.00	106.36	104.09	104.88
Equity	**100.00**	**107.33**	**110.35**	**117.35**
Category I of the insurance sector	100.00	97.68	93.72	93.82
Category II of the insurance sector	100.00	112.71	119.63	130.50
Joint-stock companies	100.00	106.96	109.74	116.65
TUW (Mutual Insurance Companies)	100.00	117.96	127.67	137.51
With a majority of foreign capital	100.00	105.77	110.47	117.94
With a majority of domestic capital	100.00	108.52	110.25	116.91
Overall	100.00	107.33	110.35	117.35
Technical provisions	**100.00**	**105.00**	**102.81**	**104.65**
Category I of the insurance sector	100.00	101.69	92.29	90.36
Category II of the insurance sector	100.00	110.24	119.44	127.25
Joint-stock companies	100.00	104.55	102.08	103.68
TUW (Mutual Insurance Companies)	100.00	127.77	139.26	153.22
With a majority of foreign capital	100.00	104.79	101.74	103.41
With a majority of domestic capital	100.00	105.30	104.29	106.36
Overall	100.00	105.00	102.81	104.65

Source: KNF, (Access: 20.11.2020).

Conclusion

The literature review and the analysis of numerical data indicate that the corporate income tax did not cause any visible or negative effects in the analysed period. The burden of this tax is therefore largely passed on to insurance consumers and possibly employees. Second, the effects are relatively small. The same applies to the tax on assets. However, consumers, i.e., policyholders and the insured, are not protected against these effects, which is negative for the universality of insurance protection. Thirdly, it is possible that these taxes contribute to a reduction in the nominal value of equity in life insurance companies. The conclusions are certainly preliminary and require further verification.

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The Act of January 15, 2016 o podatku od niektórych instytucji finansowych (Journal of Laws of 2017, item 1410).

Abstract

The chapter compares two taxes which affect corporates, with special attention to financial institutions including insurance companies. One of the taxes which affect corporates has a long tradition and is called the corporate income tax, the other applies only to financial corporates (institutions) and is known as the asset tax. The latter is very controversial and seems highly detrimental to both customers, the insured, and employees. It cuts wages and increases prices. The comparison uses the 4 sector open economy model by A. Harberger.

PART II

THE DEVELOPMENT OF FINANCIAL INSTITUTIONS

Aneta Kosztowniak*

Chapter 4

Reconfiguring banking distribution channels in countries with different levels of economic development – opportunities and challenges

Introduction

A decrease in the number of stationary branches, accelerated digitisation of services, and low interest rates contribute to a growing interest in electronic banking services. As a result of changes in these conditions, banking services distribution channels and business models are evolving. Nevertheless, in more developed countries these changes are faster and in less developed countries, slightly weaker. Therefore, it is important to examine the importance of economic welfare for the changes taking place in the distribution channels of banking services. However, each banking market has its own specificity and development path for the banking and financial system. At the same time, the changes taking place in banking create new opportunities as well as threats and challenges to the banking systems of individual countries and, for example, the European Union.

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The aim of this chapter is to examine the relationship between economic growth measured by GDP per capita PPP, which is one of the measures of social welfare, and the propensity to use traditional forms of banking services (stationary branches), as well as via mobile and internet infrastructure in selected countries.

The following research hypothesis is adopted. In the highest-income countries, the public is more willing to use electronic banking (FinTech) services, which forces banks to change their current business model. In high- and middle-income countries, bank branches are maintained, but the importance of FinTech services is also growing. In countries with the lowest level of socio-economic development and large disproportions, banks are not willing to expand their branch network, therefore, the mobile and internet channel should be the basis for the provision of financial services.

The research method is based on the models of relationship between GDP and selected distribution channels of banking services using: the ordinary least squares method (OLS), the vector error correction model (VECM), and the response impulse function, employing observations from 2004-2019. The study covers three main groups of countries: high-income and highly industrialised; post-transition developed economies; and developing countries with large internal disproportions.

The chapter uses international literature on banking and finance, including data from: the European Banking Federation (EBF), the Bank for International Settlements (BIS), Financial Stability Board (FSB), and World Bank (WB).

4.1. The evolution of banking services distribution channels – opportunities and challenges

The modern financial sector is undergoing a technological evolution. Operating on the market for years, institutions have been subject to the process of digital transformation, while newly established entities operating according to new business models and based on modern technologies (the so-called FinTechs) completely redefine the way of meeting customer needs in the area of financial services. Constant, innovative technological progress determines the effectiveness of competition on the financial market by creating

new distribution channels for financial products and services, expanding the scope of activities, and improving the quality of services provided.

Technological innovations in the financial sector are most often equated with the concept of FinTech (financial technologies), which is ambiguous, often discretionary and constantly evolving. In this regard, the Financial Stability Board (FSB) has adopted a subject approach, defining FinTech as technological innovations in financial services that shape new business models, applications, processes or products, which significantly affects the provision of financial services (FSB, 2017). Other definitions based on the subject approach indicate a sector consisting of companies that base their activities and business models on modern technologies and ICT solutions (Dorfleitneret al., 2017, pp. 5-10), with the potential to transform the financial services sector (IOSCO, 2017)

Despite numerous changes on the financial market, it should be remembered that banks are universal financial intermediaries. They offer both traditional products such as loans, deposits and transfers, and a wide range of other services that have arisen with the evolution of banking, such as specialised billing, payments, insurance, and investments. Their key role is to support and facilitate the circulation of money in the economy.

According to the theory of financial intermediation (Gurley, Shaw, 1960), the primary function of financial intermediaries is to create a mechanism ensuring the most optimal and effective transfer of money from entities that have a surplus to those that demand money and thus enable the allocation of money in the economy.

As Merton and Bodie (1995) and other advocates of the functional approach to finance argue, the institutional forms by which certain financial functions are performed may not be necessary and therefore may change over time. Banks, as the institutions of public trust, perform specific (exclusive) functions in the economy. Their auxiliary role manifests itself in activities carried out not only for their own economic benefit, but also – if not primarily – for the growth and prosperity of the people and a country in which they operate.

Due to the ongoing digitisation, the monopolistic nature of the bank as a financial intermediary is currently weakening due to the relative ease of duplicating banking products and the possibility of using new technologies (digitisation) as distribution channels for financial services.

It was digitisation that made it much easier for non-banking entities (institutions) to enter the financial services market. The current business model of banks is based on traditional financial intermediation, which usually

involves a physical visit to a given institution and direct contact with an advisor, which in turn largely translates into high costs that an intermediary must incur to provide its clients with services that meet their needs in the form they prefer. The strategies adopted by banks consist in building relationships between market participants in order to generate revenues and profits while satisfying customer needs. However, the latest data indicate a significant shift towards focusing the strategy on customer experience (EBF, 2017).

Banks' strategies address many challenges:

- regulatory – with regard to capital and liquidity requirements or a deposit guarantee system;
- the development of new technologies – cloud computing, digitisation of services;
- the polarisation of customer needs – e.g., in terms of changes in the expectations of companies resulting from their development;
- returning to the path of sustainable development of economies after the COVID-19 pandemic;
- acting as a financial intermediary – on the line of economic entities and financial support programs, such as: financial shields or EU packages supporting modernisation and new climate and energy solutions.

Currently, the business models of banking sector entities are evolving, taking into account the challenges "revealed so far", mainly in the field of:

- building relationships with customers,
- infrastructure and partner network,
- creating value,
- organisational changes,
- innovation and the implementation of new technologies,
- extending the business model – in the area of financial products and value-added services.

Adaptation adjustments in the banking sector take place quite quickly. This is noticeable in changes to business lines in the segment of retail, corporate and investment banking and financial markets within mobile and internet platforms. Banks launch "multi-purpose" credit lines for enterprises, lines dedicated to retail customer service or with guarantees for corporate

customers. In the area of supporting climate policy, banks offer the so-called green products supporting energy changes.

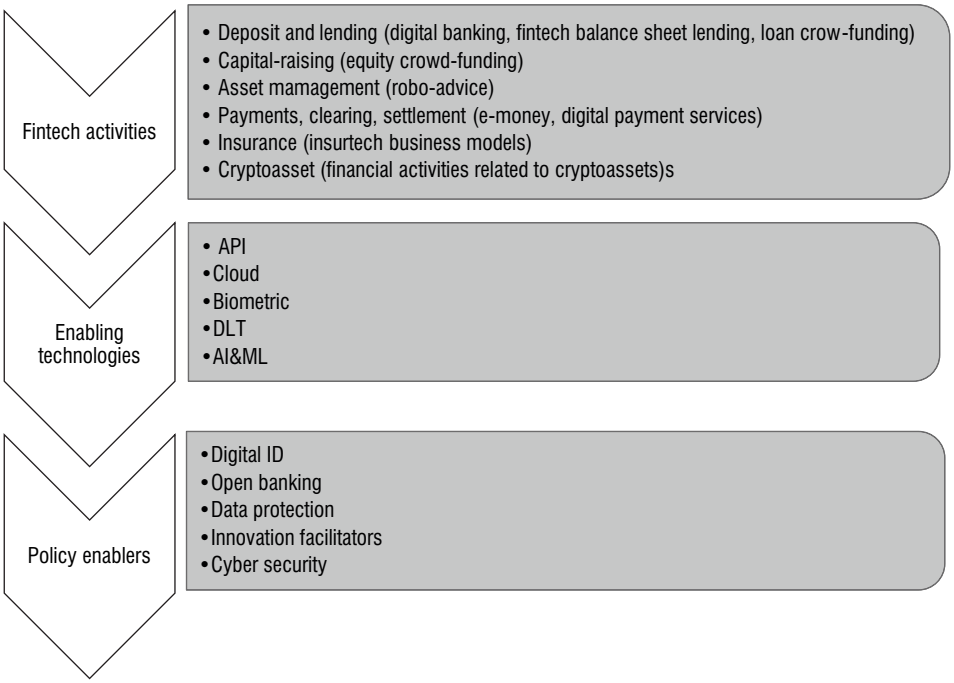
Technological innovations in financial services (FinTech) are increasingly transforming the way financial services are provided. This transformation opens opportunities but comes with potential risks to consumers and investors and, more broadly, to financial stability and integrity, which financial regulation seeks to mitigate.

As for opportunities, FinTech can support potential growth and poverty reduction by strengthening financial development, inclusion, and efficiency. In this context, financial authorities are adjusting their policy frameworks and providing guidance based on their assessments of the implications of emerging technologies for the financial sector. The challenge for policymakers is to maximise the benefits of FinTech while minimising potential risks for the financial system (hacker attacks in the era of open finance and open data).

Also, important trade-offs may arise between different policy objectives. FinTech activities (e.g., digital banking or robo-advice) can take various forms and may be performed in the different sectors of the financial industry. Enabling technologies (e.g., cloud computing or artificial intelligence) are those that make innovation possible in the provision of financial services and, as such, form the backbone of FinTech activities. Policy enablers refer to public policy measures and initiatives (e.g., digital ID systems) that support the development of FinTech activities and the use of enabling technologies (Figure 4.1).

As traditional financial intermediaries, banks use a simplified, direct form of service delivery in their supply chain that allows them to maximise profits. The extensive and complex internal networks within the banking sector and banks' leading position on the financial services market (especially in Europe) had allowed them to offer services without engaging other providers. While direct sales include two levels, the producer (supplier) and the recipient (buyer), in financial services, due to formal requirements, it is prescribed that the buyers use banks as intermediaries. Such contact has usually taken place in a bank branch, but branchless banking is increasingly utilised. The branchless banking is the delivery of financial services outside of conventional bank branches through the use of retail agents as well as information and communications technologies to transmit transaction details. By relying on the already existing retail infrastructure and widespread technologies, such as mobile phones, the branchless banking dramatically reduces the cost of delivery and enhances convenience for customers (McKay, Seltzer, 2013).

Figure 4.1. Fintech tree: a taxonomy of the fintech environment



Source: FSI, 2020, No. 23, p. 2.

Whereas bank branches and field offices are perceived as the key elements of the financial infrastructure assessment, it is estimated (King, 2016) that the number of bank branches is currently comparable to the number in the early eighties of the last century. Two aspects are distinguished in the infrastructure: physical and financial (Demirgüç-Kunt et al., 2018). The physical infrastructure, such as reliable electricity and mobile networks, is key as people will be less inclined to use digital payments if network outages or other technical problems undermine their dependability. The financial infrastructure, which includes both an adequate payments system and a physical network to deliver payments to all corners of an economy, both urban and rural, is equally important. While financial institutions might not find it cost-effective to open a brick-and-mortar branch in every place that has a large unbanked population, they can use agent banking—forming partnerships with post offices or retail shops to offer basic financial services to customers. It is worth noting, however, that both clients' needs and the technological possibilities of financial intermediation have evolved and physical presence is not required for a variety of transactions.

The rise of technology giants Google, Amazon, Facebook and Apple (or GAFA) which leverage digital platforms to provide a variety of services, including financial, pose a challenge to the traditional supply chain in the financial services market. The financial sector already applies many ICT solutions in the field of: e-commerce, Enterprise Management Systems (ERP) – including companies within international production chains (Global Value Chains, GVC), outsourcing (Business Process Outsourcing, BPO; Information Technology Outsourcing, ITO), hosting services (data storage) or analytics (BigData).

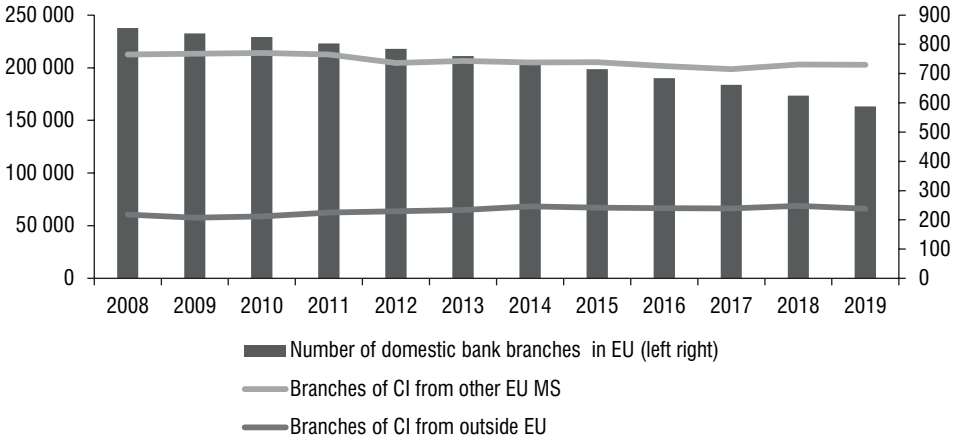
The use of digital channels of communication with clients as well as of the electronic methods of organising internal and external processes within the bank significantly reduces the level of costs. These are much lower than in the case of traditional branch expansion, which positively impacts the cost-to-income ratio and generates new streams of revenue. For instance, in 2016, the share of e-commerce revenues in EU-28 was at 16%, including the Czech Republic (31%), Slovakia (18%), Hungary (16%), and Poland (14%). There was also a visible increase in the Enterprise Resource Planning (ERP) application in THE business operations of enterprises, where Germany was the leader with 56% and the EU-28 average of 36% in 2016.

In the context of the aim of this study, which attempts to examine the relationship between economic development and the use of fixed-line and electronic banking services, it is worth emphasising that the literature on the subject presents varied research results. These results do not clearly confirm whether the financial system stimulates economic growth or whether a country's economic growth drives the development of the financial system. A positive relationship between financial development and economic growth has been identified in many studies (King, Levine, 1993; Becivenga, Smith, 1991; Peetz, Genreith, 2011). Other research confirms that in the short term, the growth of the financial system may cause disturbances in the real economy (Back, 2012). Some recent studies by the World Bank (Demirguc-Kunt et al., 2017) confirm that the financial system, by enabling digital payments and savings accounts in an electronic (mobile) format, can contribute to income growth, especially in reducing poverty and bridging the gap between development on a micro scale and economic growth on a macro scale.

4.2. Trends in moving away from stationary towards electronic banking

A systematic decline in the number of branches can be observed in Europe. The rationalisation taking place in the EU banking sector continues to involve bank branches as the number of (domestic) outlets continues to shrink, falling to about 163,000 by the end of 2019. Compared to the previous year, the number of branches in the EU-28 had shrunk at a steady pace by 6%, or about 10,000, the largest drop since the financial crisis. The number of branches has fallen by 31% since 2008, or by almost 75,000. This trend continues to reflect the increasing use of digital banking by consumers as more than half of EU individuals, 58%, used internet banking in 2019, up from 54% in 2018 and 25% in 2007, when the data series began (Figure 4.2).

Figure 4.2. The number of bank branches in the EU and branches from other EU Member States (MS) in 2008-2019



Source: The author`s compilation based on EBF (2021).

This confirms that banking customers have been continuously, widely and enthusiastically adopting electronic payments as well as online and mobile banking. This has consequently reduced the importance of widespread bank branch networks, allowing banks to further scale back their physical presence.

According to the European Banking Federation (EBF, 2021), the countries that experienced the largest contraction in absolute terms in 2018 were Spain

(-2,162) and Germany (-1,267 units). Only Bulgaria, for the second year in a row, added branches (+278 units). Moreover, already for a number of years, a trend in the establishment of branches has been dominating over that of subsidiaries in the EU. At a consolidated bank level, there were 968 foreign bank branches in the EU in 2019, of which 730 were from other EU Member States. The number of bank branches from third countries shows a marginal decline. Germany is the country with the highest number of foreign branches from other EU Member States, having 87, followed by Spain with 78. The UK is the country with the highest number, 94, of third country branches, more than three times as many as the 26 non-EU branches present in Italy and France.

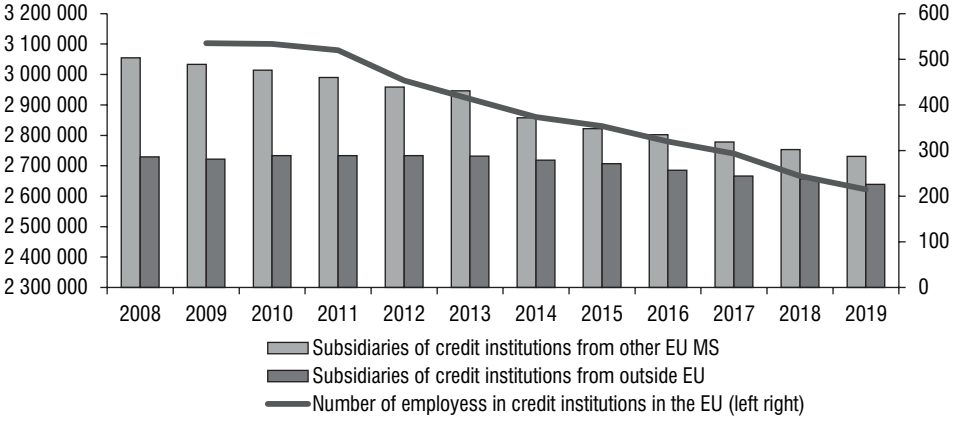
The overall number of subsidiaries continued declining for the twelfth consecutive year, falling by 4.4% to 513, the lowest level since 1997. The number of subsidiaries of credit institutions from other EU countries fell by 15 in 2019. The number of non-EU credit institutions' subsidiaries dropped to 226, down from 289 in 2010, the highest number since 2007. The number of domestic branches in EFTA countries reached 3,507 in 2019, with Switzerland hosting practically three out of four branches in the area. The total number of subsidiaries in EFTA countries was 27 in 2019.

In terms of employment, it should be noted that banks have a large stake in society as important job creators, since they employed a little over 2.6 million people in the European Union by end-2019 (Figure 3). This is about 43,000 fewer than in 2018. The countries with the largest number of jobs in this sector continue to be the countries with the largest financial centres in Europe: Germany, France, United Kingdom, Italy, and Spain. These five EU economies employ some 68% of the total EU-28 staff. Out of these five countries, only Germany (+13,661) and Italy (+6,163) saw substantial increases in the number of employees in 2019. Despite having about 5,000 fewer employees than in 2018, Poland remained the country in Eastern and Central Europe with the largest number of jobs in the sector. Including EFTA countries, the number of staff employed in the banking sector was about 2.741 million.

The liquidation of bank branches and a simultaneous dynamic increase in access to the Internet and mobile telephony have resulted in a significant change in customer expectations and the structure of entities providing these services. There is a marked increase in the market share of non-banking financial institutions (NBFI). These provide financial services using two main distribution channels: traditional (branches, agents) and branchless (mobile

and Internet networks). In these branchless channels, the share of FinTech services is growing (Schueffel, 2016).

Figure 4.3. The number of employees in credit institutions and subsidiaries in the EU in 2008-2019

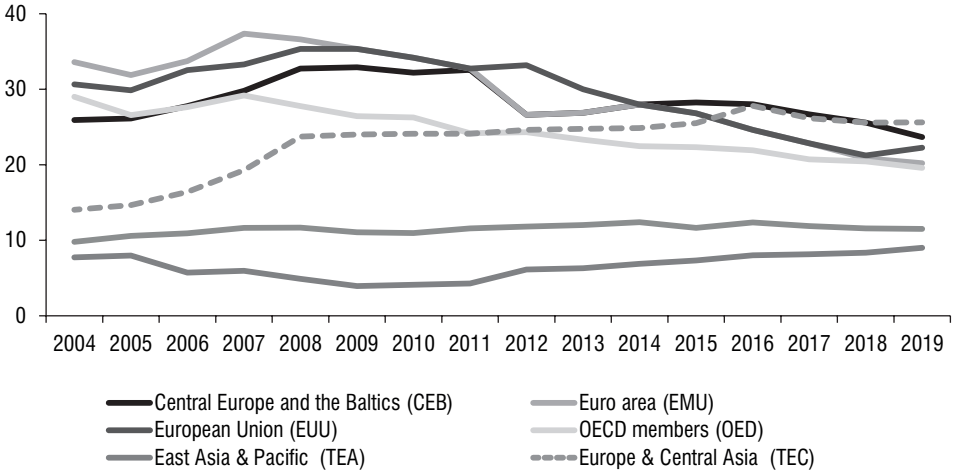


Source: The author`s compilation based on EBF (2021).

An analysis of changes in the number of commercial bank branches per 100,000 persons, according to regions and groups, implies a downward trend in the number of these branches has been widespread. It started in the second half of the 2000s and has continued since. The largest decline is recorded in the euro area countries. Similarly, the remaining countries of the European Union, as well as Central Europe and the Baltic States, experienced sharp declines. On the other hand, in the lower developed countries of East Asia and the Pacific, after a period of decline (2006-2011), there was a noticeable increase in the number of commercial bank branches (2012-2019) (Figure 4.4).

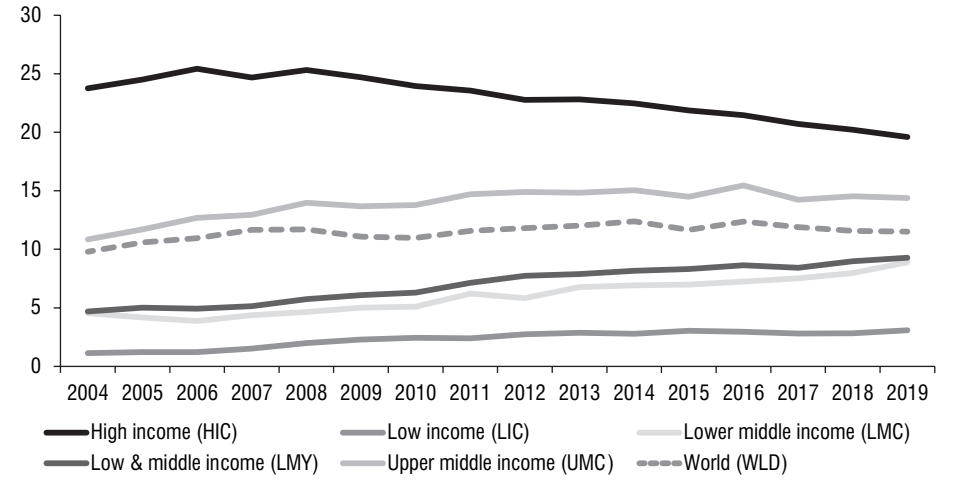
The World Bank data for 2004-2019 corroborate the relationship between the level of economic development and changes in the number of commercial bank branches. These data show that a clear downward trend in the number of commercial banks mainly concerned high-income countries. Upper middle-income countries showed a weak upward trend with some periods of stabilisation. On the other hand, a clear upward trend in the number of banks continues in the three income groups below the world average, i.e., low-income, lower middle-income, low and middle-income countries (Figure 4.5).

Figure 4.4. Commercial bank branches by regions and integration groups in 2004-2019 (per 100,000 adults)



Source: The author`s compilation based on WDI, WB (2021).

Figure 4.5. Commercial bank branches by income in 2004-2019 years (per 100,000 adults)



Source: The author`s compilation based on WDI, WB (2021).

4.3. Empirical model and results

In order to analyse interrelations between GDP *per capita* and banking service channels, the author has selected the following three channels: bank branches (traditional channels) and branchless channels: mobile and Internet-based. Individual country models are prepared for further research, where eight selected countries represent developed and developing countries from different areas of the world. The author has chosen countries from 3 main groups: (1) high income and highly industrialised: the United States of America (USA), Canada, Germany, the United Kingdom; (2) upper middle income (post-transformation developed economies): Poland and the Czech Republic; and (3) developing with major domestic disparities (lower middle income): Brazil and Uruguay.

The author estimates dependency models between GDP and selected banking service distribution channels using: Ordinary Least Squares (OLS) and Vector Error Correction Model (VECM) and response impulse function, based on observations from the period 2004-2019.

- In the first models, the classic linear regression model (KMRL) serves to estimate three statistically significant selected banking services channels affecting GDP *per capita* changes.
- In the second models, the VECM (Vector Error Correction Model) is used to examine interrelations between GDP *per capita* and selected banking services channels for Germany and Poland. As part of the modelling, the impulse response functions are employed to diagnose the impact force and direction of the explanation of individual variables.

In order to analyse the significance of the selected banking service distribution channels for GDP *per capita* for eight countries in the years 2004-2016, the following final formula for the economic growth function (OLS) is developed:

Model (OLS):

$$y_t = \propto_0 + \propto_1 x_{1t} + \propto_2 x_{2t} + \cdots + \propto_k x_{kt} + \xi_t \qquad (1)$$

where:

n – the number of estimated units,

k – the number of independent variables,

– parameters, t = 1,2, …, n and – the random component.

The author uses a model which consists of the dependent variable (GDP *per capita*) and three independent variables.

$$GDPpp_t = \propto_0 + \propto_1 \text{Branches}_t + \propto_2 \text{Mobile}_t + \propto_3 \text{Internet}_t + \xi_t \quad (2)$$

where:

GDPpp – GDP per capita, PPP (current international USD)

Branches – Commercial bank branches (per 100,000 adults)

Mobile – Mobile cellular subscriptions (per 100 people)

Internet – Individuals using the Internet (% of population)

t – period.

The time series of variables are derived from the World Bank (Global Findex) Internet database and the available data is annual.

Prior to the estimation of the model, the variables, the fit of the model (the coefficient of determination), and selection of variables for the model (correlation matrix) are examined. In order to analyse correlations between the dependent variable being GDP *per capita* and independent variables, Pearson's correlation coefficient is calculated.

The analysis of Pearson's correlation suggests that the changes in GDP show the strongest positive relations with distribution channels over the mobile phone and the Internet. Moreover, in a majority of countries surveyed, a negative relation obtains between changes in GDP and changes in the number of branches. This indicates that, as a society's wealth rises, the use of banking services in stationary outlets diminishes. Only in Poland, the Czech Republic and Brazil is there a positive correlation between these changes. This proves that Poles, Czechs and Brazilians still attach importance to direct contacts with bank employees (Table 4.1).

Table 4.1. Correlation coefficients, using the observations 2004-2019

GDP	Branches	Mobile	Internet	
1.0000	-0.3053	0.9798	0.7751	GDP_USA
1.0000	-0.6411	0.9387	0.9522	GDP_Canada
1.0000	-0.8782	0.6163	0.9601	GDP_Germany
1.0000	-0.6032	0.6418	0.7521	GDP_United Kingdom
1.0000	0.7336	0.9391	0.9608	GDP_Poland
1.0000	0.7502	0.4400	0.9336	GDP_Czech Republic
1.0000	0.8269	0.9953	0.9480	GDP_Brazil
1.0000	-0.6135	0.9400	0.9937	GDP_Uruguay

Note: 5% critical value (two-tailed) = 0.5529.

Source: The author's own calculations on the basis of WDI, WB (2021).

The verification of statistical data helps to develop the model with the inclusion of OLS. In the input version of the estimated model, the variable with 1% significance level is: Mobile (USA, Brazil), Internet (Germany, Czech Republic); 5%, the Internet (USA, Poland) and Branches (Uruguay); and at 10%, the Internet (United Kingdom, Canada). The coefficient of determination (R2; R-squared and adjusted R-squared) approximates 90% = 0.998158, which proves a high level of explanation. Moreover, the results of the F-Snedecor test (Statistics) are above the critical value F, which confirms that the models are fully useful.

Table 4.2. The estimation of GDP per capita values in selected countries by the OLS method for the period 2004-2019 (input data)

USA	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	α
Branches	-56.1632	274.189	-0.2048	0.8418	
Mobile	196.016	33.7345	5.811	0.0002	***
Internet	466.832	164.068	2.845	0.0174	**
R-squared	0.999530	Adjusted R-squared	0.941320	DW	1.253777
Canada	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	
const	-35564.7	36479.6	-0.9749	0.3551	
Branches	1362.51	1147.69	1.187	0.2655	
Mobile	-22.1627	146.164	-0.1516	0.8828	
Internet	562.799	270.280	2.082	0.0670	*
R-squared	0.919937	Adjusted R-squared	0.893250	DW	1.575826
Germany	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	
const	-29090.5	28052.7	-1.037	0.3268	
Branches	230.458	692.603	0.3327	0.7469	
Mobile	-85.2253	62.0879	-1.373	0.2031	
Internet	951.279	196.238	4.848	0.0009	***
R-squared =	0.940486	Adjusted R-squared	0.920648	DW	1.349465

USA	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	α
United Kingdom	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	α
const	5572.03	39985.0	0.1394	0.8922	
Branches	-482.761	719.877	-0.6706	0.5193	
Mobile	-44.3800	239.738	-0.1851	0.8572	
Internet	681.260	360.269	1.891	0.0912	*
R-squared	0.591742	Adjusted R-squared	0.455656	DW	1.007012
Poland	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	
const	9296.79	6491.27	1.432	0.1859	
Branches	-475.012	286.242	-1.659	0.1314	
Mobile	91.3755	49.3048	1.853	0.0968	*
Internet	270.101	97.4701	2.771	0.0217	**
R-squared	0.947199	Adjusted R-squared	0.929599	DW	0.920109
Czech Republic	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	
const	28463.9	16057.6	1.773	0.1101	
Branches	-538.722	906.481	-0.5943	0.5669	
Mobile	-64.0561	80.6728	-0.7940	0.4476	
Internet	315.705	61.2210	5.157	0.0006	***
R-squared	0.890585	Adjusted R-squared	0.854113	DW	0.863807
Brazil	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	
const	9543.80	1893.82	5.039	0.0007	***
Branches	-58.2300	114.181	-0.5100	0.6223	
Mobile	52.0571	5.31160	9.801	<0.0001	***
Internet	12.2615	15.2593	0.8035	0.4424	
R-squared	0.991334	Adjusted R-squared	0.988445	DW	1.681836
Uruguay	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	
const	20380.5	5611.99	3.632	0.0055	***
Branches	-1010.27	390.424	-2.588	0.0293	**
Mobile	25.0931	16.9910	1.477	0.1738	
Internet	140.704	55.6512	2.528	0.0323	**
R-squared	0.994152	Adjusted R-squared	0.992203	DW	1.666390

where: α=0.01 (***), α= 0.05 (**), α= 0.10 (*).

Source: The author's own calculations on the basis of WDI, WB (2021).

As a next step, the correctness of the model is checked and an augmented Dickey-Fuller test (ADF) is applied. For all the analytical variables, a unit root a = 1 is noted; integration row I (1), which indicates the non-stationarity of time series. Doornik-Hansen test cannot be applied as a standard of distribution. White's test for non-linearity (logarithms) serves the assessment of the linearity of the analytical form of the model. It confirms its validity.

The results of the final model indicate that among the significant distribution channels of banking services were: Mobile and Internet (USA), mainly Internet (Canada, Germany, United Kingdom, Poland and Czech Republic), Mobile (Brazil) and Branches and Internet (Uruguay) (Table 4.3).

Table 4.3. Estimation of GDP per capita values in selected countries by the OLS method for the period 2004-2019 (final data)

USA	***Coefficient***	***Std. Error***	***t-ratio***	***p-value***	**α**
Mobile	200.933	22.6426	8.874	<0.0001	***
Internet	433.836	29.7454	14.58	<0.0001	***
R-squared	0.999528	Adjusted R-squared	0.941074	DW	1.165194
Canada	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	α
const	3976.56	3566.91	1.115	0.2887	
Internet	460.171	44.5083	10.34	<0.0001	***
R-squared	0.906696	Adjusted R-squared	0.898214	DW	1.373402
Germany	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	α
const	-21321.4	5430.19	-3.926	0.0024	***
Internet	776.748	68.1960	11.39	<0.0001	***
R-squared	0.921836	Adjusted R-squared	0.914731	DW	0.800122
United Kingdom	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	α
const	-18864.7	14739.6	-1.280	0.2269	
Internet	776.592	205.198	3.785	0.0030	***
R-squared	0.565616	Adjusted R-squared	0.526126	DW	0.912248
Poland	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	α
const	-1267.13	1950.01	-0.6498	0.5292	
Internet	388.651	33.8271	11.49	<0.0001	***
R-squared	0.923080	Adjusted R-squared	0.916087	DW	0.617862
Czech Republic	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	α
const	11630.7	1949.05	5.967	<0.0001	***
Internet	263.058	30.4420	8.641	<0.0001	***
R-squared	0.871602	R-squared	0.871602	DW	0.570063
Brazil	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	α
const	8642.10	160.646	53.80	<0.0001	***
Mobile	55.0638	1.61007	34.20	<0.0001	***
R-squared	0.990683	Adjusted R-squared	0.989836	DW	1.525189
Uruguay	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	α
const	12886.5	2534.63	5.084	0.0005	***
Branches	-491.803	180.641	-2.723	0.0215	**
Internet	222.198	7.62831	29.13	<0.0001	***
R-squared	0.992735	Adjusted R-squared	0.991282	DW	1.418276

Source: The author's own calculations on the basis of WDI, WB (2021).

The next step involves VECM, estimated on the same factors as model I (OLS), in pursuit of an interrelation verification between GDP *per capita* and selected banking services channels for Germany and Poland. The model variables for Germany and Poland meet the assumptions of the VECM.

All the analysed variables lack the stationarity of time series, but a unit root a = 1 occurs in the process I(1). For each sequence separately, the ADF test is carried out with an absolute term and with an absolute term and a linear trend. To verify the conclusions drawn on the basis of the ADF test, the KPSS stationarity test is applied, where the null hypothesis assumes a sequence stationarity, whereas the alternative hypothesis assumes the occurrence of the unit root. Further, the Johannes test is conducted and confirms co-integration among the examined variables. According to the AIC, FDI and HQC information criteria, the maximum lag equals 1. To analyse the VAR model stability, the unit root test is executed and reveals that in the analysed model, all the equation roots as regards the module are lower than 1. Since the roots of the characteristic equation are inside the unit circle (lower than 1), the VAR model can be supplemented with the so-called component of error correction expressing the long-term relationship and the interpretation of impulse responses and variance decomposition will give credible results. Besides, in accordance with the Granger representation theorem, if variables of order one I(1) are integrated and co-integrated, the relationship between them can be represented as the VECM.

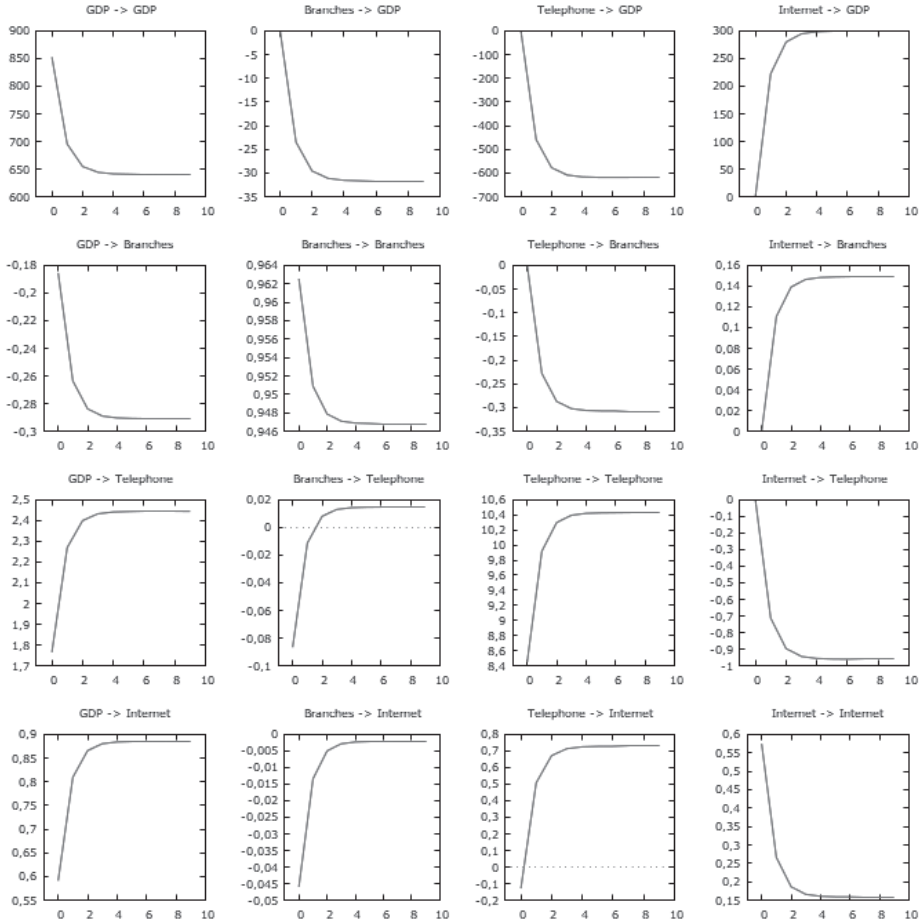
The general formula for VECM is presented below (Piłatowska, 2003).

$$\Delta Y_t = \Gamma_1 \Delta Y_{t-1} + \Gamma_2 \Delta Y_{t-2} + \ldots + \Gamma_{k-1} \Delta Y_{t-k+1} + \pi Y_{t-k} + \varepsilon_t = \sum_{i=1}^{k-1} \Gamma_i \Delta Y_{t-i} + \pi Y_{t-k} + \varepsilon_t \quad (3)$$

where: $\Gamma_i = \sum_{j=1}^{i} A_j - I,\ i = 1,2,\ldots,k-1,\ \Gamma_k = \pi = -\pi\ (1) = -\left(I - \sum_{i=1}^{k} A_i\right), I$
where: I is the unit matrix.

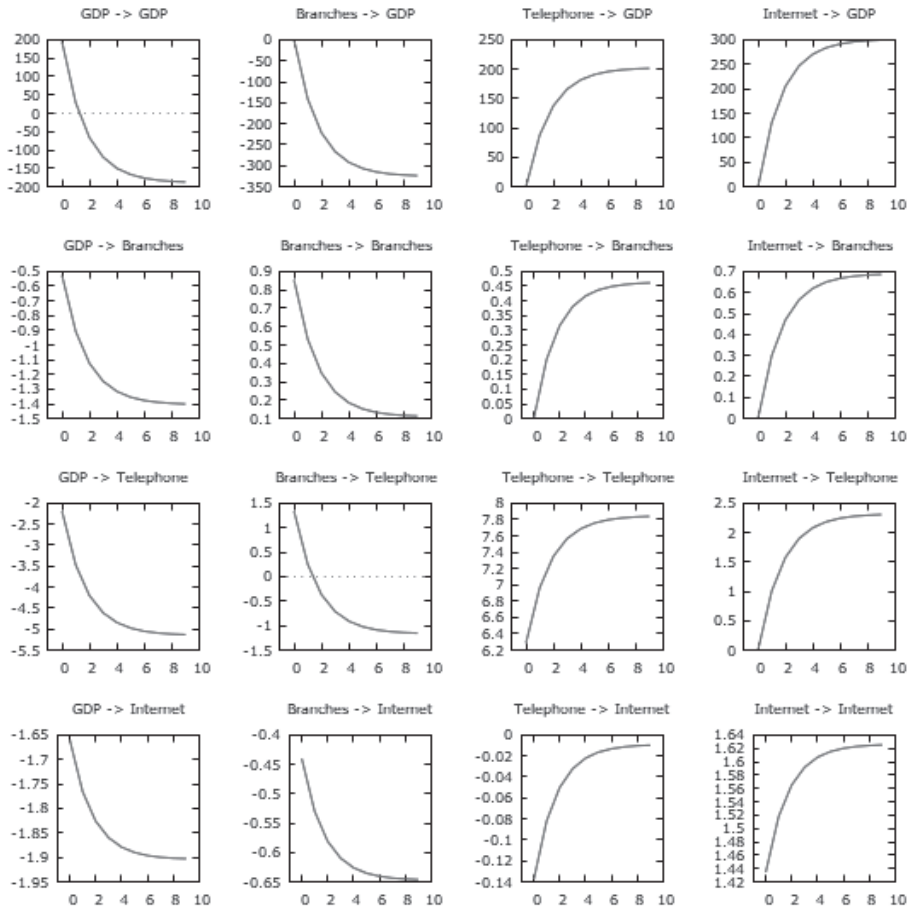
The author focuses on the impulse response function which indicates, for Germany and Poland, that the higher the economic growth, the higher the usage of mobile phone and Internet channels and the lower the significance of bank branches (per 100,000 adults). The effect is stronger in Germany than in Poland (see Figures 4.6, 4.7).

Figure 4.6. Impulse response function for VECM in Germany for 2004-2019



Source: The author's own calculations on the basis of WDI, WB (2021).

Figure 4.7. Impulse response function for VECM in Poland for 2004-2019



Source: The author's own calculations on the basis of WDI, WB (2021).

Conclusion

The expansion of electronic banking and the development of FinTech services in the world economy create various opportunities, challenges and threats for banking entities. The main opportunities include: lowering costs, improving profitability, and increasing the number of customers. Among the challenges, an increased competition from banks and non-banking institutions, consolidation processes, and ensuring cybersecurity are of key importance. Significant threats concern an increase in systemic risk in banks and hacker attacks. The types of changes may depend on the socio-economic development of a country, the welfare of a society, saturation with traditional financial infrastructure (number of bank branches), and the accessibility of mobile and Internet-based services. Nevertheless, the FinTech growth will result in a change of current business models of banks.

The results prove that the influence of FinTech on the business model of banks exists and is determined by the level of welfare of a society and the development of infrastructure.

They affirm the research hypotheses and repeatedly show that in the highest-income countries, the public is more willing to use electronic banking (FinTech) services, which forces banks to limit traditional banking (stationary branches). In high- and middle-income countries, bank branches are maintained, but FinTech services are also growing in importance. In countries with the lowest level of socio-economic development and large disproportions, banks are not willing to expand their branch network, therefore, the mobile and internet channels are the basis for the provision of financial services.

These conclusions are confirmed by the research of the World Bank experts (Demirguc-Kunt, Klapper, Singer, 2017) who emphasise the importance of a strong financial infrastructure, technological, regulatory, and legal framework regulations for the potential of economic growth and the evolution of the financial sector (FinTech services).

FinTech, thanks to a more simplified operating model, will be able to find market niches more efficiently and faster, which will allow banks to increase their market share. In turn, they will have to make changes to their business model in order to continue to fulfill their functions and achieve the goals for which they exist on the market. In this way, it will be possible to maintain the security, stability and reliability of the financial sector consisting of banks and NBFI (including FinTech).

In summary, this chapter explains a statistical correlation between the welfare of society (measured by GDP per capita, PPP) and the willingness of bank customers to use branchless channels (via mobile and internet networks) rather than the traditional form of banking services (stationary banks) in the studied countries. In the future, changes in the financial services market will differ from country to country and will be determined by the level of economic development and the financial market.

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Abstract

The expansion of electronic banking and the development of FinTech services in the world economy create various opportunities, challenges and threats for banking entities. The main opportunities include: lowering costs, improving profitability, and increasing the number of customers. Among the challenges, increased competition from banks and non-banking institutions, consolidation processes, and ensuring cybersecurity are of key importance. Significant threats concern an increase of systemic risk in banks and hacker attacks. The types of changes may depend on the socio-economic development status of a country, level of welfare of a society, saturation with traditional financial infrastructure (number of bank branches), and the accessibility of mobile and Internet-based services.

The aim of this chapter is to examine the relationship between economic growth measured by GDP per capita PPP, a measure of social welfare, and the propensity to use traditional forms of banking services as well as mobile and internet infrastructure in selected countries.

The research results positively verify the research hypotheses. They demonstrate that in the highest-income countries, the public more willingly uses electronic banking (FinTech) services, which forces banks to limit traditional banking (stationary branches). In high- and middle-income countries, bank branches are maintained, but Fin Tech services are also growing in importance. In countries with the lowest level of socio-economic development and large disproportions, banks are not willing to expand their branch network, therefore, the mobile and internet channels are the basis for the provision of financial services.

Pantelis Kyrmizoglou*

Chapter 5

The role of the dividend policy in the "success" story of a bank. The case of a small sized Greek bank

Introduction

The bank examined in this paper is Ergobank. It was established in 1975 after the restoration of democracy in Greece. The founder of the bank, Konstantinos Kapsaskis (a charismatic personality), managed to convince a number of businessmen to invest in the new bank, taking into account some restrictions regarding the amount of the investment and the percentage of participation in the share capital (no shareholder could have more than 5% of the total share capital) (Dritsa, 2006).

The management of the bank achieved an impressive performance in all the 25 years of the bank's operation. Despite the lots of restrictions from 1975 to the end of 80's, Ergobank managed to overcome the difficulty of the administrative determination of interest rates and recorded an unprecedented profitability. But even in the 90's Ergobank continued to show an incredible performance. "The Banker" magazine of the Financial Times group ranked Ergobank 10th in the world as far as its Return on Equity (ROE) is concerned. The failure of the effort to create a bank up to its standards (Probank, 2001)

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confirms the importance of the personality of the founder of Ergobank and the difficulty to repeat the successful model of Ergobank under different conditions and in another period of time.

The paper will proceed to evaluate the calculated ROA, ROE and Dividend Payout ratios, compare the bank's practice regarding its dividend policy with well-known theories, and comment on the various aspects of the exercised dividend policy. Finally, some conclusions will be drawn regarding the impact of the dividend policy on the bank's prospects.

5.1. The calculation of ratios and evaluation of the respective figures

In the following Table 5.1, we can see the history of the ROA, ROE and Dividend Payout ratios. As mentioned in the introduction, Ergobank's profitability was highly appreciated by very important magazines (Business Week, 1986, The Banker, 1997). This is confirmed in our calculation of ROA and ROE ratios for all the years of the existence of Ergobank.

Table 5.1. ROA, ROE and Dividend Payout ratios in 1976-1999

Year	ROA %	ROE %	Dividend Payout ratio (%)
1976	2.96	12.80	76.2
1977	2.50	17.11	75.7
1978	2.10	18.22	73.2
1979	2.02	19.41	65.1
1980	2.04	25.13	61.2
1981	1.75	31.02	65.7
1982	1.07	19.86	82.7
1983	0.90	19.61	84.3
1984	1.60	44.46	71.9
1985	1.95	54.84	49.9
1986	1.72	55.89	56.2
1987	2.10	78.83	52.6
1988	2.25	62.05	50.5
1989	3.55	59.38	50.3
1990	3.80	52.80	67.5
1991	4.52	69.41	61.3
1992	4.26	63.37	39.3
1993	3.90	62.95	39.1

Year	ROA %	ROE %	Dividend Payout ratio (%)
1994	3.90	63.00	39.3
1995	3.71	60.88	39.2
1996	4.03	62.26	38.4
1997	3.92	48.71	37.3
1998	3.55	48.38	37.1
1999	4.23	37.54	34.5

Source: The author's own calculations based on the published financial statements of the Ergobank.

The highest dividend payout ratios were recorded in 1982 and 1983 and connected with relatively lower net profits. On the other hand, the lowest figures recorded in 1996, 1997, 1998 and 1999 related to higher net profits. This contradictory picture of the dividend policy in place shows the wish of management to attract investors the in periods of relatively lower profitability.

On the contrary, when profitability was higher, the management of the bank was rather reluctant to convince investors about the value of shares.

Some more positive characteristics of Ergobank shares can be mentioned:

- P/E, PEG and P/BV ratios were at very attractive levels.
- Marketability ratios were very high.
- Beta coefficient was very high.
- The capitalisation to turnover ratio was very attractive.

5.2. The dividend policy of Ergobank in comparison with the practices prevailing in Greece and with theories

The positive consequences of the adopted dividend policy can be summarised as follows:

- A high dividend payout ratio made the shareholders receiving high dividends happy;
- A moderate split of the shares of a very profitable bank led to their very careful holding and therefore reduced their supply. At the same time, the demand was increasing as more and more potential shareholders were convinced about the value and the philosophy of the bank.

There are also negative consequences of the Ergobank's dividend policy. Huge amounts were channelled to the shareholders, whereas they could have been reinvested and contributed to the growth of the bank.

In general, the generous dividend policy of Ergobank encouraged a vast majority of its employees to buy shares and become shareholders in a bank whose shareholders were not big. In effect, the trade union used no serious arguments against the "employer". Therefore, the staff supported the management and when the latter were threatened by a group of shareholders, the backing of the "employee shareholders" was welcome and very effective. The support of the "employee shareholders" became even more important in the late 80's and early 90's, when the existing management became more generous for the employees and especially those working in higher positions, by distributing to them a number of shares instead of cash bonuses. Thus, the employees were "allies" of the management and Ergobank became a bank where strikes were non-existent.

In this way, Ergobank managed to face the "aggressive" attitude of brokerage firms and other institutional investors which were trying to keep the price of the shares at lower than normal levels by suddenly suggesting selling in spite of suggesting buying only a few days before. The reasons behind such contradictory attitudes cannot be explained with normal standards, but with specific interests served by such inconsistent investment behaviuors.

In the Greek reality, the dividend policy depends to a considerable extent on the composition of shareholders. For example, in the case of public utilities, a rather generous dividend policy can be observed. The presence of the government in the share capital of companies leads to rather higher dividends aiming, among other things, at the promotion of future privatisations. This is also due to political reasons, as most shareholders are also voters.

In the case of Ergobank, the high dividend yields were connected with a great profitability and the large numbers of small and medium shareholders who were not involved in the making of key decisions (as none could influence decisions favourable to their personal interests).

After a careful scrutiny of the bank's performance, we note that in the 25 years of its operation:

- Ergobank never needed to use the stock repurchase solution.
- They never needed to resort to the reverse stock split.
- Although they used the stock split 3 times, the price of the shares maintained its spectacular course.

- From its inception, Ergobank had an impressive profitability, leading to the distribution of cash dividends. They employed stock dividend once, giving a positive signal to the markets.

The case of Ergobank does not seem to confirm the dividend irrelevance theory by Miller and Modigliani and the theory of different tax treatment of dividends and capital gains by Lintzenberger and Ramaswamy. On the contrary, the bird in the hand theory of Gordon and Lintner is closer to the dividend policy exercised by the management of Ergobank.

Conclusion

The "generous" dividend policy followed by Ergobank, among other factors, led to its acquisition by Eurobank. A tighter dividend policy, with the reinvestment of most dividends, could lead to a much bigger and stronger Ergobank which could play a more important role in the Greek banking system. Such a tight dividend policy could attract extra funds (for example, in the form of bonds payable), expanding Ergobank into at least one of the biggest banks of Greece. Its priority treatment of SME financing could have changed the macroeconomic developments in the country.

Some positive implications in the case of Ergobank:

- Bringing together a lot of shareholders inspired by the management exercising a generous dividend policy,
- Concentrating the "employee shareholders" around the management of the bank,
- Lack of influence from a lot of small and medium shareholders on decisions made by the management.

The negative implication of the generous dividend policy is the leaking of resources out of the Bank, which prevented its strengthening.

I strongly believe that if Ergobank had adopted a different (less generous) dividend policy, reinvesting a much larger amount of their profits, they could have avoided their acquisition by Eurobank. On the contrary, they would have been able to acquire other banks and therefore become one of the strongest players in the Greek banking system.

The dividend policy is an element of financial management that may constitute a very important factor in a company, especially in the case of banks, where it may have significant consequences for the whole economy.

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Abstract

The chapter aims at showing the impact of an extreme dividend policy exercised by a small-sized Greek bank (Ergobank) on its prospects of development. Relying on the published financial statements, the ROA, ROE and Dividend Payout ratios of the bank are recorded. Despite the excellent financial performance of the bank since the very first year of its operation, the extremely generous dividend policy kept the shareholders happy, but finally led to the bank's acquisition by another bank (Eurobank) in 2000. A detailed consideration of the respective ratios leads to the conclusion that a tighter dividend policy could have made Ergobank at least one of the leaders of the contemporary banking system.

Aneta Kosztowniak*

Chapter 6

The modelling of the main determinants of non-performing loans in the Polish banking sector

Introduction

Monitoring the quality of the corporate loan portfolio in the banking sector results from prudential regulations imposing the obligation to maintain adequate capitals in the face of changes to banking risk.

When customers do not meet their agreed repayment arrangements for 90 days or more, a bank must set aside more capital on the assumption that the loan will not be paid back. This reduces its capacity to provide new loans. Limiting lending on the part of banks means restricting the sources of financing investments by enterprises and, further, increases unemployment in the economy.

Moreover, if a bank has too many bad loans on its balance sheet, its profitability will suffer because it will no longer earn enough money from its credit business. In addition, it will need to put money aside as a safety net

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in case it needs to write off the full amount of a loan at some point in time. To be successful in the long run, banks need to keep the level of bad loans at a minimum so they can still earn a profit from extending new loans to customers.

Monitoring the value of non-performing loans (NPLs) in the Polish banking sector is the object of the monetary policy of the National Bank of Poland (NBP), as well as of the common monetary policy of the European Central Bank (ECB) in the European Union (EU). The statistical data of the ECB show significant differences in the amount of NPLs in the banking sectors of the EU countries (e.g., 41.6% Greece, 20.9% Cyprus, 6.3% Poland, and 1.2% United Kingdom in Q1.2019). Therefore, as part of the work of the ECB, new programmes are being developed to support the reduction of NPL rates.

In modelling the quality of the portfolio of NPLs granted to non-financial corporations (NFCs), mainly the following variables are taken into account: the market and financial variables of corporations, which determine the possibility of servicing loans, and the variables of banking conditions, serving as capital hedging against increases in banking risk.

The purpose of the study is to indicate changes in the NPL ratio of non-financial corporations and its main determinants in the Polish banking sector for the period 2009-2020.

The following research questions are formulated:

1. How did the NPL rates change in the portfolio of loans granted to NFCs in the analysed period. Are these changes evidence of an improvement or a deterioration in the quality of the corporate loan portfolio in the Polish banking sector?
2. Which of the explanatory variables has the strongest impact on the changes in the NPL rate and what is their tendency over time?

This study proceeds as follows. Section 1 provides a review of literature and empirical studies on NPLs. Section 2 shows changes in the portfolio of corporate loans and NPL rates. Section 3 presents data and research procedure. Section 4 describes empirical analysis based on the VECM model, including impulse response functions and the decomposition of variables, together with a summary of results. Concluding remarks are provided in the last section.

6.1. Literature review and empirical studies

A bank loan is considered non-performing when more than 90 days pass without a borrower paying the agreed instalments or interest. Non-performing loans (NPLs) are also called "bad debt" (ECB, 2020).

The ECB requires asset and definition comparability to evaluate risk exposures across euro area central banks. The ECB specifies multiple criteria that can cause an NPL classification when it performs stress tests on participating banks.

The ECB has performed a comprehensive assessment and developed criteria to define loans as nonperforming if they are:

- 90 days past due, even if they are not defaulted or impaired;
- Impaired with respect to the accounting specifics for U.S. GAAP and International Financial Reporting Standards (IFRS) banks;
- In default according to the Capital Requirements Regulation.

The NPL rate is calculated as the ratio of the non-performing loans (impaired loans) and advances to the gross value of total loans and advances (NBP, 2020).

$$NPLratio = \frac{Non-permormingloans}{Totalloans} \quad (1)$$

The chapter attempts to assess the quality of the portfolio of loans granted to non-financial corporations, therefore, respectively, impaired loans and total loans granted to these corporations (included in the so-called phase III, portfolio B) are taken into account.

The quality of a loan portfolio depends on the exposure to banking risks, especially the credit risk. There are internal risk factors, endogenous to business entities, and external risk factors, endogenous to the environment of enterprises and independent of them[2].

[2] In the estimated econometric model, these internal factors are related to the variables of the financial situation of enterprises, and to external factors – market (macroeconomic) variables.

However, in terms of credit risk parameters, the following should be mentioned:

- Default risk, measured with PD (*probability of default*),
- Risk of loss, measured with LGD (*loss given default*)
- Exposure at default, measured with EAD (*exposure at default*).

An inseparable element here is the rating of borrowers in the case of entities or scoring in the case of retail loans.

A similar situation is related to the risk in banking activities (Pastor, 2020; Pastor & Serrano, 2005). A bank's credit policy and credit portfolio management are adjusted to the internal and external (independent) factors (Matuszyk, 2017).

As part of maintaining financial stability, banks conduct:

- The surveillance of current financial market conditions to assess the risk of shocks,
- Macro-prudential surveillance framework,
- The analysis of macro-financial linkages,
- The surveillance of macroeconomic conditions (Figure 6.1).

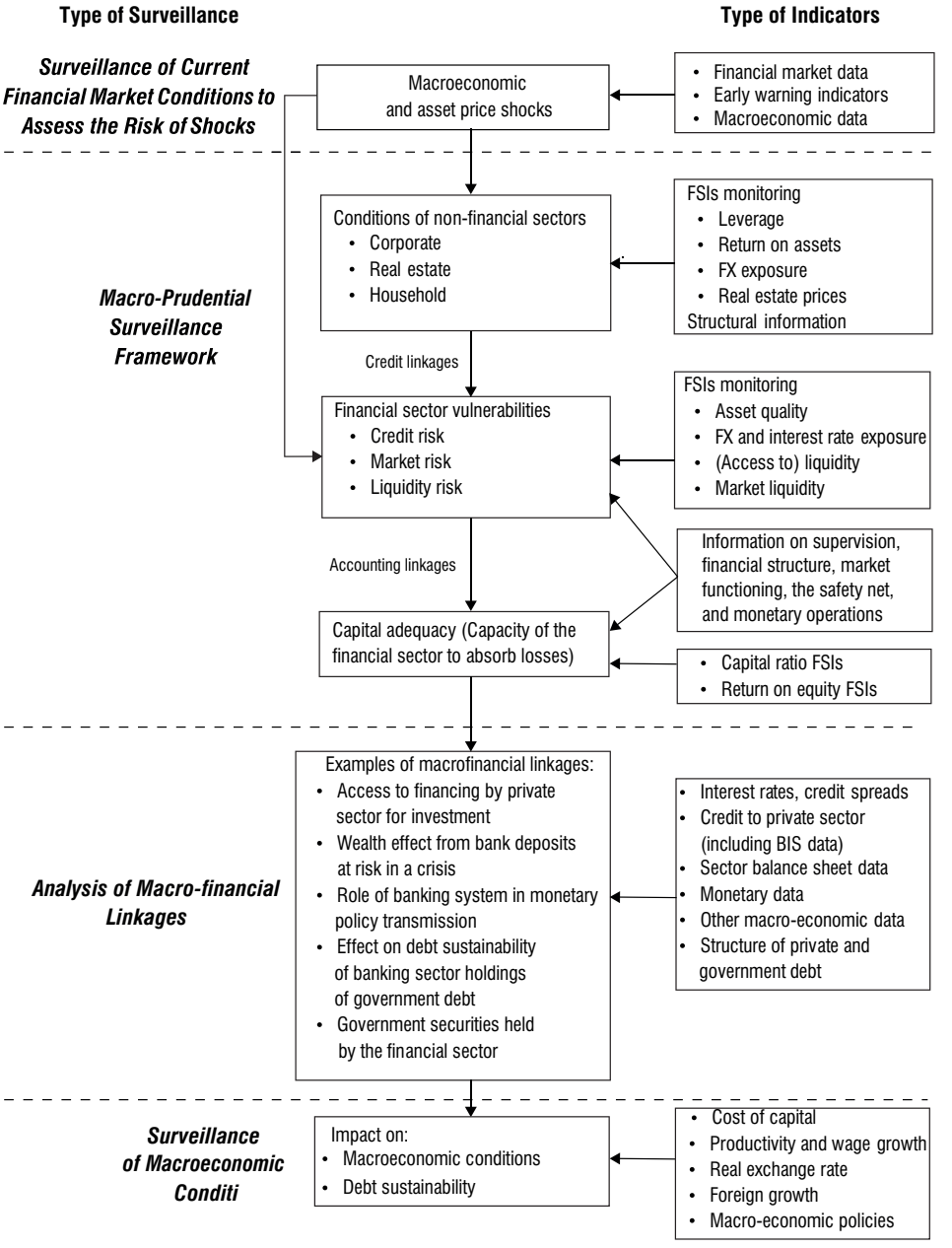
Due to interactions between risks at a bank, the risk of the balance sheet structure is important for the quality of a loan portfolio and the capital maintained in the context of security. As part of the concept of required capital, attention should be paid to the theory of economically required capital, according to which the value of economic capital for most institutions (in this case, banks) should be higher than the regulatory capital required by the BASEL concept (Generst, Brie, 2013; Basel Committee on Banking Supervision, 2014).

In addition to the above-mentioned capitals, the international supervisory standards of risk management pay special attention to maintaining adequate levels of: the solvency ratio, leverage and liquidity ratios, and capital buffers.

Asset quality monitoring is a key area of supervision in banks, alongside liquidity and profitability. The asset quality analysis mainly involves the calculation of:

- NPLs to total loans,
- NPLs less provisions to capital,
- The sectoral distribution of loans to total loans.

Figure 6.1. Framework for Financial Stability Analysis



Source: IMF (2003, p. 6).

This monitoring is facilitated by the current assessment of the level and volatility of the indicators listed in Table 6.1. These statistics are published, among others, by The International Monetary Fund (IMF) under the so-called financial soundness (FSIs).

Table 6.1. Role of Core and Corporate FSIs

Types of FSI		Specific FSIs	Role of FSIs in Monitoring the Financial Sector
Banking Sector Financial Strength	*Capital Adequacy*	Tier 1 capital ratio	Assesses the adequacy of highest quality capital, such as shareholder equity and retained earnings, relative to risk weighted assets
		Regulatory capital ratio	A broader measure of capital including items giving less protection against losses, such as subordinated debt, tax credits and unrealised capital gains
	Earnings and profitability	Return on equity	Assesses the scope for earnings to offset losses relative to capital or loan and asset portfolio
		Return on assets	
		Interest margin to gross income	Indicates the importance of net interest income to earnings and scope to absorb losses
		Non-interest expenses to income	Indicates the extent to which high non-interest expenses weaken earnings
Banking Sector vulnerabilities	*Asset quality*	NPLs to total loans	Indicates the credit quality of banks' loans
		NPLs less provisions to capital	Shows NPLs net of provisions taken against them relative to capital
		Sectoral distribution of loans to total loans	Identifies credit exposure concentrations to particular sectors by the whole banking sector
	Liquidity	Liquid assets ratio	Assesses the vulnerability of the banking sector to a loss of access to market sources of funding or a run on deposits
		Liquid assets to shortterm liabilities	
	Sensitivity to market risk	Duration of assets and liabilities	Measures maturity mismatch to assess interest rate risk
		Net open foreign exchange position to capital	Measures foreign currency mismatch to assess exchange rate risk
Corporate sector		Leverage ratio	Gives an indication of the credit risk as a highly leveraged corporate sector is more vulnerable to shocks that could impair its capacity to repay loan
		Return on Equity	Indicates the extent to which earnings are available to cover losses
		Earnings to interest and principle payments	Reveals to what extent earnings available to cover losses are reduced by interest and principle
		Net FX exposure to equity	The vulnerability of the corporate sector to exchange rate chan ges
		Number of bankruptcies	Serves as an indicator of corporate sector distress

Source: IMF (2003, p. 12).

It has already been noted NPLs are loans where the borrower has difficulties to make the scheduled payments to cover interest and/or capital reimbursements. When the payments are more than 90 days past due, or the loan is assessed as unlikely to be repaid by the borrower, it is classified as an NPL.

The elevated levels of NPLs may affect financial stability as they weigh on the viability and profitability of affected institutions and have an impact, via reduced bank lending, on economic growth. More specifically, the high stocks of NPLs can weigh on bank performance through two main channels:

1. NPLs generate less income for a bank than performing loans and thus reduce its profitability, and may cause losses that reduce the bank's capital. In the most severe cases, these effects can put in question the viability of a bank, with potential implications for financial stability.
2. NPLs tie up significant amounts of a bank's resources, both human and financial. This reduces the bank's capacity to lend, including to small and medium-sized enterprises, which rely on bank lending to a much greater extent than larger companies. In turn, this negative effect in terms of credit supply also reduces the capacity of businesses to invest, affecting economic growth and job creation, hence creating a tangible effect on the real economy (European Commission Services, 2020).

For these reasons, the Commission and other EU authorities have long highlighted the urgency of taking the necessary measures to address the risks related to NPLs (European Commission Services, 2018; 2019). In order to reduce the high NPL stocks, the EU agreed on a comprehensive set of measures outlined in an "*Action Plan to Tackle NPLs in Europe*" (European Commission Services, 2011), which is currently being implemented. The ongoing decline of NPLs has been and continues to be one of the key areas for reducing risk in the European banking sector. Still, high NPL ratios remain an important challenge for some Member States, in particular e.g., gross NPLs and advances (% of total gross loans and advances) for Q1.2019 and Q1.2018:

- Greece 41.6%, 45.1%,
- Cyprus 20.9%, 30.8%,
- Poland 6.3%, 7.4%,
- Hungary 5.3%, 7.2%,

- Czech Republic 2.0%, 2.3%,
- United Kingdom 1.2%, 1.4% (European Central Bank (2020); Kosztowniak, 2016).

The pro-cyclicality of lending activity is observed in the banking sector. Losses on banks' credit portfolios tend to follow the business cycle, falling during a recovery and increasing during a recession. Banks determine the level of these losses by means of loan loss provisions. As reserves reduce the value of revenues, their pro-cyclicality may contribute to the volatility and pro-cyclicality of bank profits and, consequently, of bank earnings and retained earnings.

There is evidence that the amount of debt recovered during a recession is lower than during an expansion. The results of Frye's (2000) research, based on Moody`s data, show that the recovery during contractions is about 1/3 lower than during expansion periods.

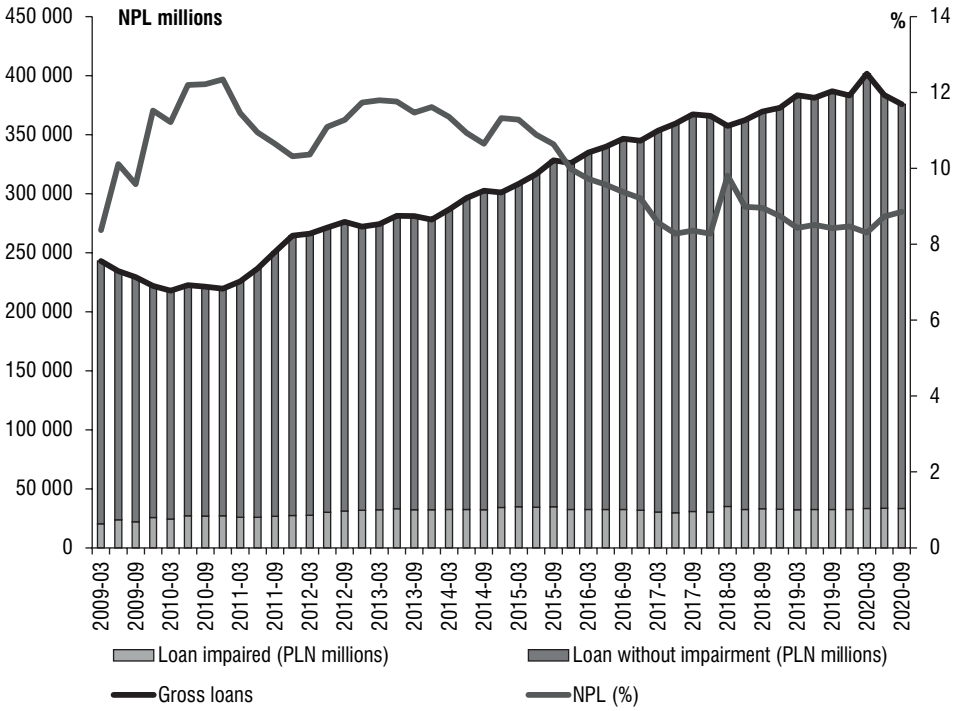
Recently, it was the outbreak of the crisis related to COVID-19 that had an impact on changes in the economic situation of corporations (borrowers) and thus on the quality of the loan portfolio (NPLs), as well as the banks' credit policy.

6.2. Changes in the portfolio of corporate loans (non-financial corporations) and NPL rates

The total value of loans in the banking sector in Poland showed a general upward trend in Q1.2010-Q1.2020 (from PLN 217.9 million to PLN 401.6 million). Only the period Q2.2020-Q3.2020 brought a decrease in the total value of loans (PLN 383.6 million and PLN 375.5 million). The NPL ratio showed a downward trend in the period Q4.2010-Q1.2020 (from 12.3% to 8.3%)[3]. On the other hand, the last two analysed quarters brought an increase in the NPL ratio, respectively: Q2.2020 (8.7%) and Q3.2020 (8.9%) (Figure 6.2).

[3] The decline in total loans was also due to a decline in demand for loans from borrowers due to the uncertain macroeconomic situation related to the COVID-19 pandemic.

Figure 6.2. The changes of loans impaired and without impairment of non-financial corporations and NPL ratio in Poland in the period of Q1.2009-Q3.2020 (%, PLN million)

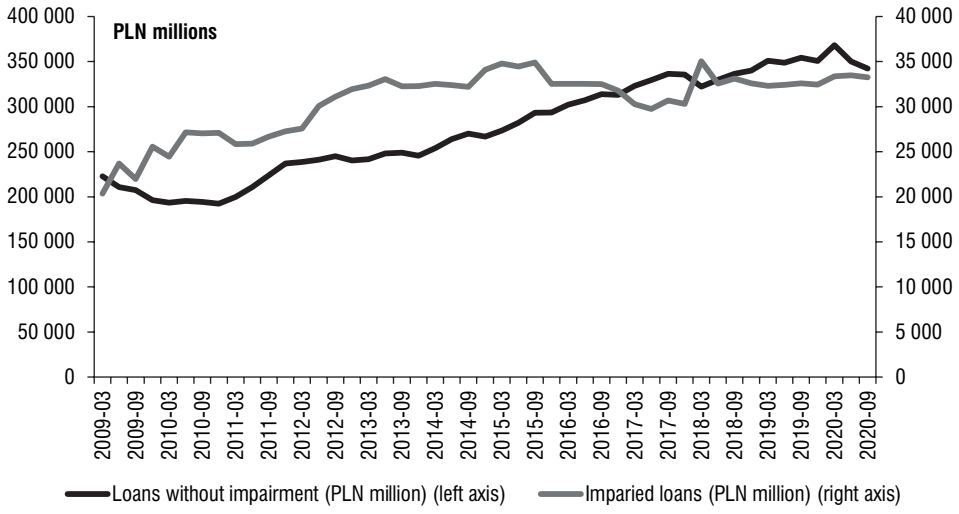


Source: The author`s compilation based on: NBP (2020).

The indicated increase in the NPL ratio in Q2-Q3.2020 results from an acceleration in the dynamics of the value of impaired loans (from PLN 33.3 million in Q1.2020 to PLN 33.5 million in Q2.2020) with a weakening of the dynamics of the value of loans without impairment (from PLN 368.2 million in Q1.2020 to PLN 342.3 million in Q3.2020) (Figure 6.3).

In the entire period Q1.2009–Q3.2020, the structure of the loan portfolio in the Polish banking sector remained stable, i.e., around 91-92% of unimpaired loans and around 9-8% of impaired loans. Due to the fact that the Polish economy has not experienced the effects of the cyclical recession so far (Q3.2020), a deterioration in the corporate loan portfolio has not been so marked either.

Figure 6.3. The changes of impaired loans and loans without impairment of non-financial corporations in Poland in the period of Q1.2009-Q3.2020 (%, PLN million)



Source: The author`s compilation based on NBP (2020).

The indicated changes in the loan portfolio (Q2.–Q3.2020) and increases in NPL rates were mainly caused by the reduction of economic activity and, consequently, lower income. While in Q4.2019 the value of net revenues from the total activity of corporations in Poland amounted to PLN 147,311 million, it decreased to PLN 23,901 million. The following quarters saw a slow increase in this net income (CSO, 2020).

Nevertheless, in the longer term, the NPL ratio depends on many market conditions determining the rate of economic growth and influencing changes in borrowers' creditworthiness.

6.3. Research procedure

The research is based on statistics from the National Bank of Poland (NBP), Central Statistics Office (CSO), and Organisation for Economic Co-operation and Development (OECD Internet databases).

In order to analyse the relationship between changes in the NPL ratio and market conditions, the financial standing of enterprises and banks' capital

requirements and the quality of the corporate loan portfolio in the Polish banking system, a final formula for the NPL function is developed:

$$NPL_t = \propto_0 + \propto_1 GDP_t + \propto_2 CPI_t + \propto_3 WIBOR_t + \propto_4 ROAC_t + \propto_5 CROAC_t + \propto_6 + GFCF_t + \propto_7 CAR_t + \propto_8 TOFSP_t + \propto_9 CRofCR_t + \xi_i \quad (2)$$

The explained variable:

NPL_t – The non-performed loan ratio

Explanatory variables:

GDP_t – Gross domestic product

CPI_t – Consumer price index

$WIBOR_t$ – Warsaw Interbank Offered Rate

$ROAC_t$ – Revenues from the overall activity of corporations

$CROAC_t$ – Costs of obtaining revenues from the overall activity of corporations

$GFCF_t$ – Gross fixed capital formation

CAR_t – Capital adequacy ratio

$TOFSP_t$ – Total own funds for solvency purposes

$TOFSP_t$ – Capital requirements of credit risk

ξ_i – random component

t – period

The methodology of changes in the quality of the loan portfolio corresponds to the methodologies used by central banks, e.g., by NBP and IMF (2003), Matthewes, Guo & Zhang (2007), Maggi & Guida (2010). The study period includes 47 quarters data for the period Q1.2009–Q3.2020 (Table 6.2). The time series is filtered using a simple moving average.

These methods are well-known from literature on international economics and international finance and econometric methods like the VECM model (*Vector Error Correction Method*) including the impulse response functions and forecast error variance decomposition analysis.

Table 6.2. Model variables

No.	Variables	Data source	Expected impact on the NPLs
1	NPL_t	NPB	"-"
2	GDP_t	CSO	"-"
3	CPI_t	CSO	"-"
4	$WIBOR_t$	OECDStat.	"+"
5	$ROAC_t$	CSO	"-"
6	$CROAC_t$	CSO	"+"
7	$GFCF_t$	CSO	"-"
8	CAR_t	NBP	in line with changes in the NPL ratio
9	$TOFSP_t$	NBP	
10	$TOFSP_t$	NBP	

Source: The author's own preparation.

All the variables are smoothed with simple moving averages. ADF tests were carried out for the first difference variables. A comparison between test τ statistics and the critical values of these statistics shows that, in the case of basic variables, the series are non-cointegrated and variables are non-stationary because the test probabilities are above 0.05. On the other hand, in the case of first differences, variables are mostly stationary and series are co-integrated to the order of 1 (Table 6.3).

Table 6.3. Stationarity test results on the basis of the augmented Dickey–Fuller (ADF) test

Variable	Null hypothesis: unit root appears	with absolute term (const)	
		test statistic: _*ct* (1)	asymptotic *p*-value
NPL	$a = 1$; process I (1)	-0.584848	0.8717
GDP		-2.8553	0.05077
CPI		-2.92809	0.04217
WIBOR		-0.937278	0.7769
ROAC		-2.0557	0.2631
CROAC		-1.05936	0.7338
GFCF		1.69445	0.9997
CAR		-4.05929	0.007153
TOFSP		1.65917	0.9996
CRofCR		-1.33423	-2.72716

Source: The author's own calculations.

An ultimate confirmation of stationarity requires an additional test, e.g., KPSS (Table 6.4).

Table 6.4. KPSS stationarity test results (lag truncation =3)

Specification		NPL	GDP	CPI	WIBOR	ROAC	CROAC	GFCF	CAR	TOFSP	CRofCR
without a trend	Test statistic	0.945821	1.15961	0.362336	1.02753	1.12756	1.12623	1.01871	1.21077	1.18868	1.06894
	Critical value of the test	0.352 (10%); 0.462 (5%); 0.722 (1%)									

Source: The author's own calculations.

The lag order for the VAR/VECM model is determined on the basis of an estimation of the following information criteria: the Aikake information criterion (AIC), Schwartz-Bayesian information criterion (BIC), and Hannan-Quinn information criterion (HQC). According to these criteria, the best, that is, minimal values of the respective information criteria are: AIC = 2, BIC = 2 and HQC = 2, with the maximum lag order 3. Ultimately, the lag order 2 is accepted.

In order to analyse the stability of the VAR model, a unit root test is applied. The test indicates that, in the analysed model, equation roots in respect of the module are lower than one, which means that the model is stable and may be used for further analyses.

Co-integration is verified using two tests: the Engle-Granger and Johansen tests (Johansen 1991, 1992, 1995). Their results comprehensively confirmed co-integration for lag 1. This is proved by the values of the test statistic τ_e which are lower than the critical values $\tau_{critical}$, the levels of asymptotic *p*-values and integrated processes $a = 1$ and I (1), at the significance level $\alpha = 0.05$ (Table 6.5).

The results of the Johansen test (including trace and eigenvalue) show that at the significance level of 0.05, a co-integration to the order of one occurs.

Due to the occurrence of the unit element in all the time series and the existence of cointegration between the model variables, the model can be extended and transformed into vector error correction models (VECM).

Table 6.5. The results of the Engle–Granger co-integration test

Specification	NPL	GDP	CPI	WIBOR	ROAC	CROAC	GFCF	CAR	TOFSP	CRofCR
Unit root appears	$a = 1$, process I (1)									
test statistic τ_c (1) τ_e (asymptotic p-value)	-0.204236 (0.9356)	-0.668505 (0.8527)	-1.15919 (0.6942)	-0.872538 (0.7975)	-1.9247 (0.3211)	-1.67249 (0.4454)	-0.615025 (0.865)	0.513939 (0.9873)	1.65917 (0.9996)	-0.907432 (0.7866)

Source: The author's own calculations.

6.4. Empirical model and results

The co-integration is verified by means of the Engle-Granger and Johansen tests which confirm the occurrence of co-integration and thus justify the use of the VECM model for the lag order 4 and the co-integration of order 1.

In accordance with the Granger representation theorem, if variables y_t and X_t are integrated to the order of I (1) and are co-integrated, the relationship between them can be represented as a vector error correction model (VECM) (Piłatowska, 2003).

The general form of the VECM can be written as:

$$\begin{aligned} \Delta Y_t &= \Gamma_1 \Delta Y_{t-1} + \Gamma_2 \Delta Y_{t-2} + \ldots + \Gamma_{k-1} \Delta Y_{t-k+1} + \pi Y_{t-k} + \varepsilon_t = \\ &= \sum_{i=1}^{k-1} \Gamma_i \Delta Y_{t-i} + \pi Y_{t-k} + \varepsilon_t \end{aligned} \tag{3}$$

where:

$$\Gamma_i = \sum_{j=1}^{i} A_j - \mathrm{I}, \qquad i = 1, 2, \ldots, k-1, \Gamma_k = \pi = -\pi(1) = -\left(\mathrm{I} - \sum_{i=1}^{k} A_i\right)$$

and I is a unit matrix.

The results of the VECM model confirm the importance of revenues, economic situation (GDP), indicators of investments, costs of obtaining revenues on the part of corporations, and total own funds on the part of banks. An evaluation of the EC1 indicates that the strongest correction of the

deviation from long-term equilibrium occurs in the case of the ROAC (revenues from the overall activity of corporations), GDP equations, GFCF (gross fixed capital formation), and CROAC (costs of obtaining revenues from the overall activity of corporations) equations (Table 6.6).

Table 6.6. The main research results for the VECM model

VECM system, lag order 2. Maximum likelihood estimates, observations 2010:2-2020:3 (T = 42) Cointegration rank = 1, Case 3: Unrestricted constant				
β (cointegrating vectors, standard errors in parenthes)			**α (adjustment vectors)**	
ma_NPL	1	0	ma_NPL	0.001541
ma_GDP	0.004300	-0.000477	ma_GDP	-51.029000
ma_CPI	68.262000	-4.247700	ma_CPI	-0.000120
ma_WIBOR	-70.363000	-5.754800	ma_WIBOR	0.001539
ma_ROAC	-0.0037265	-0.000640	ma_ROAC	-1400.6000
ma_CROAC	0.0030214	-0.000664	ma_CROAC	-25.258000
ma_GFCF	-0.0090612	-0.000889	ma_GFCF	25.681000
ema_CAR	-130.0900000	-13.807000	ma_CAR	0.000322
ma_TOFSP	0.003685	-0.000779	ma_TOFSP	12.803000
ma_CRofCR	0.000165	-0.000017	ma_CRofCR	269.560000
Specification	EC1 (p-value)	R2	DW	
d_ma_NPL_1	0.001541 (0.3591)	0.718519	2.066768	
d_ma_GDP_1	-51.028700 (0.0202)	0.837387	2.006660	
d_ma_CPI_1	-0.000119 (0.9632)	0.725796	2.124272	
d_ma_WIBOR_1	0.001538 (0.0552)	0.895970	1.838453	
d_ma_ROAC_1	-1400.580000 (0.0082)	0.780972	1.629164	
d_ma_CROAC_1	-25.258200 (0.8645)	0.594654	1.976559	
d_ma_GFCF_1	25.681300 (0.0321)	0.614740	2.218404	
d_ma_CAR_1	0.000321 (0.7065)	0.645838	2.234513	
d_ma_TOFSP_1	12.803100 (0.1867)	0.746981	2.368444	
d_ma_CRofCR_1	269.559000 (0.5101)	0.619110	1.690697	

Source: The author's own calculations.

In order to verify the correctness of the VECM model results, two tests are carried out verifying the occurrence of autocorrelation, i.e.: Autocorrelation Ljung-Box Q' test, lag order for the test = 2, and ARCH test = lag order for the test = 2.

Ljung–Box tests (LMF, LM, Q) are conducted to verify autocorrelation for the lag order 4. The verifying statistic using the autocorrelation coefficient function (ACF) in the form Q' and empirical p-value levels higher than the nominal $\propto = 0.05$ let us conclude that there is no autocorrelation in the residual process (Kufel, 2011).

The ARCH test results indicate that, in the examined model of the residual-based process (four variables), the ARCH effect is not observed because LM test statistics are lower than the levels of χ^2. This means that there is no autoregressive changeability of the conditional variance and there is no need to estimate model parameters by means of the weighted least squares method. Thus, the results of both the tests confirm the credibility of the VECM model and allow for conclusions drawn on their basis.

An analysis of the NPL response to impulses from the explanatory variables confirms that the strength of the influence of these impulses increases over time. In the 4th quarter, the strongest NPL responses to impulses came from: CPI, ROAC and GDP. Nevertheless, in the 19th–20thquarter (5th year) of the forecast, the NPL response was the strongest, including apparently against ROAC and CPI.

The NPLs show declining trends in response to impulses from: NPLs' own changes, GFCF, CROAC and CPI. The NPLs showed increasing trends in response to the changes of: ROAC, GDP, WIBOR and CRofCR, CAR, and TOFSP.

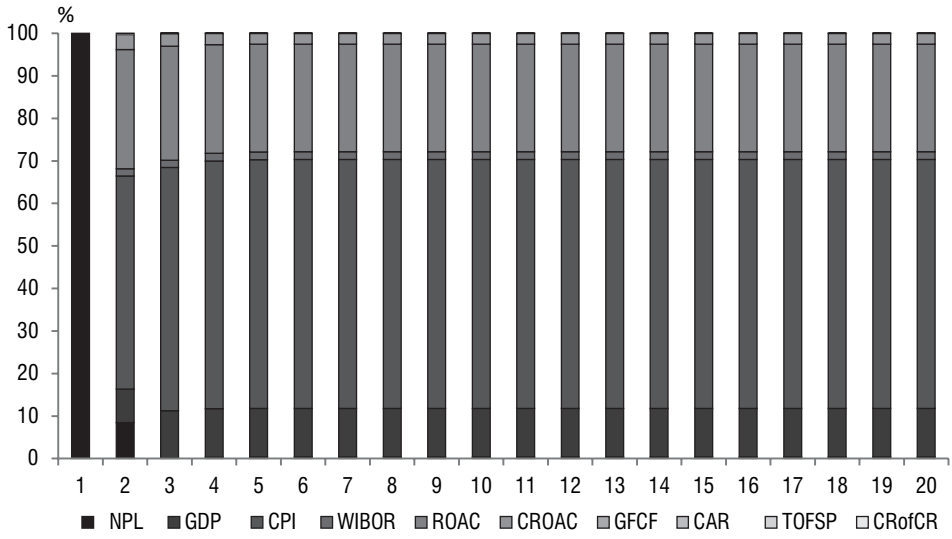
When interpreting the impulses, it is worth emphasising that the NPL rate shows a downward trend in the analysed period. This trend results from the prudential norms which actually determine a tightening of the creditworthiness test and thus a reduction of below-standard claims in banks' portfolios.

Thus, the expected impact of the following variables: NPL, CPI, GFCF and CAR, TOFSP, CRofCR on the responses from the NPL rate is confirmed. For the remaining variables, the expected impact on the NPL rate is not clearly affirmed but relates to the tightening of prudential standards. The GDP growth stimulates a growing demand for loans globally, while ROAC and CROAC are strongly dependent on changes in the economic situation.

The NPL and other explanatory variables are next analysed by means of variance decomposition in the forecast horizon of 20 quarters. The results of NPL decomposition indicate that, in the 1st quarter, these changes are fully accounted for with their own forecast errors (100.0%). In the 4th–20th quarter, their own changes lose significance (below 1.0%) and they are mainly accounted for with CPI (about 58.2%); ROAC (25.6%) and GDP (11.4%) grow

in significance, with less importance of other variables. Thus, the share of PGP in explaining changes to NPLs confirms the pro-cyclical nature of lending to the corporate loan portfolio (Figure 6.4).

Figure 6.4. Variance decomposition for the NPL variable



Source: The author's own calculations.

On the other hand, the analysis of the decomposition of explanatory variables shows that the NPL rate is significant to explaining the following changes in the first period: WIBOR (22.3%), CPI (12.2%), GFCF (5.3%), and CAR (3.3%). In the subsequent periods of the forecast, the degree of explanation of the NPL rate in the investigated explanatory variables decreases to a level below 1.0% in the 20th quarter.

Conclusion

The analysis of NPL changes shows a long-term downward trend confirming the improvement in the quality of the portfolio of loans of non-financial companies in the period Q1.2009–Q1.2020. However, the last two analysis quarters brought an increase in the NPL ratio: Q2.2020 (8.7%) and Q3.2020

(8.9%), respectively. In the entire period Q1.2009-Q3.2020, the structure of the loan portfolio in the Polish banking sector was stable, i.e., around 91-92% of unimpaired loans and around 9-8% of impaired loans. Due to the fact that the Polish economy has not experienced the effects of the cyclical recession so far (Q3.2020), the syndicated loan portfolio has not suffered a marked deterioration, either.

The results of the VECM model confirm the importance of revenues, economic situation (GDP), investments, the costs of obtaining revenues on the part of corporations, and total own funds on the part of banks. An evaluation of the EC1 indicates that the strongest correction of the deviation from long-term equilibrium occurs in the case of ROAC (revenues from the overall activity of corporations), GDP, GFCF (gross fixed capital formation), and CROAC (costs of obtaining revenues from the overall activity of corporations).

The analysis of the NPL response to impulses from the explanatory variables confirms that the strength of the influence of these impulses increases over time. In the 4th quarter, the strongest NPL responses to impulses came from: CPI, ROAC and GDP. Nevertheless, in the 19th–20thquarter (5th year) of the forecast, the NPL response was the strongest, including apparently against ROAC and CPI. This confirms the important influence of market indicators on changes in NPL.

The results of NPL decomposition indicate that in the 1st quarter, these changes are fully accounted for with their own forecast errors. In the 4th–20th quarter, their own changes lose significance (below 1.0%) and mainly CPI, ROAC and GDP grow in significance, with less importance of other variables. The share of PGP in explaining the changes of NPLs confirms the pro-cyclical nature of lending to the corporate loan portfolio.

Thus, the results of the impulse response are confirmed with the results of the variance decomposition, indicating the importance of market and financial factors both to the volatility and the degree of explanation of NPL in the Polish banking sector. The results of the NPL research additionally confirm the pro-cyclical nature of lending activity in Poland in the years under discussion.

In conclusion, there was a long-term trend of improving the quality of the loan portfolio of non-financial companies in the period 2009-2020, influenced chiefly by the market (macroeconomic factors) and financial situation of corporations.

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Abstract

The purpose of this chapter is to indicate changes in the NPL ratio of non-financial corporations and its main determinants in the Polish banking sector for the period 2009-2020. The NPL ratio is the variable explained in the model by three groups of explanatory variables representing market factors, the financial situation of corporations, and the capital requirements (tightening of prudential standards) on banks. The methodology of assessing changes in the quality of the loan portfolio corresponds to the methodologies used by central banks, e.g., by NBP and IMF. The empirical analysis bases on the VAR/VECM model, including impulse response functions and the decomposition of variables. The study period includes quarterly data for Q1.2009–Q3.2020. The analysis of NPL changes shows a long-term downward trend confirming an improvement in the quality of the portfolio of loans of non-financial companies in the period Q1.2009–Q1.2020. Although the last quarters brought an increase in the NPL ratio (Q2.–Q3.2020), the Polish economy has not experienced the effects of the cyclical recession so far and the corporate loan portfolio has not deteriorated markedly either. The results of the VECM model confirm the importance of revenues, economic situation (GDP), indicators of investments, costs of obtaining revenues on the part of corporations and total own funds on the part of banks. The results of the impulse response are corroborated by the results of the variance decomposition, indicating the importance of market and financial factors (CPI, ROAC and GDP) both to the volatility and the degree of explanation of NPL in the Polish banking sector. The results of the NPL research additionally confirm the pro-cyclical nature of lending activity in Poland in the years under review. The empirical results may be of practical use to banks in modelling the dynamics and quality of their corporate loan portfolio.

Sławomir Bukowski*, Marzanna Lament**

Chapter 7

The market structure and financial results of non-life insurance companies

Introduction

The factors influencing the financial results of insurance companies most frequently mentioned in the literature and subject to empirical research include: the size of an insurance company, financial liquidity, the value of liabilities, capital structure, the risk of assets, and increase of revenue (Lament, 2019a, p. 227). When analysing the financial efficiency of insurance companies, it is worth paying attention to the differentiation of insurance companies in terms of the scope of their activity and the resulting different risk profiles that affect financial results. This is confirmed by the principles of the supervisory assessment of BION (2020) conducted by the Polish Financial Supervision Authority, as well as the research conducted by the Geneva Association (2010) on risk profiles in insurance and on the impact of risk profiles on the financial results of insurance companies (Lament 2019b). That is why a homogeneous group of non-life insurance companies is surveyed.

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The aim of the study is to examine the relationship between the structure of the insurance market and the financial results of non-life insurance companies. Therefore, attempts are made to answer the following research question: does the market share have a statistically significant impact on the financial results of non-life insurance companies from the Polish insurance market? The following research hypothesis is formulated: the structure of the insurance market affects the financial efficiency of no-life insurance companies.

In search of answers to the research questions and in order to verify the research hypothesis, the financial results of non-life insurance companies operating on the Polish insurance market in 2004-2019 are analysed. The study uses the annual financial data of insurance companies collected by the Polish Chamber of Insurance (PIU). In the chapter, literature on the subject is analysed and the methods of descriptive statistics and econometric forecasting are used. The analysis of results uses the STATISTICA 12 and GRETL software.

The study consists of three main parts. The first presents factors influencing the financial results of insurance companies in the light of the literature reviewed on the subject. The second part introduces the research methodology, while the third discusses the results of research into the impact of the insurance market structure on the financial efficiency of non-life insurance companies conducting insurance activity in Poland in 2004-2019.

7.1. The determinants of the financial results of insurance companies – literature review

Our studies of the literature on factors influencing the financial results of insurance companies confirm their diversity. These include, in particular, factors such as (Bukowski, Lament, 2021, pp. 169-170):

- The size of an insurance company, measured with its share in the insurance market. Research shows that large insurance companies have a better market position, operate on a larger scale, and therefore achieve better financial results. This is confirmed by, among others, Doumpos et al. (2012) and Kramaric et al. (2017). Kripa and Ajasllari

(2016) show that the size of an insurance company does not affect financial results, on the other hand.

- The effectiveness of investment activities, measured by the investment profitability ratio. This is confirmed by Lee (2014),
- The cost intensity of activities, measured with the loss ratio, acquisition costs ratio, and the combined ratio. This is confirmed, among others, by Fiegenbaum and Thomas (1990), Wu Z. Desheng et al. (2007), Hifza (2011), and Doumpos et al. (2012),
- The level of reinsurance, measured with the retention ratio (withholding the insurance premium). Research conducted by Olajumoke (2012) shows a negative impact of reinsurance on the financial results of insurance companies. A positive impact of reinsurance on the effectiveness of risk management in an insurance company is demonstrated in studies conducted by Adams (1996),
- Foreign direct investment, measured with the share of foreign capital in the share capital of a given insurance company. According to Kozak (2011), the financial results of insurance companies are positively influenced by the share of foreign capital, and according to Lee (2014), by membership in a capital group.

It seems that a significant factor influencing the financial results of insurance companies is the level of market concentration. The relationship is explained by the theory of the effective market structure – Efficient Structure Hypothesis (ESH). It has been described, inter alia, by Hicks (1935), Demsetz (1973, 1974) and Peltzman (1977). It assumes a positive impact of the concentration on financial results. Concentrated markets are those in which highly efficient economic entities operate. This is due to lower operating costs, which are characteristic of more efficient entities with a greater market share. A greater operational efficiency contributes to maximising profits for shareholders by maintaining the current prices and the size of a company or reducing prices and thus increasing the company's market share. Improving efficiency leads to an increased concentration. Therefore, the size of a market share approximates the degree of operational efficiency and is therefore positively correlated with profitability.

The ESH theory in relation to insurance companies has been verified by, among others (Bukowski, Lament, 2020, pp. 270-271):

- Caroll (1993) – insurance companies offering employee insurance, operating on the American market in 1980-1987, were examined. The study showed no relationship between the market share and the financial results of insurance companies.
- Chidambaran, Pugel and Saunders (1997) – the research was carried out in relation to non-life insurance, but the study did not include the individual results of insurance companies and conducted the analysis at the state level. That confirmed the existence of a relationship between market share and financial results.
- Bajtelsmit and Bouzouita (1998) – motor insurance companies operating on the American market in 1984-1992 were examined. Market concentration is shown to lead to a higher level of profitability.
- Choi and Weiss (2005) – non-life insurance companies operating on the American market in 1992-1998 were surveyed. The research confirmed the existence of a relationship between market share and financial results.
- Bukowski and Lament (2020) – insurance companies from the Polish insurance market operating in the years 2004-2018 were explored. The study confirmed that the share in the insurance market has a statistically significant positive effect on the return on equity.

The topic should be considered poorly understood in relation to the insurance market, especially in Poland. The research does not clearly indicate the existence of a relationship between the market share and the financial results of insurance companies, however, a positive impact was indicated in four out of five studies analysed. Taking into account the above, the following research hypothesis is formulated: the structure of the insurance market affects the financial efficiency of non-life insurance companies.

7.2. Data and methods

The annual financial figures of non-life insurance companies operating in the Polish market in 2004-2019, collected by the Polish Chamber of Insurance (PIU), are utilised in this study. The selection of the insurance companies to

study is purposive. Insurance companies active in the entire time surveyed are chosen. Thus, insurance companies that commenced or discontinued their activities in those years are not taken into consideration. The insurance companies examined are characterised in Table 7.1.

Table 7.1. The characteristics of the insurance companies studied – non-life insurance companies in the Polish insurance market in 2004-2019

Specification	Non-life insurance companies studied (Category II)	Insurance companies studied by form of business	
		Joint stock	Mutual insurance company
Number of insurance companies	23	17	6
Structure (%)	100.0	73.9	26.1

Source: The authors' own research on the basis of PIU. Database, https://ibd.piu.org.pl (access: 10.03.2021).

The shares of the non-life insurance companies studied in the overall number of insurance companies active in the Polish market in 2004-2019 are contained in Table 7.2 and in Figures 7.1 and 7.2. On average, they constituted approximately 40% of all insurance companies and approximately 70% of non-life insurance companies (Category II) operating in the Polish market. The sample can be therefore assumed to be representative and the results can be generalised to all non-life insurance companies in the Polish market.

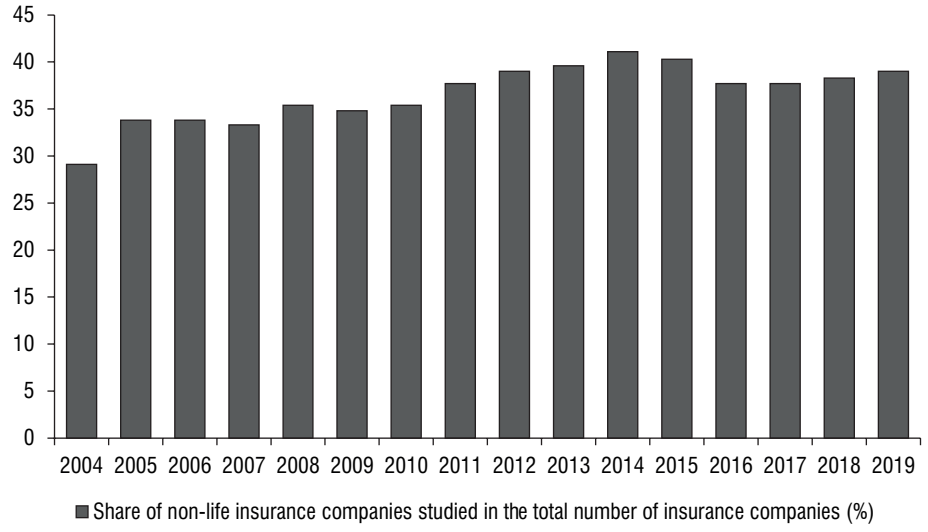
A dependence is assumed between the insurance market structure and the financial results of non-life insurance companies. A panel model is constructed. The financial results of non-life insurance companies measured with ROE (*Return On Equity*) are the dependent variable (explicated feature). Shares in the insurance market measured with gross written premium are the independent variable. It is additionally assumed the financial results of non-life insurance companies are influenced by: cost levels as measured with loss, the costs of acquisition, and the combined ratios, the profitability of investments, a share of foreign capital, as well as the levels of reinsurance measured with the retention ratio. The methods of calculating these variables are set out in Table 7.3.

Table 7.2. The share of non-life insurance companies studied in the total number of insurance companies in the Polish insurance market in 2004-2019

Specification	Years															
	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
Number of insurance companies in the Polish insurance market																
Total	79	68	68	69	65	66	65	61	59	58	56	57	61	61	60	59
By range of activities: Category I	37	31	32	32	29	30	30	28	28	27	26	27	27	27	26	25
Category II	42	42	36	37	36	36	35	33	31	31	30	30	34	34	34	34
By form of business: Joint stock	70	58	59	60	56	57	57	53	51	50	48	47	50	50	49	48
Mutual	9	10	9	9	9	9	8	8	8	8	8	10	11	11	11	11
Share of non-life insurance companies studied in the total number of insurance companies (%)																
In total	29.1	33.8	33.8	33.3	35.4	34.8	35.4	37.7	39.0	39.6	41.1	40.3	37.7	37.7	38.3	39.0
In non-life insurance companies (Category II)	54.7	54.7	63.9	62.1	63.9	63.9	65.7	69.7	74.2	74.2	76.7	76.7	67.6	67.6	67.6	67.6
By form of business: Joint stock	24.3	29.3	28.8	28.3	30.4	29.8	29.8	32.1	33.3	34.0	35.4	36.2	34.0	34.0	34.7	35.4
Mutual	66.7	60.0	66.7	66.7	66.7	66.7	75.0	75.0	75.0	75.0	75.0	60.0	54.5	54.5	54.5	54.5

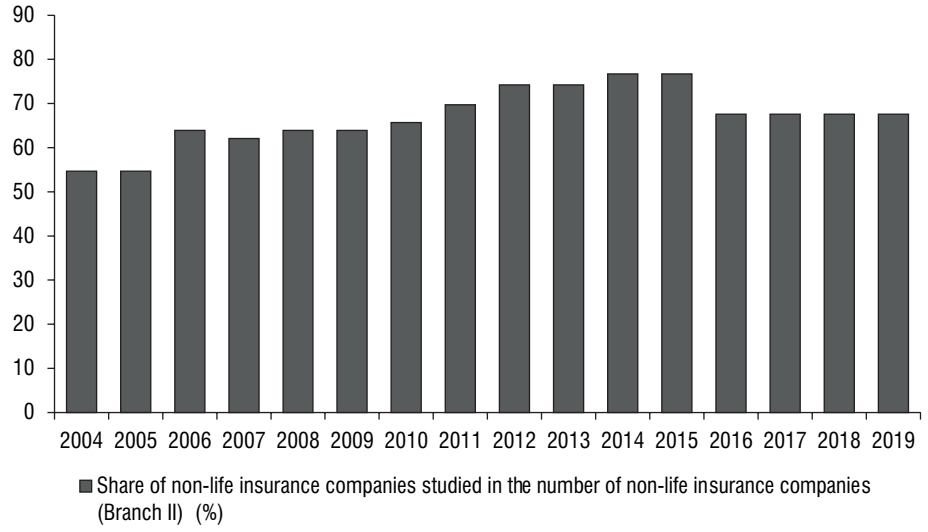
Source: The authors' own research on the basis of PIU. Database, https://ibd.piu.org.pl (access: 10.03.2021).

Figure 7.1. Share of non-life insurance companies studied in the total number of insurance companies of the Polish insurance market in 2004-2019 (%)



Source: The authors' own research on the basis of PIU. Database, https://ibd.piu.org.pl (access: 10.03.2021).

Figure 7.2. The share of non-life insurance companies studied in the number of non-life insurance companies (Category II) in the Polish insurance market in 2004-2019 (%)



Source: The authors' own research on the basis of PIU. Database, https://ibd.piu.org.pl (access: 10.03.2021).

Table 7.3. The methods of calculating the variables analysed

Variable	Variable designation	Method of calculating the variable
ROE	*ROEi,t*	Net profit × 100/ Equity
Share in the insurance market	*Ki,t*	Gross written premium in a given insurance company × 100/ Gross written premium for all insurance companies (insurance market)
Reinsurance levels – retention	*Ri,t*	Written premium net of reinsurance × 100 / Gross written premium
Net loss ratio	*Di,t*	(Claims and benefits paid net of reinsurance +/-Change in provisions against outstanding claims and benefits net of reinsurance) × 100/ Earned premium net of reinsurance
Share of acquisition costs in gross written premium	*ACi,t*	Acquisition costs × 100 / Gross written premium
Combined ratio	*CRi,t*	(Claims paid net of reinsurance + costs of insurance activities net of reinsurance + other technical costs net of reinsurance + dividend paid) × 100/ Earned premium net of reinsurance
Profitability of investments	*RIi,t*	Profit of investments × 100/Investments
Share of foreign capital in total capital	*KZi,t*	Foreign capital × 100/Total capital

Source: The authors' own compilation.

The model explains the financial results of non-life insurance companies measured with ROE as dependent on seven independent variables:

K – a share in the insurance market measured with gross written premium
R – retention ratio
D – net loss ratio
AC – a share of acquisition costs in the gross written premium
CR – combined ratio
RI – the profitability of investments
KZ – the share of foreign capital in total capital

Key descriptive statistics that characterise the variables are shown in Table 7.4.

Table 7.4. Basic statistics concerning the variables studied in non-life insurance companies in the Polish insurance market in 2004-2019

Specification	*ROE*	*K*	*R*	*D*	*AC*	*CR*	*RI*	*KZ*
Average	0.03489	0.01834	0.74911	0.73044	0.27401	1.06331	0.04428	0.66286
Median	0.06500	0.00457	0.83400	0.61050	0.21700	0.95300	0.04200	0.98580
Maximum	0.43000	0.27090	1.00000	48.8320	3.10900	15.3170	0.18900	1.00000

Specification	ROE	K	R	D	AC	CR	RI	KZ
Minimum	-2.3410	0.00	0.06600	0.01000	0.00700	-0.2450	-0.0360	0.00
Variance	0.05489	0.00157	0.05244	6.64107	0.07697	1.22529	0.00062	0.19186
Standard deviation	0.23429	0.03964	0.22901	2.57702	0.27743	1.10693	0.02508	0.43802

Source: The authors' own research on the basis of PIU. Database, https://ibd.piu.org.pl (access: 10.03.2021).

Explanation:
ROE – return on equity
K – a share in the insurance market measured with gross written premium
R – retention ratio
D – net loss ratio
AC – a share of acquisition costs in the gross written premium
CR – combined ratio
RI – the profitability of investments
KZ – a share of foreign capital in total capital

7.3. Model and empirical results

We have built the following panel data model for the purpose of verifying the hypothesis:

$$ROE_{i,t} = a_1 + a_2 K_{i,t} + a_3 AC_{i,t} + a_4 R_{i,t} + a_5 CR_{i,t} + a_6 RI_{i,t} + u_{i,t} \qquad (1)$$

$ROE_{i,t}$ – return on equity
$K_{i,}t$ – a share in the insurance market measured with gross written premium
$R_{i,t}$ – retention ratio
$AC_{i,t}$ – a share of acquisition costs in gross written premium
$CR_{i,t}$ – combined ratio
$RI_{i,t}$ – the profitability of investments

The model is built using step wise regression with backward elimination. Collinearity and correlation between the independent variables and the explanatory variable are assumed as the criteria. We use the Weighted Least Squares (WLS) method to estimate the model. It is dictated by the existing heteroscedasticity and autocorrelation. The results of the model estimation are shown in Table 7.5.

Table 7.5. Model: WLS, using 368 observations. Including 23 cross-sectional units. Dependent variable: ROE. Weights based on per-unit error variances

Specification	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	
const	0.00260237	0.0243703	0.1068	0.9150	
K	0.701566	0.121775	5.761	<0.0001	***
R	0.0702957	0.0291233	2.414	0.0163	**
AC	-0.0758232	0.0217609	-3.484	0.0006	***
CR	-0.0186649	0.00451485	-4.134	<0.0001	***
RI	0.644750	0.215301	2.995	0.0029	***
Statistics based on the weighted data					
Sum squared resid		342.1500	S.E. of regression		0.972196
R-squared		0.288335	Adjusted R-squared		0.278506
F(5, 362)		29.33331	P-value(F)		5.34e-25
Log-likelihood		-508.7680	Akaike criterion		1029.536
Schwarz criterion		1052.984	Hannan-Quinn		1038.852
Test for normality of residual					
Null hypothesis: error is normally distributed					
Test statistic: Chi-square(2) = 473.5					
with p-value = 1.51666e-103					

Source: The authors' own research on GRETL.

The results of the model's estimation indicate that all the independent variables are statistically significant and the signs are in accordance with the theory and hypothesis. The model explains the variability of the explanatory variable ROE in 28.8%. In the case of panel models, it is a quite good result. The main variable influencing ROE is K – a share in the market measured with gross written premium.

Conclusion

Our research allows for a positive verification of the research hypothesis: the structure of the insurance market affects the financial efficiency of non-life insurance companies. The model estimation results indicate that the financial

results of non-life insurance companies, measured with ROE, are statistically significantly influenced by their share in the insurance market, measured with gross written premium. This means that the research hypothesis has been positively verified.

The results extend the scope of research into the financial efficiency of non-life insurance companies and confirm previously obtained results. They are consistent with the results of studies conducted by Bajtelsmit and Bouzouit (1998) and Choi and Weiss (2005) for the American market, which corroborated the existence of a relationship between the market share and the financial results of insurance companies.

Further research should concern life insurance companies, also in relation to insurance markets other than Polish. This will be the subject of further studies by the authors.

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Abstract

A dependence is assumed between the insurance market structure and the financial results of non-life insurance companies. A panel model is constructed. The financial results of non-life insurance companies measured with ROE (*Return On Equity*) is the dependent variable (explicated feature). A share in the insurance market measured with gross written premium is the independent variable. The study allows for a positive verification of the research hypothesis: the structure of the insurance market affects the financial efficiency of non-life insurance companies.

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Chapter 8

The asymmetry of information and risk in the insurance market

Introduction

The insurance market is a unique segment of financial markets. Insurance companies accept all types of risks: property, health, motor, and other, from other market players. They incur operational risks like other financial institutions, on the one hand, and absorb risks from areas of their customers' operation, on the other hand. Changes in the financial markets and the real economy in connection with technological development pose both opportunities and threats. The availability and quality of information gained by insurance companies are the basis for risk identification and management. For insurance institutions, information is an asset worth investing in to limit the asymmetry of information.

The development of technologies, chiefly IT, serves to acquire and verify information in nearly real time. Disequilibria are no longer local and are opportunities for arbiters in the particular market segments. Even unlimited access to information is not a guarantee, however, decisions made will always result in the attainment of assumed objectives. A range of data apparently useful to insurers remain useless for regulatory reasons or due to psychological barriers. In addition, excess information may interfere with the process of

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making decisions and increase instead of reducing risk. An appropriate selection and use of information in the decision-making process are only partly results of their availability. The knowledge about the significance of individual information and its interdependences is key.

The problem of appropriate selection and use of information in the decision-making process is addressed in the face of changes to global financial markets which arise from the broadly-defined asymmetry of information. Technological development facilitates acquisition of information by all market players to the same extent. Financial intermediaries and institutional financial market players are undoubtedly more specialised in and effective at a proper choice and use of information. An appropriate selection of a source of information should limit the risk in financial markets and thus enhance their broadly-defined effectiveness. Where access to information is no longer a barrier to making decisions, its reliability, a function of the source of information, becomes important.

This study, intended to introduce the issues of appropriate selection and use of information in the decision-making process, presents such concepts as information and knowledge as well as their components (data, interpretation, evaluation, misinformation, and information noise). The problems of risks in the insurance market are discussed as well.

8.1. Information and knowledge, information noise

Information as a means to attaining a variety of goals has been employed by humankind since its very beginnings. However, the definitions of *information* in scientific literature appeared quite late, namely, in the second half of the 20th century. The concept of *information* can mean contents of a message from a sender to a receiver, expressed in an appropriate language or coded in a way that is comprehensible to the receiver. Information can be carried over time by remembering and in space by certain ways of communication. Information is designed to order a system it refers to. It should help a receiver better adapt to the outside world and orient their behaviour towards an effective achievement of objectives (Meyer, 2006, pp. 225-229). *Information* may be alternatively interpreted as a result of ordering or analysing data in a meaningful way (Stoner, Freeman, Gilbert, 2001, p. 589). Criteria of data ordering and a method of analysis arise from objectives whose realisation information is to help. From the perspective of decision-making processes,

information can be regarded as 'data presented in a way having a meaning' (Griffin 2000, p. 676).

Depending on a market, access to information by its players may vary. The financial market, which includes insurance, is an example of a market with a specific type of information asymmetry. Information is gained by intermediaries at virtually no cost as part of basic financial services they provide. As a consequence, it may mean a barrage of information that interferes with a proper interpretation of data, drawing of conclusions, and taking of reasonable and ultimately effective actions (Wojciechowska-Filipek, 2014, p. 1). Unreliable, untrue or distorted information may have the same results as its barrage. Information may be distorted for a variety of reasons. These may be gaps in data sequences, incorrect interpretations of data or a premeditated supply of false data or distorted information to mislead recipients. The effects of information distortions are generally negative regardless of whether they are conscious or not. This is, among other causes, due to the fact both the assimilation of, response to, and passing of information are to a large degree spontaneous. August von Hayek pointed out this spontaneous nature of information transfer both on the macro and microeconomic scales as early as the 1940s. Hayek appreciated the importance of information in management processes, though he claimed the process is hard to organise and coordinate centrally (Hayek, 1945, pp. 519-530).

Defining *knowledge* is as hard as defining *information*. According to the most obvious source, that is, encyclopaedias, knowledge is all reliable information about the reality and the skill of using it. This definition most commonly refers to scientific knowledge. More broadly, knowledge means any set of information, views, beliefs, etc. that is credited with a cognitive and/or practical value.

The terms 'information' and 'knowledge' are often used interchangeably, both in literature and in everyday speech. Nonaka and Takeuchi have addressed this practice. They have delimited the concepts, stating information is a stream of messages while knowledge is its product rooted in a recipient's convictions and expectations (Nonaka, Takeuchi, 2000, p. 81). Thus, knowledge is based on individual information and data streams that acquire significance only after logical and premeditated processing and can be useful. This utility translates into specific benefits and competitive edge over others (Brdulak, 2005, p. 14). In business practice, this edge normally means profit and its absence, loss.

If information is assumed to be the source of knowledge, it cannot be said entities having the same information have the same knowledge. This is known as *the asymmetry of knowledge* (Karaban, 2008, p. 6). Several causes can be

identified. First, entities or individuals are not necessarily equally interested in the processing of information they have or have available. Second, entities may exhibit some different initial levels of knowledge required for the proper processing of information. Third, entities with the same initial levels prerequisite to effective information processing may select data, where they are excessive, on the basis of diverse criteria, thereby arriving at different end results. The asymmetry of information itself may be another cause of knowledge asymmetry. If this is the case, the asymmetry of knowledge will arise even where the foregoing causes are not in place. The asymmetry of knowledge, regardless of its causes, may lead to negative selection in the market. Market players in the economic process are assumed to try and maximise benefits (objective, measured with profits, and subjective, resulting from individual preferences) from their actions. The asymmetry of knowledge may cause the most effective choice to be rejected for the sake of a worse variant. This is assumed to affect young rather than developed markets, since individual investors with little experience of investment decisions prevail in the former. This is only in the process of practical action that it emerges whether market players have at their disposal data, information or knowledge resources (Wawrzyniak, 2001, p. 25 after: Kisielnicki, 2004, p. 4).

The internet is the main source of information at present. In the days of information society, information is both a tool and a commodity. Web users are information recipients (consumers) as well as sources. The internet users place a variety of information on the Web, sometimes unawares. This is commonly subjective and fragmentary information based on individual experience with institutions, products or services. Information in the Web also happens to be untrue, intended to misinform market players. It is occasionally impossible to verify the reliability of information as those who have uploaded it remain anonymous. The barrage of information, both reliable and not, anonymous and authorised, results in information noise. This noise works like a lack of information (Szarek, 2011, p. 135).

The quantity of information generated and available to market players continues to grow. In accordance with Metcalfe's law, interest in a new telecommunication service, for example, usually has a negligible initial value for potential users but its value, at least for some time, rises in line with the number of users squared (Wydro, 2007, p. 119).

Market players may deal with the information noise by standardising the acquisition, verification, and presentation of information. These actions can be of particular importance to those market participants for whom customer trust

is key. Insurance institutions are the entities for which the trust of customers is a necessity. To the customers of insurance institutions, enterprises or households, reliable information is of paramount importance to their insurance decisions as well.

The gaining and management of information is a crucial part of risk management. *'Information management is a conscious human behaviour intended to optimise the role of information in goal attainment by organisations'* (Zygała, 2007, p. 46 and Turek, 2011, pp. 47-57). Information noise must be restricted to optimise the role of information. As far as financial institutions are concerned, both their business objects, their scale and connections among them cause the choice of information sources, its selection and analysis to be exceptionally significant to the security of the institutions and their customers. Following the experience of the financial crisis, a range of postulates have been voiced to introduce some systemic international solutions (Mertzanis, 2014, p. 22) in order to limit the information noise at the micro and macro-prudential levels. The idea of establishing a macro-prudential transnational institution to cover all the EU member states is an instance of working for standardising information and eliminating information noise (Olszewska, 2011, pp. 227-230).

8.2. The asymmetry of information

The asymmetry of information is a situation where entities or their groups have different information resources (Stiglitz, 2004, p. 94). In some markets, the asymmetry of information is natural. Wherever a market is constituted by institutional intermediaries, a natural asymmetry of information arises. Intermediaries are virtually always privileged in the process of obtaining information. Here, the asymmetry of information is a result of transactional links, as one party has more knowledge about the object of a transaction than the other. It may undermine their equilibrium or market standing and, in extreme cases, lead to information monopoly and market irregularities. This is true of all intermediaries, including financial and insurance institutions.

The asymmetry of information can also result from unequal access to information, caused by a variety of factors, e.g., a lack of equal and fair distribution of information, limited access to information, absence of transparent information or premeditated publication of untrue information. This kind of asymmetry is unequivocally negative.

The asymmetry of information may result from both the quality of input information itself and the associated factors that influence its use. This refers to the initial knowledge condition of information recipient that will allow for its proper evaluation and effective management and contributes to a potential asymmetry of information.

Regardless of its causes, the asymmetry of information can produce such adverse effects as adverse selection and moral hazard. Adverse selection arises from the awareness information is incomplete and from the fear the other party attempts to take advantage of this situation and enter into a transaction on terms better than appropriate to the value of its object. As a result, low-value assets/ contracts are traded at low prices in the market. Holders of high-value assets/ contracts refrain from transactions as they do not accept the low prices. The moral hazard is incurred, in turn, where one party, aware of the other's restricted access to information, misleads that party on purpose.

The asymmetry of information in the insurance market emerges not only where an intermediary uses or abuses a customer's ignorance, but also where a policyholder is the only person with a full knowledge of their circumstances, health, and financial position. A customer may present an insurer with incomplete or untrue data for the purposes of risk assessment. In the process of negotiation, they may also persuade an insurer to offer insurance, knowing in advance a specific event will take place. Charging customers with the costs of assessment and monitoring of insurance risk is a way of limiting adverse effects of trust abuses. Costs like medical fees, the installation of anti-burglary devices or regular MOTs substantially increase the costs of insurance policies.

The asymmetry of information in the insurance market operates the other way, too. Policy holders cannot effectively evaluate the financial standing of an insurance company and the associated likelihood of failure to perform. The asymmetry of information as a symptom of market imperfection is present in both the instances. The analysis of costs incurred by both the parties, financial intermediaries and their customers, in effect of the asymmetry of information has shown reducing the asymmetry with an effective sharing of information can cut losses and reduce the purchase prices of financial instruments (Karapetyan, Stacescu, 2014, p. 1602). The same is true of the insurance market. Reducing the asymmetry of information helps to cut insurance premium as well as the risk of default on payments to the insured.

The imperfection of the insurance market arising from the imbalance between its participants causes rating agencies to differ in their evaluations of financial

conditions of the individual insurers far more often than is the case regarding enterprises in other industries (Golędzinowski, 2009, pp. 10-11). Therefore, the view the asymmetry of information in the financial sector has considerable impact on the possibility of macro and micro-economic management and should be seen as a systemic risk that is variable both in time and space, mobile or anchored in specific parts of the financial system, is reasonable.

A standardisation of information acquisition and processing is a way of limiting the asymmetry of information. The processes of economic globalisation, the integration of the financial market, and development of trans-border services have demonstrated the need for a regulation of the international principles of accounting.

8.3. Risk in the insurance market

Risk is a broad concept that can be classified by means of different criteria. Due to its complexity and the wide range of applications, the following definition from those offered by literature is selected for the purposes of this study:

- Risk is an occurrence that may but will not necessarily take place,
- Risk is a chance of an event that will affect our objectives, assets or health,
- Risk is measured with reference to the probability of an occurrence and its consequences (Czajkowska, 2017, p. 42).

Risk is connected with an unpredictability of effects of what may happen to an entity, their assets or an objective of value to this entity. It may be classified depending on the criteria it emphasises:

- The object of risk, or what is at risk,
- The cause of risk, or a condition or factor leading to an occurrence and its effects,
- The area where uncertain occurrences and their effects materialise.

Risk is variable, dynamic, and directly dependent on time. Risk in the insurance market is of particular importance as it concerns the object of its operation and affects each party, both an insurer and insured. Risk inherent in the operations of insurance institutions results from environmental factors

and the internal conditions of their activities. The environmental (external) factors comprise:

- Macroeconomic factors,
- The legal regulations of insurance activities,
- The development of an insurance market,
- The development of a financial market,
- The standards of insurance awareness,
- Insurance crime.

Internal factors include:

- Activities associated with the execution of insurance contracts,
- Activities associated with loss adjustment and the determination of indemnities,
- Investment activities,
- Reinsurance activities,
- The creation and dissolution of technical reserves.

The International Actuarial Association's Working Group for Assessment of Insurers' Solvency has prepared a risk classification and distinguished four basic categories of risks incurred by insurance companies. These are:

- Insurance risk, associated with the structures of products, pricing of premium, and potential for incorrect risk assessment and pricing of liabilities under the effective contracts of insurance,
- Market risk, associated with fluctuating quotations or prices or, in the case of investment, the fluctuations of interest rates, exchange rates, and real estate prices,
- Credit risk, associated with a cooperating entity (e.g., borrower, broker, agent, reinsurer) unable or unwilling to meet their financial obligations,
- Operational risk, associated with improper business processes in an insurance company. The risk may arise from defective internal control, technological faults (e.g., IT), human error, dishonesty, etc.

Risk in its broader sense continues changing at all times. Some new types of threats keep emerging that have not been taken into account before. Mass terror attacks like against the Word Trade Center may be an example. That event had a dramatic effect not only on safety procedures in transportation

but also on the insurance offered to carriers and policy costs. The pandemic caused by the Covid-19 virus works in the same way for health insurance. Developed countries used to believe this kind of jeopardies had been under control and possible only in particularly backward African or Asian countries. Insurance market players had not been prepared for such a development.

8.4. The elements of insurance risk identification

Insurance risk is addressed in the context of the probability and consequences of an occurrence for which an insurance company accepts liability. Risk identification involves, inter alia, the determination of its causes and type, characteristics of the identified types of risk, as well as the anticipated potential effects of a given risk.

Gathering of as much reliable information as possible and addressing each source of risk are pre-requisite to an effective process of risk identification and thereby management. A variety of methods are employed to gain information about risk relating to business activities, occasionally based on the knowledge and experience of owners or managerial staff of a given enterprise.

The methods of identifying insurance risk can be divided into:

- Expert methods, including: the checklists of control questions, Delphi method, nominal group process,
- Heuristic methods including: brainstorming, synectics, public debate, scenario building,
- System methods including: holistic, risk register, system error analysis,
- Using software and artificial intelligence: documentation review, information gathering techniques, checklists, the analysis of assumptions, diagrammatic techniques.

Technological development and digitalisation allow insurance companies to use some new sources of information to identify insurance risk. Satellite data can prove of use to the identification of risks affecting large facilities or whole areas. Closed-ended data catalogues insurance companies have gained access to under new legal regulations may prove useful to health insurance. Applications monitoring a customer's physical activities or diet may come in

handy likewise. As far as motor insurance is concerned, insurers can utilise data from measurement equipment in cars and from GPS devices. Some telematic equipment could assist insurers with risk assessment and provide added value to the insured, saving their life or health. Telematic devices installed in cars and notifying competent services of an accident might be an example. All these tools can help with an appropriate selection and use of information in the decision-making process, thus helping to restrict the asymmetry of information and its adverse consequences.

Conclusion

The insurance market exhibits a high level of information asymmetry, although insurance companies have at their disposal some increasingly state-of-the-art tools of acquiring information. Excess information may also interfere with the process of risk assessment and decision-making. Too many data give rise to information noise. In the circumstances, an appropriate selection and use of information in the decision-making process is not simple. The gamut of tools insurance companies employ to identify risk continues to expand, which helps to limit the asymmetry of information. It cannot be ignored, however, customers also take advantage of technologies to mislead insurance companies. The jeopardy of moral hazard, a result of the asymmetry of information, applies to both parties to a transaction.

Changes in the economic environment tend to enhance rather than restrict risks. Risk identification and management by insurance companies become more difficult in effect. Insurance companies are facing challenges they have not encountered before. The asymmetry of information, which used to be due to a lack of access to data, springs from excessive data nowadays. New technologies may provide access to new data but also facilitate their distortion.

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Abstract

The insurance market is a unique segment of financial markets. Entities in this market incur risks like other financial institutions, on the one hand, and absorb risks from the areas of their customers' operation, on the other hand. Changes in the financial markets and the real economy in connection with technological development pose both opportunities and threats. The availability and quality of information gained by insurance companies are the basis for risk identification and management. For insurance institutions, information is an asset worth investing in to limit the asymmetry of information. The acquisition and storage of information from a variety of sources is in itself insufficient, though. The information obtained should have predictive power. Information, if reliable and complete, should allow for an effective restriction of risk when making decisions. New technological solutions and changing regulations enable insurance companies to gain information by means of telemetric equipment, drones, artificial intelligence or databases concerning the health condition or work of the insured. The chapter introduces concepts like information and knowledge as well as their components (data, interpretation, evaluation, misinformation, and information noise). Selected authors' views on the meaning of information in the decision-making process of businesses, especially insurance institutions, are discussed. The problems of insurance risk, its sources and classifications are presented.

PART III

THE DEVELOPMENT OF ENTERPRISES

Anna Wolak-Tuzimek*

Chapter 9

The instruments of competing of large enterprises in the Polish economy

Introduction

Competitiveness is a key condition of business success of every enterprise (Ćurčić, Miletić, 2020, p. 832). It is a characteristic of an efficient firm associated with the process of competition among entities (Liao et al. 2015, p. 470). Firms in a market may compete by means of diverse factors and methods as part of different management strategies and other specific internal capacities (Namiki, 2011, p. 50). The different choices of factors can also result from enterprise size, a sector of activities or extent of operations.

The creation and maintenance of an enterprise's competitive advantage in areas determined by macro- and micro-environment conditions, on the one hand, and by a firm's mission and objectives, on the other hand, are the conditions of effective competing in the market. The instruments of competing characteristic only of a given sector acquire increasing importance.

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This chapter aims to examine the effect of business objects (sector) on the selection of enterprises' competition factors.

Enterprises in the contemporary economy face challenges connected with globalisation processes, the need to adapt to the fluctuating conditions of the market economy, and competitive struggle in the market. Functioning in such conditions, they are forced to continue improving their competitiveness by applying some new instruments of competing that provide advantage in the market.

The theoretical part of this chapter applies a critical review of literature about enterprise competitiveness. The empirical section, meanwhile, employs some tools of descriptive statistics and Kruskal-Wallis test to present the results of a study of 253 large enterprises operating in the Polish economy. Statistica 12 software serves the purposes of data analysis.

9.1. The instruments of competing – a literature review

Competitiveness is a dynamic, evolutionary, and multidimensional process that can be evaluated at a variety of levels and dimensions. It can be studied at a national (Amaral, Salerno, 2019; Malega et al., 2019), regional (Castellanos Machado et al., 2017; Nava Rogel et al., 2017), sectoral, industry (Maráková et al., 2016; Sieradzka et al., 2015), and enterprise levels (Sarmiento Reyes, Delgado Fernández, 2020; Shevchenko et al., 2019).

Competitiveness at the enterprise level is defined in a number of ways. It can be said to denote the capability and dynamics of: increasing share in the market; the creation and maintenance of competitive advantages; improvements to productivity and profitability (Doncheva, 2020. p. 423); the quality that makes an enterprise successful at competing against other market players (Suchanek et. al, 2011, p. 120), as well as an enterprise's actions to preserve an existing 'good' competitive standing in comparison with other firms (Šproch, Nevima, 2021, p. 111).

These definitions imply enterprise competitiveness is its ability to stay in a market and to develop its business, as well as to oppose other firms co-existing in the same market.

M. Kraszewska and K. Pujer (2016, p. 9) believe competitiveness means an enterprise is capable of continued development, gaining profits, benefits, and competitive edge. Thus, competitiveness is nothing but the ability of a given enterprise to supply customers with appropriate goods or services of adequate quality at the right time and place, so that customers' needs are satisfied more efficiently and effectively than by other enterprises.

Competitiveness is ambiguous, complex, and multidimensional. For this reason, some authors decompose and define the elements of enterprise competitiveness system. M.J. Stankiewicz (2005, p. 89) distinguishes four subsystems: competitive potential, competitive advantage, the instruments of competing, and competitive standing. In his opinion, the instruments of competing are means consciously created and used by enterprises to acquire customers for their products. It should be noted what matters is the role an enterprise accords to its instruments. A product range is addressed to a specific market area where an enterprise interacts with its environment.

M. Gorynia (2010, p. 77), meanwhile, specifies a dynamic set of microeconomic determinants of enterprise competitiveness: competitive standing in future, competitive potential, and competitive strategy of an enterprise, which are the instruments of competing treated as means consciously created by a firm to win customers for its current or projected range.

Four groups of the instruments can be distinguished (Stankiewicz, 2005, p. 243):

1. The instruments of qualitative competition – the perception of product range value: the quality, modernity, brand of a product,
2. The instruments of price competition – the perception of spending: purchase price, promotional prices, prices of new products, price discounts,
3. The instruments of service and support competition – the perception of transaction convenience: sale and after-sale services and their quality, supply of spare parts, timely delivery,
4. The instruments of communication and information competition – the perception of a manufacturer's attitude to customer: advertising, sales promotion, loyalty programmes, exhibitions.

In the contemporary economy, enterprise competitiveness is decided by such aspects as: financial capacities, human and technological resources, innovation, operational effectiveness, the quality of goods/ services, and customer satisfaction (Hong et al., 2010).

Financial capacities allow an enterprise to introduce new technological solutions, implement innovation or strengthen its brand. Human resources are another important factor of competitiveness (Maimunah, 2009), since highly qualified staff help to implement advanced technologies and state-of-the-art projects. Technological resources and innovation, meanwhile, allow for cutting operational costs and product prices and for a more sustainable use of resources (Vukic, 2015). The quality of goods/ services can ensure the loyalty of customers and consumers, create a positive business image, and improve reputation, which contributes to an enhanced customer satisfaction and the resultant greater sales and profits (Maráková et al., 2021). Consumer satisfaction and the quality of goods/ services build a loyal customer base and contribute to the expansion of a conscious segment (Mandhachitara, Poolthong, 2011).

An enterprise's status in the current economy is decided by the way it is perceived by its staff, customers, partners, local authorities and communities, while their needs and expectations are increasingly often addressed in the long-term strategies of business development. Enterprises implement the concept of Corporate Social Responsibility, which primarily improves an enterprise's image in the market, boosts staff commitment to operations and internal life of an organisation. In addition, enterprises get more satisfied customers who are more loyal to products or services and, in a longer time-frame, gradually reduce some costs (Sieradzka, 2018; Wolak-Tuzimek, 2014).

J. Lu et alia (2020, p. 1639) are of the opinion Corporate Social Responsibility affects: reputation, brand, financial capabilities, specific product characteristics, consumer loyalty and satisfaction, the attracting of highly competent workers, market share, work productivity, cost and risk reductions, providing competitive advantage to a socially responsible enterprise.

Enterprises that have implemented CSR pursue the policies of sustainable development that aim not only at maximum profits but also actions for environment protection (Ioannou, Serafeim, 2012; Engert, Baumgartner, 2016). According to J. Šnircová and others (2016), the realisation of these policies assures long-term competitive advantage by forming a loyal base of

customers who understand enterprises in the contemporary economy must care for the natural environment and their stakeholders.

9.2. Methods

The intensity of competing by enterprises in the contemporary economy depends on the type of products or services offered, on the structure of a sector offering these products and services, the structure of their buyers, and the instruments of competing in place. Enterprises in the particular industries can use some unique instruments of competing or traditional instruments like the price or quality of products. Therefore, the research hypothesis H is advanced – the scope of activities (sector) is a factor differentiating the selection of instruments of competing by enterprises.

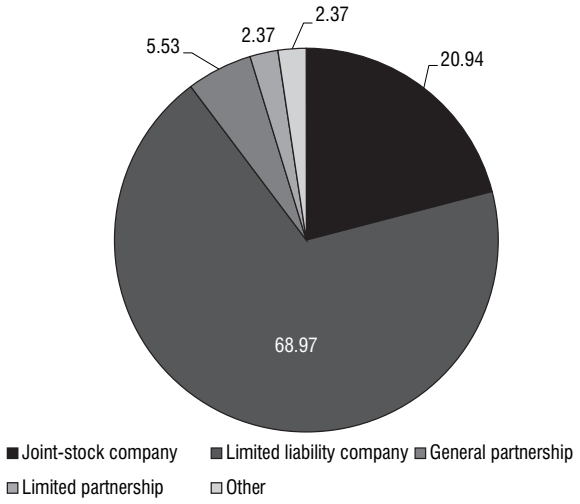
The results of a national study are presented in this chapter, conducted in March 2020 by means of Computer-Assisted Telephone Interview (CATI) of a randomly selected sample of 1600 large enterprises. 253 correctly filled surveys were received. Assuming α=95% and β=6%, the results are representative of the general population.

The empirical study employs an original survey questionnaire consisting of two parts: particulars and contents. The former characterise the sample with objective criteria: the legal and organisational status of an enterprise, its sector, region where an enterprise is based, the implementation of the CSR, and application of an integrated information system.

Limited liability and joint-stock companies are the dominant legal and organisational formats (174 and 53, respectively). They account for nearly 90% of all the businesses. Fewest, barely 6 surveys are generated by general partnerships. This is illustrated in the following Figure 9.1.

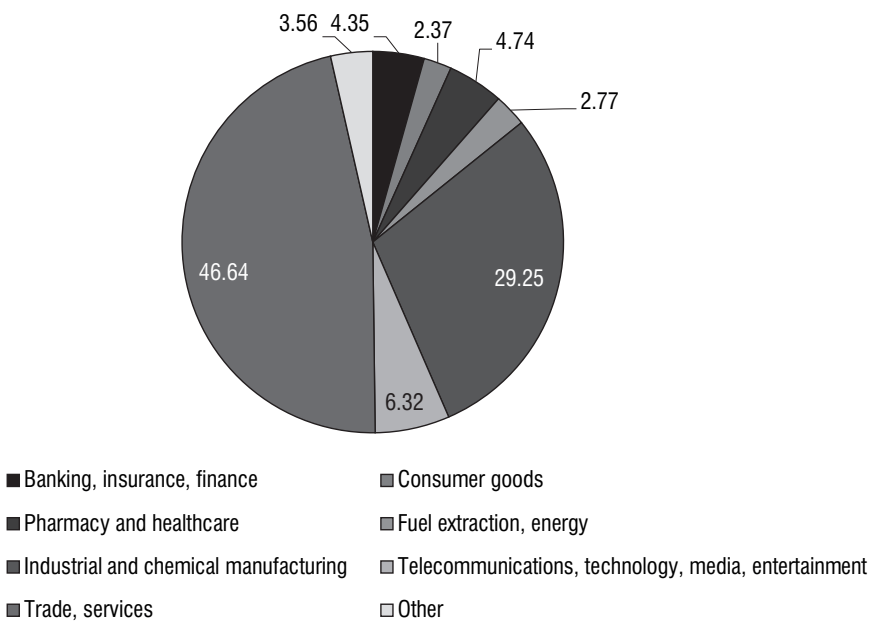
Service and commercial entities constituted the largest grouping (118, ca. 47% of all the firms), followed by industrial and chemical manufacturing businesses, which totalled approx. 29% (74 firms). Consumer goods and fuel extraction and energy enterprises formed the smallest groups surveyed (6 and 7 firms, respectively), accounting for 2.4% and 2.8% of the sample.

Figure 9.2. The structure of the study sample as per the business sector



Source: The author's results.

Figure 9.2. The structure of the study sample as per the business sector



Source: The author's results.

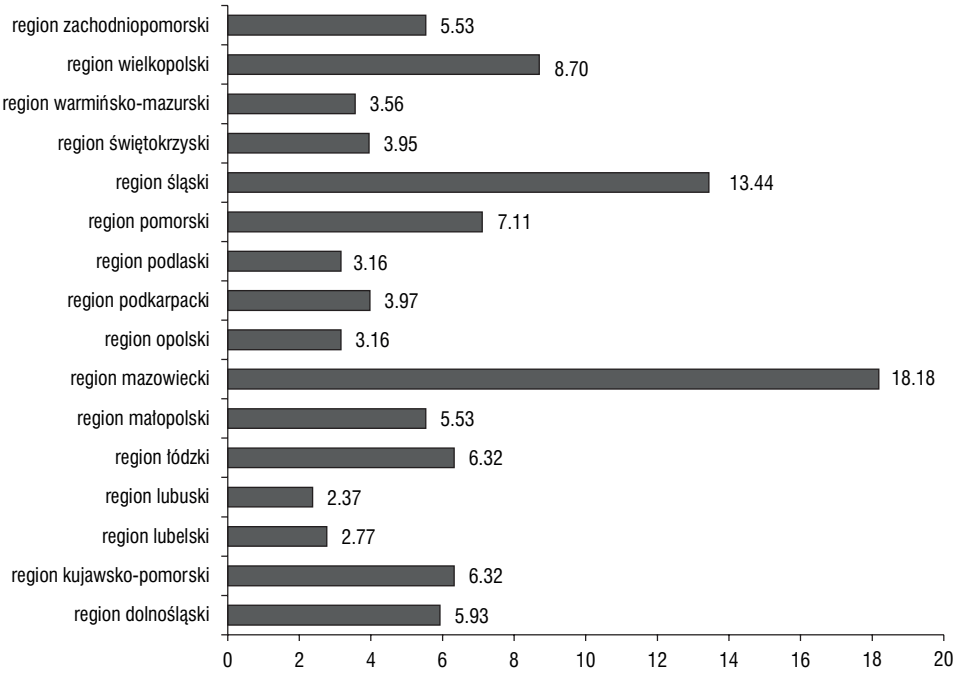
Most enterprises examined have their registered offices in mazowieckie (46) and śląskie (34) regions. Their shares reach 18.2% and 13.4%, respectively. Fewest firms (6), on the other hand, are surveyed in lubuskie region. What is more, about 75% enterprises studied have implemented the CSR and use ERP III integrated information systems in their operations.

6 questions are asked in the other part of the survey concerning the significance of competitiveness factors to competitive standing, competitive potential, the instruments of competing, sources of competitive advantage, and effect of CSR and Covid-19 pandemic on the factors of enterprise competitiveness. This chapter discusses results for the question about the significance of the particular instruments of competing, rated on a scale from 1 to 10, with 1 standing for low significance and 10 for high significance. The respondents are expected to accord significance to the individual observable variables or the instruments of competing. 13 variables are surveyed, namely: the quality of product/ service, quality of servicing, product brand, advertising, public relations, image of enterprise, highly qualified staff, product pricing, innovativeness of products, size of product range, matching of product structure to the structure of consumer demand, availability of products, and implementation of corporate social responsibility.

The particular instruments of enterprise competing (observable variables) are measured and assessed by means of descriptive statistics: the position measure, arithmetic mean characterising a statistical set regardless of any differences among its component units, and the measure of volatility, the standard deviation that characterises a statistical set addressing any differences among its component units.

The research hypothesis H: the scope of activities (sector) is a factor differentiating the selection of instruments of competing by enterprises, is verified by means of Kruskal-Wallis test (Kruskal, Wallis, 1952). This is a non-parametric test that helps to verify statistical hypotheses about the differentiation of certain dimensions among groups. It corresponds to the single-factor analysis of variance (ANOVA). Kruskal-Wallis tests the hypothesis n independent samples come from the same population. The zero hypothesis assumes no statistically significant effect of a grouping factor on a characteristic tested. The alternative hypothesis (H1), on the other hand, assumes the factor influences at least some group pairings in the general population. The zero hypothesis (H0) is rejected at the level of significance $p < 0.05$. This is the maximum acceptable likelihood of the so-called statistical error of the first type, that is, rejecting a true zero hypothesis.

Figure 9.3. Structure of the study sample as per the regions where the enterprises are seated



Source: The author's results.

9.3. Results

The particulars allow to classify the respondent set along a variety of criteria and to analyse the survey results within the distinct respondent subsets. Results for 253 large enterprise classified by their business objects or sectors are presented in this chapter.

The arithmetic mean serves to determine the significance of the particular instruments of competing. As a classic parameter, it is based on all the values of a characteristic and thus offers a high cognitive value.

Banking, insurance, and finance enterprises accord a maximum value to the variables *quality of product/ service* (9.18) and *image of enterprise and availability of products* (8.45). *Product pricing* as an instrument of competing is the most significant to consumer goods firms. Businesses engaged in fuel

extraction, energy and trade and services find *quality of servicing* the most important, valuing it at 9.43 and 8.47, respectively. A maximum significance is attributed to the variable *matching of product structure to structure of consumer demand,* worth 4.67 to consumer goods enterprises. The results are summarised in Table 9.1.

Table 9.1. The arithmetic mean for the instruments of enterprise competing as per the scope of operations (sector)

Enterprise sector / Variables	Banking, insurance, finance	Consumer goods	Pharmacy and healthcare	Fuel extraction, energy	Industrial and chemical manufacturing	Telecommunications, technology, media, entertainment	Trade, services	Other
Quality of product/ service	9.18	7.67	7.50	8.86	8.47	8.13	8.53	7.00
Quality of servicing	8.36	7.83	7.75	9.43	8.35	8.25	8.47	8.22
Product brand	7.82	6.83	7.33	7.29	7.95	7.25	7.64	6.11
Advertising	7.18	5.17	7.25	6.29	6.46	7.00	6.53	5.11
Public relations	7.18	6.00	7.00	6.00	6.26	6.31	6.30	6.33
Image of enterprise	8.45	7.33	6.92	7,57	7.82	7.56	7.56	6.67
Highly qualified staff	7.82	6.83	8.17	8.00	7.69	8.06	8.03	6.67
Product pricing	8.18	8.00	7.50	6.29	7.85	7.00	7.67	6.11
Innovativeness of products	7.36	7.33	6.08	6.29	7.62	6.94	6.54	5.56
Size of product range	7.73	6.50	7.42	6.57	7.81	7.88	7.36	5.11
Matching of product structure to structure of consumer demand	7.55	4.67	7.08	6.86	6.81	6.13	6.77	5.67
Availability of products	8.45	6.83	7.83	6.57	8.27	8.44	8.14	6.89
Implementation of Corporate Social Responsibility	6.73	6.33	7.17	5.86	8.08	8.00	8.00	5.89

Source: The author's calculations.

The value of the standard deviation helps to determine the average difference between the significance of the particular instruments of competing in the individual sectors and the mean value. The standard deviation is minimum in the case of *quality of servicing* in the fuel extraction and energy industry (0.53) and of *product pricing* in the consumer goods sector (0.63). It is low for the variable *quality of product/ service* in banking, insurance, finance (0.87) and telecommunications, technology, media, entertainment (0.89) as well. This

means the responses are the least varied with regard to these variables and industries. A maximum standard deviation, on the other hand, is attained by *image of enterprise* in the consumer goods sector and by the variable *size of product range* in banking, insurance, finance (3.10).

Industrial and chemical manufacturing enterprises supply the least differentiated responses, with the standard deviation in the range <1.14;1.79>. The details of the standard deviation for the particular variables, or the instruments of competing, in the sectors surveyed are contained in Table 9.2.

Table 9.2. Standard deviation for the instruments of enterprise competing as per the scope of operations (sector)

Enterprise sector / Variables	Banking, insurance, finance	Consumer goods	Pharmacy and healthcare	Fuel extraction, energy	Industrial and chemical manufacturing	Telecommunications, technology, media, entertainment	Trade, services	Other
Quality of product/ service	0.87	1.97	1.0	2.04	1.14	0.89	1.27	2.4
Quality of servicing	1.21	2.04	0.97	0.53	1.21	1.18	1.29	1.3
Product brand	2.52	3.31	2.19	1.6	1.41	2.02	1.62	2.52
Advertising	2.18	2.64	1.76	1.25	1.41	1.71	2.06	2.26
Public relations	2.89	2.83	1.81	1.15	1.79	1.3	1.83	1.73
Image of enterprise	1.81	3.44	1.62	1.13	1.36	1.03	1.66	2.24
Highly qualified staff	2.56	3.13	1.11	1.41	1.51	0.93	1.52	2.92
Product pricing	2.36	0.63	2.32	1.6	1.48	1.59	1.58	2.20
Innovativeness of products	2.54	2.88	2.68	2.63	1.60	1.12	1.97	2.65
Size of product range	3.10	1.22	2.54	1.4	1.64	2.28	2.31	2.32
Matching of product structure to structure of consumer demand	2.50	0.82	1.56	1.07	1.51	1.54	1.52	1.41
Availability of products	1.29	2.14	1.80	1.51	1.32	0.96	1.52	2.71
Implementation of Corporate Social Responsibility	2.94	1.21	3.16	2.04	1.24	1.51	2.02	2.67

Source: The author's calculations.

In order to verify the hypothesis concerning business objects (sector) as a factor differentiating the instruments of competing selected by enterprises (13 codes of the grouping variable), the Kruskal-Wallis is applied (Table 9.3). Two hypotheses are framed:

- H0 – the instruments of enterprise competing are the same for every sector,
- H1 – a minimum of one sector (population) differentiates the instruments of enterprise competing.

The calculated p is compared with the level of significance α. The research hypotheses are then verified in line with the following dependence:

- If $p \leq \alpha$, H0 is rejected and H1 is accepted.
- If $p > \alpha$, there are no reasons for rejecting H0.

The calculated and assumed ($\alpha = 0.05$) levels of significance are reviewed accordingly.

Table 9.3. The results of Kruskal-Wallis test for the impact of business objects (sector) on the selection of instruments of enterprise competing

No.	Zero hypothesis	Test	Significance	Decision
1.	The distribution of *quality of product/ service* variable is the same for the sector category	Kruskal-Wallis test	0.0034	Reject the zero hypothesis
2.	The distribution of *quality of support* variable is the same for the sector category		0.1315	Accept the zero hypothesis
3.	The distribution of *product brand* variable is the same for the sector category		0.1836	Accept the zero hypothesis
4.	The distribution of a*dvertising* variable is the same for the sector category		0.0954	Accept the zero hypothesis
5.	The distribution of *public relations* variable is the same for the sector category		0.7238	Accept the zero hypothesis
6.	The distribution of e*nterprise image* variable is the same for the sector category		0.1781	Accept the zero hypothesis
7.	The distribution of *highly qualified staff* variable is the same for the sector category		0.1442	Accept the zero hypothesis
8.	The distribution of *product price* variable is the same for the sector category		0.0661	Accept the zero hypothesis
9	The distribution of p*roduct innovation* variable is the same for the sector category		0.0045	Reject the zero hypothesis
10	The distribution of w*ide range* variable is the same for the sector category		0.0175	Reject the zero hypothesis
11	The distribution of *matching of product structure* and *structure of consumer demand* variables is the same for the sector category		0.0082	Reject the zero hypothesis
12	The distribution of *availability of products* variable is the same for the sector category		0.1256	Accept the zero hypothesis
13	The distribution of *implementation of Corporate Social Responsibility* variable is the same for the sector category		0.0020	Reject the zero hypothesis

Source: The author's research.

An analysis of Table 9.3 shows the boundary probabilities for thirteen variables are in the range <0.0020 – 0.7238>. For eight variables, they are greater than the assumed level of significance (α=0.05). This means there are no statistically significant differences in the selection of such instruments of competing as: *quality of support, product brand, advertising, public relations, enterprise image, highly qualified staff, product price, availability of products* with regard to the scope of business operations (sectors). Enterprises in diverse sectors employ these variables (instruments of competing). Therefore, the sector is not a factor that would differentiate the choice of instruments of competing for the selected eight variables. As far as five other variables are concerned (*quality of product/ service, product innovation, wide range, matching of product structure and structure of consumer demand,implementation of Corporate Social Responsibility),* though, p is lower than the assumed level of significance (α=0.05), which indicates statistically significant differences in the choice of these instruments of competing with a view to business objects (sector).

Conclusion

Competition is a basic feature of the market economy, where enterprises must exhibit competitiveness. A competitive enterprise must be capable of a flexible adaptation to variable market conditions and attempt to make business decisions that will guarantee a long-term competitive advantage. An appropriate selection of the instruments of competing, that is, any means consciously created by an enterprise to acquire customers for its commercial range, is the foundation of competitive advantage.

The results of the author's survey of 253 large enterprises operating in the Polish economy and the instruments of competing they employ offer the following conclusions:

1. *Quality of servicing* is the variable accorded the maximum significance as an instrument of competing. Enterprises in the sector of fuel extraction, energy value it at 9.43 (arithmetic mean). The same variable is attributed the lowest standard deviation (0.53), the evidence of a considerable homogeneity of the responses.
2. The significance of the particular instruments of competing to the sectors studied varies a lot. *Quality of product/ service* as an instrument

of competing displays the highest significance only for businesses from three sectors. Banking, insurance, finance, industrial and chemical manufacturing, and trade and services firms granted it values in the range <8.47;9.18>. In addition, the low standard deviation, <0.87;1.27>, corroborates a low dispersion of the responses.

3. The results of Kruskal-Wallis test indicate no statistically significant differences in the choice of such instruments of competing as: *quality of support, product brand, advertising, public relations, enterprise image, highly qualified staff, product price, availability of products* occur in respect of sector. For five variables (*quality of product/service, product innovation, wide range, matching of product structure and structure of consumer demand, implementation of Corporate Social Responsibility*), on the other hand, the differences in the selection of these instruments (variables) are statistically significant with a view to business objects.

This analysis suggests the research hypothesis H – the scope of activities (sector) is a factor differentiating the selection of the instruments of competing by enterprises – cannot be fully validated. This is because there are no statistically significant differences in the choice of the instruments of competing with regard to the scope of operations for eight variables, whereas the dependence is statistically significant for five variables.

This study implies the selection of the instruments of competing is not always dependent on the scope of activities. It can be said to be a function of an enterprise's competitive strategy, designed above all to win competitive advantage and take the best possible competitive standing.

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Abstract

It is the purpose of this chapter to examine the impact of business activities (sector) on the selection of the instruments of enterprise competing. A research hypothesis H is postulated: the scope of activities (sector) is a factor differentiating the selection of the instruments of competing by enterprises. The concept and nature of competitiveness are discussed and the instruments of competing used to gain competitive advantage in the market are described.

The chapter presents the author's study of a representative group of large enterprises that can be generalised to the overall population assuming a confidence level $\alpha=95\%$ and a maximum error $\beta=6\%$. An original survey questionnaire is administered by means of CATI (Computer-Assisted Telephone Interview). The study was carried out in March 2020 on a sample of 253 enterprises. The research hypothesis is verified with Kruskal-Wallis test determining the significance of the impact of a grouping factor on a characteristic. The analysis of the results suggests the research hypothesis cannot be fully validated. This is because there are no statistically significant differences in the choice of the instruments of competing with regard to the scope of operations for eight variables, whereas the dependence is statistically significant for five variables.

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Chapter 10

An assessment of the competitiveness of complex business networks based on their ability to create value added

Introduction

This chapter focuses on the sources of competitiveness of complex economic organisms, i.e., global business networks (GBNs). The author concentrates on finding measures that make it possible to assess global business networks' (GBNs) competitiveness. Measures that take into account the layers responsible for the strength of GBNs' intellectual capital, or the elements of the meso-, macro- and metaeconomic levels, are especially sought after. The key sources of GBN advantage are: networking, defined as the ability to build coalitions; full-form internationalisation, as the utilisation of the potential of both foreign investments and the international transfer of human resources; and coopetition, as constant cooperation, even with competitors, in the area of research and development.

This chapter aims to develop rules for assessing GBN competitiveness based on a complex, multi-dimensional assessment of a given network's orchestrator, who explores the "organisation's knowledge capital" of a system (multilayered GBN).

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The first part presents selected methods of assessing enterprise efficiency. Their authors have attempted to discover how to measure the influence of a complex structure of capital on an agent's competitiveness. They are mostly methods to evaluate intellectual capital and its role in improving the efficiency of an enterprise. Special attention is paid to multi-dimensional, statistical evaluation as a concept that is appropriate for assessing the efficiency of complex structures.

The following part identifies the specificity of GBNs and attempts to find an appropriate concept to assess orchestrators' competitiveness. Ultimately, a meter is built that measures the ability to create value-added that reflects the position of a given GBN against the position of its sector-specific competition by assessing its orchestrator and on the basis of measurable parameters.

The last section presents the concept of the *Synthetic Indicator of Creation of Added Value* (SICAV). It is based on an aggregation of quantitative parameters that constitute the image of all important components of competitiveness and are meant for the top transnational corporations – the orchestrators of global business networks.

10.1. Some selected methods of a multi-dimensional assessment of complex structures

The specialist literature presents various methods used in the assessment of the efficiency of complex-structured organisations, whose development is based on a multi-layered resource capital (Rosińska-Bukowska, 2020). Some effective methods of a multi-dimensional assessment of complex structures include those that strive to evaluate wealth components, including intellectual capital, such as *Knowledge Capital Earnings* (KCE™) or the *Value Added Intellectual Coefficient* (VAIC™). Another group consists of multi-dimensional statistical analysis methods, including the linear ordering of objects in taxonomic and economic studies, via, for instance, Hellwig's method[4] or the *Technique for Order Preference by Similarity to Ideal Solution* (TOPSIS), using a positive-ideal solution and a negative-ideal solution, as proposed by Hwang and Yoon (2015). The *Principal Component Analysis* (PCA) model is yet another method

[4] It was described in 1967 in an unpublished UNESCO Report *Procedure of Evaluating High Level Manpower Data and Typology of Countries by Means of the Taxonomic Method*.

with no ideal solution that uses the values of the first main component and is based on the values and own vectors of covariance or correlation matrix. The contemporary methods of assessing competitiveness that take into account the stratification of an enterprise's capital mostly strive to effectively evaluate IC components. Those include the methods of KCE or VAIC (Pulić, 2000, 2009; Ujwary-Gil, 2009; Iazzolino, Laise, 2013; Wang, 2013; Atalay et. al, 2018).

The concept of KCE™ emphasises income from knowledge capital as a return on physical and financial capitals. The productive function of an enterprise, which defines the economic result as a sum of results of using physical capital, financial capital and knowledge, is the starting point. The method takes into account past and predicted incomes. It consists of 7 stages of separate calculations of individual components. The formula for calculating the economic result (ER) is:

$$ER = a\,(Cph) + b\,(Cfin) + c\,(IC) \tag{1}$$

ER – economic result

Cph – physical capital

Cfin – financial capital

IC – intellectual capital

a, *b*, *c* – the productivity coefficients of individual capital types

The aim is to establish competitive position. VAIC, in contrast to KCE, focuses solely on the current situation. The calculation of value added is the starting point, while expenses on employees are treated as investments.

The method consists of five stages:

- Calculating intellectual value added (VA);
- Calculating capital employed efficiency, or the use of Cphys in the creation of value-added (CEE);
- Calculating human capital efficiency (HCE), or the influence of HC on the creation of value added (the influence of expenditure on the high quality of HC and the influence of HC management methods on the operating result);
- Calculating structural capital efficiency (SCE) and its use in the creation of value added;
- Calculating value added intellectual coefficient.

The value added of the intellectual coefficient is the accumulated value of the indices of individual components. VAIC is the sum of the accumulated economic capital (AEC) index and the intellectual capital efficiency (ICE) index. The latter is, in turn, the sum of the human capital efficiency index and structural capital efficiency index (Gigante, Previati, 2010, pp. 41-47). Therefore, in this sense, VAIC combines the evaluation of the layers of economic capital and the subsystems of intellectual capital (IC). The VAIC index depicts the influence of a given category on individual IC elements, but as a single index, it does not provide a full assessment of the impact of an enterprise's intellectual capital on its operating result. A detailed analysis of the dynamics of changes to the individual elements of the VAIC index and the interpretation of the index itself make it possible to estimate relations between individual IC elements and the operating result.

The application of the VAIC method makes it possible to determine the source of a given value or indicate which categories of tangible and intangible resources have contributed to the creation of this value.

It can be said that a single universally accepted method of measuring IC does not exist. The methods referred to, i.e., Knowledge Capital Earnings or the Value Added Intellectual Coefficient, are considered the most precise. However, even with all their merits, these methods still have a major flaw: they undervalue the full-form internationalisation of the system, despite its significance in the modern developmental model. Additionally, neither takes into account structure networks and their organisational and management complexity.

Another method mentioned is the Multidimensional Statistical Analysis (MDA), which allows for a comparison of complex phenomena and objects with complex structures whose description requires the use of more than one feature. The processes used in the studies include zero unitarisation, the construction of synthetic measures, and linear ordering.

The method of zero unitarisation enables to compare numerous objects through selected criteria. The criteria may be expressed in various quantities and the method aims to normalise the criteria. It uses both elements with positive correlation with a dependent variable (stimulants) and elements with negative correlation with a dependent variable (destimulants) (Zadrąg, Kniaziewicz, 2015, pp. 190-210). The normalisation of qualities (according to the models for stimulants and destimulants) enables the creation of a matrix that serves to put entities in order and create rankings. The construction of

a measure is based on the calculation of a synthetic index of the taxonomic distance between a selected object and a theoretical model of development. A hypothetical object with the best-observed qualities serves as the model. The measure accepts values between 0 and 1 – the higher the value, the greater the similarity between an object and the model.

Linear ordering involves ordering the elements of a studied set according to the values of selected diagnostic indices, based on a defined superior criterion of their assessment. Ordering requires the construction of a synthetic assessment measure developed after the analysis of qualities that constitute the phenomenon.

Global business networks (GBNs) definitely belong to the category of objects that need to be described with more than one diagnostic index; therefore, they can be defined as complex. They are a somewhat abstract creation, depicting a qualitative state which is directly immeasurable yet related to the system of real objects. It appears that the presented concept of creating a synthetic indicator should be considered the most appropriate method of assessing the competitiveness of GBNs as structures whose development is determined by complex factors. The VAIC and KCE methods may still constitute useful, additional concepts used to describe the competitiveness of transnational corporations (TNCs), the orchestrators of GBNs.

10.2. An aggregated assessment of the global business network efficiency – from the point of view of a corporation-orchestrator

A global business network (GBN) is a type of economic and social organism that interacts with the global (including institutional) environment. The key assumption regarding GBNs is that the final stage of the sequential process of business integration involves the creation of a global network that encompasses numerous and diverse elements. Despite the lack of any formal connections, these elements function as a coherent system.

The empowerment of a GBN is based on a common developmental idea. Network members concentrate around this idea, which is reflected in the strategy of the constant and systemic creation of international competitiveness, wherein an orchestrator (the mother corporation of a global network) is the

heart of the system. The threads that make up the connections are a web-like system which is not managed through orders but regulated by the collective wisdom of an organisation – it is orchestration based on a given GBN's knowledge capital.

It is highly significant that, externally, a GBN is perceived from the angle of its orchestrator's actions. It resembles a government in the aftermath of an election – it is an elective governing body.

The legitimisation of an orchestrator's authority is the result of, firstly, the network's acceptance of the adopted developmental strategy, which refers to the international competitiveness system based on the potential of the whole GBN. Secondly, it is due to a majority of business system members considering the results achieved to be satisfactory.

The efficiency of GBN functioning is verified by the market through a network's global competitive position. Network members may vote to continue a given developmental direction or, if they have the required competence, attempt to provoke a revolution, i.e., network reconfiguration, including a change of orchestrator. An orchestrator, like the government in a national system, is merely a manifestation of the developmental priorities of its principal – the GBN community.

Since a broad spectrum of factors, or authority determinants, are considered when assessing the competitiveness of economies, a similar process seems justified in the assessment of GBN competitiveness.

The essence of the constructed Synthetic Indicator of Creation of Added Value (SICAV) is the use of indices that aim to reflect the significance of both the layers of economic capital and intellectual capital. The stages of constructing a SICAV correspond to the stages described in the previous section.

The assessment of economic capital (AEC) is a much simpler procedure due to a much larger base of measurable parameters. One of the most popular indices used to assess AEC is the return on equity (ROE). The simplified version of ROE expresses the current effectiveness (profit – P) of capital accumulated by stockholders (stockholder's equity – SE). However, in the analysis of the initial equation, the DuPont Identity, the interpretation of ROE as an aggregated measure of an agent's developmental potential, is justified. The essence of identity involves determining the relations between individual indices and then aggregating them. The model makes it possible to concentrate on the most significant elements that determine management performance.

ROE takes into account the influence of the following three factors on the profitability of involved capitals: operational effectiveness (return on sales – ROS), the effectiveness of accumulated assets (return on assets – ROA), and the difference between the profitability of equity and the profitability of possessions (financial leverage – *FL*), which reflects the influence of employing foreign capital on an increase in profits per unit of equity – equity multiplier (total assets to stockholders' equity – *A*/*SE*). The multiplier determines the structure of a given agent's employed capitals and how many times larger its wealth is than the employed equity. *A*/*SE* determines how many times ROE is larger than ROA. If a business is being financed solely with equity, the multiplier equals 1 and ROE = ROA.

The formula for the DuPont Identity is:

$$ROE = P/S \times S/A \times A/SE = P/SE \tag{2}$$

where:

P – profit (net financial result = total income – total costs)

S – sales (total income from sales)

A – assets (total assets = fixed assets + current assets)

SE – stockholders' equity (equities)

After (2) is simplified, the calculation of ROE involves dividing the net financial result (P) by equities (SE). However, the subsequent layers of the ROE index are also important. In the first layer, ROE = ROA × A/SE, the product of asset profitability and equity multiplier is calculated. Asset profitability depends on sales profitability and the effectiveness of asset use, or the total assets turnover (TAT). It can be calculated using the following formula:

$$ROA = ROS \times TAT = P/S \times S/A = P/A \tag{3}$$

where:

P – profit,

S – sales,

A – assets.

The TAT index reflects the degree of asset use (A) in order to obtain a specific level of sales (S) and is known as the asset productivity index. Increasing its level is not automatically equivalent to an increase in an agent's competitiveness (measured with an increase in sales), since it can be a consequence of a fall in wealth value (e.g., through asset sales due to financial problems).

Confronted with a mounting pressure from investors to improve shareholder value even further, companies pay attention to improving asset productivity. They need to factor asset efficiency into strategic decisions regarding the product and business portfolio and into the entire process of capital allocation. ROA is usually improved by accelerating asset turnover, i.e., increasing sales volumes and lowering the profit margin per unit or, in the case of low turnover, increasing the profit margin per unit. That is how the second layer of ROA becomes visible.

In conclusion, ROE represents economic capital in a synthetic measure. The construction of GBN competitiveness is based on this capital. Therefore, the selection of ROE as an index that represents it is justified, since the index also introduces other factors that condition competitiveness to the analysis.

The evaluation of intellectual capital is a more complicated matter. The construction of SICAV elements relies mostly on the following concepts: HVA (Pike, Roos, 2018; Pike, et al., 2001), ICBS (Viedma, Cabrita, 2012, 2013, pp. 371-384), the Intellectual Capital Dynamic Value (ICdVAL) (Bounfour, 2008) and, additionally, EVA, MVA, KCE™, and VAIC™.

The HVA concept proves the most useful. Its ability to create value added is nearly identified with a proper IC as an accelerator of an "organisation's knowledge capital". It has been emphasised that IC constitutes merely developmental potential. Pike and Roos emphasise the role of human, organisational and institutional capitals (INNC, ORGC and INSC, respectively) as part of IC. The determination is based on measures that concern financial and non-financial values (standardised between values 0 and 1) and then aggregated. Additionally, it has been observed that while organisation (GBN) members can have common purposes, they attach varying weights to achieving them. As a result, appropriate weights must be used – ones which would make it possible to interpret the results from the perspective of a specific agent (GBN member). These observations are especially significant since SICAV is constructed for GBN orchestrators and a position in a network, while the specificity of knowledge, skills and competence of a given GBN element require a correct interpretation of results for a given agent.

In the ICBS method, Viedma distinguishes human capital, structural capital, relational capital and social capital as the elements of IC. They are a set that can be identified with an "organisation's knowledge capital" and the adopted system of division of IC layers (INNC, ORGC, INSC). The concept of benchmarking is also of great significance; benchmarks must be selected from among the leading agents in a given zone. That justifies conducting a sector-specific assessment (with the use of a measure) of direct competitors with stable positions in a sector. In the method discussed, the evaluation of individual capital layers is based on self-evaluations in business excellence models, using some lists of questions (scored from 0 to 100). The degree of the fulfilment of criteria, between -5 and +5, reflects the position against competition. Then, a balanced assessment is presented in the form of a weighted mean of individual assessments.

The ICdVAL concept, from the perspective of the construction of SICAV, attempts to identify relations between an organisation's condition, expressed in the form of measurable parameters (financial value of resources), and the potential of developmental possibilities based on assets accumulated in the connection system. For this purpose, Bounfour uses three groups of indices that relate to resources, processes and actions[5]. During the assessment of components (on a scale of 0 to 1), the index of an organisation's efficiency is calculated and multiplied by market value.

In conclusion, it should be emphasised that all the methods of IC evaluation are, by their very nature, simplified, since, as M'Pherson and Pike correctly observe, these streams are not easily quantified (M'Pherson, Pike, 2001, pp. 246-260). Additionally, it is crucial that a complex study and measurement of IC make use of methods that enable the integration of top-down and bottom-up approaches.

It should take into account the meaning of "know-what", or facts, "know-why", or their interpretation (i.e., what can be learned from them), as well as "know-how", or the understanding of the significance of correct knowledge transfer (communication).[6] "Know-how" stands for the technical knowledge that is specific to a given field but, in contrast to "know-what" and "know-why", it is tacit. This knowledge is hard to transfer verbally or in writing. Its transfer is influenced by the precision of a given purpose, the applied methods

[5] On the basis of research among practitioners, the author has determined that IC comprises: organisation (structural) capital, human (innovation) capital, and relational (market) capital.

[6] According to the *International Chamber of Commerce*, it is the entirety of knowledge, or specialist knowledge and experiences in the field of technology and production processes of a specific product.

of learning, teaching and assessment as well as internal and external features that are typical of the interested parties involved in the process (Dubickis, Gaile-Sarkane, 2017, pp. 1-17). Still, it is the transfer of "know-how" that guarantees the efficiency and high-quality performance of a specific task, since it combines the necessary knowledge reserve with experience (skills and competence).

10.3. The concept of the Synthetic Indicator of Creation of Added Value (SICAV) – the method assumptions

The concept of the Synthetic Indicator of Creation of Added Value (SICAV) attempts to meet these challenges. In SICAV, all indices carry the same weights. The measurement of knowledge resources on the basis of ICBS can be related to the concept of the assessment of subsequent layers of competitiveness: base competitiveness – an assessment of potential; operational competitiveness – assessment of specific processes/brands; competence competitiveness – assessment of innovative processes; system competitiveness – assessment of social and relational capital. In these aspects, the strong and weak points of a studied object group can be compared, then their influence on the aggregated result can be assessed.

The constructed measure allows for an analysis of the issue studied for a period of time that is applicable to a constant group of objects, for example, ten years for ten most powerful players in a sector. The values of the measure are a resultant of the aggregation of individual, final parameters, which represent the condition of individual subsystems in an organisation.

The rankings obtained may constitute the foundation for a long-term assessment of a given GBN's competitiveness against the strongest competitors in a sector. The ranking is analysed in relation to a specific GBN orchestrator and takes into account other GBN orchestrators in a given sector. It identifies the real key competences of a network and the conditions for building an agent's position in that sector – both in the past and in the future. The competitive position of individual GBN orchestrators depends on the development of global network structures and fulfilment of their orchestrator function.

This results in an oligopolisation of individual sectors of the global economy, which signifies a decrease in the number of agents that determine the direction of development of the sector. These agents set minimum standards for a sector, which brings the competition to a level of value added above the standard in a given segment, country or model. Therefore, over a long period, the competitiveness of a given member of a global oligopoly, or a GBN orchestrated by one of the Top-TNCs, depends on the ability to accumulate a multi-layer (economic and intellectual) capital and use it to the fullest as the developmental potential that creates value added. That is why the parameters considered in the construction of the synthetic indicator reflect the individual layers of the capital of a GBN orchestrator.

In the concept presented here, it is crucial to emphasise that a significant stimulant of long-term competitiveness is the degree of networking. The development of a GBN is a result of the necessity to adapt to the requirements of the global business space. It also signifies the expansion of structures and, as a consequence, the necessity to transform the organisational model. The development of GBN structures has a significant influence on the improvement of competitiveness in all stakeholder types, especially the orchestrator.

The most visible evidence of an effective implementation of the strategy of building GBN competitiveness includes an increase in an orchestrator's profits, trading volume, market value, the percentage of intangible assets in the generated sales value, asset internationalisation indices, employment, sales, etc. These parameters are fully considered when constructing the measure, assuming that the position of an orchestrator is a resultant of the accumulated GBN potential.

The assessment of GBN orchestrators' competitiveness is based on an aggregated assessment of the ability to create value added. A crucial feature of a GBN is its continuous development of connections. Network expansion is an instrument that stimulates development. It is a tool for releasing new energy from assets and equity as well as research and development expenditure, etc. (Zott, et al., 2011, pp. 1019-1042).

The purpose of a synthetic indicator is to highlight the potential of a long-term creation of value added, or a GBN's ability to adapt to the constantly changing requirements of a global market. Value is created by a skilful and systematic addition of new positive features to the standard. It requires the establishment of ever wider connection systems which improve arbitrage abilities, including coopetitive relations (cooperation with the competition).

An inherent feature of GBNs is a growing level of full-form internationalisation of assets, sales and employment – these parameters must be included in the assessment of GBN competitiveness.

In the presented SICAV concept, the following issues are considered vital (Rosińska-Bukowska, 2017, pp. 143-157):

- Systematically developing and increasing the density of the international connection system while simultaneously adapting the management system to a multi-cultural network – it is reflected in a rising TNI, especially increasing in employment abroad and foreign assets relative to these total values;
- Establishing strategic alliances and expanding brand portfolio while rearranging structures to maintain control over a developing network and prevent the efficiency of coordination mechanisms from weakening. It is evidenced by the establishment of effective coordination mechanisms, thanks to a systematic implementation of subsequent stages of the model of business integration. This process must include the mechanisms of reengineering, outsourcing, benchmarking, and isomorphism as some inherent features of the developmental strategy;
- Maintaining a constantly high level of R&D expenditure as a basis for controlling the international life cycle of products. The measure of technological advancement as the foundation for innovativeness is not only the expenditure on research and development against the background of industry competition, but also an extensive global structure of R&D centres;
- Constantly restructuring the management system in response to market suggestions (monitoring the requirements of competition and client assessments). The measures are: an integrated assessment of management quality (e.g., MAC); fulfilling the premises of sustainable development (e.g., CSR reports); maintaining a high quality of the brand (e.g., the value of the brand portfolio compared to competitors);
- Implementing changes to a developmental strategy with the new requirements of competitiveness. Entries in annual reports indicate that the pillars of the strategy confirm the shift of focus from a quantitative approach (the maximisation of sales and profits) to a qualitative one (the role of intellectual capital, the role of intangible assets in creating sales value and market value of the company).

Since the range of factors that stimulate the ability to create value added to a GBN is very wide and some of the issues enumerated are hard to quantify, their analysis is always oversimplified.

Having accepted the role of economic capital as a basis for the selection of potential orchestrators, it is necessary to focus on the key aspects of each IC layer. This should be ensured by building parameters that enable the assessment of varying methods for building a competitive position based on intellectual capital into the measure. Issues such as how much they draw on the multicultural potential of human capital, arbitrage abilities that stem from investing assets in an international market, and the significance of intangible assets in the ability to create value added are stressed.

The most problematic issue is determining a combination of parameters that would enable measurements based on published statistical data (in accordance with widely recognised methodologies). Governed by this criterion, the following are acknowledged as the sources of information: profit (P), market value (MV), research and development (R&D) expenditure, stockholders' equity (SE), asset value (A), assets value abroad (AVA), sales (S), sales value abroad (SVA), employment (E), and employment abroad (EA). Based on these sources, relative indices have been created. Table 10.1 presents the rules for calculating individual SICAV indices.

Table 10.1. The diagnostic indices of an GBN orchestrator's ability to create value added

No.	Preferences	Specifics
1	Stimulant	Return on equity [ROE] expressed in %.
2	Stimulant	R&D expenditure per 1 employee [(R&D)/E] expressed in USD.
3	Stimulant	A percentage of intangible assets in the creation of sales value [(MV–SE)/S] expressed in %.
4	Stimulant	A percentage of assets abroad in the value of total assets [AVA/A], expressed in %.
5	Stimulant	A percentage of employment abroad in employment in general [EA/E] expressed in %.

Source: The author's own compilation.

It is equally important to introduce a parameter indicator, [(MV–SE)/S]. In this way, the "measurement" of the importance of a business network is attempted. The network centres around an enterprise to make the central subject carry the best sales volume. The difference between the market value and the stockholder's equity value [MV–SE] is considered the valuation of the network system. The share of intangible assets in the creation of sales value [MV–SE/S] is, therefore, a very important measure of intellectual capital's ability to multiply the economic capital of an organisation.

Network capital is based on a system built by company relationships and business connections, which are not necessarily visible in a materialised form, for example, owned holdings, joint ventures or formal cooperation agreements. A company possesses these types of assets through a skilful combination of cooperation and competition. It enables the company to acquire experience, increase the professionalism of its personnel, develop certain models of conduct, improve procedures and modify standards, introduce some new brands of products relevant to the specific individual segments or regions, etc.

The index is an attempt at assessing the impact of potential intangible assets whose key ingredients, unique skills and competencies worked out as part of the interactions within the system, build the image of the organisation and systematically raise the value of its brands. An important element of these assets is a quality management system, based on some often unwritten internal codes of conduct that create the foundations of organisational culture, including a unique sense of entrepreneurship and innovation. They comprise some specific types of reactions of the organisation's members to the challenges of the dynamic and diverse environment, including the workflow in emergencies, rules for adjusting the offer to unique local conditions or sudden challenges (e.g., activities of the main competitors or changes in economic and legal situations).

Using [(MV–SE)/S] is an attempt to take into account the impact that standard factors not measured directly, i.e., soft stimulants of competitiveness, including coopetitive abilities, have on sales. It attempt to quantify hidden factors that increase the competitive potential of intellectual capital (Marr, Roos, 2005, pp. 28-41).

Innovation capital is represented in the indicator with research and development expenditure per employee. It is compared with the level of employment in order to assess the technological advancement of the production system against competitors.[7] Today, leaders in sectors that are competing for primacy in a particular market segment often work in another area. They observe one another's actions, utilise best practices and cooperate (also in the trade of items). This innovative capital assessment model makes it possible to capture development trends.

Two further indicators, i.e., the share of assets abroad in total assets [AVA/A] and the participation of employees abroad in total employment

[7] In order for the [(R&D)/E] indicator to serve its purpose, it must consider a properly selected set of companies.

[EA/E], are introduced into the synthetic indicator designed to reflect the internationalisation of an organisational system. In this way, it highlights both the ability to derive potential from a multicultural human capital and the ability to arbitrate which stem from the investment of assets outside a home country. Both elements are essential in an era of corporate globalisation. The importance of a global spread of assets, i.e., the skilful following of trends, including the movements of competition and the building of creative international teams, are underlined. An increase in the value of indicators shows the development of global network enterprise systems and confirms the system's ability to combine competition and cooperation.

It should be emphasised that SICAV serves to fully depict the sources of GBNs' competitive advantage built around an orchestrator and based on available and properly selected data. The measure created is not a perfect tool, merely one proposed to arrange a given group of units that represent network-type structures in the order of strength of their competitive potential. It is a concept that statistically verifies the proposed hypothesis on the role of flexible, coopetitive organisation structures in strengthening competitive position on the global market. Appropriate indices are selected to assess the significance of each layer of capital of a GBN, including crucial qualitative factors, to the creation of a competitive advantage.

In conclusion, SICAV is a form of integrated measurement. Its task is to combine indices that represent the individual layers of GBN capital. The assessment of the significance of individual parameters by combining them and thereby determining the synthetic indicator is crucial. The essence of a GBN's competitiveness as a complex system can be taken into account in this way. Efficiency is maximised through synergy as a result of correctly selecting participating agents.

SICAV utilises indices that aim to reflect the significance of the layers of both economic and intellectual capital. For that purpose, the return on equity was adopted as the basis for a complex assessment of the strength of economic capital, since it contains ROA data as tools that enable the assessment of the efficiency of resource usage and ROS as a source of information regarding the amount of profit per sales unit. Additionally, four parameters are introduced to express the significance of intellectual capital: (1) a percentage of intangible assets in the creation of sales value, (2) research and development expenditure per employee, (3) the full-form internationalisation of assets, and (4) the utilisation of the advantages of multicultural personnel.

Conclusion

The chapter presents a measure of an orchestrator's ability to create value added that meets the requirements of an aggregated long-term assessment of GBN competitiveness (since a GBN is considered a complex structure).

A complex assessment of global business systems/networks competitiveness requires that parameters that reflect the influence of all capital subsystems on its ability to create value added be considered. Ultimately, the author focuses on an approach based on MDA. The Synthetic Indicator of Creation of Added Value (SICAV) is proposed, based on an aggregation of quantitative parameters that constitute the image of all important components for GBN orchestrators (the main corporations of global business systems).

In the indicator, an AEC valuation for GBN is introduced as the orchestrator's return on equity (ROE). ROE is a synthetic measure of the market and financial potential or several aspects of business activity that influence each other. To appreciate the influence of innovation as well as structural and institutional changes on the improvement of competitive position, two indices are introduced: R&D expenditure per employee (R&D)/E] and a percentage of intangible assets in the creation of sales value [(MV–SE)/S].

When emphasising the significance of a multi-level connection system, the internationalisation of assets and employment is referred to. The indices of assets abroad in total assets [AVA/A] and employment abroad in total employment [EA/E] are addressed. In this way, the role of a global distribution of value chains, investment allocation, including the structures of strategic alliances, mergers and international acquisitions, or resources, experiences and competencies of a global business system are all taken into account.

The concept of the SICAV, based on five indices, i.e., [ROE], [(R&D)/E], [(MV–SE)/S], [AVA/A], and [EA/E], meets the requirements of an aggregated long-term assessment of competitiveness for complex business systems. It enables not only an ex-post assessment against a selected group of direct competitors (a linear ordering of objects researched) but also a prediction of competitiveness.

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Abstract

This chapter focuses on the sources of competitiveness of complex economic organisms, i.e., global business networks (GBNs). The author focuses on finding measures that make it possible to assess global business networks' (GBNs') competitiveness. Measures that take into account the layers responsible for the strength of GBNs' intellectual capital, or the elements of the meso-, macro- and meta-economic levels, are especially sought after. The key sources of GBN advantage are: networking, defined as the ability to build coalitions; full-form internationalisation, as the utilisation of the potential of both foreign investments and the international transfer of human resources; and coopetition, or constant cooperation, even with competitors, in the area of research and development. This chapter aims to develop rules for assessing GBN competitiveness based on a complex, multi-dimensional assessment of a given network's orchestrator, who explores the "organisation's knowledge capital" of the system (multilayered GBN).

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Chapter 11

IT management system as factors in the development of SME enterprises

Introduction

SME enterprises play an important role in the market economy. They are seen as the creators of new jobs that drive income growth of the population (Manzoor et al., 2021), they help to establish a healthy competition that enforces a high quality of products and services (Wolak-Tuzimek, 2018; Ahmedova, 2015), and drive the development of a national economy (Toma et al., 2014; Ayyagari et al., 2007).

Appropriate management is the foundation of each enterprise. This is a set of actions that include planning and decision-making, organisation, motivation and control, addressed to an organisation's (human, financial, material and information) resources and undertaken with a view to attaining the enterprise's objectives. In this connection, adequate management systems are created for the purposes of efficient management and enhanced productivity of rules, procedures and processes in a given organisation (Luft, 2021, p. 321). SME enterprises take an increasing advantage of IT management systems which optimise both internal processes and those in the immediate environment

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by offering ready-made tools that help to automate data sharing between enterprise divisions and other businesses in its environment.

This chapter identifies benefits that accrue to small and medium-sized enterprises from the implementation of IT management systems. In addition, a research hypothesis H1 is posited: the implementation of IT systems supporting an enterprise brings benefits, particularly in respect of production, communication, administration, and the numbers of deliveries.

The hypothesis is verified by means of a CAWI (*Computer-Assisted Web Interview*) study of 213 small and medium-sized enterprises in the Radom subregion and exploratory factor analysis.

11.1. The conditions of development of small and medium-sized enterprises

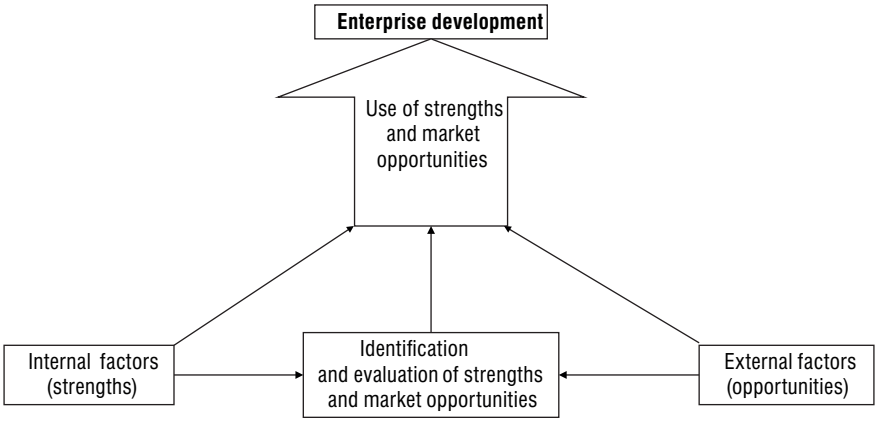
The formation and development of SMEs are indissolubly linked with the process of socio-economic development. Changes in the social and economic life of regions, particularly manifest in the long term, have considerable effects on societies. The numbers, resources, sectors, and staffing of small and medium-sized enterprises are major factors (Sahut, Peris-Ortiz, 2014, pp. 663-667). SMEs are generally local, as distinct from large companies active in a number of markets. This sector is part of the overall socio-economic infrastructure of each region. The principles of market economy, growing and changing social needs, a rising demand for broadly-defined services, a whole gamut of conditions associated with civilisational transformations in the life of societies, and related changes in consumer behaviour form a set of factors determining the numbers and structure of SMEs.

I. Szczepaniak (2007, p. 543) believes enterprise development is stimulated by external and internal conditions. The former are those a firm has limited control over and build a broadly-defined environment whose resources an enterprise utilises. Internal conditions, on the other hand, can be directly influenced by a business and determine the development of an enterprise.

Enterprises in the market apply a variety of factors that can foster their development. These so-called stimulators, determinants or catalysers of development are measurable components treated as the causes or conditions of development processes and constitute their driving forces (McKeown, 2017,

p. 165). They can arise from inside an enterprise as its strengths or from the environment offering opportunities for the development of a small enterprise. These dependences are illustrated in Figure 11.1.

Figure 11.1. Internal and external factors in the development process of small and medium-sized enterprises



Source: Nogalski et al., 2007, p. 132.

The enterprise environment can be defined as a set of objects outside a given organisational system whose properties, however, affect the system and can change under its impact. Such an environment consists of a number of trends, events, and markets that make up the external environment and context of a firm's activities (Romero, Martinez-Roman, 2012, p. 179).

The environment affects enterprises by providing them with some opportunities and possibilities of development while also imposing some requirements and restrictions. As a result, enterprises are obliged to make decisions and adopt diverse lines of development. These decisions are the objects of optimum choices.

In the opinion of J.A. Martinez-Roman and I. Romero (2017), there are two elements of the dependences between an enterprise and its environment: internal and external environment. The former is identical with an enterprise itself, comprising: management, staff, corporate culture specific to a given enterprise, and a variety of resources, processes and procedures as part of an organisational system.

The external environment additionally includes:

- The macro-environment, also known as general or distant environment,
- The micro-environment, also known as closer or specific environment.

The determinants which are part of the distant environment have a macroeconomic dimension. They are functions of political, legal, economic or technological conditions. They can be classified with regard to an environment they spring from. International and domestic environments are distinguished, therefore. The external conditions of an enterprise that arise from the international and domestic environments are listed in Table 1. The processes of state and regional integration and intensifying globalisation play important roles among the international external conditions (Forsman, 2011, pp. 739-750). Growing foreign direct investments are a direct effect. Domestic external conditions include legal norms and regulations and the political situation of a state.

Table 11.1. The external conditions of enterprise operations

Resulting from the international environment	Resulting from the domestic environment
• Capital concentration and enterprise integration, • Greater significance of international corporations, • Growing competition in the global market, • Flows of foreign direct investment, • Rapid technological progress, • Knowledge-based management that gives greater significance to advanced R&D and innovation, • State integration processes, including the process of European integration.	• Legal and administrative norms and regulations, • Opening of a domestic market to foreign enterprises, goods, and capital, • State policies in education, science, and implementation of innovation, • Unstable political scene, • Creation and implementation of restructuring strategies to certain industries,

Source: The author's compilation based on: T. Rachwał, 2008, pp. 55-56.

A stable macroeconomic policy of a state that will assure economic equilibrium is the fundamental condition of a long-term development of small and medium-sized enterprises. Key macroeconomic factors affecting the economic condition and development of an enterprise include the dynamics of economic growth, stable currency, and market demand.

The macroeconomics include legal conditions as well. They influence an enterprise from its very formation, when an entrepreneur must select a legal form of organisation. SMEs are most commonly self-employed individuals,

civil and general partnerships. Commercial companies are rarely chosen as founders have limited financial resources. The more accessible formats involve a full financial liability of entrepreneurs, which may discourage them from business and risk-taking (Dunning 2006, pp. 23-38).

A tax system is another important factor affecting development of the SME sector. A state should attempt to stabilise it and provide transparent legislation. As part of a fiscal system, tax rates standardised by the state have an overwhelming effect on the condition of enterprises.

The micro-environment, on the other hand, encompasses all entities and segments outside of an organisation that may influence it, while an organisation is capable of direct interactions with or even affecting parts of its close environment (a bidirectional reaction).

The numbers of entities in the micro-environment that affect or depend on an entrepreneur's decisions continue to fluctuate. New ones appear in the market or existing entities change their impact and become some major sources of changes in the development process of small and medium-sized enterprises.

The internal (microeconomic) conditions are: the amounts of capitals, quality of products, sales profitability, standard of innovation, staff and management skills, engineering standards, trademarks, staff entrepreneurship, and resource management. They are formed by resources and factors at the disposal and under control of enterprises in the process of achieving their objectives (Hoelscher et al., 2015, pp. 48-78).

Capital is desired as it enables operations that, if reasonable, increase its value or it fulfils a function that provides for a return on the committed good (capital). If it is used improperly, however, it will be lost.

Innovation and advanced technologies acquire more importance in the contemporary economy as factors determining enterprise development (Liu et al., 2020, p. 1). By implementing technological, process and organisational innovations, enterprises can cut the costs of production, improve the quality of their products, and boost export revenue. They rely on a continuing introduction of state-of-the-art technology, not always based on licensed solutions. Innovative solutions become part of a continued strategy, combined with cooperation with research organisations these enterprises treat as partners in the creation of state-of-the-art solutions. Firms introducing innovations thus take effective advantage of their workers' knowledge (Valaei, 2017, pp. 16-40).

In the opinion of Galvão et alia (2018), the quality of product range and the ability to identify and satisfy customers' needs also have considerable impact on the condition and development capabilities of small and medium-sized enterprises. The manufacturing of high-quality products and supply of quality services are of special significance to the expansion of Polish products in the European Union market.

Intellectual capital is one more factor affecting the development of enterprises. It comprises both staff potential and what continues to influence an enterprise's status after workers leave (Ngah, Ibrahim, 2012, pp. 593-596).

Small and medium-sized enterprises increasingly often employ IT management systems that utilise the power of information to boost productivity (Cherotich, 2017, p. 1), planning, and finance management (Lenart, 2005, p. 28) to provide information at the right time, and effectively support decision-making processes and other management functions (Shaqiri, 2014, p. 19).

The role of IT management systems is the object of interest to a number of managers, practitioners, and researchers (Ibidapo-Obe, Ayeni, 2019). This is due to the fact they contribute to ensuring a successful sustainable development of enterprises, are a factor in long-term operation in the free market economy, and help maintain high competitiveness (Johnson, Scholes & Whittington, 2008).

A.V. Hollay (2017) claims the use of IT management systems allows enterprises to adapt to the current free market conditions by facilitating the improvement of strategic enterprise development and compilation of effective measures of assessment, elimination or alleviation of such adverse aspects as uncertainty and risk.

It can be said in summary factors springing from the environment are independent from an enterprise and derive to a large extent from state policies and the mechanisms of market regulation while being influenced by both overall conditions and economic situation in a country and the state of the world economy. Internal factors, on the other hand, are connected to an enterprise's actions, its financial position, material resources, intellectual capital, organisational structure, a strategy of development in place, management methods, entrepreneurship, innovation, and the quality of products and services.

11.2. Methods

The results of a CAWI (Computer-Assisted Web Interview) survey of 240 small and medium-sized enterprises in the Radom subregion are presented in this chapter. The study was completed in March 2017, producing 213 correctly filled surveys.

The empirical section employs an original survey questionnaire. It consists of particulars and questions. The former characterises the sample by means of five objective criteria (the form of business activities, field of operations, extent of operations, number of workers, revenue last year) and 13 criteria describing the enterprises in terms of IT systems in place and their functionalities. Two issues are examined in the latter part: the impact of IT systems in place on competitiveness and an assessment of benefits from the implementation of IT systems.

The chapter discusses the results concerning the benefits from implementation. Based on a literature review, 27 benefits (variables) are defined and their values recorded on 10-point ordinal scales, with 1 standing for low benefits and 10 for high benefits.

As far as the characteristics of the sample are concerned, more than 40% of the enterprises are self-employed individuals (86). The second largest business format is the limited liability company, 64 entities or 30% of all the enterprises queried. The shares of general and civil partnerships account for 15.5% and 7.5%, respectively, whereas joint-stock companies and limited partnerships constitute 0.5% each. 1.9% of all the enterprises have other legal and organisational forms. More than 35% of those examined are manufacturing firms (75), followed by trade enterprises (26.3%). Other fields of business constitute the smallest percentage (0.5%). A little less than a quarter of the enterprises are active in the regional or national market (22.1% and 23.9%, respectively). Fewest firms, on the other hand, are oriented towards the international market. The businesses of an international extent form the smallest grouping of 7%, with a prevailing majority generating below PLN 0.5m revenue (30%) and 26.8% of those studied earning more than PLN 2m revenue in the last year.

The exploratory factor analysis is applied to verify the research hypothesis. It helps to identify factors underlying observable variables. It is assumed a number of variables of a similar variance may be clearly correlated with a latent value represented by a factor. Cattell's scree test, to the right of which

eigenvalues decline, is undertaken to identify the number of factors, the key to further analysis. The so-called factor scree, which determines the number of factors eligible for continuing analysis, is situated to the right of the declining point. The test enables to distinguish a number of factors on reviewing the plot until it turns into the factor scree. The purpose is to capture a point where a continued increasing of the number of factors will only produce a negligible growth of the explained variance ('when the plot begins to flatten out') (Cattell, 1966, p. 84).

The reliability (internal consistency) of the scales, that is, the precision with which a scale measures what it measures, is subsequently verified. A measurement is found reliable if it mainly represents true results compared to the error (StatSoft, 1997, p. 3108). Cronbach's alpha is among the most common techniques of measuring scale reliability. Its values are in the range <0,1>, with coefficients above 0.6 assumed to mean the minimum reliability of a scale.

11.3. Results

The empirical results for observable variables concerning the benefits gained by a firm on the implementation of IT systems to support its enterprise are developed with descriptive statistical tools (arithmetic mean and standard deviation), as shown in Table 11.2.

These data imply the means are maximum for the following variables: an improved security of confidential information (6.02), followed by more detailed information (5.90) and a more accurate processing of information (5.65). The liquidation of bottlenecks (3.77), more consistent production flow (4.04), and more flexible production schedule, easier to adapt to market situation (4.23) are ranked lowest. All the variables are within the range <3.77-6.05>. For most, the range (the empirical area of volatility) is 10, which is the maximum possible for the measurement scale adopted. This means each variable is at least once rated minimum (1) and at least once maximum (10). The standard deviations for all the variables are comparable and range between <2.19; 2.83>.

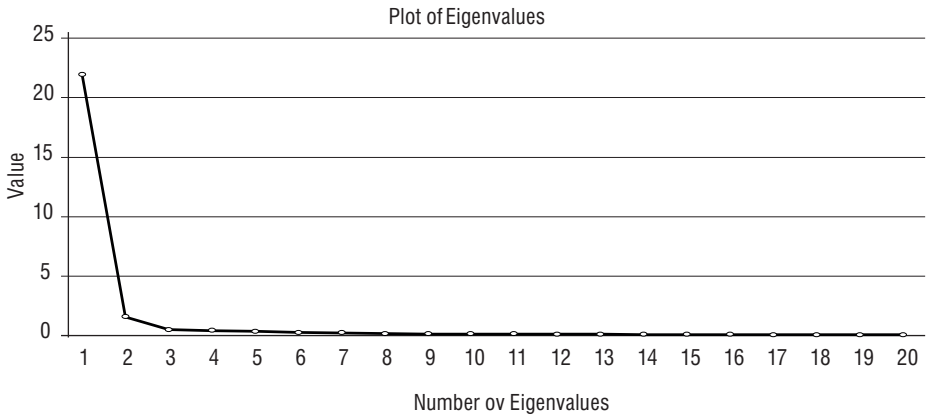
Table 11.2. Descriptive statistics for observable variables characterising benefits from the application of IT systems

Variable number	Name of variable	Mean	Standard deviation
1.	Reduction of discards by following technological standards	4.34	2.45
2.	Reduction of unit production cost by adequate control of the process	4.41	2.57
3.	Accounting by function and by type for the particular divisions and products	4.46	2.61
4.	Shorter production cycle	4.24	2.81
5.	More flexible production schedule, easier to adapt to market situation	4.23	2.63
6.	More consistent production flow	4.04	2.75
7.	Liquidation of bottlenecks	3.77	2.56
8.	Reduced stoppage and waiting times in the production process	4.29	2.60
9.	More timely production	4.62	2.58
10.	Optimisation of material procurement	5.07	2.39
11.	Fewer materials in warehouses (less stock)	4.70	2.46
12.	Shorter time of material storage (faster stock turnover)	4.78	2.62
13.	More deliveries realised	4.90	2.37
14.	More standardised products	4.71	2.45
15.	More orderly material management	5.19	2.83
16.	Lower losses on excess stock (freezing of capital, storage costs, lower quality).	5.08	2.62
17.	Faster processing of information	5.56	2.56
18.	More accurate processing of information	5.65	2.64
19.	More detailed information	5.90	2.77
20.	Improved security of confidential information	6.02	2.79
21.	Lower personnel costs (redundancies)	5.16	2.34
22.	Lower administrative costs	5.14	2.30
23.	Lower telecommunications costs	5.58	2.49
24.	More efficient document flows	5.39	2.67
25.	Elimination of redundant administrative work	5.02	2.28
26.	Improved coordination of tasks	5.04	2.47
27.	Elimination of errors	4.46	2.19

Source: The author's compilation.

The exploratory factor analysis and Cattell's scree test are utilised to explicate mutual relations among the observable variables.

Figure 11.2. The scree diagram for the factors describing benefits from the implementation of IT systems to support enterprise operations



Source: The author's compilation.

Figure 11.2 shows a sharply declining curve turns into a mild scree when three factors are identified. This means any subsequent factors will contain little information and have low eigenvalues, therefore are rejected. A model consisting of three factors is selected for the continuing analysis. Table 11.3 contains a matrix of eigenvalues for the selected factors.

Table 11.3. The eigenvalue matrix for the factors describing benefits from the implementation of IT systems to support enterprise operations

Factor	Eigenvalue	Percentage of total variance	Accumulated eigenvalue	Accumulated percentage
1	21.94	81.26	21.94	81.26
2	1.60	5.91	23.54	87.18
3	0.51	1.89	24.05	89.06

Source: The author's compilation.

An analysis of Table 11.3 implies the eigenvalues, that is, parts of the explicated variance for the three factors, are as follows:

- Factor one: 21.94 or 81.26% of the overall variance,
- Factor two: 1.60 or 5.91% of the overall variance,
- Factor three: 0.51 or 1.89% of the overall variance.

The Table also shows the combined explicated share of the variance totals 89.06%, which means the model very well matches the realities studied.

The analysis proceeds to test factor loads. These are correlations among observable variables and factors introduced to the model. 0.6 is the minimum correlation qualified as significant.

Table 11.4. The matrix of factor loads for the factors describing benefits from the implementation of IT systems to support enterprise operations

Variable	Factor 1	Factor 2	Factor 3
V.1	**0.73**	0.52	0.24
V.2	**0.78**	0.43	0.24
V.3	**0.67**	0.59	0.23
V.4	**0.82**	0.42	0.26
V.5	**0.82**	0.37	0.33
V.6	**0.84**	0.38	0.23
V.7	**0.86**	0.35	0.10
V.8	**0.83**	0.33	0.33
V.9	**0.75**	0.40	0.39
V.10	**0.66**	0.51	0.40
V.11	**0.69**	0.42	0.46
V.12	**0.65**	0.52	0.43
V.13	0.58	0.45	**0.60**
V.14	0.60	0.44	0.58
V.15	**0.60**	0.49	0.55
V.16	**0.62**	0.54	0.50
V.17	0.52	**0.64**	0.50
V.18	0.49	**0.70**	0.44
V.19	0.45	**0.74**	0.43
V.20	0.42	**0.78**	0.39
V.21	0.37	**0.70**	0.44
V.22	0.38	**0.81**	0.29
V.23	0.35	**0.84**	0.26
V.24	0.36	**0.87**	0.23
V.25	0.38	**0.85**	0.18
V.26	0.42	**0.82**	0.17
V.27	0.38	**0.81**	0.17

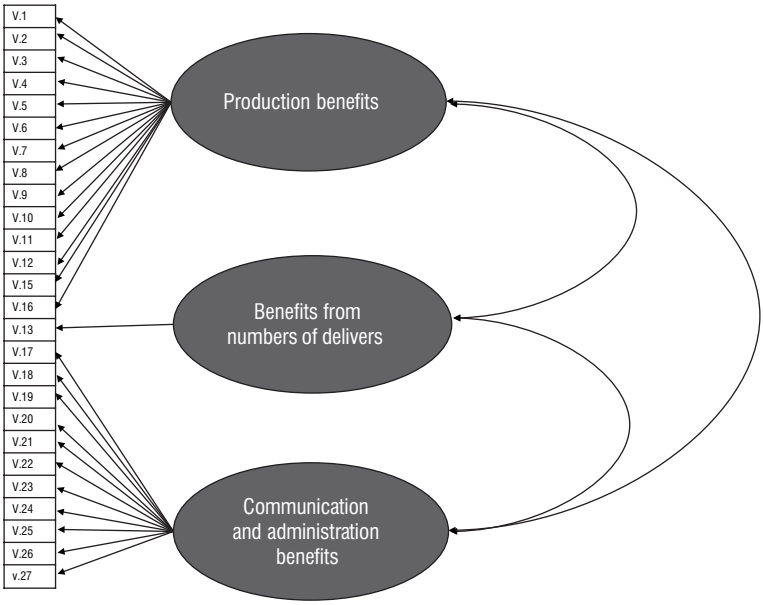
Source: The author's compilation.

A review of Table 11.4 implies:

- The first factor is loaded by variables 1-12, 15 and 16. The factors still need to be named. As suggested by literature, the names are derived from the variables of maximum factor loads. Thus, factor one is called 'production benefits'.
- The second factor is loaded by variables 17-27. According to the convention, the factor is termed 'communication and administration benefits'.
- The third factor is only loaded by variable 13, from which it takes its name of 'benefits from numbers of deliveries'.

The model is depicted in Figure 11.3.

Figure 11.3. A factor model describing the benefits from the implementation of IT systems to support enterprise operations



Source: The author's compilation.

The individual observable variables (positions on the scale) are represented with rectangles and the latent variables (factors) as ovals in Figure 11.3. The cause-and-effect (regressive) relations are shown as unidirectional arrows and correlation dependences as bidirectional arrows.

The reliability of the scales is analysed for the two first factors. This is not undertaken for factor three, since this type of analysis only applies to scales comprising a minimum of 3 positions, whereas only one variable is available here.

The results of the analysis for the first two factors are contained in Tables 11.5 and 11.6.

Table 11.5. Analysis of the measurement scale reliability for the first factor – 'production benefits'

Variable	Mean when removed	Variance when removed	Standard deviation when removed	Position-total correlation	Alpha when removed
V.1	58.86	991.68	31.49	0.91	0.99
V.2	58.79	984.85	31.38	0.91	0.99
V.3	58.74	984.29	31.37	0.90	0.99
V.4	58.96	965.55	31.07	0.94	0.99
V.5	58.97	977.01	31.26	0.94	0.99
V.6	59.16	972.64	31.19	0.92	0.99
V.7	59.44	991.80	31.49	0.87	0.99
V.8	58.91	980.80	31.32	0.92	0.99
V.9	58.59	981.49	31.33	0.93	0.99
V.10	58.13	995.20	31.55	0.91	0.99
V.11	58.50	990.17	31.47	0.91	0.99
V.12	58.42	980.71	31.32	0.92	0.99
V.15	58.01	970.29	31.15	0.91	0.99
V.16	58.13	978.35	31.28	0.93	0.99

Source: The author's compilation.

Table 11.6. Analysis of the measurement scale reliability for the second factor – 'communication and administration benefits'

Variable	Mean when removed	Variance when removed	Standard deviation when removed	Position-total correlation	Alpha when removed
V.17	53.37	545.59	23.36	0.92	0.98
V.18	53.27	539.67	23.23	0.94	0.98
V.19	53.02	532.91	23.08	0.95	0.98
V.20	52.91	530.86	23.04	0.96	0.98
V.21	53.77	559.14	23.65	0.88	0.99
V.22	53.79	555.91	23.58	0.93	0.98
V.23	53.34	547.85	23.41	0.93	0.98
V.24	53.53	537.83	23.19	0.95	0.98
V.25	53.91	559.08	23.64	0.91	0.98
V.26	53.88	551.49	23.48	0.90	0.98
V.27	54.46	566.56	23.80	0.87	0.99

Source: The author's compilation.

Tables 11.5 and 11.6 demonstrate Cronbach's alpha is far below the boundary value of 0.6 in both the cases: 0.987 and 0.986, respectively. Therefore, the measurement scales are reliable. Mean correlations among the positions of the particular scales are high: 0.852 for the first and 0.872 for the second factor. A review of the last columns of the tables, which show how alpha will change if a variable is removed from a scale, does not indicate a need for a rejection of any variables.

It can be said in general, therefore, both the multi-positional scales derived from the factor analysis are reliable, that is, they measure the phenomena studied well.

Conclusion

Contemporary enterprises function in changing economic conditions characterised by, among other things, an intense competition and rapid development of IT technologies, which compels entrepreneurs to continue improving their processes. Therefore, enterprises should introduce integrated IT systems which support day-to-day activities and constitute some powerful

and efficient tools of operational management. The application of these systems helps, inter alia, to reduce stock, streamline commodity flows and data sharing with partners or improves the use of personnel. The systems facilitate making of crucial decisions as management has access to data about the current position of an enterprise. All of these measures have positive effects on the competitiveness development of enterprises.

The results of the author's study of 213 SME enterprises imply:

and The respondents attribute a maximum significance to three benefits from IT systems, namely, an improved security of confidential information, more specific information, and more accurate information processing. Arithmetic means for these variables are: 6.02, 5.9, and 5.65, respectively. The liquidation of bottlenecks (3.77), more consistent production flow (4.04), more flexible production schedule, and easier adaptation to the market situation (4.23) are lowest rated, on the other hand. All these variables are in the range <3.77-6.05>. The standard deviations of the responses concerning all the variables are comparable and range <2.19; 2.83>. The first hypothesis, that is, the existence of benefits from the implementation of IT systems to SMEs, is verified in this way.

The exploratory factor analysis helps to construct an original model of benefits from the implementation of IT systems to support enterprise operations. Three factors that identify these benefits in a statistically significant manner, i.e., production benefits – loaded by 15 variables, communication and administration benefits – loaded by 10 variables, and benefits to numbers of deliveries, loaded by one variable. This corroborates the research hypothesis advanced.

This analysis implies integrated IT systems streamline enterprise management systems and contribute to a novel, frequently innovative look at processes, enhancing their effectiveness and the rate of enterprise development. Innovative IT technologies can be expected to develop in coming years to increasingly support decision-making processes and contribute to growing enterprise competitiveness.

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Abstract

The chapter focuses on the question of benefits from the use of integrated IT systems in enterprises. It aims to identify the benefits to small and medium-sized enterprises that implement IT management systems. A research hypothesis H1 is proposed: the implementation of IT systems to support enterprise activities brings benefits, in particular, to production, communication, administration, and numbers of deliveries. Some internal and external conditions of enterprise development are discussed on the basis of a literature review. It is indicated IT management systems provide for efficient management, continued improvement to the productivity of rules, procedures and processes in an enterprise, and the optimisation of both internal processes and those in the nearest environment.

The results of the author's CAWI survey are presented of 213 SME enterprises in the Radom subregion. The tools of descriptive statistics (arithmetic mean and standard deviation) help to identify three benefits from the utilisation of IT systems that are of maximum significance to enterprises, namely: an improved security of confidential information, more specific information, and more accurate information processing. Moreover, an original model of benefits from the implementation of IT systems to support enterprise activities is constructed by means of exploratory factor analysis which consists of three factors: production benefits, communication and administration benefits, and benefits to delivery numbers.

Katarzyna Sieradzka*

Chapter 12

Start-ups in Poland – the key factors of success and failure

Introduction

The continually changing business environment and conditions of economic activity keep posing new challenges to entrepreneurs, forcing them to look for new products and services, technological and organisational solutions and to create new market needs while considering customer expectations. As a result, firms offering intangible products in the virtual environment and the global market become important. These are largely start-up enterprises which are innovative, exhibit above-average development and attract a rising interest of the market. As research demonstrates (Patel, 2015, Walden 2014, after: Sobczak, Dudycz, 2016, p. 81), only 10% start-ups become successful in the market. It is reasonable to ask, therefore, what factors condition success and which contribute to their business failure.

The objective of this chapter is to identify and analyse the key factors of success and failure of start-ups in Poland. To this end, the following research hypotheses are adopted:

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- H1: The literature fails to offer a standard approach to either defining or identifying the stages of start-up development, which makes research and analysis difficult.
- H2: Factors determining the success of start-ups primarily include: innovative potential, opportunities for commercialisation, and launch strategies, resulting from: the quality of human capital and business ideas, financing capabilities and business model, as appropriate.
- H3: The factors of start-up success turn into the factors of their business failure in adverse circumstances.

In order to reach the objective and prove the research hypotheses, data and information are analysed from studies and reports by Polish and European institutions and organisations, including: Raport „Polskie startupy" 2016-2020/ Polish Startups 2016-2020 Report (Start-up Poland Foundation), European Startup Monitor (ESM) 2016-2020. Specialist literature is reviewed as well.

12.1. The specific nature of start-up organisations

Start-ups are a relatively novel form of business undertakings. Their emergence and development are connected with the development of information and communication technologies, processes of globalisation and intensifying competition, reduced product life-cycles, and development of entrepreneurial attitudes among the young. A universal definition of start-up is absent from specialist literature. The notion is identified with business in its early stages of development as it is in search of a model to assure growth. It is also described as an enterprise working on a solution which is not obvious and the success of this undertaking is not guaranteed and even liable to above-average risk. Blank and Dorf (2013, p. 50) point out *'a start-up is a temporary organisation in search of a scalable, reproducible, and profitable business model'*. For Reis (2011, p. 27), this is *'a human institution formed with a view to building new products or services in the conditions of uncertainty'*. In turn, K. Kozioł-Nadolna (2018, p. 71) indicates it is *'an undertaking of a very high innovative potential that satisfies a specific consumer need, operates in an initial phase of its life-cycle and experiences an above-average potential of growth, risk, and uncertainty'*. A number of authors (ESM 2016, Reis, 2017,

Startup Commons, 2019) commonly speak of start-ups with reference to high-technology organisations. A range of definitions share some characteristics attributed to start-ups (Damodaran, 2009, p. 5): a high growth potential, early stage of development, dependence on various sources of capital, lack of history, low survival. The following need to be added to this list (Sieradzka, Kaliszczak, 2018, pp. 91-96): capacity for knowledge, extreme market uncertainty, product or service innovation, scalability, absence of a stable business model, and internet environment. In Poland, there are a range of original definitions, without a legal one, however. The approaches of institutions addressing this subject matter are not standard, either. The PARP (Polish Agency for Enterprise Development) report (2019, p. 4) 'Startups in Poland' states a start-up is *'an entity represented by a person at the stage of business foundation or running a firm for up to 3.5 years and employing technologies/ working methods that have been in the market for up to five years to make products/ services'*. The authors of 'Polskie startupy' report (Fundacja STARTUP Poland, 2018, p. 107) indicate the following characteristics (where a minimum of one must be present):

- They are part of the digital economy sector,
- Information processing or derivative technologies are the key parts of their business model,
- They create new ICT technological solutions.

Start-ups are considered innovative organisations as they operate in the field of high technologies and their (scalable) business model is founded on the processing of knowledge, data, and information. Most start-ups are unique organisations that do not fit the development patterns of traditional enterprises. *'They base on the new business paradigm of multi-level openness and attempts at creating an effective business model'* (Chrzanowski, Zawada, 2018, p. 42).

12.2. Factors conditioning the success of an innovative business undertaking

Factors affecting the development of start-ups can be divided into exogenous and endogenous. The external conditions of start-up operations comprise (Kuranowski, Szymańska, 2018, p. 97): the legal aspects of innovative activities, government programmes, the availability of financial support guaranteed

by the state and local authorities, cooperation of enterprises and research organisations and diffusion of innovation, matching of university education to rapidly changing market conditions, infrastructure, sector and industry-specific elements and broadly-defined enterprise cooperation, regional, national and foreign markets, impact of globalisation on customers and competition, social and cultural (demographic and ecological) factors, protection of intellectual property (patents, licences), and turbulent environment of start-ups. The other group of conditions key to start-up development encompasses the so-called endogenous factors, inherent in an enterprise. These are the resources and factors owned by an enterprise that it controls in the process of reaching its goals, including (Kuranowski, Szymańska, 2018, p. 100): human resources, the flexibility of organisation, its structures and resources, business experience, capability of adapting innovations from outside and from R&D, flexibility of financial and tangible capital, ability to implement innovation, corporate culture, ability to take risk, climate of innovativeness, skill of cooperation, and a rapid response to changes.

The conditions of start-up development are also related to the notion of ecosystem that consists of all entities and organisations interested in the process of initiating innovation and transforming it into prosperous business undertakings. This is *'a system of entities desiring to make new products and services in the conditions of high uncertainty using available resources and functioning in a given regulatory environment'* (Deloitte, 2016, p. 4). Its following parts are distinguished: financing, legal regulations, human capital, social capital, and institutional environment. Financing is crucial to every stage of development, though it must be kept in mind requirements for this type of support change as undertakings develop. The institutional environment comprises institutions and organisations working for the development of the entire start-up ecosystem. It includes: entrepreneurship and innovation centres, central and local administration institutions, and non-banking financial institutions. Human capital decides the emergence and quality of innovative concepts and development opportunities. Social capital in turn 'binds' interpersonal contacts which rely on obedience to norms and commitment to community life.

The development of innovative business undertakings depends on a number of factors, some of which are key: worker team and business idea, financing and business model.

A business idea and a team forming a start-up constitute the potential for the innovation and market advantage of a start-up. The business idea is seen

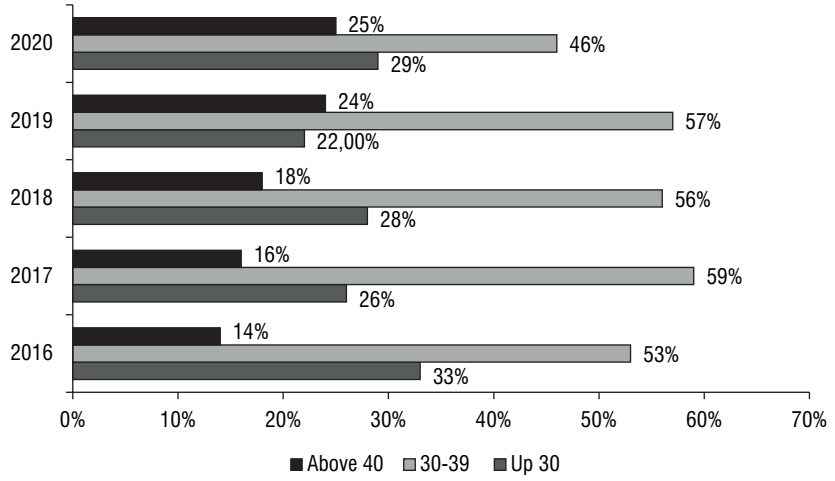
as one of the most important elements of a successful enterprise. However, its generation and fit to market needs are a function of a properly selected team.

Human capital is a determinant of innovation concepts and their quality and development capacities. The significance of human capital is of particular importance at the early stages in the development of an undertaking. The utilisation of available knowledge resources and research and continual learning are the fundamental characteristics of a start-up, which results in the creation of an innovative product or service of a high market value, thereby realising the concept of knowledge-based economy. Therefore, the productivity of knowledge and thus the level of human capital and quality of its management are of special significance to the start-up ecosystem. The quality of human capital, measured with years in education and educational standards (gained both by formal education and company training), affects the levels of innovativeness and commitment to start-up creation. Greater levels of human capital also improve the likelihood of introducing breakthrough innovations. The mental and physical features of founders and staff are important as well. At the stage of start-up formation, psychological (e.g., personality, convictions, values, needs, attitudes, motivations) and subjective qualities (abilities, experiences, demographics or education) and cognitive factors (knowledge, the processes of thinking and decision-making) are decisive (Kałowski, Wysocki, 2017, p. 75). As an enterprise develops, the role of subjective factors declines to the benefit of situational and random variables that are hard to capture.

In Europe, start-up founders are predominantly young males (aged around 35) with university education who run their businesses in teams of 2-3 (ESM, 2016-2020). This undermines the common belief a start-up founder is a very young person who comes up with breakthrough innovations in their garage. Academic knowledge, professional skills and experience combined with the features of a contemporary entrepreneur (creativity, innovativeness, can-do attitude, etc.) provide the basis for a modern start-upper. They are believed to be motivated by the dreams of their own business (71.9%) and the associated independence (62.9%), as well as financial success (ESM, 2018, p. 28).

A survey of a group of Polish start-ups (Startup Poland, 2016-2020) indicates the characteristics of Polish start-up founders are very similar to those of their European equivalents. A contemporary founder of a Polish start-up is a man below 40, most often aged 30-39 (cf. Figure 12.1).

Figure 12.1. Start-up founders in Poland (age) in 2016-2020



Source: Startup Poland (2019 p. 19, 2020, p. 11).

The figures also suggest the Polish start-up founders mature – there are more of those aged 40 (25% in 2020 vs. 14% in 2016) while the numbers of the young fall (29% vs. 33%, respectively). The high average age in Poland is connected to the need for financial stability and capital accumulation to venture into a risky and uncertain undertaking. Many of those who do take a new challenge point to their professional experience, an undoubted asset and a possible determinant of business success. A majority of these individuals are university educated (76% are graduates), mostly in engineering and social subjects (48.5% and 42%, respectively). The data show the start-ups studied tend to run their business in twos rather than alone, and this is a growing trend (Startup Poland, 2018, p. 16). A division of duties and diversity of specialisations matter as they allow for job delegation and savings on subcontractors.

The ability to apply innovative solutions to management is a key factor of success for organisations in the conditions of extreme uncertainty as it provides for efficient functioning in a dynamically shifting environment. No standard approach to definition or identification of the stages of start-up development is presented by literature. The development model proposed by Blank and Dorf (2013) envisages the following stages of start-up evolution: *idea generation and team creation; product validation and development; obtaining financing; finding customers and monetisation; business scaling; business maturity*. Skala and Kruczkowska (2016), the authors of the Polish Startups

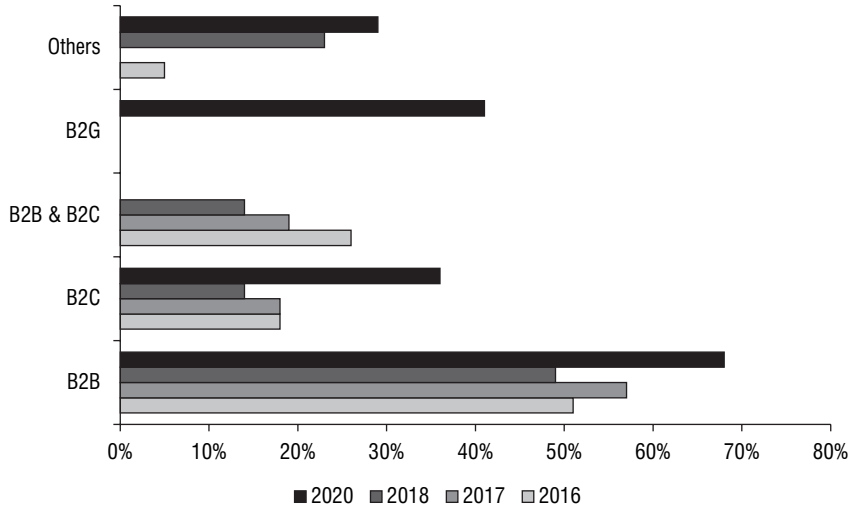
2016 report, distinguish the following stages*: Problem-Solution Fit, Solution-Product Fit, Product-Market Fit*, and *Expansion*. Yet another model is suggested by practitioners who have authored the report '*Diagnoza ekosystemu start-upów w Polsce 2016/ A Diagnosis of the Polish Start-up Ecosystem 2016'*, who identify the following stages: *ideation, vision, formation, validation, scaling,* and *maturity*. Regardless of the names and numbers of the stages, foundations for company development are laid at the initial stages of a team, prototype products, and a preliminary plan for development. First customers are found and the product is corrected. External funding is attracted to support the sales process and continuing product development. Sustained growth and business scaling to foreign markets are important. When profits stabilise and financial flows are positive, a start-up reaches its business maturity. Specialist literature describes the operation and development of a start-up as a passage through the most dangerous stage that frequently ends in failure. An initial stage of development and its accompanying extremely high risk generate negative cash flows. At this stage of seeking a business model, a range of investment costs are incurred, for instance, technological work or customer acquisition, which means problems with reaching the threshold of profitability in practice.

Some authors point out (Glinka, Piaseczny, 2015, p. 18) a start-up is not a smaller version of a large enterprise but a peculiar type of organisation that should be treated differently and with other tools of management. Start-up creators design their business models by means of the *Business Model Canvas*, proposed by A. Osterwalder and Y. Pigneur (2010), among other methods. This is a sort of substitute strategic plan. Nine elements of enterprise concept are indicated that refer to the fundamental areas of operation – customers, products, infrastructure, and financial standing. These include: value proposals, customer segments, the channels of distribution, customer relations, key actions, key resources, a network of partners, revenue streams, and cost structure. The creation of a business model is not a single act but a process that involves experimentation and verification of all its parts using the Customer Development approach (market research, market verification, realisation). Building on this approach, E. Reis (2017) stresses the importance of knowledge acquisition as the basic objective of a start-up. This process consists of successive actions: creation – measurement – learning. Knowledge is to rely on hard data obtained by experimentation or sales of a product featuring its basic functionality (Minimum Viable Product). Due to dynamic changes in the environment, all these actions should be carried out as part of short cycles. The process allows for a quick adjustment of a product to actual

market needs by means of iterative modifications and for discontinuing an undertaking if preliminary assumptions widely diverge from market realities.

Research into the business models of Polish start-ups focuses on the categorisation of market dependences (Startup Poland, 2016-2020): B2B (*business to business*), B2C (*business to customer*), B2B2C (*business to business to consumer*), and B2G (*business to government*). These studies imply start-ups concentrate on the sales of goods and services to other enterprises in the entire period examined (Figure 12.2). These are above all micro, small and medium-sized enterprises and corporate customers. In 2020, 68% of the start-ups surveyed realised this business model. This means the focus on business client guarantees faster profits than is the case for private customers. Institutional clients like offices, local authorities, schools or hospitals play an increasing role. 41% start-ups supplied their services to these entities in 2020. Fewest start-ups employed the consumer model.

Figure 12.2. The business models of start-ups in Poland in 2016-2020



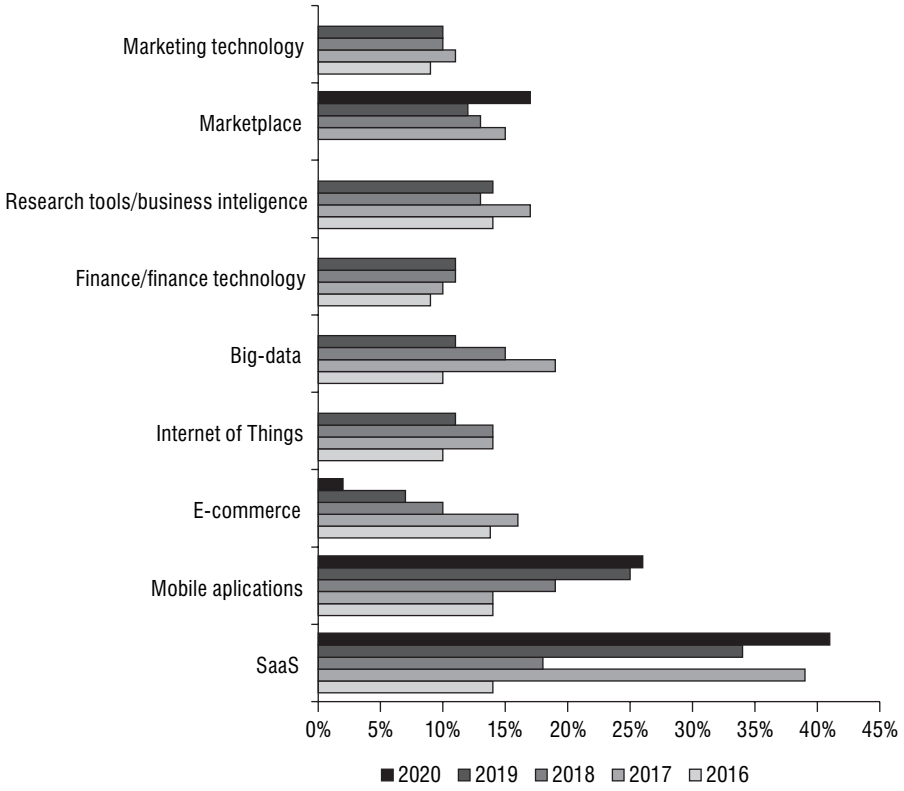
* No data are available for 2019.

Source: Startup Poland (2016-2020).

The SaaS (Software as a Service) model, in which a customer gets software made available via the internet, is noteworthy. An enterprise becomes a global player as a result and distribution costs of the product become minimum. 14% of the start-ups examined sold their services as part of this model in 2016, with the

share rising to 41% four years later (Figure 12.3). As much as 90% of firms selling through the SaaS model generate regular revenue (Start-up Poland, 2017, p. 21).

Figure 12.3. The major sectors of start-up operations in Poland in 2016-2020 (percentages of indications, multiple choice)



Source: The author's compilation on the basis of: Start-up Poland (2016-20).

Owing to their high profitability, big data, analytics, and IoT remain the chief specialities of start-ups, with mobile and marketplace applications the most popular product categories.

The business models pursued by Polish start-ups uphold the tendency in the European market, where the B2B model is dominant – 82% in 2019, 44 percentage points more than in 2016. The key specialisations of European start-ups are: SaaS and IT/Software development – 18.5% and 19% in 2019, respectively (ESM, 2016, 2019).

Most start-ups are micro and small enterprises that begin their activities based on an innovative idea and the associated above-average market risk. As their access to the formal capital market is restricted, start-ups look for some alternative sources of development financing. These include: high-risk funding, mainly venture capital and business angels, and crowdfunding. Grants and support from public institutions and business accelerators play significant roles as well.

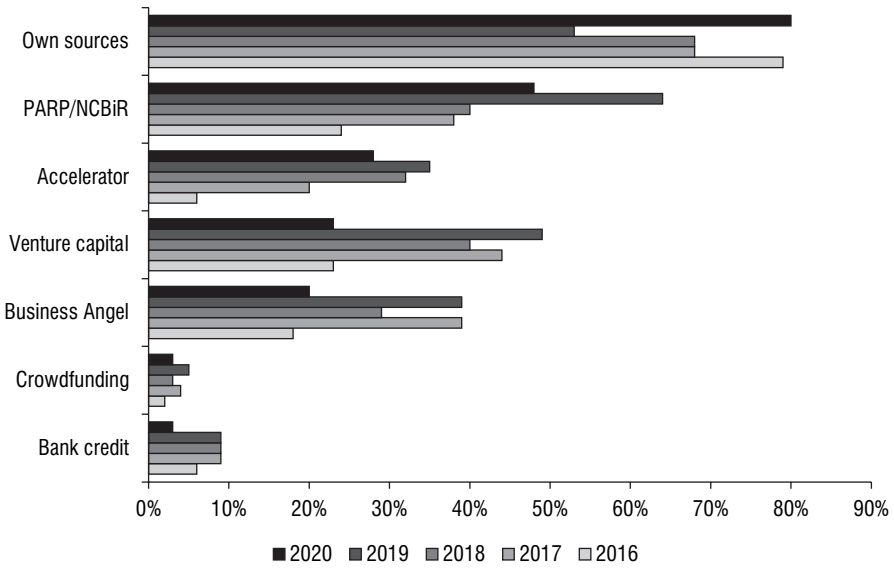
Financing for start-up development is indissolubly linked to the stages of their operations. As the risk of investing in an initial phase of development is very high, the so-called bootstrapping, or financing with own savings based on credit card overdrafts and monies from family and friends, is the key source of capital. Financing at this stage is exposed to a very high risk. In some cases, return on investment is possible after 5-7 years and can even reach 10 years if the financial situation in the market is unstable. Funds after quick returns on investment will not be interested in such opportunities. Business accelerators, expecting longer periods of mentoring and maturing of a business before it enters the path of fast development, are another story. Financing with capital transactions is the most common form of venture capital fund investments at the start and early development stages. This takes place by acquiring newly issued shares in increased company capital. The same form of investment is employed by business angels, too. Crowdfunding gains in popularity as a way of financing, which is the gathering of capital from the internet community in order to fund a new undertaking in return for a pre-arranged form of consideration (e.g., share in profits from a project) (Sieradzka, 2020, pp. 39-48). Donation crowdfunding is the best for the initial start-up phase, as it displays the maximum operational flexibility. Debt-based crowdfunding, on the other hand, where capital is received to be returned, is a good option for the start phase. Share-based crowdfunding, which guarantees sharing in an enterprise's profits, may be the method of choice in the growth phase (Paschen, 2017, pp. 179-188). As an enterprise enters the stages of expansion and stabilisation, commonly associated with share floatation, private equity funds and bank lending become its sources of capital.

Some European studies of start-up development (ESM, 2020, p. 11) corroborate the notion sources of financing need to match the development stage of a business undertaking. Characteristically, though, owners' capital constitutes the main source of financing at every stage of development: from the seed (79%) through start-up (78%) and steady stage (49%) to the growth stage (65%). As far as the start-up stage is concerned, government subsidies/

funding (39%), internal financing/cash flow (34%), business angels (24%), incubators and accelerators (17%), and venture capital (16%) are the key sources of funding.

Owners' capital was the dominant source of financing for start-ups in Poland in 2016-2020, which replicates the European tendencies (Figure 12.4). This is due above all to the high risk and early stage of development as well as the severely limited accessibility of external financing. In 2020, 80% start-ups identified owners' savings and loans from family and people believing in the success of an undertaking as the principal sources of capital. Grants and subsidies from institutions supporting the development of science and entrepreneurship play a major part as well. In Poland, these are chiefly PARP (Polish Agency for Enterprise Development) and NCBiR (National Centre for Research and Development). The European Union funds fulfil a significant function as they support innovative projects as part of operational programmes. Accelerators also issue grants to start-ups, combined with support by technological experts and access to infrastructure and know-how for enterprises to use such accelerated technologies.

Figure 12.4. The main sources of start-up financing in Poland in 2016-2020 (multiple choice)



Source: The author's compilation on the basis of: Startup Poland (2016-20).

High-risk funds, first of all venture capital, and informal investors, business angels, play growing roles in financing early stages of undertaking development. Crowdfunding is listed among the main sources of start-up financing. Its levels are relatively low (approximately 2-3% in the entire period studied), however, its role and importance in the European market rise (in 2019, 8%), which may anticipate a similar trend in the national market (ESM, 2019). Start-ups take advantage of banking products far more rarely than other firms. This is related to the absence of crediting histories, as well as innovative products, too risky for a bank. In effect, banks have virtually nothing to offer to projects of this kind.

12.3. The causes of failure

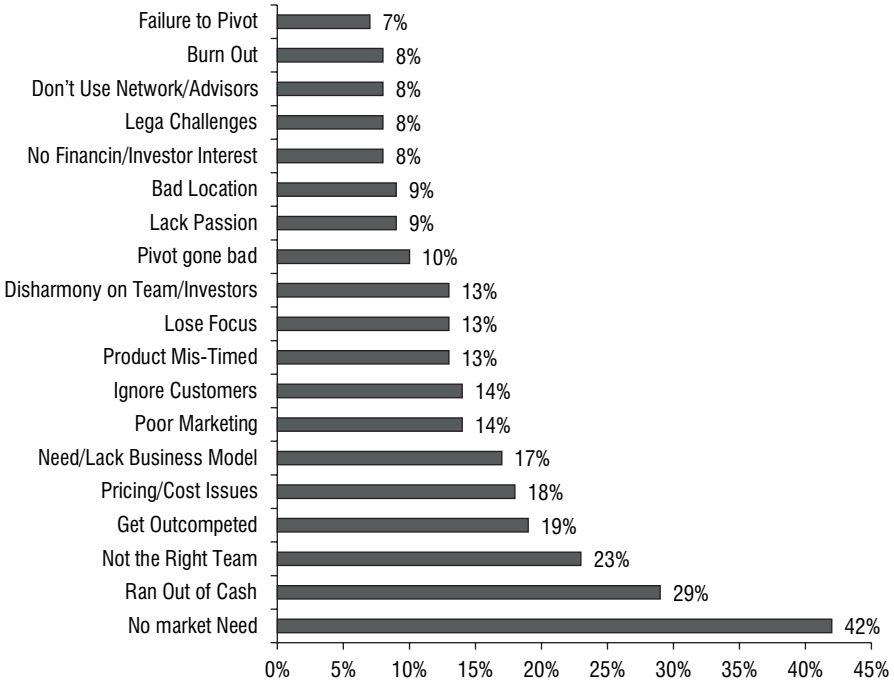
Start-ups are not smaller versions of large enterprises. The traditional model of economic activity, including market introduction, does not apply to this case. Most start-ups fail as they employ the assumptions, methods and instruments characteristic of the classic concept of the enterprise. Literature suggests the following causes of start-up failure (Blank, Dorf, 2013, pp. 45-57):

- An owner's conviction about a customer market, its needs, and methods of product sale – a start-up owner should verify their assumptions and hypotheses in the market and then correct the earlier assumptions,
- An owner's conviction about product features – certain features of a product are developed as the owner is convinced they know customers and their needs, which may be wrong. Therefore, a continuing and direct contact with customers is the starting point for low-cost corrections to the assumptions,
- Focus on product launch and the realisation of plans – by concentrating on deadlines and plans, one often forgets the iteration process (start-ups work in the search mode, therefore, the testing and verification of hypotheses is the foundation of their success),
- An owner's attachment to a business plan and classic financial ratios – flexibility, correction to earlier assumptions, and focus on the financial resources in place bring start-ups closer to the goal of finding a reproducible and scalable business,

- The traditional division of jobs – hiring of enterprising individuals who think and carry out their duties in unconventional ways are key to start-up success.

E. Griffith's study (2014) of 101 start-ups has identified twenty reasons for business failure (Figure 12.5). The central causes relate to the customer, lack of matching to or even ignoring their needs. "No market need', that is, the lack of customers for a firm's products, has proven the main reason for start-up failure. Start-ups can be said, then, to fail where they do not solve a problem in the market. Offering products failing to satisfy customer needs, poor product quality, and the absence of an appropriate business model are some other problems. Another group of failure factors are connected with worker team and corporate culture. An inadequate selection of human capital, disagreements among founders and/ or investors, as well as a lack of focus and passion decide market failure of start-ups.

Figure 12.5. The top 20 reasons startups fail



Source: Griffith, (2014) after: Kasimov, (2017, 3)

Financial issues (ran out of cash and no financing) account for but two out of twenty failure factors. This means, therefore, an initial success of an economic undertaking (products, technology, business models, financing) is a function of human capital both inside and outside an organisation, its team and customers.

Research shows (PARP, 2019, p. 32) five key factors that pose barriers to beginning start-up operations in Poland:

- Lack of faith in your own abilities;
- Lack of skills related to a firm's organisation and management necessary to start a business;
- Lack of capital to start a business;
- Lack of industry and specialist knowledge necessary to start a business;
- Lack of business idea.

Conclusion

Literature fails to offer a standard approach to either defining or identifying the stages of start-up development. A range of authorial definitions identify it with the notion of innovativeness, a rapid pace of development, lack of a business model, and early stage of development. This analysis implies a team of people forming a start-up and a business idea, financing, and a business model are key factors influencing the development of start-ups. Depending on their organisation, they contribute to the success or failure of a firm.

A business idea and a team constitute innovation potential and market advantage of a start-up. The team is the key element – in a start-up, these are first of all founders who generate a product and decide the time, methods, tools, and ways of launching in the market. Research suggests these are mostly young males (below 40) with (engineering and economic) university education who work in teams of 2-3. By working as part of a team, they meet a variety of business development conditions. Mental and physical features matter as well – creativity, the ability to work in an environment of changes and to make decisions in the conditions of uncertainty. Human capital is the foundation of every business, and of start-ups in particular. It enables them to develop, build the valuable capital of relations, and generate creative solutions to problems as they arise.

A suitable matching of a financing strategy to a given stage of undertaking development is a basic condition of market success. The owners' capital is the key source of start-up financing in Poland (79%). As the nature of their operations is peculiar – innovativeness, an early stage of development and the consequent high market risk – start-ups seek some alternative sources of financing for their activities. These include capital from: public institutions PARP/NCBiR (48%), accelerators (28%), high-risk funds (23%), and business angels (20%). Working with an investor supplies not only capital but also expert support, professional experience, and business contacts, of considerable value to start-up founders. By finding some external sources of financing, innovative products and services can be commercialised.

A business model is the factor deciding a launch strategy. Start-up owners build their competitive advantage on an innovative approach to their business, focusing on a scalable, optimum and profitable model. Focusing on the sales of products or services as part of the B2B model, which provides for a quick development and rise of revenue, is a distinct trend with Polish start-ups. The B2C model, in turn, loses its significance due to intense competition and extreme difficulties matching products and services to dynamically changing market needs. Start-ups increasingly often resort to the SaaS model, which offers the chance of rapid internationalisation without incurring the costs of distribution and generates regular income. The main, highly profitable sectors of start-up operations, namely, big data, e-commerce, and mobile applications, remain unchanged.

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Abstract

At a time of global opportunities for business development, a dynamic progress of information and communication technologies, and drive towards new types of innovations, enterprises need to develop permanently. As a result, start-ups become important. This chapter aims to identify and analyse the key factors of start-up success and failure in Poland. To this end, some definitions and development stages of start-ups are analysed and their characteristics identified. The conditions of their development are discussed and the key factors of success are designated. The causes of market failure of these firms are presented as well.

Foteini Tatsi*, Kostas Karamanis**

Chapter 13

The evolution and impact of Airbnb on the hotel industry

Introduction

It is now observed, due to the widespread use of electronic platforms worldwide, that travelers prefer new short-term rental models, emphasising experience and leaving behind the traditional travel services (Pine, Gilmore, 1998). Airbnb has therefore expanded rapidly in recent years (Schor, 2016). More and more tourists are choosing accommodation from this internet platform. Its great spread has had a great impact on the hotel industry around the world, resulting in an intense debate around the issue (Quattrone et al., 2016; Nieuwland, Van Melik, 2020). For many people, the reason to become "hosts" on Airbnb was the financial crisis, while for others the "impulse" to engage in tourism or simply make a profit from unused properties. All make up the target group of a community that turns whole areas into vast hotel complexes.

The Airbnb community is divided into hosts and guests with the former making a profit from bookings and the latter choosing a cheaper way of vacationing than the traditional hotel room (Böcker, Meelen, 2017). For the

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traveller, the choice of accommodation is now made through a huge deposit of spaces, such as a room in an apartment where the owner lives or an independent villa by the sea. Behind this platform, which is gaining more and more fans, there is a story of a startup.

The story of Airbnb.com begins in 2007, when Brian Chesky and Joe Gebbia, unable to pay their rent, thought of turning their home in San Francisco into tourist accommodation during the Industrial Plan Conference, after all the hotel rooms in the city were booked. Their idea came to fruition and in August 2008 Joe Gebbia, Brian Chesky and Nathan Blecharczyc created a short-term rental site, the Airbnb.com. Following continuous improvements to the website and listing increases, Airbnb was nominated the company of the year by Inc. com in 2014.

While it seemed that nothing could stop this rapid growth of Airbnb, the situation has changed due to the appearance of the Covid-19 virus. Although there are still not enough research findings on the effects of the virus on the short-term renting industry, completely different figures have characterised the last few months, while the immediate future is not optimistic, either (Dolnicar, Zare, 2020; Von Briel, Dolnicar, 2020).

The present study deals with the large extent of new forms of accommodation chosen by travellers in the past, with the main point of reference being the case of Airbnb. Researchers focus not only on the economic size and impact that Airbnb has had on traditional hotel units, but also on the changes it has caused to "the travel culture" and socio-political issues. Many consider Airbnb very limited, serving mainly travellers who want to spend modest sums and unable to serve customers travelling for business.

13.1. The impact of Airbnb on the tourism economy

Undoubtedly, the part of tourism mostly affected by the rise of the sharing economy is hospitality, heavily disrupted by the appearance of Airbnb. The spreading use of technology, as well as the consequent changes in the attitudes and perceptions of tourists, have resulted in the flourishing of the experience economy (Pine, Gilmore, 1998), with the sharing economy constantly gaining ground, taking advantage of the new global conditions.

Airbnb's story begins in August 2008 in California with Joe Gebbia, Brian Chesky and Nathan Blecharczyc, who built a short-term accommodation and real estate rental site, Airbnb.com. It is an online platform, in which every "host" owning a home, cottage or even a free room inside a house and interested in renting it for short term stays is matched with a traveller. Today, a vast range of properties (from budget rooms to luxury villas) is available in multiple locations around the world at varying prices.

With a view to improving security and reliability, Airbnb provides services such as photos which enhance its authenticity (Ert et al., 2016) and a host-customer mutual evaluation system. Nurturing trust between hosts and guests is a key part of Airbnb's success. As an example, Ert et al. (2016)'s study points out the importance of a host's personal photo and reputation to increasing the possibility of guest booking and boosting the average revenue per reservation. Similarly, Liang, et al. (2017) conclude that "Superhost" accommodations enjoy an increased RevPAR (Revenue Per Available Room) and such hosts receive higher ratings and better reviews, Wang and Nicolau (2017) find that "Superhosts" with verified identities usually charge more and Gibbs et al. (2017) strongly corelated RevPAR in five Canadian cities with host characteristics.

Airbnb has managed to promote traveling to different parts of the world, living in accommodation provided by locals and acquiring an understanding for the local ways of life as a unique experience, since it brings people together and creates a new type of tourist, the "urban tourist "(Nieuwland, Van Melik, 2020). This has been made possible as Airbnb has blurred the boundary between residents and accommodation service providers (Heo, 2016). A visitor "hosted" by a local has the opportunity to talk to them and feel like a temporary resident of the area, as opposed to spending a night in the usually more expensive option, a hotel (Madera et al., 2017; Ioannides et al., 2019). In essence, it has brought tourists and locals together in a new setting (e.g., Molz, 2013; Tussyadiah, Pesonen, 2016) while improving employment and increasing the income of local communities (e.g., Fang et al., 2016). Furthermore, Airbnb is a better value proposition for people who are allocentric, in particular for longer trips (Poon, Huang, 2017).

Although the accommodation sharing economy has started as an idea where visitors can access and get to know the lifestyle of locals in their destination, today it has become a competitive industry in the hospitality sector (Möhlmann, 2015). In June 2016, the platform was valued at $ 25.5 billion, making it the 3rd most valuable startup in the world. In 2018, Airbnb

was valued at $ 31 billion and was present in more than 65,000 cities in 191 countries, with over 3 million users. It seems that hotels will have to deal with it and adapt to the new conditions, as coexistence with sharing economy platforms is inevitable.

The impact of Airbnb on the hotel industry is extremely significant. Several studies have addressed the "phenomenon" of Airbnb, focusing mainly on the impact of the platform on hotel revenues (Zervas et al., 2017) and employment in the tourism industry (Fang et al., 2016). Fang et al. (2016) find that the sharing economy creates new job opportunities and influences positively the entire tourism industry. However, they point out, as small hotels are rapidly losing ground in favor of Airbnb's accommodation, the marginal impact of the platform is diminishing as the accommodation capacity offered through the sharing economy increases.

It is noted that in areas with a limited supply of accommodation Airbnb has given a way out, multiplying the available options. For example, in areas where hotels operate daily at full capacity or where the accommodation availability is exhausted during festivals or other events, Airbnb has played a crucial role in serving as many guests as possible. Thus, a respective local community benefits financially since an expansion of the tourism market results in an increasing income (Horton, Zeckhauser, 2016). According to the OECD (2016), areas that are less popular have the potential to grow by attracting travellers through the sharing economy.

The critics of Airbnb point out that its widespread use doesn't have only a positive impact, because a strong criticism is voiced of unfair competition practices as well as taxation and health and safety issues. Taking into consideration the increase in supply created by Airbnb, destinations that lack viability and growing mass could be negatively affected (Moreno-Izquierdo et al., 2019). In Spain, there are concerns about massification and sustainability issues that have arisen over the years in different holiday destinations (García, Servera, 2003; Rebollo, Baidal, 2003). Health-wise, the residents of cities where Airbnb is adopted want tourist accommodation to meet health and safety standards and undergo frequent inspections (Guttentag, 2015). Overall, a transient flow of tourists in a residential building or neighbourhood may be unpleasant for other tenants or neighbours (Gottlieb, 2013).

At the same time, critics argue that the sharing economy provides opportunities for tax evasion and causes unfair competition. Untaxable revenues are generated, while the turnover of "standard" hotel accommodation

shrinks (Zervas et al., 2017) when a destination lacks proper regulation and control measures (Guttentag, 2015). In addition, due to the rapid expansion of Airbnb and the accommodation sharing economy, the need to regulate the emerging short-term accommodation rental market worldwide has emerged (Ikkala, Lampinen, 2015; Stors, Kagermeier, 2017).

At this point, it should be noted there are surveys that have explored the phenomenon of discrimination that Airbnb users may be subjected to. Specifically, a study by Biber et al. (2017) states that hosts in some areas pursue a policy of discrimination against potential guests. Edelman et al. (2017) examine racist discrimination on the Airbnb platform, combining photos, prices and quality reviews of accommodation for all Airbnb hosts in New York, concluding that "non-black" hosts charge about 12% more than "black" hosts for the provided accommodation.

It should be also kept in mind that tourism is one of the areas mostly affected by the sudden onset of COVID19. Dolnicar and Zare (2020) explore the possible long-term effects of COVID19 on the short-term real estate lease market using online platforms. Based on Airbnb's historical key growth indicators and recent developments related to COVID19, they predict that the percentage of professional hosts will diminish while the percentage of ordinary hosts will rise, shifting Airbnb towards its original idea where ordinary citizens share their accommodation. It is also expected that although the sharing economy and related platforms, such as Airbnb, will recover, an upper supply limit will take effect, as some professional hosts will move a portion of their properties into long-term rentals in order to hedge for suchlike events in the future (Dolnicar, Zare, 2020). These cases have immediate practical consequences. Before COVID19, many countries were forced to adjust short-term leases in order to minimise the negative effects on society, while maximising economic opportunities (Von Briel, Dolnicar, 2020). In the new circumstances, they might proceed to regulate in favour of the sharing economy instead of discouraging it (Dolnicar, Zare, 2020).

13.2. Airbnb & hospitality

The hospitality industry has long argued that Airbnb is not its direct competitor as both its business model and its target audience differ. However, together with the rise of Airbnb came a shift in opinion, with hoteliers

questioning Airbnb's practices as a large portion of its revenue comes from "illegal hotels" (Dogru et al., 2019).

It is a general perception that Airbnb "is bad for hotels but good for tourism" (Oskam, Boswijk, 2016). The company claims to be complementary to the traditional hospitality, since about 70% of its offerings are located outside central areas (Airbnb, 2013). Analysts, however, believe that a significant proportion (43-67%) of Airbnb's entries compete directly with the traditional hotel offer (Oskam, Boswijk, 2016). Airbnb has inevitably become part of the tourism industry and continues to grow (Guttentag, Smith, 2017). Its impact on the performance indicators of mainstream hotels has become an area of interest for researchers (Dogru et al., 2020).

While Airbnb was launched as an attractive proposition for a specialised tourist market, it has now taken over a part of the hotel industry's core market. As Airbnb seeks to increase its penetration in underperforming markets, its alternative benefits are consolidated in consumer standards and travelers' preferences (Guttentag, 2015). Booking via Airbnb appears to be reducing hotel occupancy and sales ratios. This is especially true as Airbnb is constantly improving its features to offset its limitations compared to the traditional hotel product (Blal et al., 2018).

In addition, the fact that Airbnb's growing supply is affecting the performance of certain hotel categories shows that the threat of substitution is felt throughout the industry (Guttentag et al., 2018; Hajibaba, Dolnicar, 2017; Dogru et al., 2019). Research has shown that Airbnb will reduce hotel prices and revenue, since additional and excess supply will adversely affect the hotel business value proposition and market distribution (Oskam, Boswijk, 2016).

Haywood et al. (2017) argue that as the value proposition of hotels differs from that of Airbnb properties, they are not in direct competition with each other and hence the latter should not be considered a direct threat to the former. Blal et al. (2018) study the accommodation market in San Francisco and argue that the Airbnb doesn't impact hotel sales. On the contrary, they claim it has the two industries complement each other. Choi et al. (2015) on the Korean market came to similar conclusions.

In contrast, other studies have shown that the increase of capacity available in Airbnb is reversely correlated to the key metrics of the hospitality industry. Dogru et al. (2019) argue that the hotel occupancy rate and room revenue drop are correlated with the rise of Airbnb, which has a smaller but still significant impact on medium-sized hotels (Dogru et al., 2019).

The RevPAR (Revenue Per Available Room) of independent and managed hotel chains appears to be less affected by Airbnb, while the impact on franchise hotels is larger. These results show that hotel chains and independent hotels are more resilient to the shifts caused by Airbnb's rise, because they manage to have recurring customers through targeted loyalty programmes (Dogru et al., 2020). With respect to authenticity, customers regard the level of authenticity of independent local hotels as comparable to that of Airbnb properties, demonstrating authenticity is a minor reason for moving towards Airbnb (Guttentag et al., 2018; Dogru et al., 2019).

Moreover, Zervas et al. (2017) estimate that Airbnb's impact reduced hotel room revenue in Austin, Texas, by about 10% over a five-year period. In the same state, Texas, Xie and Kwok (2017) provide strong indications that an increase in Airbnb listings is correlated with a reduction in RevPAR of traditional hotels, while Neeser et al. (2015) conclude that increasing Airbnb listings reduce ADR (Average Daily Rate) for the Scandinavian hotel industry. According to Benítez-Aurioles (2019), an expansion of the Airbnb market in tourist accommodation in Barcelona has negatively impacted hotel occupancy rates and financial performance, regardless of hotel categories.

In contrast, based on data from 101 hotels in San Francisco between 2013 and 2016, Blal, Singal and Templin (2018) show that the hotel RevPAR is not correlated with Airbnb's total supply. Similarly, Heo, Blal and Choi (2019) do not find a strong correlation between total hotel revenues and the number of Airbnb stays using aggregate data for 20 districts in Paris for the period 2009 to 2015. More recently, Strømmen Bakhtiar and Vinogispradov (2019) analyse regional statistics for hotels in Norway from 2014 to 2016 and find that RevPAR as well as room bookings are independent from Airbnb activity, something that might indicate that hotels are not under pressure to proceed with price reductions in high Airbnb activity areas (Benítez-Aurioles, 2019).

Interestingly, the Airbnb offer is responsible for a 0.04% reduction in both budget and luxury hotels (Dogru et al., 2019), while Airbnb outperforms budget hotels on features such as cleanliness and comfort (Guttentag, Smith, 2017; Dogru et al., 2019). An unexpected finding of a recent study is that the increase in Airbnb listings has actually had a statistically significant positive effect on franchise and independent hotel occupancy levels (Dogru et al., 2020). As this increase is attributed to price reductions by hotels facing the intense competition, it has actually led to a significant reduction in the hotel RevPAR.

Guttentag (2015) suggests that, as cheaper accommodation becomes available, spending will be reduced, while a substitution of full-time employment with gig economy-based jobs could be damaging to the hospitality industry. This finding is also confirmed by a study in Spain that argues that more than five times workers are required for the operation of a traditional hotel than of Airbnb properties of the same capacity (53.3 versus 9.8 jobs per 100 beds) (EY España, 2015; Oskam, Boswijk, 2016). Also, Zervas et al. (2017) argue that Airbnb could in fact contribute to unemployment, while Fang et al. (2016) report that the sharing economy job creation benefits the tourism industry. However, Airbnb's impact on employment has not been extensively investigated (Dogru et al., 2019).

Although it seems that Airbnb adversely affects the traditional hospitality industry, the increased capacity could be beneficial during peak times and major events such as the Olympic Games (Guttentag, 2015; Zervas et al., 2017). Another factor that ought to be considered is the positive effects of Airbnb on the tax revenues of cities and local governments and especially neighbourhoods that are off the beaten path (Tussyadiah, Pesonen, 2016).

However, since Airbnb is not taxed in many areas, the revenue shifting from traditional hotels towards Airbnb properties reduces tax revenue for cities and local governments, resulting in additional taxation burdens on the rest of the economy (Williams, Horodnic, 2017). Hoteliers need to evaluate "the creative destruction of old business models and the adoption of new creative ways of participating in the common economy" (Belk, 2014).

Conclusion

Tourism, especially tourist accommodation, is one of the sectors most affected by the sharing economy. The coexistence of both houses offered for tourist use through the sharing economy and the classic hospitality services offered by hotels causes significant disturbances in the hospitality industry, raising issues of competitiveness. Airbnb is one of the most successful short-term rental real estate platforms in the world, considered the largest hotel provider (Airbnb, 2018a) with over 4 million listings available in 191 countries and with fanatical supporters who make use of the service either as guests or as hosts.

The main positives that visitors to the Airbnb community have are the low price and the finding of space even at the last minute. What's more, the existing literature suggests the profile of travellers has changed, from classic tourists to travellers who seek an opportunity to live like locals in the places they visit, bypassing the traditional accommodation channels. The sharing economy undoubtedly offers opportunities but also boosts business competition. It is based on the cooperation, equality and parity of its members and has the potential to be a pillar of global economic and social development in an ever-changing global economy and society.

On the other hand, there have been a range of reactions to the short-term lease of real estate through Airbnb, especially by hoteliers who believe that the tourism situation is changing when each owner can turn their house into tourist accommodation. There is, therefore, a debate about the negative effects of Airbnb, which mainly concerns the adverse impact on hotels, poor legislation, tax evasion, and urban planning. Hoteliers around the world also point out that health and safety rules must be set for tourist accommodation that enters uncontrollably the community of sharing economy.

Numerous researchers have studied the Airbnb phenomenon from different perspectives. However, due to the changing global economic situation, the volatile consumer behaviour and the impact of the Covid-19 pandemic on global tourism, the scientific community faces the challenge of studying the impact of the sharing economy and Airbnb in the hotel industry in more detail.

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Abstract

Since the beginning of the 21st century, due to the technological revolution, the internet has been spreading and some new social networks have been created which have led to new business models, reinforced by the need to respond to the financial crisis and lack of financial resources. New e-business models, such as the sharing economy, often complement and influence the traditional forms of economy. A boom in the sharing economy has penetrated various sectors, exerting a major influence in the field of „tourist" accommodation. One such model of e-business is Airbnb, which has become a global phenomenon due to the expansion of sharing platforms worldwide.

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PROSPECTS AND CHALLENGES TO THE DEVELOPMENT OF BUSINESSES IN THE WORLD ECONOMY

The monograph presents the results of research conducted in Poland and Greece. The originality of the monograph is also evidenced by its interdisciplinarity – it combines issues related to the enterprise sector and financial institutions, indicating opportunities for and threats to their development.

The book consists of three main parts divided into thirteen chapters.

The first part of the book is titled *The macroeconomic factors of businesses development* and analyses the conditions for implementing a capital market union in the light of the realities of the external environment and the European Union itself, the importance of gold as a safe haven asset in the international monetary system and in last part of this chapter was compare two taxes which affect corporations, especially financial institutions.

The second part of the book is titled *The development of financial institutions* and examines the relationship between economic growth and internet infrastructure in selected countries, the impact of an extreme dividend policy on prospects of Greek bank development, changes in the NPL (Non-Performing Loans) ratio of non-financial corporations and its main determinants in the Polish banking sector, the relationship between shares in the insurance market and the financial results of insurance companies, and the issues of appropriate selection and use of information in the decision-making process of insurance companies.

The third part of the book is titled *The development of enterprises* and presents the impact of business activities (sector) on the enterprise competing, the measures of the orchestrator's ability to create value added meeting the requirements of an aggregated long-term assessment of GBN (Global Business Networks) competitiveness, benefits from the use of integrated IT systems in enterprises, the key factors of start-up success and failure in Poland, and the new forms of accommodation chosen by travellers in recent years, with the main point of reference being the case of Airbnb.

This monograph may be of considerable interest to scholars and business practitioners concerned with the problems of development of financial institutions and enterprises.

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